Fish and Game Commission
Meeting Binder

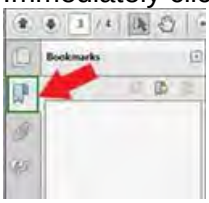
December 9-10, 2015

Commission Meeting

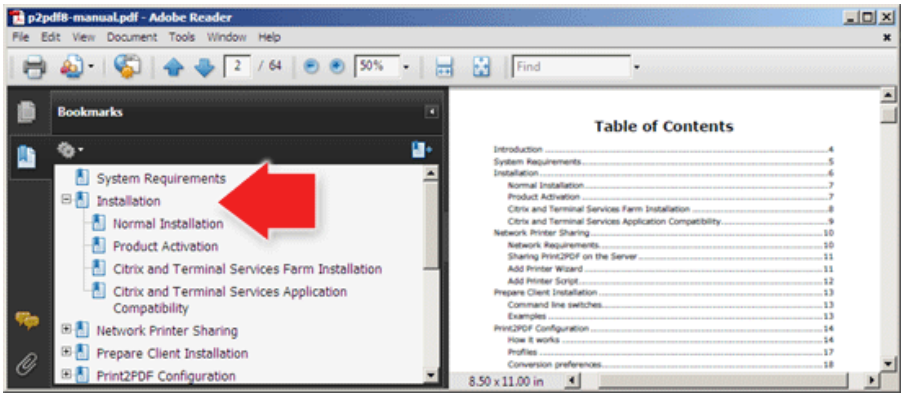
EASY GUIDE TO THE BINDER

1. Download and open the binder document using your Adobe Acrobat program/application.

2. Immediately click/tap on the “bookmark symbol” located near the top left-hand corner.



3. A bookmark panel should appear on either the top or the left-hand side of the screen. To make adjustments, simply use the Page Display option in the View tab. If done correctly, you should see something like:



4. We suggest leaving open the bookmark panel to help you move efficiently among the analysis sheets and supporting documents included in the binder. It’s helpful to think of these bookmarks as a table of contents which allows you to go to specific points in the binder without having to scroll through hundreds of pages.

5. Resize the bars by placing the icon in the dark, vertical line located between the text boxes and using a long click/tap to move ⇿ in either direction. You may also adjust the sizing of the documents by adjusting the sizing preferences located on the Page Display icons found in the top toolbar or in the View tab.

6. Upon locating an analysis sheet for an agenda item that interests you, notice that you can get more information by double-clicking/tapping on any item underlined in red.

7. Return to the analysis sheet by simply re-clicking/tapping on the item in the bookmark panel.

OVERVIEW OF FISH AND GAME COMMISSION BUSINESS MEETING

- This is the 145th year of continuous operation of the Fish and Game Commission (Commission) in partnership with the Department of Fish and Wildlife (Department). Our goal is the preservation of our heritage and conservation of our natural resources through informed decision making. These meetings are vital in achieving that goal. In that spirit, we provide the following information to be as effective and efficient toward that end. Welcome and please let us know if you have any questions.

- We are operating under Bagley-Keene Open Meeting Act and these proceedings are being recorded and broadcast via Cal-Span.

- In the unlikely event of an emergency, please note the location of the nearest emergency exits. Additionally, the restrooms are located _____.

- Items may be heard in any order pursuant to the determination of the Commission President.

- The amount of time for each agenda item may be adjusted based on time available and the number of speakers.

- Speaker cards need to be filled out **legibly** and turned in to the staff **before** we start the agenda item. Please make sure to list the agenda items you wish to speak to on the speaker card.

- We will be calling the names of several speakers at a time so please line up behind the speakers' podium when your name is called. If you are not in the room when your name is called you may forfeit your opportunity to speak on the item.

- When you speak, please state your name and any affiliation. Please be respectful. Disruptions from the audience will not be tolerated. Time is precious so please be concise.

- To receive meeting agendas and regulatory notices about those subjects of interest to you, please visit the Commission's website, www.fgc.ca.gov, and sign up for our electronic mailing lists.

- Beginning October 1, 2015, all petitions for regulation change must be submitted in writing on the authorized petition form, FGC 1 Petition to the California Fish and Game Commission for Regulation Change, available athttp://www.fgc.ca.gov/public/information/petitionforregulatorychange.aspx.

- **Reminder!** Please silence your mobile devices and computers to avoid interruptions.

- **Warning**! The use of a laser pointer by someone other than a speaker doing a presentation may result in arrest.

INTRODUCTIONS FOR FISH AND GAME COMMISSION COMMISSION MEETINGS

FISH AND GAME COMMISSIONERS

Jack Baylis	President (Los Angeles)
Jim Kellogg	Vice-President (Discovery Bay)
Jacque Hostler-Carmesin	Member (McKinleyville)
Eric Sklar	Member (Saint Helena)
Anthony Williams	Member (Huntington Beach)

COMMISSION STAFF

Sonke Mastrup	Executive Director
Michael Yaun	Legal Counsel
Susan Ashcraft	Marine Advisor
Melissa Miller-Henson	Program Manager
Caren Woodson	Anaylst
Mary Brittain	Administrative Assistant

OFFICE OF THE ATTORNEY GENERAL

Chris Ames	Deputy Attorney General

DEPARTMENT OF FISH AND WILDLIFE- *Directorate*

Chuck Bonham	Director
Dan Yparraguirre	Deputy Director, Wildlife and Fisheries Division
David Bess	Chief, Law Enforcement Division

I would also like to acknowledge special guests who are present:
(i.e., elected officials, tribal chairpersons, other special guests)

_____

_____

_____

_____

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Wildlife Heritage and Conservation
Since 1870

Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814
(916) 653-4899
www.fgc.ca.gov

MEETING AGENDA
December 9-10, 2015

Town and Country Resort & Convention Center
500 Hotel Circle North, San Diego

Field Trip: Fund for Animals Wildlife Center
December 8, 2015, at 3:00 p.m.
18740 Highland Valley Road, Ramona, CA 92065
Members of the public are invited, but must provide their own transportation.

The meeting will be live streamed at www.cal-span.org

NOTE: See important meeting procedures and information at the end of the agenda.

DAY 1 – DECEMBER 9, 2015, 8:30 A.M.

1. Call to order/roll call to establish quorum

2. Approve agenda and order of items

3. Public forum for items not on the agenda
The Commission **may not** discuss or take action on any matter raised during this item, except to decide whether to place the matter on a future meeting agenda. (Pursuant to sections 11125 and 11125.7(a), Government Code)

CONSENT ITEMS

4. Authorize publication of notice of intent to amend ocean salmon sport fishing regulations

   (A) Season dates, size limits, and daily bag limits for April 2016 (Subsection 27.80(c), Title 14, CCR)
   (B) Season dates, size limits, and daily bag limits for May-November 2016 (Subsection 27.80(d), Title 14, CCR)

5. Receive request from Charles Friend Oyster Company to amend State Water Bottom Lease No. M-430-04 to add new aquaculture cultivation methods

CONSENT ITEMS

6. Receive request from Tomales Bay Oyster Company to amend State Water Bottom Lease No. M-430-05 to add new aquaculture cultivation methods

7. Approve request from Hog Island Oyster Company to renew State Water Bottom Lease No. M-430-15 for aquaculture

8. Marine Resources Committee

   (A) Meeting summary
      I. Receive and adopt recommendations
   (B) Work plan development
      I. Update on work plan and draft timeline
      II. Discuss and approve new topics

9. Tribal Committee

   (A) Discuss items identified for a proposed rulemaking to allow tribal take exemptions in select marine protected areas
   (B) Work plan development
      I. Update on work plan and draft timeline
      II. Discuss and approve new topics

10. Adopt proposed changes to marine protected areas regulations (Section 632, Title 14, CCR)

11. Request for authorization to publish notice of intent to amend Pacific halibut sport fishing regulations (Section 28.20, Title 14, CCR)

12. Receive draft Spiny Lobster Fishery Management Plan

13. Receive proposed final Master Plan for Marine Protected Areas pursuant to the Marine Life Protection Act

14. Approve request for an extension of time to transfer Mr. Thomas L. Ptak's transferable nearshore fishery permit and nearshore fishery trap endorsement for the Nearshore Fishery South Coast Regional Management Area

15. Approve request for an extension of Santa Barbara Mariculture's State Water Bottom Lease No. M-653-02 for aquaculture

16. Receive informational update on electronic reporting and pilot program for commercial passenger fishing vessel log books

17. Request for authorization to publish notice of intent to amend Commission meeting procedures regulations (Section 665, Title 14, CCR)

18. Approve Commission Conflict of Interest Code pursuant to the requirements of the Political Reform Act

19. Announce results from Executive Session

20. Receive presentation on state agencies' climate change policies and provide direction for development of Commission policy

21. Items of interest from previous meetings

    (A) Action on petitions for regulation change received at the October 2015 meeting
    (B) Action on non-regulatory requests received at the October 2015 meeting
    (C) Update on domoic acid in recreational and commercial crab fisheries
    (D) Update on schedule and approach to sea urchin regulatory change proposal

22. Department informational items

    (A) Director's report
    (B) Wildlife and Fisheries Division, and Ecosystem Conservation Division
    (C) Law Enforcement Division
    (D) Marine Region
    (E) Other

23. Other informational items

    (A) Executive director's report
    (B) Staff report
    (C) Legislative update and possible action
    (D) Federal agencies report
    (E) Other

24. Recess

DAY 2 – DECEMBER 10, 2015, 8:00 A.M.

25. Call to order

26. Public forum for items not on the agenda
    The Commission **may not** discuss or take action on any matter raised during this item, except to decide whether to place the matter on a future meeting agenda. (Pursuant to sections 11125, 11125.7(a), Government Code)

CONSENT ITEMS

27. Receive the Department's 90-day evaluation report on the petition to list the Humboldt marten (*Martes caurina humboldtensis*) as an endangered species under the California Endangered Species Act
(Pursuant to Section 2073.5, Fish and Game Code)

28. Wildlife Resources Committee

    (A) Work plan development
        I. Update on work plan and draft timeline
        II. Discuss and approve new topics
        III. Make appointments to Predator Policy Workgroup

29. Approve proposed amendments to Commission Designated Wild Trout Waters Policy

30. Adopt proposed changes to endangered or threatened animals regulations to add gray wolf (*Canis lupus*) to the list of endangered species
(Section 670.5, Title 14, CCR)

31. Consider the petition, Department's evaluation report, and comments received to determine whether listing the tricolored blackbird (*Agelaius tricolor*) as a threatened or endangered species may be warranted
(Pursuant to Fish and Game Code, Section 2074.2).
Note: If the Commission determines listing may be warranted, a one-year status review will commence before the final decision on listing is made.

32. Sport fishing regulations
(Section 1.05, et al., Title 14, CCR)

    (A) Certify California Environmental Quality Act document
    (B) Adopt proposed changes to regulations

33. Request for authorization to publish notice of intent to amend Central Valley salmon sport fishing regulations
(Subsection 7.50(b)(5), (68) and (156.5), Title 14, CCR)

34. Request for authorization to publish notice of intent to amend Klamath River salmon sport fishing regulations
(Subsection 7.50(b)(91.1), Title 14, CCR)

35. Fisheries at risk
(Section 8.01, Title 14, CCR)

    (A) Consider and re-adopt emergency regulations regarding special measures for fisheries at risk due to drought conditions.
    (B) Request for authorization to publish notice of intent to adopt permanent regulations regarding special measures for fisheries at risk

36. Request for authorization to publish notice of intent to amend mammal hunting regulations
(Sections 265, et al., Title 14, CCR)

37. Request for authorization to publish notice of intent to amend waterfowl hunting regulations
(Sections 502 and 507, Title 14, CCR)

38. Discuss and act on future Commission meeting items

(A) Next meeting – February 10-11, 2016, in Sacramento
(B) Rulemaking calendar updates
(C) New business
(D) Other

39. Adjournment

EXECUTIVE SESSION

(Not Open to Public)

Pursuant to the authority of Government Code Section 11126(a)(1) and (e)(1), and Section 309 of the Fish and Game Code, the Commission will meet in closed Executive Session. The purpose of this Executive Session is to consider:

(A) Pending litigation to which the Commission is a Party

I. Big Creek Lumber Company and Central Coast Forest Assoc. v. California Fish and Game Commission (Coho listing, south of San Francisco)

II. James Bunn and John Gibbs v. California Fish and Game Commission (squid permits)

III. Center for Biological Diversity and Earth Island Institute v. California Fish and Game Commission (black-backed woodpecker)

IV. Dennis Sturgell v. California Fish and Game Commission, California Department of Fish and Wildlife, and Office of Administrative Hearings (revocation of Dungeness crab vessel permit No. CT0544-T1)

V. Kele Younger v. California Fish and Game Commission, et al. (restricted species inspection fee waiver and Administrative Procedure Act)

(B) Possible litigation involving the Commission

I. Tricolored blackbird

II. Bobcat trapping prohibition

(C) Staff performance and compensation

(D) Receive hearing officer recommendations on license and permit items

I. Mr. Peter Vitali – Appeal of the Department's permanent revocation of his hunting privileges and request for reinstatement of such privileges

FISH AND GAME COMMISSION
2016 MEETING SCHEDULE
www.fgc.ca.gov

MEETING DATE	COMMISSION MEETING	COMMITTEE MEETING
January 20		**Wildlife Resources** Stanley Mosk Library and Courts Building 914 Capitol Mall, Room 500 Sacramento, CA 95814
February 10-11	Resources Building – Auditorium 1416 Ninth Street Sacramento, CA 95814	
March 15	**Special Meeting — Teleconference Arcata, Sacramento, Los Alamitos and Yountville**	
March 21		**Marine Resources** West Ed Building – Ed Meyers Classroom 4665 Lampson Avenue, Suite A Los Alamitos, CA 90720
April 12		**Tribal Meeting** River Rock Casino Quail Run Buffet 3250 Highway128 East Geyserville, CA 95441
April 13-14	Flamingo Conference Resort & Spa 2777 Fourth Street Santa Rosa, CA 95405	
April 18	**Special Meeting — Teleconference Arcata, Sacramento, Los Alamitos and Yountville**	
May 18		**Wildlife Resources** Department of General Services Ziggurat Building – Auditorium 707 3rd Street West Sacramento, CA 95605
June 21		**Tribal** Huntington Beach, CA
June 22-23	Huntington Beach, CA	
July 21		**Marine Resources** Napa, CA

MEETING DATE	COMMISSION MEETING	COMMITTEE MEETING
August 24-25	Sacramento, CA	
September 21		**Wildlife Resources** Sacramento, CA
October 18		**Tribal** Crescent City, CA
October 19-20	Crescent City, CA	
November 17		**Marine Resources** Irvine, CA
December 7-8	San Diego	

OTHER MEETINGS OF INTEREST

Wildlife Conservation Board – Dates unknown at this time

Pacific Fishery Management Council

- March 9-14, Sacramento, CA
- April 9-14, Vancouver, WA
- June 23-28, Tacoma, WA
- September 15-20, Boise, ID
- November 16-21, Garden Grove, CA

Pacific Flyway Council

- March 15, Pittsburgh, PA
- September, TBD

Western Association of Fish and Wildlife Agencies

- January 7-10, San Diego, CA
- July 2016, Cody, WY

IMPORTANT COMMISSION MEETING PROCEDURES INFORMATION

WELCOME TO A MEETING OF THE CALIFORNIA FISH AND GAME COMMISSION
This is the 145th year of operation of the Commission in partnership with the California Department of Fish and Wildlife. Our goal is the preservation of our heritage and conservation of our natural resources through informed decision making; Commission meetings are vital in achieving that goal. In that spirit, we provide the following information to be as effective and efficient toward that end. Welcome and please let us know if you have any questions.

PERSONS WITH DISABILITIES
Persons with disabilities needing reasonable accommodation to participate in public meetings or other Commission activities are invited to contact the Reasonable Accommodation Coordinator at (916) 651-1214. Requests for facility and/or meeting accessibility should be received at least 10 working days prior to the meeting to ensure the request can be accommodated.

SUBMITTING WRITTEN MATERIALS
The public is encouraged to comment on any agenda item. Submit written comments by one of the following methods: **E-mail to fgc@fgc.ca.gov; hand delivery to Fish and Game Commission, 1416 Ninth Street, Room 1320, Sacramento, CA 95814; or hand-deliver to a Commission meeting.** ***The Commission no longer accepts written comments or requests for regulations changes via facsimile; please submit written comments by email, mail service or in person, or submit requests for regulation change at http://www.fgc.ca.gov/public/FGC1.docx.***

Written comments received at the Commission office by **5:00 p.m. on November 24** will be made available to Commissioners prior to the meeting. Comments received by **12 noon on December 4** will be marked late and made available to Commissioners at the meeting. Otherwise, 10 copies of written comments must be brought to the meeting. All materials provided to the Commission may be made available to the general public.

PETITIONS FOR REGULATORY CHANGE AND NON-REGULATORY REQUESTS
All petitions for regulatory change and non-regulatory requests will follow a two-meeting cycle to ensure proper review and thorough consideration of each item. All requests submitted by **12 noon on December 4** (or heard during public forum at the meeting) will be scheduled for receipt at this meeting, and scheduled for consideration at the next business meeting.

All petitions for regulation change must be submitted in writing on the authorized petition form, FGC 1 Petition to the California Fish and Game Commission for Regulation Change, available at http://www.fgc.ca.gov/public/information/petitionforregulatorychange.aspx.

VISUAL PRESENTATIONS/MATERIALS
All electronic presentations must be submitted by **December 4 at 12 noon** and approved by the Commission executive director before the meeting.

1. Electronic presentations must be provided by email or delivered to the Commission on a USB flash drive by the written materials deadline.
2. All electronic formats must be Windows PC compatible.
3. It is recommended that a print copy of any electronic presentation be submitted in case of technical difficulties.
4. A data projector, laptop and presentation mouse will be available for use at the meeting.

CONSENT CALENDAR
A summary of all items will be available for review at the meeting. Any item may be removed from the consent calendar by the Commission, or upon the request of the Department or member of the public who wishes to speak to that item.

LASER POINTERS may only be used by a speaker during a presentation; use at any other time may result in arrest.

SPEAKING AT THE MEETING
To speak on an agenda item, please complete a “Speaker Card" and give it to the designated staff member before the agenda item is announced. Cards will be available near the entrance of the meeting room. Only one speaker card is necessary for speaking to multiple items.

1. Speakers will be called in groups; please line up when your name is called.
2. When addressing the Commission, give your name and the name of any organization you represent, and provide your comments on the item under consideration.
3. Each speaker has up to three minutes to address the Commission as determined by the presiding commissioner. If there are several speakers with the same concerns, please appoint a spokesperson and avoid repetitive testimony.
4. Speakers may cede their time to an individual spokesperson, but only under the following conditions:
    a. Individuals ceding time forfeit their right to speak to the agenda item; and
    b. The minimum number of individuals required to cede time to a spokesperson and the amount of time allocated are *arranged in advance* with the presiding commissioner.
5. If you are presenting handouts/written material to the Commission at the meeting, please provide 10 copies to the designated staff member just prior to speaking.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

3. PUBLIC FORUM

Today's Item **Information ☒** **Action ☐**

Receipt of public comments and requests for regulatory and non-regulatory actions.

Summary of Previous/Future Actions

- **Today's receipt of requests and comments** **Dec 9-10, 2015; San Diego**
- Direction to grant, deny, or refer requests Feb 10-11, 2016; Sacramento

Background

FGC generally receives three types of correspondence: Requests for regulatory action, requests for non-regulatory action, and informational only. The Administrative Procedure Act (APA) requires action on regulatory requests to be either denied or granted and notice made of that determination. At the end of public forum a motion may be made to provide direction to staff on any items for which FGC wishes to receive additional information or take immediate action. Otherwise, FGC will determine the fate of the regulatory and non-regulatory requests at the next commission meeting to allow staff time to evaluate requests.

Significant Public Comments

1. See regulatory requests in Exhibit 1
2. See non-regulatory requests in Exhibit 2

Recommendation (N/A)

Exhibits

1. Table containing a summary of new petitions for regulation change received by Nov 24 at 5:00 p.m., the comment deadline for the meeting binder.
2. Table containing a summary of new non-regulatory requests received by Nov 24 at 5:00 p.m., the comment deadline for the meeting binder.

3-9. Individual, new petitions and requests that are summarized in the tables.

10-17. Informational-only items; staff will not take any action on these unless otherwise directed by FGC.

Motion/Direction (N/A)

STAFF SUMMARY FOR DECEMBER 9-10, 2015

4. OCEAN SALMON (CONSENT)

Today's Item **Information** ☐ **Action** ☒

Authorization to publish two notices of intent to change ocean salmon sport fishing regulations.

Summary of Previous/Future Actions

- **Today's notice hearing** **Dec 9-10, 2015; San Diego**
- Discussion hearing Feb 10-11, 2016; Sacramento
- Adoption hearing (A) Mar 15, 2016; Teleconference
- Adoption hearing (B) Apr 18, 2016; Teleconference

Background

Two notices are proposed:

1. Agenda Item 4(A): Subsection 27.80(c) is proposed for amendment for Apr 2016 salmon season conformance with federal rules.
2. Agenda Item 4(B): Subsection 27.80(d) is proposed for amendment for May to Nov 2016 salmon season conformance with federal rules.

FGC annually adopts ocean salmon sport fishing regulations in state waters to conform to federal rules. The Pacific Fishery Management Council (PFMC) coordinates West Coast management of recreational and commercial ocean salmon fisheries in the federal fishery management zone, 3 to 200 miles offshore WA, OR and CA. PFMC ocean salmon recommendations are subsequently implemented by the National Marine Fisheries Service, effective on May 1 of each year.

The proposed regulations include a broad range of options from no fishing in all areas off California to limited salmon fishing in all areas to increase flexibility and encompass possible PFMC recommendations. The exact opening and closing dates, bag limit, minimum size, and days of the week open will be determined after considering the final federal regulations and may be different for each area.

Significant Public Comments (N/A)

Recommendation

FGC staff: Authorize publication of two notices as recommended by DFW.

DFW: Authorize publication of two notices.

Exhibits

1. DFW memo, received Oct 19, 2015
2. ISOR (A)
3. ISOR (B)

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the Consent Calendar, items 4, 6 and 7.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

5. CHARLES FRIEND OYSTER COMPANY (CONSENT)

Today's Item **Information ☐** **Action ☒**

Receive request from Charles Friend Oyster Company to amend State Water Bottom Lease No. M-430-04 to add new aquaculture cultivation methods.

This request has been withdrawn following staff clarification with the leaseholder on his intent; staff requests that no action be taken on this item.

Summary of Previous/Future Actions (N/A)

Background (N/A)

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits (N/A)

Motion/Direction (N/A)

STAFF SUMMARY FOR DECEMBER 9-10, 2015

6. TOMALES BAY OYSTER COMPANY (CONSENT)

Today's Item **Information ☐** **Action ☒**

Receive request from Tomales Bay Oyster Company to amend State Water Bottom Lease No. M-430-05 to add new aquaculture cultivation methods.

Summary of Previous/Future Actions

- **Today receive request** **Dec 9-10, 2015; San Diego**
- Consider approval TBD

Background

FGC has the authority to lease state water bottoms to any person for aquaculture for an initial lease term not to exceed 25 years (Sections 15400 and 15405, Fish and Game Code). Regulations require that any changes to existing leases must be approved by FGC (Section 237(c)(1), Title 14, CCR).

Mr. Tod Friend of Tomales Bay Oyster Company holds State Water Bottom Lease No. M-430-05 in Tomales Bay for purposes of culturing shellfish, and also holds a second state water bottom lease, No. M-430-04, under the business name Charles Friend Oyster Company, in Tomales Bay. Mr. Friend has submitted a request to amend lease M-430-05 to add authorization for "longlines, floats, and rack and bag" cultivation methods within the lease area, consistent with those authorized under lease No. M-430-04, to provide consistent authorized uses across both leases.

Upon receipt by FGC, DFW will review the request relative to management and biological considerations, and to identify any recommended changes to the terms of the leases. Action on the lease amendment request will be placed on a future FGC meeting agenda once DFW has completed its review.

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

1. Request from Tod Friend, Tomales Bay Oyster Company, received Oct 13, 2015

Motion/Direction

Moved by _____ and seconded by _____that the Commission adopts the Consent Calendar, items 4, 6 and 7.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

7. HOG ISLAND OYSTER COMPANY (CONSENT)

Today's Item **Information ☐** **Action ☒**

Approve Hog Island Oyster Company's request to renew State Water Bottom Lease No. M-430-15 for aquaculture.

Summary of Previous/Future Actions

- Received request to renew — Feb 11-12, 2015; Sacramento
- **Today approve request to renew** — **Dec 9-10, 2015; San Diego**

Background

FGC has the authority to lease state water bottoms that grant exclusive privilege to any person for conducting aquaculture, for an initial lease term not to exceed 25 years (Fish and Game Code sections 15400 and 15405). An existing lease holder may request to renew a lease prior to expiration and, if still actively engaged in aquaculture as determined by FGC, the lessee shall have a prior right to renew the lease on terms agreed upon between FGC and the lessee (Fish and Game Code Section 15406).

In 2011, FGC approved a new lease template that specified terms to be applied to new leases as well as lease renewals (Exhibit 1). The new lease template established, among other things, a lease term of 15 years with subsequent 10-year renewal terms, and annual lease rental rates based on high, moderate, and low productivity classifications ($50, $100, or $150 per acre, respectively), with a provision that the State may review and recalculate lease rental rates no more frequently than every five years. The tenant is required provide to the State financial assurance sufficient for site clean-up if the lease is terminated or abandoned.

Hog Island Oyster Company has held FGC-issued state water bottom lease M-430-15 in Tomales Bay since 1992. The existing lease, originally established in 1990, encompasses 128.2 acres of state water bottom tidelands in Tomales Bay for cultivating shellfish, and is set to expire on February 28, 2016 (exhibits 2 and 3). The lessee, Mr. John Finger of Hog Island Oyster Company, has submitted a request to renew the lease for a period of 15 years (Exhibit 4). There are no proposed changes to the culture methods or species currently authorized for the lease.

DFW has reviewed the current lease and request for renewal and provided recommendations to FGC (Exhibit 5). No changes to lease provisions or operations are proposed and, as a result, DFW has determined that the proposed project is subject to a Class 1, or "Existing Facilities" categorical exemption from CEQA review. The renewed lease would be subject to the new lease template and rental rate schedule, set a renewed lease term of 15 years, and set a new annual rental rate based on a 10-year average production for the lease area, which DFW staff has indicated would place this lease at the low productivity classification rate of $50 per acre.

Finally, to ensure that the lessee's current financial securities (see escrow agreement, Exhibit 3) are sufficient, DFW will conduct a site survey to confirm existing structures, obtain a third-

party estimate for clean-up, and adjust required financial securities to cover site clean-up as required under the lease terms.

Significant Public Comments (N/A)

Recommendation

FGC staff: Approve the lease renewal as recommended by DFW, and request that DFW proceed with steps to review and update the escrow agreement if warranted.

DFW: Approve the lease renewal for a period of 15 years.

Exhibits

1. Current lease template for State water bottom leases
2. Hog Island Oyster Company Lease M-430-15, amendments, and maps
3. Hog Island Oyster Company Escrow Agreement
4. Letter from Hog Island Oyster Co. requesting renewal of lease M-430-15, received Dec 5, 2014
5. DFW memo, received Nov 23, 2015

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the Consent Calendar, items 4, 6 and 7.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

8. MRC

Today's Item **Information ☐** **Action ☒**

This is a standing item to receive MRC reports and recommendations, including a summary from the Nov 4, 2015 meeting (Exhibit 1).

Summary of Previous/Future Actions

- Most recent MRC meeting — Nov 4, 2015; Ventura
- **Today's report and recommendations** — **Dec 9-10, 2015; San Diego**
- Next MRC meeting — Mar 21, 2016; Los Alamitos

Background

FGC directs the work of the committees (see Exhibit 2 for the current MRC two year work plan). Based on work referred to MRC for its Nov 4, 2015 meeting, MRC has the following recommendations for FGC consideration:

1. Master Plan for Marine Protected Areas: Schedule review and discussion for three FGC meetings, as opposed to the minimum of two required for the master plan, per DFW recommendation (see staff summary for Agenda Item 13).
2. California's Fishing Communities: Consider hosting a scoping discussion on fishing communities at or in conjunction with a future FGC meeting.
3. Kelp Regulations Review: Support DFW's recommendation to revise the order of FGC's approved 3-Phase approach to amending kelp harvest regulations, and undertake Phase 3 (improve management) prior to Phase 2 (funding and fees to cover management).
4. Possible Future Agenda Topics: Consider scheduling the following topics on future MRC and/or FGC meeting agendas:
    a. FGC – Schedule for Feb 2016 an update from DFW's Marine Region on outcomes of the federal process to protect unmanaged forage species
    b. MRC – Receive update from the Ocean Protection Council (OPC) on ocean acidification
    c. MRC – Refer an informational item on plastic pollution and marine debris (by Plastic Pollution Coalition, and possibly OPC)
    d. MRC – Receive update from DFW on the commercial sea cucumber fishery

Significant Public Comments

1. See MRC meeting summary for comments received during the meeting (Exhibit 1)
2. Ken Bates, Humboldt commercial fisherman, requests that FGC and DFW staff hold a meeting with north coast community members to discuss a community based fishing proposal for coastal communities north of Point Arena, prepared by Dan Yoakum, Bob Juntz, Mary Fairbanks, Linda Hildebrand, and Ken Bates (Exhibit 3)

Recommendation

FGC staff: (1) Approve MRC recommendations 1, 2, and 3; (2) Provide direction on potential agenda topics identified under recommendation 4, in the context of the MRC current work plan; (3) support request from Ken Bates to explore his request.

Committee: See background above and Exhibit 1.

DFW: (1) FGC hold three meetings to discuss the master plan for MPAs; and (2) FGC agree that DFW should undertake Phase 3 for kelp harvest regulations before Phase 2 (MRC recommendations 1 and 3 above).

Exhibits

1. Nov 4, 2015 MRC meeting summary
2. MRC Two-Year Work Plan
3. Email and attachment from Ken Bates, dated Nov 24, 2015

Motion/Direction

Moved by _____and seconded by _____ that the Commission approves the MRC recommendations, approves a Feb 2016 update on the federal process to protect unmanaged forage species, approves _____ topics for future MRC meetings, and directs staff to continue discussions with fishing communities regarding support by the FGC

STAFF SUMMARY FOR DECEMBER 9-10, 2015

9. TRIBAL COMMITTEE

Today's Item **Information ☒** **Action ☐**

Update on the Tribal Committee's proposed draft rulemaking to accommodate tribal requests for take exemptions in select marine protected areas.

Summary of Previous/Future Actions

- TC tribal take discussion — Apr 7, 2015; Santa Rosa
- TC tribal take discussion — Jun 9, 2015; Mammoth Lakes
- TC meeting to draft rulemaking — Oct 6, 2015; Los Angeles
- FGC discussion of progress — Oct 7**,** 2015; Los Angeles
- **Today's discussion** — **Dec 9, 2015; San Diego**
- Notice hearing — Feb 10-11, 2016; Sacramento
- Adoption hearing — Apr 13-14, 2016; Santa Rosa

Background

During FGC's rulemaking processes to adopt a network of marine protected areas (MPAs), the issue of impacting traditional gathering by Native American tribes surfaced. In particular, during the north coast study region planning effort (Point Arena to the California-Oregon border), the issue of tribal take of living marine resources was recognized as a traditional use to avoid impacting through the siting and designation of MPAs. FGC exempted take of living marine resources in specific MPAs by tribes that could demonstrate traditional use of those resources in those MPAs; this exemption did not apply to MPAs designated as "reserves".

FGC has received several requests since the north coast process from tribes that were not afforded the take exemptions in other study regions (for examples see exhibits 1-4). In a more recent instance, the Kashia Band of Pomo Indians would like to revisit the marine reserve regulations governing the Stewarts Point area. In 2010, the tribe, DFW, and FGC worked to modify the Stewarts Point MPA to maintain access to fishing and gathering, and ceremonial activities on the tribe's ancestral lands along the coast. A key element of the solution was that the property surrounding Stewarts Point was privately-owned and limited access largely to tribal members; the property has since changed hands, and is about to change hands again. The new property owners want to protect the conservation values of the property, but will also offer a public access trail running the length of the property. While the public trail will make the shoreline accessible to the public, the tribe is concerned about inappropriate access to its sacred areas, and the new owners are concerned about public safety arising from activities along the bluffs and shoreline (no exhibit)

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

1. Letter from the U.S. Bureau of Indian Affairs regarding tribal take in MPAs by

Resighini Rancheria, received Aug 20, 2012

2. Letter from Resighini Rancheria requesting tribal take exemptions in select MPAs in north coast, received Aug 20, 2012
3. Letter from Cher-Ae Heights Indian Community of the Trinidad Rancheria, regarding consultation about tribal take exemption for Reading Rock SMCA, received Aug 14, 2013
4. Letter from Santa Ynez Band of Chumash Indians requesting tribal take exemption in SMCAs in Santa Barbara County, received Nov 1, 2011
5. Draft tribal take in MPAs regulations
6. Letter from Santa Ynez Band of Chumash Indians, received Oct 14, 2015

Motion/Direction (N/A)

STAFF SUMMARY FOR DECEMBER 9-10, 2015

10. MARINE PROTECTED AREAS

Today's Item **Information ☐** **Action ☒**

Adopt proposed changes to marine protected area (MPA) regulations.

Summary of Previous/Future Actions

- Notice hearing — Aug 4-5, 2015; Fortuna
- Discussion hearing — Oct 7-8, 2015; Los Angeles
- **Today's adoption hearing** — **Dec 9-10, 2015; San Diego**

Background

The proposed regulations will clarify and correct errors and inconsistencies in the regulations as follows:

- Clarify the origin of MPA and marine managed area (MMA) definitions.
- Clarify the allowed and prohibited take for marine resources in state marine reserves (SMRs), state marine conservation areas (SMCAs), state marine parks (SMPs), and state marine recreational management areas (SMRMAs).
- Remove the allowance for aquaculture within Drakes Estero SMCA.
- Clarify aquaculture use in Morro Bay SMRMA.
- Update obsolete commercial troll gear references.
- Remove the allowance for the commercial harvest of kelp within Año Nuevo SMCA and change its classification from an SMCA to an SMR, consistent with the original intent.
- Simplify the names of twenty-one MMAs.
- Adjust the shared boundary between Laguna Beach SMR and Laguna Beach no-take SMCA to address municipality concerns.
- Replace the coordinate boundary at Goleta Slough SMCA with the mean high tide line.
- Delete unnecessary text pertaining to the mean high tide line for three offshore MMAs.
- Refine boundaries to improve geographic accuracy for 106 MMAs and special closures by:
    - adding a third decimal place to increase precision for all current coordinates ending at 1/100th of a minute;
    - moving coordinates closer to an intended point of reference;
    - adding additional coordinates to existing boundaries; and
    - anchoring offshore boundaries on the 3-nautical mile state line.
- Correct a printing error in subsection 632(b)(120) and make other non-substantive changes for clarity and consistency.

At its Aug 4, 2015, meeting, FGC received a request from Mr. Joe Exline for an alternate western boundary line for Laguna Beach SMR, rather than the boundary correction proposed

by DFW. FGC received testimony in opposition to this recommendation and did not include Mr. Exline's proposal in the rulemaking.

Significant Public Comments (N/A)

Recommendation

FGC staff: Adopt the changes to the regulations as recommended by DFW.

DFW: Adopt the changes as originally proposed.

Exhibits

1. DFW memo, received Jul 20, 2015
2. ISOR
3. ISOR Attachment 1 – Summary of proposed language amendments
4. ISOR Attachment 2 – Summary of proposed boundary refinement amendments
5. ISOR Attachment 3 – Proposed boundary refinement images
6. DFW email confirming that there are no significant comments and no additional proposed changes to the regulations, received Nov 23, 2015
7. Table of all proposed regulation amendments for marine managed areas
8. DFW presentation

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the proposed changes to Section 632 related to marine protected area regulations.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

11. PACIFIC HALIBUT

Today's Item **Information** ☐ **Action** ☒

Authorization to publish notice of intent to change Pacific halibut sport fishing regulations.

Summary of Previous/Future Actions

- **Today's notice hearing** **Dec 9-10, 2015; San Diego**
- Discussion hearing Feb 10-11, 2016; Sacramento
- Adoption hearing Apr 13-14, 2016; Santa Rosa

Background

Proposed changes to Section 28.20 modify the season to include a range from May 1 to October 31 which may include periodic closures, and replace existing text regarding the 2015 quota with a reference to the Federal Register specifying the 2016 federal quota amount.

Pacific halibut is internationally managed under the authority of the Northern Pacific Halibut Act of 1982 between the USA and Canada. Pacific halibut along the US west coast is jointly managed through authorities of the International Pacific Halibut Commission, Pacific Fishery Management Council, and National Marine Fisheries Service, in conjunction with the west coast state agencies. For consistency, FGC routinely adopts regulations to bring State law into conformance with federal and international law for Pacific halibut.

Significant Public Comments (N/A)

Recommendation

FGC staff: Authorize publication of the notice as recommended by DFW.

DFW: Authorize publication of the notice.

Exhibits

1. DFW memo, received Oct 19, 2015
2. ISOR
3. DFW presentation

Motion/Direction

Moved by _____ and seconded by _____ that the Commission authorizes publication of a notice of its intent to amend Section 28.20 related to Pacific halibut sport fishing.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

12. DRAFT SPINY LOBSTER FISHERY MANAGEMENT PLAN

Today's Item **Information** ☐ **Action** ☒

Receive draft California Spiny Lobster Fishery Management Plan (FMP).

Summary of Previous/Future Actions

- MRC vetting and recommendation — Mar 4, 2015; Marina
- Discuss regulatory options and give direction — Jun 10-11, 2015; Mammoth Lakes
- **Today receive draft spiny lobster FMP** — **Dec 9-10, 2015; San Diego**
- Discuss FMP; regulations notice hearing — Feb 10-11, 2016; Sacramento
- Adopt FMP, certify CEQA; regulations discussion — Apr 13-14, 2016; Santa Rosa
- Regulations adoption hearing — Jun 22-23; Huntington Beach

Background

The Marine Life Management Act (MLMA) requires that FMPs form the primary basis for managing California's marine fisheries (Section 7072 et seq., Fish and Game Code). Pursuant to the mandates of the MLMA, a spiny lobster FMP has been under development since 2012, to guide the future management of the fishery in a way that ensures sustainability. The Lobster Advisory Committee (LAC), a multi-stakeholder advisory body, developed consensus recommendations for the FMP and implementing regulations, which were presented to the MRC and recommended by MRC for FGC support. The draft FMP, and proposed regulations necessary to implement the plan, were subsequently prepared by DFW based on LAC recommendations and MRC and FGC input.

The draft FMP has undergone independent scientific peer review and tribal review and is now being submitted by DFW for public review and adoption by FGC (exhibits 1 and 2). Originally scheduled to be delivered to FGC in Aug 2015, the timeline was extended to provide adequate time for DFW to consider and integrate input from the peer review.

MLMA requires that FGC hold at least two public hearings prior to adoption, and that the draft be available to the public for review at least 30 days prior to the first hearing and discussion. The MLMA master plan for fisheries further clarifies the adoption process and provides that, in addition to the public hearings, written comments may be submitted at any time up to adoption (Exhibit 3). FGC may either adopt the FMP, or, if it determines changes are warranted, may reject the FMP for DFW to revise and resubmit for further public review before adoption.

Significant Public Comments (N/A)

Recommendation

Accept the draft FMP and direct staff to publish notice of FGC intent to adopt the FMP and commence the comment period, with a discussion in Feb 2016 and discussion and possible adoption in Apr 2016.

Exhibits

1. DFW memo, received Nov 20, 2015
2. Draft California Spiny Lobster FMP, dated Nov 10, 2015
3. Illustration of FGC FMP adoption process, MLMA master plan, Figure 5-2
4. DFW presentation

Motion/Direction

Moved by _____ and seconded by _____ that the Commission directs staff to publish a notice of its intent to adopt an FMP for the California spiny lobster fishery.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

13. MASTER PLAN FOR MPAS

Today's Item **Information** ☒ **Action** ☐

Receive proposed final master plan for marine protected areas (MPAs), an updated version of the 2008 FGC-adopted draft master plan. Today, DFW will present an overview of the approach used to update the plan, and highlight areas that represent new policy direction for FGC consideration (exhibits 1-2).

Summary of Previous/Future Actions

- MRC receives overview of master plan for MPAs update — Nov 4, 2015; Ventura
- **Today receive draft proposed final master plan** — **Dec 9-10, 2015; San Diego**
- Discuss proposed final master plan — Feb 10-11, 2016; Sacramento
- Discuss and adopt final master plan — Apr 13-14, 2016; Santa Rosa

Background

The Marine Life Protection Act (MLPA) calls for creating an improved network of MPAs, redesigned to increase its coherence and effectiveness at protecting the State's marine life, habitats, and ecosystems (Section 2853(a), Fish and Game Code). To help achieve its goals, the MLPA directs DFW to prepare, and FGC to adopt, a "master plan" to guide the design, implementation, and management of a redesigned network of MPAs in California (Section 2855, Fish and Game Code).

A draft master plan for MPAs was adopted by FGC in 2008 (available at www.dfg.ca.gov/marine/mpa/masterplan.asp) as a "living document" with a focus on providing guidance for designing California's MPAs through a regional approach. The master plan played a significant policy role in providing consistent scientific and design feasibility standards and guidelines across all planning regions. The regional design and adoption phases were completed in 2012 and, now that the coastwide MPA network is in place, focus has shifted from planning to implementation and management. To reflect the new focus, DFW has prepared a draft updated master plan for FGC adoption as a final master plan pursuant to Section 2859, Fish and Game Code, and to serve as a foundation for managing the Marine Life Protection Program statewide (Exhibit 3).

DFW has collaborated extensively with staff from FGC, the Ocean Protection Council, and the California Ocean Science Trust to tie together MPA management, monitoring, research and evaluation concepts and priorities across statewide and regional scales. One notable proposed change is to establish a ten year management review cycle for evaluating the statewide MPA network for efficacy and adaptive management. The proposed final master plan also includes five appendices that memorialize the planning and design phase, tribal consultation policies, and regional MPA network details and monitoring plans (Exhibit 4).

Today marks the first public opportunity to review the draft final document. A preliminary draft was made available by request to California tribes and tribal communities on Sep 25, 2015, and DFW presented an overview to the Marine Resources Committee at its Nov 4, 2015 meeting.

Significant Public Comments (N/A)

Recommendation

FGC staff: Schedule discussion on the merits of the contents of the plan for Feb and Apr 2016.

Committee: While Fish and Game Code only requires two hearings before FGC adopts the final master plan, the MRC supports holding three meetings for additional public input opportunity.

DFW: DFW supports a three meeting process to provide adequate public input and discussion.

Exhibits

1. DFW presentation
2. DFW memo, dated Nov 13, 2015
3. Draft final master plan, dated Nov 2015
4. Draft Appendices A-F, available at https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

Motion/Direction

Confirm for staff that a discussion hearing in Feb 2016 and a discussion/adoption hearing in Apr 2016 are acceptable.

14. THOMAS PTAK ESTATE

Today's Item **Information ☐** **Action ☒**

Approve request for an extension of time to transfer Mr. Thomas L. Ptak's transferable nearshore fishery permit and nearshore fishery trap endorsement for the Nearshore Fishery South Coast Regional Management Area to Dec 15, 2016.

Summary of Previous/Future Actions (N/A)

- Approved extension to transfer to Dec 15, 2015 — Dec 3, 2014; Van Nuys
- **Today's request for an extension of time** — **Dec 9-10, 2015; San Diego**

Background

Thomas L. Ptak died on March 13, 2012; at his death he owned five California commercial fishing permits. Attorneys for Mr. Ptak's estate indicate that they or the estate's representatives have been in communication with DFW's License and Revenue Branch (LRB) since less than a week after Mr. Ptak's death to understand the process by which Mr. Ptak's permits could be transferred.

On June 5, 2014, DFW approved the transfer of Mr. Ptak's transferable nearshore fishery permit and nearshore fishery trap endorsement for the south coast region; on Jun 22, 2014 DFW notified the estate and buyer of the permits that the transfer was rescinded because more than a year had passed since Mr. Ptak's death.

On Aug 22, 2014 attorneys for the estate appealed DFW's denial to FGC. After several conversations between FGC and DFW staff in Sep and Oct 2014, it was determined that a more efficient and mutually agreeable route would be for FGC to grant a time extension rather than incur the time and costs of an appeal hearing. Attorneys for the estate and Christine Allen as Executor of the Estate of Mr. Thomas L. Ptak therefore requested an extension of time to sell/transfer Mr. Ptak's transferable nearshore fishery permit and trap endorsement, which FGC granted on Dec 9, 2014; DFW did not object to the time extension.

Christine Allen as Executor of the Estate of Mr. Thomas L. Ptak contacted FGC staff in Nov 2015, indicating that DFW seized the subject permit and trap endorsement (and three other permits) which had prevented the estate from transferring either to a willing buyer. Attorneys for the estate and Christine Allen therefore requested another extension of time to sell/transfer Mr. Ptak's transferable nearshore fishery permit and trap endorsement (exhibits 1 and 2).

DFW has objected to the extension of time because it believes that FGC has no authority to grant the extension and because it accuses the estate of using the permits illegally after the death of Mr. Ptak; DFW has requested that FGC remove the agenda item (Exhibit 3). An attorney for the estate and Ms. Allen have responded to DFW's objection (Exhibit 4) by again requesting that FGC provide a one year extension of time to transfer the permits, direct DFW to allow the permits to be renewed, and to return all five permits to Christine Allen as executor of the estate.

At this time it is clear that the parties do not agree on a path forward; staff believes any possibility of resolution is best managed through an appeal hearing through the Office of Administrative Hearings (OAH).

Significant Public Comments (N/A)

Recommendation

FGC staff: Do not approve the request for an extension of time to transfer Mr. Thomas L. Ptak's permit and trap endorsement because it does not appear that FGC has that authority. The estate requested in Aug 2014, and has the right to, an appeal process, which staff recommends managing through OAH.

DFW: Do not approve the request for an extension of time to transfer Mr. Thomas L. Ptak's permit and trap endorsement, and remove the request as an agenda item, because FGC does not have the authority to waive the deadlines and because the estate has used the permits to illegally fish after Mr. Ptak's death.

Exhibits

1. Letter from Chris Shrouds, attorney for the Estate of Thomas L. Ptak, requesting an extension of time to transfer Thomas L. Ptak's transferable south coast region nearshore fishery permit, received Nov 11, 2015
2. Letter from Chris Shrouds, attorney for the Estate of Thomas L. Ptak, requesting an extension of time to transfer Thomas L. Ptak's transferable south coast region trap endorsement, received Nov 11, 2015
3. DFW letter objecting to the request for an extension, received Nov 23, 2015
4. Letter from Chris Shrouds, attorney for the Estate of Thomas L. Ptak, responding to the DFW objection, received Nov 25, 2015

Motion/Direction

Moved by _____ and seconded by _____ that the Commission approves the request from the Estate of Mr. Thomas L. Ptak to appeal the Department's denial of an application to transfer a transferable nearshore fishery permit and a nearshore fishery trap endorsement for the Nearshore Fishery South Coast Regional Management Area, and directs staff to initiate an appeal process through the Office of Administrative Hearings.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

15. SANTA BARBARA MARICULTURE'S STATE WATER BOTTOM LEASE

Today's Item **Information ☐** **Action ☒**

Approve an extension of Santa Barbara Mariculture's existing State Water Bottom Lease No. M-653-02 for aquaculture while under review for renewal.

Summary of Previous/Future Actions

- Approved one year lease extension — Dec 3, 2014; Van Nuys
- Received request to renew lease — Jun 9, 2015; Mammoth Lakes
- **Today approve lease extension** — **Dec 9-10, 2015; San Diego**
- Discuss/approve lease renewal — TBD, 2016

Background

FGC has the authority to lease state water bottoms to any person for aquaculture if such a lease is in the public interest (Section 15400, Fish and Game Code). The lessee shall have a prior right to renew the lease on terms agreed upon between FGC and the lessee (Section 15406, Fish and Game Code).

Santa Barbara Mariculture holds FGC-issued State Water Bottom Lease (lease) No. M-653-02 (Exhibit 1). Since the original lease period of 2005-2010, FGC has approved several short-term extensions (see Exhibit 2)which have, in part, been in response to a request from the leaseholder to renew the 72-acre lease under a reconfigured shape and position. The proposed new shape would remove the 26 seaward-most acres of the lease area and reestablish them alongside the remaining shoreward-most 46-acre area, resulting in a contiguous alongshore shape intended to be more compatible with vessel traffic patterns.

At DFW's request, FGC granted the extensions to allow continued operations while DFW worked on resolving the complex issues associated with the lease renewal and boundary reconfiguration request. In 2014, based on legal counsel, the lessee was informed that the request constitutes two separate but interrelated discretionary actions for FGC consideration: A lease renewal for the retained area within lease No. M-653-02 (this agenda item), and a new lease application for the new area adjacent to, but outside, the current lease area for M-653-02. FGC additionally approved a one-year extension to the existing lease (through January 17, 2016) for administration of this new guidance. FGC received the two separated requests at its June 2015 meeting with recognition that both items are intended to be scheduled concurrently for FGC consideration, and requested that DFW initiate its review (exhibits 3 and 4).

One step required is environmental review of each project area pursuant to the California Environmental Quality Act (CEQA). The applicant is responsible for initial drafting of environmental review documents for the lead agency. DFW is still working with the applicant to refine and finalize these reviews. In light of the January 17, 2016 lease expiration, DFW has brought to staff's attention that an additional extension is needed to allow for continued operation of the existing aquaculture area until the review is complete (Exhibit 5). DFW requests a final one year extension under existing terms until analyses for both project areas are completed and ready for concurrent FGC consideration.

Significant Public Comments (N/A)

Recommendation

FGC staff: FGC staff supports extending the lease an additional year under existing terms and conditions to allow concurrent consideration of the lease renewal and new lease application in 2016.

DFW: Extend lease for a period of one year under existing terms and conditions.

Exhibits

1. Santa Barbara Mariculture State Water Bottom Lease M-653-02, issued Nov 3, 2005
2. Lease history and renewal timeline for M-653-02
3. Santa Barbara Mariculture request for lease renewal and application for new lease, received Apr 15, 2015
4. Map of current and proposed lease areas
5. DFW memo, received Dec 1, 2015

Motion/Direction

Moved by _____ and seconded by _____ that the Commission approves the request for a one year extension of the lease period for Santa Barbara Mariculture State Water Bottom Lease No. M-653-02.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

16. E-REPORTING

Today's Item **Information** ☒ **Action** ☐

Receive update and presentation from DFW concerning transitioning from commercial marine logbooks to electronic reporting, and give direction for potential rulemaking.

Summary of Previous/Future Actions

- **Today receive update; give direction** **Dec 9-10, 2015; San Diego**
- Notice hearing Feb 10-11, 2016; Sacramento
- Discussion/Adoption hearing Apr 13-14, 2016; Santa Rosa

Background

DFW is proposing to allow the submission of electronic reports of fishing activities instead of paper logs for all fisheries requiring logbooks. DFW has embarked on a large-scale information technology project to develop electronic reporting for commercial marine fisheries. When fully operational, the project will include public–facing, web-based user interfaces that offer commercial fishermen the option to submit electronic fishing activity records instead of paper logs.

The first electronic logbook to be developed is the Commercial Passenger Fishing Vessel (CPFV) logbook, which has been pilot-tested in the field by a group of commercial fishermen and is ready to be used throughout the State. DFW is on schedule to request authorization to publish notice at the Feb 2016 meeting.

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

1. DFW presentation

Motion/Direction (N/A)

STAFF SUMMARY FOR DECEMBER 9-10, 2015

17. MEETING PROCEDURES

Today's Item **Information ☐** **Action ☒**

Authorization to publish notice of intent to amend FGC meeting procedure regulations.

Summary of Previous/Future Actions

- Previous notice hearing — Oct 7-8, 2015; Los Angeles
- **Today's Notice hearing** — **Dec 9-10, 2015; San Diego**
- Discussion hearing — Feb 10-11, 2016; Sacramento
- Adoption hearing — Apr 13-14, 2016; Santa Rosa

Background

Per direction received at the Feb, Aug and Oct 2015 FGC meetings, staff has prepared proposed regulations related to meeting procedures, which will do the following:

- Define the number of members constituting a quorum to conduct Commission and committee meetings;
- Provide that no more than two commissioners may attend committee meetings;
- Provide that a motion must receive at least three votes to pass or fail;
- Establish a deadline for public requests for meeting agenda items;
- Specify that agenda items will be approved by majority vote of the Commission;
- Specify that committee agenda items may not include items scheduled for action by the Commission, unless otherwise directed by majority vote of the Commission;
- Specify that the Commission president or his designee may amend meeting agendas;
- Establish a deadline, consistent with the Bagley-Keene Open Meeting Act, for public distribution of agendas;
- Outline the process and timeline for receipt of and action on WRC and MRC recommendations; and
- Specify the process for public participation in Commission and committee meetings including:
    - when public testimony will be taken;
    - appropriate public forum topics;
    - time limits for public comment at Commission meetings and methods the public may use to receive additional time;
    - when and how to submit written comments;
    - when and how to submit audio and visual presentations and how to receive approval of the presentation from the executive director; and
    - potential consequences of disruptive behavior.

Staff requests feedback on any items of potential concern or additional items to include in the proposed regulations.

Significant Public Comments

1. Several comments recommending procedures for WRC meetings (Exhibits 3-7, 11-12)
2. One comment recommending voting requirements in cases where only three commissioners are present, and requesting public forum be included as the first and last agenda items for each day of each meeting (Exhibit 8)
3. Two comments requesting that all FGC communications be made on government issued devices/servers (Exhibits 9-10)

Recommendation

Authorize publication of the notice.

Exhibits

1. Proposed regulatory text
2. Summary of public recommendations and staff responses
3. Letter from Scott Franklin, Michel & Associates, P.C., representing the National Rifle Association of America (NRA), received Apr 14, 2014
4. Letter from C.D. Michel, Michel & Associates, P.C, representing NRA, received Jul 11, 2014
5. Letter from Ashlee Titus, Bell, McAndrews & Hiltachk, LLP, representing the National Shooting Sports Foundation (NSSF), received Jul 21, 2014
6. Letter from Dennis Anderson, Safari Club International, received Jul 14, 2014
7. Letter from C.D. Michel, Michel & Associates, P.C, representing NRA, received Jul 31, 2014
8. Email from Eric Mills, Action for Animals, received Jun 30, 2015
9. Letter from C.D. Michel, Michel & Associates, P.C., representing NRA and California Rifle and Pistol Association, received Jun 5, 2015
10. Letter from Trevor Santos, NSSF, received Jul 9, 2015
11. Letter from Sean Brady, Michel & Associates, P.C., representing NRA received Sep 24, 2015 (also under 21A)
12. Sample form letter of approximately 40 received
13. FGC staff presentation

Motion/Direction

Moved by _____ and seconded by _____ that the Commission authorizes publication of a notice of its intent to amend Section 665, Title 14, California Code of Regulations, regarding meeting procedures as recommended by Commission staff.

OR

Moved by _____ and seconded by _____ that the Commission authorizes publication of a notice of its intent to amend Section 665, Title 14, California Code of

Regulations, regarding meeting procedures as recommended by Commission staff and adding/deleting the following: (Enumerate deletions and/or additions.)

STAFF SUMMARY FOR DECEMBER 9-10, 2015

18. CONFLICT OF INTEREST CODE

Today's Item **Information** ☐ **Action** ☒

Approve updated conflict of interest code as required by the Political Reform Act.

Summary of Previous/Future Actions

FGC approved its last conflict of interest code in 2005 as a joint code with DFW and the Wildlife Conservation Board.

Background

The Political Reform Act requires decision-making bodies to adopt a conflict of interest code and to update it regularly to keep it current.

Significant Public Comments (N/A)

Recommendation

Approve the updated conflict of interest code so that it may be approved by the Fair Political Practices Commission in a timely fashion.

Exhibits

1. Proposed updated conflict of interest code

Motion/Direction

Moved by _____and seconded by_____ that the Commission approves the updated conflict of interest code.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

19. EXECUTIVE SESSION

Today's Item **Information ☐** **Action ☒**

(A) Pending litigation to which FGC is a party: See agenda for complete list of litigation.

(B) Possible litigation involving FGC: Tricolored blackbird, bobcat trapping ban.

(C) Staff performance and compensation: Update on staffing.

(D) Hearing officer recommendations on license and permit items:

I. Mr. Peter Vitali

Summary of Previous/Future Actions (N/A)

Background

This is a standing agenda item for FGC to announce results from its executive session.

(C) ***Recruiting Leadership.*** As of January 1, 2016, the commission will likely have vacancies of its executive director and deputy executive director positions. Staff has prepared updated duty statements for both positions for consideration (Exhibits C1-C2)

Signature Authority. While vacancies exist in both executive positions, FGC must authorize an alternate to sign for official FGC documents and communications.

(D) ***Vitali Proposed Decision.*** FGC has received a proposed decision from the hearing officer, the Office of Administrative Hearings (OAH), as well as an objection from Peter Grow on behalf of his client and DFW's response to the objection.

Significant Public Comments (N/A)

Recommendation

(C) ***FGC staff:*** Develop plan for recruitment of both leadership positions and how to operate while positions vacant.

(D) ***FGC staff:*** Adopt the proposed decision for Peter Vitali.

DFW: Adopt the proposed decision for Peter Vitali.

Exhibits

C1. Executive director duty statement

C2. Deputy executive director duty statement

D1. OAH's proposed decision for Peter Vitali (exhibits will be available during executive session)

D2. Peter Vitali objection to the proposed decision

D3. DFW response to Peter Vitali's objection

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the Office of Administrative Hearings' proposed decision for Peter Vitali.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

20. CLIMATE CHANGE POLICY

Today's Item **Information** ☒ **Action** ☐

Presentation by DFW regarding various agency climate change policies and possible direction on drafting an FGC policy.

Summary of Previous/Future Actions

- Discussion of potential climate change policy — Oct 7-8 2015; Los Angeles
- **Today's presentation from DFW** — **Dec 9-10, 2015; San Diego**

Background

Per direction received at the Oct 2015 FGC meeting, DFW is making this presentation today on climate change policies of other states and other California state agencies as background for a discussion about a potential FGC policy on climate change. FGC staff seeks direction from FGC on next steps.

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

1. Letter from Dennis Fox supporting the idea of ongoing adaptive management in response to climate change, received Sep 30, 2015

Motion/Direction (N/A)

21. ITEMS OF INTEREST FROM PREVIOUS MEETINGS

Today's Item **Information ☒** **Action ☒**

This is a standing agenda item for FGC to provide direction on regulatory petitions and non-regulatory requests from the public, as well as other items of interest from previous meetings. For this meeting:

(A) Action on petitions for regulatory change received at the Oct meeting and pending items from previous meetings.

(B) Action on non-regulatory requests received at the Oct meeting and pending items from previous meetings.

(C) Domoic acid and crab fisheries

(D) Sea urchin regulations

Summary of Previous/Future Actions

(A-B) FGC received the requests in exhibits A1 and B1 in three ways: (1) Requests received at the office through Sep 24 were published as tables in the Oct meeting binder, (2) requests received as late handouts were delivered at the Oct meeting, and (3) requests that were received during public forum at the Oct meeting.

(C) FGC approved emergency regulations delaying the recreational Dungeness crab season and closed the recreational rock crab fishery at the Nov 5, 2015 teleconference meeting.

(D) At its Oct 7, 2015 meeting, FGC directed staff to work with the California Sea Urchin Commission (CSUC) on a draft initial statement of reasons (ISOR) and appropriate CEQA document for proposed sea urchin regulation changes, and to schedule a 2016 rulemaking.

Background

(A-B) FGC provides guidance and direction to staff regarding requests from the public received by mail and email and during public forum at the previous FGC meeting. The public request logs listed as exhibits capture the regulatory and non-regulatory requests received through the last meeting that require FGC guidance.

(C) A massive toxic bloom of the marine diatom *Pseudo-nitzschia* has been detected along the California coast, resulting in significant impacts to coastal resources and marine life. Some *Pseudo-nitzschia* species produce a potent neurotoxin, known as domoic acid, which can accumulate in shellfish, other invertebrates, and sometimes fish, leading to illness and death in a variety of birds and mammals. Recent test results have shown persistently high levels of domoic acid in Dungeness crab and rock crab caught along the California coastline.

Domoic acid levels in recent samples have exceeded the State's action level for the crabs' body meat as well as the viscera, commonly referred to as crab butter, and therefore pose a significant risk to the public if they are consumed, as determined by the California Department of Public Health (CDPH). As a result, the Office of

Environmental Health Hazard Assessment (OEHHA), in consultation with CDPH, has recommended the fisheries be closed. The Department, CDPH, OEHHA, and the Ocean Protection Council are coordinating efforts to monitor toxicity levels and ensure public safety.

The emergency regulations will remain in effect until the director of the Office of Environmental Health Hazard Assessment, in consultation with the director of the California Department of Public Health, determines that domoic acid levels in crab no longer pose a significant risk to public health and no longer recommends that fisheries be closed.

(D) CSUC developed a regulation change proposal in consultation with DFW to address industry concerns over the potential for inactive urchin diving permits to become active and result in unsustainable fishery conditions. CSUC proposed to reduce the permit capacity goal from 300 to 150 permits through a revised 10-to-1 permit issuance system; close a loophole in the lottery timing for issuing new permits; and add one day of fishing to the current four allowed Jun – Oct in southern California. In Oct 2014, FGC accepted an MRC recommendation to grant the petition and schedule a rulemaking in 2015, but this was subsequently put on hold. In Oct 2015, FGC agreed to reschedule the rulemaking for 2016 based on CSUC commitment to provide resources to support the rulemaking.

Update: Staff analysis of a timeline necessary to prepare the draft rulemaking and CEQA review suggests that it is not likely to be ready for scheduling until mid-2016. However, this would result in another lottery occurring (in Aug 2016) and further exceeding permit capacity before the loophole is closed. The lottery loophole portion of the rulemaking is simple enough that staff believes it could be completed in time to suspend the next lottery if the rulemaking only focuses on that change, and all other proposed changes are advanced to a subsequent rulemaking. This two-phase rulemaking is supported by CSUC if it is the only avenue to prevent the lottery from occurring again under the current loophole.

Significant Public Comments (N/A)

Recommendation

(A-B) Adopt staff recommendations for the regulatory and non-regulatory requests with either (1) deny the request, (2) grant the request, or (3) refer the request to MRC, WRC, TC, DFW staff, or FGC staff for further evaluation or information gathering. The exhibits contain staff recommendations for each request.

(C) N/A

(D) Schedule sea urchin rulemaking in two phases during the rulemaking calendar updates agenda item (Agenda Item 38(B), this meeting). Staff suggests scheduling phase one for notice in Feb 2016, and discussion/adoption in Apr 2016, to address a lottery loophole. Schedule phase two for the remainder of the proposal, with timing yet to be determined.

Exhibits

A1. Regulatory requests received at the Oct 2015 meeting
B1. Non-regulatory requests received at the Oct 2015 meeting
C1. Presentation on Domoic acid impacts to crab fisheries

Motion/Direction

(A-B) Moved by _____ and seconded by _____ that the commission adopts the staff recommendations for actions on October 2015 regulatory and non-regulatory requests.

OR

Moved by _____ and seconded by _____ that the Commission adopts the staff recommendations for actions on October 2015 regulatory and non-regulatory requests, except for item(s) _____ for which the action is _____.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

22. DEPARTMENT INFORMATIONAL ITEMS

Today's Item **Information** ☒ **Action** ☐

This is a standing agenda item to receive and discuss informational updates from DFW:

(A) Director's Report
(B) Wildlife and Fisheries Division, and Ecosystem Conservation Division
(C) Law Enforcement Division
(D) Marine Region
(E) Other

Summary of Previous/Future Actions (N/A)

Background

DFW's Law Enforcement Division distributes a monthly report (exhibits C1-C2, which link to the website).

The Marine Region has developed a conceptual framework for a strategic work plan with a goal of improving marine resources management with a focus on state fisheries management under the Marine Life Management Act (Exhibit D1)

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

C1. Law Enforcement Division Monthly Report, Sep 2015
C2. Law Enforcement Division, Monthly Report, Oct 2015
D1. Memo from Regional Manager Craig Shuman transmitting the Marine Region's strategic work plan, dated Nov 13, 2015

Motion/Direction (N/A)

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23A. OTHER ITEMS – EXECUTIVE DIRECTOR REPORT

Today's Item **Information ☒** **Action ☐**

Receive the executive director's report and provide direction to staff.

Summary of Previous/Future Actions (N/A)

Background

Commission Priorities and Capacity

FGC receives a constant deluge of requests for consideration and action, many more that there is time and resources to address. Efforts to prioritize workload have largely focused on urgency and significance; however, this results in important but not urgent issues being left unresolved. Examples of issues that have fallen into the "unresolved and deferred" pit include fishery management plan reviews (squid, nearshore), reviewing and revising existing policies, streamlining routine rulemakings to reduce FGC and DFW staff workload, and restricted species program overhaul. In addition, the current approach is producing taxing meeting agendas, leaving both the public and commissioners with a feeling of being rushed through topics. The sense of hurried discussions led, in part, to the president earlier this year suggesting a limit on the number of agenda topics per meeting. FGC would be well-served to develop a better process for prioritizing and managing FGC workload, especially in light of the current limited staffing capacity.

Significant Public Comments (N/A)

Recommendation

Before FGC makes a commitment to a new project, a discussion of expectations, workload, and priorities should be conducted so that commissioners may make a more informed decision regarding the task and how it may affect other important work that is the unique purview of FGC and for which the public depends on FGC to be proactively addressing.

Exhibits (N/A)

Motion/Direction

Direct FGC staff to work in conjunction with DFW, FGC's key partner in achieving its mandates, to develop a proposed process for better prioritizing and managing FGC workload (Note: this is a new project that will involve a significant amount of work to complete, but is worth the investment).

STAFF SUMMARY FOR DECEMBER 9-10, 2015

23B. OTHER ITEMS – STAFF REPORT

Today's Item **Information ☒** **Action ☐**

Receive the staff report, including the Oct meeting highlights and staff time allocations.

Summary of Previous/Future Actions (N/A)

Background

Oct Meeting Highlights

As requested, staff has prepared a shortened summary of meeting outcomes for the previous meeting (Exhibit B1).

Staff Capacity and Roles

In an effort to help keep FGC current on its staffing and where staff is expending its time, staff has developed a report that shows the allocation of time in general categories for the previous month, as well as highlights some of the specific activities for the previous and current months (Exhibit B2).

For the most recent Wildlife Advisor recruitment effort, nearly two dozen individuals have submitted applications for the position (senior environmental scientist, specialist), with four of the applications incomplete. Staff reviewed the applications and interviewed six potential candidates; second round interviews will be conducted in December. The position remains open until filled.

The need for dedicated legal assistance has been steadily increasing as FGC issues have become more complex. To address this need, Michael Yuan became FGC's legal counsel on Nov 2, 2015. Michael has spent his first month with FGC in various training and learning how FGC operates.

Executive Director Sonke Mastrup has taken another position with the state effective Jan 1, 2016; his last day in the FGC office will be Dec 24, 2015. In the first few months of 2016 he will be available to the interim executive director for limited consultations.

The deputy executive director has been on leave since March of 2014; that position is expected to become vacant in early 2016, at which time a recruitment effort can begin.

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

B1. Staff summary of the Oct 2015 FGC meeting outcomes
B2. *Staff Report on Staff Time Allocation* – dated November 25, 2015

Motion/Direction (N/A)

STAFF SUMMARY FOR DECEMBER 9-10, 2015

23C. OTHER ITEMS – LEGISLATIVE UPDATE

Today's Item **Information ☒** **Action ☐**

Review and discuss legislation of interest, and provide staff direction.

Summary of Previous/Future Actions

- Brief legislative update — Oct 7-8, 2015; Los Angeles
- **Today's update and possible action** — **Dec 9-10, 2015; San Diego**

Background

FGC staff has prepared a list of legislative bills that may be of interest to FGC, which includes a brief synopsis and current bill status. Items highlighted in yellow indicate legislation of particular interest or that may impact FGC's resources and workload.

This is an opportunity for FGC to provide direction to staff concerning any proposed legislation. At any meeting FGC may direct staff to provide information or share concerns with bill authors. FGC members also have the option to take positions on bills at the same meeting an update is provided.

The State legislature recessed on September 11, 2015, and will reconvene on January 4, 2016. The last day for the Governor to sign or veto bills passed by the Legislature was October 11, 2015.

Updates on Adopted Legislation (N/A)

Updates on Pending Legislation

AB 290 (Bigelow) – This is a 2-year bill; would re-define "pigs", prohibit release into uncontrolled areas, eliminate DFW-required management plan, require up to 40% of funds from sale of wild pig validations be used to remedy damage by pigs, replace the wild pig tag with a validation on the hunting license which permits unlimited take and possession, set pig validation at $15 for residents and $30 for nonresidents, and prohibit take at night unless DFW is notified by 3:00 p.m. prior to the planned take.

AB 435 (Chang) – This is a 2-year bill; would require that each department, board, and commission of the Natural Resources Agency, except as specified, and each department, board, and office of the California Environmental Protection Agency webcast all onsite public meetings, in a manner that enables listeners and viewers to ask questions and provide public comment by telephone or electronic communication commensurate with those attending the meeting.

AB 665 (Frazier) – This is a 2-year bill; would confirm that the state fully occupies the field of authority for the taking and possession of fish and game. The bill was amended to alleviate concerns regarding the prohibition of cities and counties from enacting laws that affect incidental take for the purpose of protecting health and/or safety. The bill clarifies that unless otherwise authorized by the Fish and Game Code or other state or federal law, FGC and DFW

are the only entities that may adopt or promulgate regulations regarding the take or possession of fish and game on any lands or waters within the state.

AB 729 (Atkins) – This is a 2-year bill. Per FGC request, staff met with Speaker Atkins' staff. Legislative staff indicated Speaker Atkins is not seeking to remove FGC's aquaculture lease authority. FGC staff agreed to keep in touch with the office and monitor the legislation.

SB 345 (Berryhill) – This is a 2-year bill. If passed, the bill would (1) authorize charitable organizations to possess fish taken under a sport fishing license in excess of a possession under certain provisions, (2) require FGC to adopt regulations to clarify when a possession limit is not violated by processing into food lawfully taken sport fish, (3) make annual fishing licenses valid for a full 12 months, and (4) create a junior fishing license.

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits (N/A)

Motion/Direction (N/A)

STAFF SUMMARY FOR DECEMBER 9-10, 2015

23D. OTHER ITEMS – FEDERAL REPORT

Today's Item **Information ☒** **Action ☐**

This is a standing agenda item to receive reports on any recent federal agency activities of interest not otherwise addressed under other agenda items.

Summary of Previous/Future Actions (N/A)

Background

National Oceanic and Atmospheric Administration (NOAA): NOAA announced that as part of President Obama's Climate Action Plan and the National Fish, Wildlife & Plants Climate Adaptation Strategy, an interagency group of federal, state, and tribal agencies created a new Climate Adaptation Leadership Award for Natural Resources. Individuals or groups can be nominated until Jan 8, 2016. (Exhibit C1)

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

D1. NOAA news release: *New award recognizes outstanding efforts to increase awareness and safeguard U.S. natural resources from climate change*, dated Nov 12, 2015

Motion/Direction (N/A)

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23E. OTHER INFORMATIONAL ITEMS – OTHER

Today's Item **Information ☒** **Action ☐**

This agenda item is an opportunity for staff to identify any additional informational items that arise after binder production is complete.

Summary of Previous/Future Actions (N/A)

Background (N/A)

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits (N/A)

Motion/Direction (N/A)

STAFF SUMMARY FOR DECEMBER 9-10, 2015

26. PUBLIC FORUM (DAY 2)

Today's Item **Information** ☒ **Action** ☐

Receipt of public comments and requests for regulatory and non-regulatory actions.

Summary of Previous/Future Actions

- **Today's receipt of requests and comments** **Dec 9-10, 2015; San Diego**
- Direction to grant, deny, or refer requests Feb 10-11, 2016; Sacramento

Background

FGC generally receives three types of correspondence: Requests for regulatory action, requests for non-regulatory action, and informational only. The Administrative Procedure Act (APA) requires action on regulatory requests to be either denied or granted and notice made of that determination. At the end of public forum a motion may be made to provide direction to staff on any items for which FGC wishes to receive additional information or take immediate action. Otherwise, FGC will determine the fate of the regulatory and non-regulatory requests at the next commission meeting to allow staff time to evaluate requests.

Significant Public Comments

1. See regulatory requests in Exhibit 1
2. See non-regulatory requests in Exhibit 2

Recommendation (N/A)

Exhibits

See exhibits for Item No. 3.

Motion/Direction (N/A)

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27. HUMBOLDT MARTEN (CONSENT)

Today's Item **Information ☐** **Action ☒**

This item is to inform the public that FGC has received DFW's evaluation on the petition from the Environmental Protection Information Center and Center for Biological Diversity to list Humboldt marten as endangered under the California Endangered Species Act (CESA).

Summary of Previous/Future Actions

- Received petition — Jun 8, 2015
- FGC transmitted petition to DFW — Jun 18, 2015
- Published notice of receipt of petition — Jul 24, 2015
- Acted on DFW request for 30-day extension — Oct 7-8, 2015; Los Angeles
- **Today receive evaluation and recommendation** — **Dec 9-10, 2015; San Diego**
- Determine whether petitioned action may be warranted — Feb 10-11, 2016; Sacramento
- If FGC moves species to candidacy, status report due — Feb 2017; TBD

Background

On, Jun 8, 2015, FGC received a petition from the Environmental Protection Information Center and Center for Biological Diversity to list the Humboldt marten as an endangered species under CESA. FGC will consider the petition, DFW's evaluation and other information submitted to FGC at the Feb 11, 2016, meeting in Sacramento.

Significant Public Comments

This meeting is not intended for FGC discussion as the law requires the public to have 30 days to review the petition and public release of the evaluation report; however, under Bagley-Keene, FGC must allow public comment on this item if requested.

Recommendation (N/A)

Exhibits

1. DFW memo and evaluation report

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the consent calendar, item 27.

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28. WILDLIFE RESOURCES COMMITTEE

Today's Item **Information ☐** **Action ☒**

Appoint members to the drafting and reviewing groups of the predator policy workgroup from the applicants in Exhibits 3 & 8.

Summary of Previous/Future Actions

- Most recent WRC meeting — Sep 9, 2015; Fresno
- Discuss and approve recommendations — Oct 8-9, 2015; Los Angeles
- **Today's discussion and appointments** — **Dec 10, 2015; San Diego**

Background

Earlier this year FGC staff identified the growing public participation and group dynamics of the predator management policy review as preventing meaningful progress. At the May WRC meeting a possible solution was identified and tentatively approved by FGC at its June meeting. Based on the proposed solution, staff presented structural and functional recommendations for a Predator Policy Workgroup (Exhibit 2), which FGC adopted at its Aug 2015 meeting. Also in Aug the president nominated Bill Gaines, Noelle Cremers, and Jean Su to the writing group.

At its Oct meeting, FGC focused on resolving the structure and function of the Predator Policy Workgroup and deciding on recommendations from the Sep WRC meeting. FGC accepted the recommendations from the Sep WRC meeting and directed staff to prepare for appointments to the Predator Policy Workgroup at the Dec FGC meeting.

In preparation for the Dec meeting, staff has prepared a table listing the applicants for the Predator Policy Workgroup, indicating if applications are complete and in which of the groups (writing or reviewing) they preferred to participate (Exhibit 3). The individual applications are provided for review in Exhibit 8.

FGC directs committee work. This agenda item is used to provide direction to WRC for further work at its January 2016 meeting. Topics that were previously referred to WRC and are ongoing:

- Predator management policy review
- One year versus calendar term fishing license
- Feral pig management
- Possession of game for processing into food (Sec. 3080(e), Fish and Game Code)

Significant Public Comments

1. The Al Taucher Conservation Coalition (ATCC) is requesting clarification as to what process WRC is using to implement the Predator Policy Workgroup relative to the approved by FGC in Aug, 2015 (Exhibit 1).

2. National Shooting Sports Foundation (NSSF) expresses concerns about transparency and process being used by WRC to address predator policy (Exhibit 4).
3. Safari Club International (SCI) is concerned about WRC form and function relative to predator policy project (Exhibit 5).
4. Support letter for Rick Hopkins and Keli Hendricks applications to the predator policy workgroup (Exhibit 6).
5. Several individual letters requesting that WRC not function until there are rules and procedures in place (see Exhibit 7 for sample).

Recommendation

Appoint no more than six individuals to the writing group and no more than 15 individuals to the review group.In addition, until a WRC advisor is hired, staff does not have the capacity to initiate the work the workgroup.

Exhibits

1. Letter from ATCC regarding WRC function, received Sep 8, 2015
2. Predator Policy Workgroup proposal, approved Aug 2015
3. Applicants to the Predator Policy Workgroup, as of Nov 18, 2015
4. Letter from NSSF regarding WRC structure and function, received Sep 24, 2015
5. Letter from SCI regarding WRC form and function, received Sep 24, 2015
6. Letter from Assembly Member Marc Levine supporting applicants to the workgroup, received Nov 16, 2015
7. Sample letter, from Andy White, requesting that WRC rules and procedures are established, received Oct 5, 2015
8. Predator Policy Workgroup applications

Motion/Direction

Moved by _____and seconded by_____ that the Commission appoints _____ to the writing and _____ to the review groups of the Predator Policy Workgroup

STAFF SUMMARY FOR DECEMBER 9-10, 2015

29. WILD TROUT WATERS POLICY

Today's Item **Information** ☐ **Action** ☒

Addition of waters to the list of FGC-designated Wild Trout Waters.

Summary of Previous/Future Actions (N/A)

Background

Existing law (Fish and Game Code Section 1727) requires DFW to annually submit to FGC a list of no less than 25 miles of stream or stream segments and at least one lake deemed suitable for designation as wild trout waters. DFW proposes the addition of two new waters:

1. Little Kern River drainage, including tributaries, from the confluence with the Kern River upstream to the headwaters (Tulare County).
2. Maggie Lake (Tulare County)

DFW proposes that Little Kern River drainage also be designated as a Heritage Trout Water, which is a further designation by the Commission to recognize the beauty, diversity, historical significance, and special values of California's native trout.

Significant Public Comments (N/A)

Recommendation

FGC staff: Approve these amendments as recommended by DFW.

DFW: Approve the recommended amendments.

Exhibits

1. DFW memo
2. Commission Designated Wild Trout Waters Policy text with proposed amendments
3. Section 1727, Fish and Game Code

Motion/Direction

Moved by _____ and seconded by _____ that the Commission approves the proposed amendments to the Commission Designated Wild Trout Waters Policy.

30. GRAY WOLF

Today's Item **Information** ☐ **Action** ☒

Adopt proposed regulation changes to add gray wolf to the list of endangered species.

Summary of Previous/Future Actions

- Notice hearing — Jun 4, 2014; Fortuna
- **Today's discussion/adoption hearing** — **Dec 9-10, 2015; San Diego**

Background

On Feb 27, 2012, the Center for Biological Diversity, Big Wildlife, the Environmental Protection Information Center, and the Klamath-Siskiyou Wildlands Center petitioned FGC to list the gray wolf as an endangered species under the California Endangered Species Act (CESA). On Oct 3, 2012, FGC voted to accept the petition for further evaluation and to initiate a 12-month review of the status of the gray wolf in California. DFW submitted its final status review at FGC's Feb 5, 2014 meeting, gave a detailed presentation on the status review at FGC's April 16, 2014 meeting, and gave an abbreviated presentation on the status review at FGC's Jun 4, 2014 meeting, FGC considered the petition, DFW's status report and other information included in the administrative record of proceedings and determined that listing the gray wolf as an endangered species under CESA is warranted. At the same meeting, FGC authorized publication of a notice of its intent to amend Section 670.5 regarding animals of California declared to be endangered or threatened; the notice was published in the California Regulatory Notice Register on Oct 23, 2015.

Significant Public Comments

1. Several letters opposing the proposal to list gray wolf as an endangered species and urging FGC to reject the proposed amendments (exhibits 2-4).

Recommendation

FGC staff: Adopt the proposed changes to Section 670.5 to add gray wolf to the list of endangered species.

Exhibits

1. ISOR
2. Letter from Holly Gallagher, Colusa County Fish & Game Advisory Commission, received Nov 4, 2015
3. Email from Michael Payne, Shasta County Sportsmen's Association, dated Oct 23, 2015
4. Letter from California Cattlemen's Association, California Farm Bureau Federation, and California Wool Growers Association, dated Nov 24, 2015

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the proposed changes to Section 670.5 related to animals of California declared to be endangered or threatened.

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31. TRICOLORED BLACKBIRD

Today's Item **Information ☐** **Action ☒**

Determine whether tricolored blackbird warrants listing as endangered under the California Endangered Species Act (CESA), pursuant to sections 2074.2 and 2076.5 of the Fish and Game Code.

Summary of Previous/Future Actions

• FGC transmitted petition to DFW	Oct 15, 2014
• Published notice of receipt of petition	Oct 21, 2014
• Took emergency action to list	Dec 3, 2014; Van Nuys
• Received DFW's petition evaluation	April 9, 2015; Santa Rosa
• Decision that listing is not warranted	Jun 11, 2015; Mammoth Lakes
• Received request to reconsider Jun 11 decision	Aug 5, 2015; Fortuna
• Received CBD's 2015 petition and DFW's evaluation, and rejected the request to reconsider the Jun 11 decision	Oct 7-8, 2015; Los Angeles
• **Today determine whether listing may be warranted**	Dec 9-10, 2015; San Diego
• If FGC moves to candidacy, status report due	Dec 2016; San Diego

Background

In Dec 2014 FGC listed tricolored blackbird as endangered through emergency regulations that expired on Jun 30, 2015. In the interim, DFW prepared and submitted to FGC a petition evaluation as required by CESA; the petition evaluation was received by FGC at its Apr 9, 2015 meeting and on Jun 11, 2015 it made a decision that listing tricolored blackbird as endangered was not warranted. At its Aug 2015 meeting, FGC deferred a decision on CBD's request for reconsideration of the 2014 petition to its Oct 2015 meeting and at the Oct meeting the request was rejected.

On Aug 19, 2015 CBD submitted a petition that was largely the same as the petition submitted to FGC on Oct 8, 2014 to take emergency action to list the tricolored blackbird as an endangered species. The Aug 2015 petition included an addendum composed of two new relevant studies on the tricolored blackbird. The review of the new information does not change DFW's previous recommendation to accept and consider the petition using the standard listing process.

Significant Public Comments

1. A letter from Conway Preservation Group concerned about the potential for costly requirements associated with the listing, and their direct impact on private landowners, and questioning the potential conservation benefits of listing (Exhibit 2).
2. FGC has received over 3,000 form letters and other comments supporting the petition (see exhibits 3-6 for examples).
3. A letter from Nossaman LLP on behalf of Dairy Cares opposing the petition (Exhibit 7)

Recommendation

FGC staff: Accept the petition for further evaluation during a standard listing process.

DFW: There is sufficient information to indicate that the petitioned action may be warranted; accept the petition for further evaluation using a standard listing process.

Exhibits

1. Aug 19, 2015 petition
2. DFW memo and updated petition evaluation
3. Letter from Conaway Preservation Group, received Nov 17, 2015
4. Email from Santa Lucia Conservancy of Carmel, dated Oct 15, 2015
5. Letter from Napa Solano Audubon Society, received Nov 17, 2015
6. Letter from Audubon California, received Nov 20, 2015
7. Example form letter “Support a state listing for the tricolored blackbird”
8. Letter from Nossaman LLP on behalf of Dairy Cares, dated Nov 24, 2015
9. DFW presentation

Motion/Direction

1a. Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2076.5 of the Fish and Game Code, finds that the petitioned action to *list the tricolored blackbird as an endangered species on an emergency basis is warranted* based on the information before the Commission and therefore amends Section 670.5, Title 14, California Code of Regulations, to add the tricolored blackbird as an endangered species.

OR

1b. Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2076.5 of the Fish and Game Code, finds that the petition and other information before the Commission to list the tricolored blackbird on an emergency basis as an endangered species *does not provide sufficient information to warrant an emergency listing*.

AND

2a. Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2074.2 of the Fish and Game Code, finds the petitioned action to list the tricolored blackbird as an endangered species may be warranted based on the information in the record before the Commission, and *therefore designates the tricolored blackbird a candidate for endangered species status*.

OR

2b. Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2074.2 of the Fish and Game Code, finds that the petition to designate the tricolored blackbird as an endangered species and other information in the record before

the Commission *does not provide sufficient information to indicate that the petitioned action may be warranted*.

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32. SPORT FISH 2016

Today's Item **Information** ☐ **Action** ☒

Certify the negative declaration pursuant to the California Environmental Quality Act (CEQA) and adopt the proposed changes to sport fishing regulations.

Summary of Previous/Future Actions

- DFW's status report — Jun 10-11, 2015; Mammoth Lakes
- Notice hearing — Aug 4-5, 2015; Fortuna
- Discussion hearing — Oct 7-8, 2015; Los Angeles
- **Today's adoption hearing** — **Dec 9-10, 2015; San Diego**

Background

DFW's proposal for this year's sport fish rulemaking combines DFW and public requests for changes to Title 14, CCR. This proposal:

- revises snagging definition for clarity and consistency,
- creates a new definition for landlocked salmon and bag and possession limits for non-anadromous waters,
- creates flexibility for black bass contest drawing dates,
- increases fishing opportunities around the de-commissioned Red Bluff Diversion Dam,
- closes Yolo Bypass, Toe Drain, and Tule Canal to sturgeon fishing to protect vulnerable fish, and
- makes general clean-up to clarify San Francisco and San Pablo bay boundaries, recognize Solano Lake in 7.50(b), and technical fixes to reptile and green sturgeon regulations

Pursuant to CEQA, based on the initial study the proposed project will have a less than significant or no impact on the environment, supporting a negative declaration.

Significant Public Comments (N/A)

Recommendation

1. Certify CEQA negative declaration.
2. Adopt regulations as proposed by DFW.

Exhibits

1. DFW presentation
2. Negative declaration
3. ISOR
4. Preadopt statement

Motion/Direction

Moved by _____ and seconded by _____ that the Commission certifies the negative declaration, adopts the proposed project, and adopts the proposed changes to freshwater sport fishing regulations.

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33. CENTRAL VALLEY SALMON

Today's Item **Information** ☐ **Action** ☒

Authorization to publish notice of intent to amend central valley salmon regulations to conform with federal guidelines.

Summary of Previous/Future Actions

- **Today's notice hearing** **Dec 9-10, 2015; San Diego**
- Discussion hearing Feb 10-11, 2016; Sacramento
- Adoption hearing Apr 18, 2016; Teleconference

Background

DFW is proposing changes to subsections 7.50(b)(5), (68) and (156.5), proposing a range of bag and possession limits in the American, Feather, and Sacramento rivers to encompass possible Pacific Fishery Management Council (PFMC) 2016 recommendations for Central Valley salmon stocks in mid-April. The scope of this option is intentionally broad to increase flexibility for development of the final Central Valley salmon seasons. Specific bag and possession limits for Central Valley adult fall-run Chinook salmon will be presented to FGC at its Apr meeting after the final PFMC recommendations are adopted by the National Marine Fisheries Service. For consistency, FGC generally adopts regulations to bring State law into conformance with federal law for Central Valley salmon.

Significant Public Comments (N/A)

Recommendations (N/A)

Exhibits

1. ISOR
2. DFW presentation

Motion/Direction

Moved by _____and seconded by _____ that the Commission authorizes publication of a notice of its intent to amend Subsections 7.50(b)(5), (68) and (156.5) regarding Central Valley Salmon.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

34. KLAMATH RIVER SALMON

Today's Item **Information ☐** **Action ☒**

Authorization to publish notice of intent to change Klamath River Basin sport fishing regulations.

Summary of Previous/Future Actions

- **Today's notice hearing** **Dec 9-10, 2015; San Diego**
- Discussion hearing Feb 10-11, 2016; Sacramento
- Adoption hearing Apr 18, 2016; Teleconference

Background

Subsection 7.50(b)(91.1) is proposed for amendment to:

1. ***Change quota, bag limit and possession limit.*** For notice purposes, DFW recommends an allocation range of 0-67,600 adult Klamath River Basin Fall Chinook Salmon (KRFC); bag limit between 0-4 KFRC with no more than 0-4 fish over 22" until the sub-quota is met, then 0 fish over 22"; possession limit between 0-12 KRFC with no more than 0-12 fish over 22" when the take of salmon over 22" is allowed.
2. ***Clean up for clarity and consistency.***

No changes are proposed for the Klamath River spit. Consistent with a request from FGC for additional research and data at Blue Creek, no changes are proposed for the Klamath River at the mouth of Blue Creek pending results of a study.

FGC annually adopts Klamath River Basin sport fishing regulations consistent with federal fishery management goals. Specific bag and possession limits are adopted after the Pacific Fishery Management Council reviews West Coast salmon stocks and fishery allocations have been proposed. Two tribal entities within the Klamath River System (Hoopa Valley Tribe and Yurok Tribe) maintain fishing rights for ceremonial, subsistence and commercial fisheries that are managed consistent with federal fishery management goals.

Significant Public Comments

1. Several stakeholders, including the Del Norte and Humboldt counties, have requested that the closure at the mouth of Blue Creek be repealed or amended (exhibits 4 and 5).

Recommendation

FGC staff: Authorize publication of the notice as recommended by DFW.

DFW: Authorize publication of the notice.

Exhibits

1. DFW memo, received Nov 24, 2015
2. ISOR

3. DFW presentation
4. Letter from Del Norte Co. Board of Supervisors, received Sep 25, 2015
5. Letter from Humboldt Co. Board of Supervisors, received Jun 15, 2015

Motion/Direction

Moved by _____ and seconded by _____ that the Commission authorizes publication of a notice of its intent to amend subsection 7.50(b)(91.1) related to Klamath River Basin sport fishing.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

35. FISHERIES AT RISK

Today's Item **Information** ☐ **Action** ☒

Authorization to publish notice of 90-day emergency extension, and notice of intent to make permanent fisheries at risk regulations.

Summary of Previous/Future Actions

- **Today's notice hearing** **Dec 9-10, 2015; San Diego**
- Discussion hearing Feb 10-11, 2016; Sacramento
- Adoption hearing Apr 13-14, 2016; Santa Rosa

Background

(A) Consider and re-adopt emergency regulations regarding special measures for fisheries at risk, Section 8.01, Title 14, CCR.

DFW and FGC staff are currently working together to formulate a regular rulemaking proposal (see 35(B)) that will refine the approach and associated language based on experience and feedback from the public, and with revisions to increase the efficacy of the current emergency action. This action is set to expire on December 29, 2015 unless FGC adopts a request for a 90-day extension, and files it with OAL the week prior to the expiration. Pursuant to Section 11346.1(h), Government Code, OAL may approve not more than two readoptions, each for a period not to exceed 90 days, of an emergency regulation that is the same as or substantially equivalent to an emergency regulation previously adopted by that agency. The readoption shall be permitted only if the agency has made substantial progress and proceeded with formulating a full rulemaking within the 180 days of the emergency.

Pursuant to the authority vested in it by Fish and Game Code Section 240, and for the reasons set forth in the attached "Statement of Emergency Readoption," FGC expressly finds that the adoption of this regulation is necessary for the immediate conservation, preservation, or protection of fish resources.

(B) Request for authorization to publish notice of intent to adopt permanent regulations regarding special measures for fisheries at risk.

To ensure that California's fisheries are protected now and in the future, DFW is proposing that FGC make permanent the emergency regulations set forth in Section 8.01, Title 14, CCR, as amended in the attached ISOR.

Significant Public Comments (N/A)

Recommendations (N/A)

Exhibits

1. (A) Statement of Emergency Action to Readopt

2. (A) Original Emergency Action
3. (A) DFW Memo Requesting Extension
4. (B) DFW presentation
5. (B) ISOR

Motion/Direction

35(A)

Moved by _____and seconded by _____ that the Commission finds that adopting the proposed 90-day extension of emergency regulations, as established in Section 8.01, is necessary for the retention of immediate process for temporarily closing rivers to fishing while efforts are in place to make these regulations permanent.

35(B)

Moved by _____and seconded by _____ that the Commission authorizes publication of a notice of its intent to make permanent the addition of Section 8.01.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

36. MAMMAL HUNTING

Today's Item **Information** ☐ **Action** ☒

Authorization to publish notice of intent to amend mammal hunting regulations for the 2016-2017 seasons.

Summary of Previous/Future Actions

- **Today's notice hearing** **Dec 9-10, 2015; San Diego**
- Discussion hearing Feb 10-11, 2016; Sacramento
- Adoption hearing Apr 13-14, 2016; Santa Rosa

Background

Annual tag quotas for big game are indicated as a range (e.g., [0 - 40]) from which the final 2016 recommendation will be made at the conclusion of population survey efforts. For sections 364 and 364.1, the quotas and seasons are proposed to be moved into a more convenient tabular format; new hunts are also proposed for elk.

Additional change proposals include: modifications regarding the use of electronic collars on dogs; clarifying the definition of soft-nose bullets versus fragmenting bullets; clarifying the take of domestic pigeons and allowing an extended season for hunting non-native deer; and establishing a process for issuing refunds for unused fund-raising tags.

Significant Public Comments

Comment letters/emails have been received from a number of individuals both opposed to hunting elk in Del Norte County and in favor of mitigating damage the elk cause in the county by increasing the number of hunting tags.

Recommendations

Because commenters recommend both a zero elk tag quota and an increased elk tag quota, beyond the scope of the current recommendations from DFW, staff recommends that commenters requesting additional changes to elk regulations use the approved petition process for possible consideration in a future, annual review of elk tag quotas. DFW staff will provide a presentation and be available to discuss this issue.

Exhibits

1. DFW presentation
2. 265 ISOR, use of dogs
3. 353 ISOR, methods for taking
4. 360(a) ISOR, deer in A, B, C and D zones
5. 360(b) ISOR, deer in X zone
6. 360(c) ISOR, deer, additional hunts

7. 361 ISOR, deer, archery
8. 362 ISOR, Nelson bighorn sheep
9. 363 ISOR, pronghorn antelope
10. 364 ISOR, elk hunts
11. 364.1 ISOR, SHARE elk hunts
12. 472 ISOR, nongame animals
13. 708.18 ISOR, fund raising return for refund
14. Final environmental document deer
15. Final environmental document pronghorn antelope
16. Final environmental document Nelson bighorn sheep
17. Draft environmental document elk
18. Email from Phoebe Lenhart opposing any increase in Roosevelt deer hunting, received Nov 8, 2015
19. Email from Aimee Bolender requesting that elk be protected but not allowed to damage people's property, received Nov 14, 2015
20. Letter from the Center for Biological Diversity re-submitting scoping comments on potential impacts from elk hunting regulations, received Nov 15, 2015
21. Letter from Friends of Del Norte making a number of requests related to an elk management plan and elk hunting, received Nov 18, 2015
22. Email from Helen Ferguson in favor of increasing tag numbers for both sexes of Roosevelt elk in Del Norte County, received Nov 24, 2015

Motion/Direction

Moved by _____and seconded by _____ that the Commission authorizes publication of a notice of its intent to amend Sections 265, 353, 360, 361, 362, 363, 364, 364.1, 472 and 708.18 regarding mammal hunting regulations for the 2016-2017 season.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

37. WATERFOWL

Today's Item **Information** ☐ **Action** ☒

Authorization to publish notice of intent to amend waterfowl regulations for the 2016-2017 season.

Summary of Previous/Future Actions

- **Today's notice hearing** **Dec 9-10, 2015; San Diego**
- Discussion hearing Feb 10-11, 2016; Sacramento
- Adoption hearing Apr 13-14, 2016; Santa Rosa

Background

DFW is proposing three changes to Section 502:

- Increase the white goose daily bag limit from 15 to 20 in most zones. This change will also result in an increase in the total bag limit in respective zones.
- Increase the white goose daily bag limit from 15 to 20 in the Imperial County Special Management Area.
- Increase the age requirement to participate in Youth Waterfowl Hunting Days from 15 years of age and younger to 17 years of age and younger.
- DFW proposes to delete that part of subsection 507(a)(2) prohibiting the possession of a firearm while archery hunting for migratory birds.

Significant Public Comments

Three alternatives are offered by the public regarding hunting in Morro Bay Special Management Area, which include 1) Eliminate all hunting during the Martin Luther King, Jr. weekend during the Morro Bay Winter Bird Festival; 2) Change the start time for hunting to 8 AM on Saturdays and Sundays instead of 7 AM; 3) Change the days of hunting to Wednesdays, Saturdays and Sundays (see Exhibit 4 for a sample).

The issue of hunting in Morro Bay is a semi-annual debate amongst the hunters that value the unique recreational opportunities provided there and some of the local residents who believe the opportunity infringes on their ability to enjoy some of the other benefits provided by Morro Bay. Existing regulations reflect the results of many negotiations in front of FGC to find an appropriate balance between competing interests. Significant efforts have been invested over the years in evaluating the situation and determining reasonable adjustments to the hunting activities out on the bay.

Regarding alternatives proposed for the Morro Bay Special Management Area, current regulations (Section 506) already provide for a later morning start time (7 a.m. rather than ½ hour before sunrise in all other hunt zones in California) and a substantial portion of Morro Bay is not open for hunting. The current balance on hunting in Morro Bay is consistent with the federal framework and FGC's mandate to conserve wildlife and provide recreational opportunity. Given this history, FGC staff does not support considering changes to the Morro

Bay regulations without additional efforts to work with affected stakeholders to resolve the issues.

Recommendations

FGC staff: Authorize publication of the notice as recommended by DFW.

DFW: Authorize publication of the notice which considers the Morro Bay recommendations as alternatives not supported (Exhibit 3).

Exhibits

1. DFW presentation
2. Draft environmental document
3. ISOR 502, migratory waterfowl
4. ISOR 507, migratory game birds
5. Email from Alex Beattie, received Feb 3, 2015

Motion/Direction

Moved by __ _____and seconded by _____ that the Commission authorizes publication of a notice of its intent to amend Sections 502 and 507 regarding Waterfowl regulations for the 2016-2017 season.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

38A. FUTURE MEETINGS – NEXT MEETING

Today's Item **Information ☒** **Action ☒**

Review logistics and approve agenda items for the next FGC meeting .

Summary of Previous/Future Actions (N/A)

Background

The next FGC meeting is scheduled for Feb 10-11, 2016, in Sacramento. Staff does not anticipate any other special logistics for this meeting. Potential agenda items are included in Exhibit 1.

Significant Public Comments (N/A)

Recommendation

Approve agenda topics for the Feb meeting.

Exhibits

A1. Potential agenda topics for Feb 10-11, 2016, FGC meeting

Motion/Direction (N/A)

Moved by _____and seconded by _____ that the Commission approves the draft agenda items for the Feb 10-11, 2016 meeting.

STAFF SUMMARY FOR DECEMBER 9-10, 2015

38B. FUTURE MEETINGS – PERPETUAL TIMETABLE FOR REGULATORY ACTION

Today's Item **Information ☒** **Action ☐**

Review and acknowledge requested changes to the perpetual timetable for anticipated regulatory actions.

Summary of Previous/Future Actions

- Adopted 2015 rulemaking calendar — Dec 3, 2014; Van Nuys
- Last amended perpetual regulatory timetable — Oct 2015
- **Today's requested changes to timetable** — **Dec 9-10, 2015; San Diego**

Background

At each FGC meeting, FGC staff provides the latest approved timetable along with any requests for changes.

Through a memo (Exhibit B1) DFW has requested changes to the regulatory timetable (Exhibit B2):

- Add a proposed rulemaking to establish standards for imposing penalty enhancements for illegal take of game with defined characteristics.
- Add the semiannual recreational groundfish rulemaking to match federal changes.
- Add a Pacific halibut conformance package to initiate an automated approach to federal conformance regulations.

Significant Public Comments (N/A)

Recommendation

FGC staff: Acknowledge that requested changes to the regulatory timetable are acceptable.

DFW: See Exhibit B2 for DFW's requested changes.

Exhibits

B1. DFW memo requesting changes to the perpetual timetable for regulatory actions, dated Nov 24, 2015

B2. Perpetual timetable for anticipated regulatory actions, updated Dec 1, 2015

Motion/Direction (N/A)

STAFF SUMMARY FOR DECEMBER 9-10, 2015

38C. FUTURE MEETINGS – NEW BUSINESS

Today's Item **Information** ☐ **Action** ☒

This agenda item is intended to share public requests to consider new business or for Commissioners to bring new items of business to FGC.

Summary of Previous/Future Actions (N/A)

Background (N/A)

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits (N/A)

Motion/Direction (N/A)

STAFF SUMMARY FOR DECEMBER 9-10, 2015

38D. FUTURE MEETINGS – OTHER

Today's Item **Information ☒** **Action ☐**

This agenda item is an opportunity to identify and discuss items or issues regarding future meetings.

Summary of Previous/Future Actions (N/A)

Background (N/A)

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits (N/A)

Motion/Direction (N/A)

CALIFORNIA FISH AND GAME COMMISSION
REQUESTS FOR REGULATORY ACTION THROUGH 11-24-2015

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Grant (previously Accept): FGC is *willing to consider* the petition through a process
Refer: FGC *needs more information* before deciding whether to grant or deny the petition

Deny (previously Reject): FGC is *not willing to consider* the petition

Green cells: Referrals to DFW for more information
Lavender cells: Accepted and moved to a rulemaking

Blue cells: Referrals to FGC staff or committee for more information
Yellow cells: Current action items

Tracking No.	Date Received	Date Response Due (10 woking days)	Response letter to Petitioner	Accept or Reject	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision
2015-003	10/27/2015	11/10/15	11/10/2015	A	Eric Boyd	Allow 50 Shot Shells	Sections 551 and 552, Title 14, CCR	Allow hunters using a state wildlife area or national wildlife area refuge to carry 50 shot shells in field. Currently, hunters are allowed 25 shot shells.	**Action scheduled 2/10-11/2016**
N/A	2/12/2015	N/A	N/A	N/A	Jim Cloninger	Deer Hunting Tags		Requests changes to deer, elk, pronghorn, and sheep hunting tag draw to reduce cost and be more competitive with border states.	**Action scheduled 2/10-11/2016**
2015-004	11/2/2015	11/16/15	11/16/2015	A	James McCabe	Native Reptiles Venom	Sections 5061	Commerical take, sale, trasnport, export or import of native reptiles	**Action scheduled 2/10-11/2016**
2015-005	11/12/2015	11/25/15	11/16/2015	R	Corey Nommensen	Domesticated Ferrets	Under 671 14CA ADC 671	Domesticated ferrets are misclassified as non-domestic and subject ot ban under 671	**Action scheduled 2/10-11/2016**
2015-006	11/24/2015	12/10/15	11/25/2015	A	Dennis Thibeault	Rockport Rocks	632(b)(17)	Remove special closure regulations for Rockport Rocks.	**Action scheduled 2/10-11/2016**

CALIFORNIA FISH AND GAME COMMISSION
REQUESTS FOR NON-REGULATORY ACTION THROUGH 11-24-2015

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Grant (previously Accept): FGC is *willing to consider* the petition through a process **Deny (previously Reject):** FGC is *not willing to consider* the petition
Refer: FGC *needs more information* before deciding whether to grant or deny the petition

Green cells: Referrals to DFW for more information **Blue cells:** Referrals to FGC staff or committee for more information
Lavender cells: Accepted and moved to a rulemaking **Yellow cells:** Current action items

Date Received	Name of Petitioner	Subject of Request	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
11/1/2015	Kerry Kriger	Bullfrog policy	Requests response to letter sent to Director Bonham and Secretary Laird concerning status of bullfrog vision document and discontinuing importation permits.	**Action Scheduled 2/10-11/2016**	Deny - not FGC authority	
11/19/2015	Marc Gorelnik	D-Crab Closure	Requests December meeting agenda include a specific item to discuss the ongoing closures of the recreational Dungeness and rock crab fisheries.	**Action Scheduled 2/10-11/2016**	Grant - will be discussed at Dec FGC meeting	

From:	Jim Cloninger
To:	FGC
Subject:	Proposal: How to obtain a deer hunting tag in California
Date:	Thursday, February 12, 2015 11:13:59 AM

Fish and Game Commission: I want to propose the following procedure to obtain a resident deer hunting tag in California.

Proposal: Conduct the deer hunting draw for a deer tag the same as the draw for elk, pronghorn and sheep. Namely, resident applicant pays an application fee, the amount the same as the elk, pronghorn and sheep application fee. The actual draw will be the same. A deer tag applicant would pay the application fee, submit an application with up to 3 deer hunting zones. If the applicant is successful for any of his/her zone choices, he/she is entitled to purchase a deer hunting tag for that zone. If the applicant is not successful in drawing his/her first choice, a preference point will be granted. If the applicant is not successful for any of his/her choices, he/she may purchase a "left over" deer hunting tag, or not hunt deer that season.

Discussion: I have conducted a survey of the states that border California to determine a procedure norm for a resident to obtain a deer hunting tag.

Oregon: Must purchase a hunting license - $29.50. Application fee to apply for a deer hunting tag - $8.00. If successful in the draw, deer hunting tag - $24.50.

Nevada: Must purchase a hunting license - $33.00. Application fee to apply for a deer hunting tag - $13.00. If successful in the draw, deer hunting tag - $30.00.

Arizona: Must purchase a hunting license - $37.00. Application fee to apply for a deer hunting tag - $13.00. If successful in the draw, deer hunting tag - $45.00.

California: Must purchase a hunting license - $46.40. Must purchase a non refundable deer hunting tag before the draw - $30.81.

As you can see an applicant for a deer hunting tag in California is more expensive: $30.81 for California, $13.00 for Nevada, $13.00 for Arizona, $8.00 for Oregon. The average application fee for obtaining a deer hunting tag in bordering states is $11.33. A California applicant has to pay $19.48 more for being unsuccessful in the deer hunting tag draw!!!! California's procedure must be changed to the normal procedure as used in bordering states.

James Cloninger, Antioch,CA

State of California – Fish and Game Commission
PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATION CHANGE
FGC 1 (NEW 10/23/14) Page 1 of 3

Tracking Number: (BCD-001)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

RECEIVED
2015 SEP 29 PM 2:05
CALIFORNIA
FISH AND GAME
COMMISSION

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. **Person or organization requesting the change (Required)**
   Name of primary contact person: Curtis Haney
   Address: [redacted]
   Telephone number: [redacted]
   Email address: [redacted]

2. **Rulemaking Authority (Required)** - Reference to the statutory or constitutional authority of the Commission to take the action requested: Title 14, CONS, FGC, Division 1, Chapter 2, Article1, Section 205

3. **Overview (Required)** - Summarize the proposed changes to regulations: Change CA F&W Regulations, Chapter 4, (Ocean Fishing), Section 29.05 (b) (1) (Invertebrates, General) (Add Barnacles to the list of Invertebrates that can be harvested, and remove them from being prohibited to, "Take or Possess").

4. **Rationale (Required)** - Describe the problem and the reason for the proposed change: "Take or Possession" of barnacles in California ocean waters is currently prohibited. I and many of my fellow divers love the taste of Gooseneck/Leaf Barnacles which are abundant on rocks exposed at low tide. Currently, the only legal way to consume barnacles locally is to go to an expensive restaurant and order them off the menu. Barnacles served in restaurants are all imported from Spain. I personally spoke with Jerry Kashiwada, a marine biologist at the CDFW office in Fort Bragg and asked him why Barnacles could not be harvested. The only reason he could think of was that when the regulations were written it was assumed that no one harvested or ate barnacles! He suggested I petition the commission to have barnacles added to the list of invertebrates that are allowed to be harvested.

SECTION II: Optional Information

5. **Date of Petition: 26 September 2015**

6. **Category of Proposed Change**
   - ☒ Sport Fishing
   - ☐ Commercial Fishing
   - ☐ Hunting
   - ☐ Other, please specify: Click here to enter text.

7. **The proposal is to:** (*To determine section number(s), see current year regulation booklet or https://govt.westlaw.com/calregs*)
   - ☐ Amend Title 14 Section(s):Chapter 4, Section 29.05 (b) (1)
   - ☐ Add New Title 14 Section(s): NA
   - ☐ Repeal Title 14 Section(s): NA

8. **If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition** Click here to enter text.
   Or ☒ Not applicable.

9. **Effective date**: If applicable, identify the desired effective date of the regulation.
   If the proposed change requires immediate implementation, explain the nature of the emergency: 2017 - 2018 Regulation Booklet Update

10. **Supporting documentation:** Identify and attach to the petition any information supporting the proposal including data, reports and other documents: None

11. **Economic or Fiscal Impacts:** Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: None

12. **Forms:** If applicable, list any forms to be created, amended or repealed:
    None

SECTION 3: FGC Staff Only

Date received: Click here to enter text.

FGC staff action:
- ☐ Accept - complete
- ☐ Reject - incomplete
- ☐ Reject - outside scope of FGC authority

Tracking Number

Date petitioner was notified of receipt of petition and pending action: _____

Meeting date for FGC consideration: _____

FGC action:
- ☐ Denied by FGC

☐ Denied - same as petition _____
Tracking Number

☐ Granted for consideration of regulation change

State of California – Fish and Game Commission
PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATION CHANGE
FGC 1 (NEW 10/23/14) Page 1 of 3

Tracking Number: 2015-003 (Click here to enter text.)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. **Person or organization requesting the change (Required)**
   Name of primary contact person: Eric Boyd
   Address: [redacted]
   Telephone number: [redacted]
   Email address: [redacted]

2. **Rulemaking Authority (Required)** - Reference to the statutory or constitutional authority of the Commission to take the action requested: Title 14, Division 1, Subdivision 2, Chapter 8, Sections 551 and 552

3. **Overview (Required)** - Summarize the proposed changes to regulations: Allow hunters using a State of California Wildlife area or National Wildlife refuge to carry 50 shot shells in the field. [Currently hunters are allowed only 25 shot shells].

4. **Rationale (Required)** - Describe the problem and the reason for the proposed change: Although the bag limits for geese have risen dramatically over the last several years, hunters are still crippled by the 25 shot shell limit on Wildlife Areas and NWR's. The goose limits alone are now 25 birds. Coupled with the possibility of 7 ducks as well and the 25 shot limit has become a rule preventing anyone from actually harvesting a full limit of ducks and geese. I have tried to work with the Department of Fish and Wildlife over the last several years on this change. I have been unsuccessful. It is now necessary to bring this directly to the Commission. Please change this rule to a shell limit that makes sense. A maximum of 50 shells would be logical.

SECTION II: Optional Information

5. **Date of Petition: 10/202015**

6. **Category of Proposed Change**

☐ Sport Fishing
☐ Commercial Fishing
☒ Hunting
☐ Other, please specify: Click here to enter text.

7. **The proposal is to:** (*To determine section number(s), see current year regulation booklet or https://govt.westlaw.com/calregs*)
☒ Amend Title 14 Section(s):551 and 552
☐ Add New Title 14 Section(s): Click here to enter text.
☐ Repeal Title 14 Section(s): Click here to enter text.

8. **If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition** Click here to enter text.
Or ☒ Not applicable.

9. **Effective date**: If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency: December 1, 2015

10. **Supporting documentation:** Identify and attach to the petition any information supporting the proposal including data, reports and other documents: see enclosed information regarding effective shot sizes for ducks versus geese.

11. **Economic or Fiscal Impacts:** Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: none

12. **Forms:** If applicable, list any forms to be created, amended or repealed:
none

SECTION 3: FGC Staff Only

Date received: Click here to enter text. 10/27/15

FGC staff action:
☒ Accept - complete
☐ Reject - incomplete
☐ Reject - outside scope of FGC authority

Tracking Number

Date petitioner was notified of receipt of petition and pending action: 11/10/15

Meeting date for FGC consideration: Dec 2015 / Feb 2016

FGC action:
☐ Denied by FGC
☐ Denied - same as petition _____

Tracking Number

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION
2015 OCT 27 AM 8:42

☐ Granted for consideration of regulation change

10/20/2015

General survey and information regarding shot size effectiveness on ducks and geese.

Since non-toxic shot has been required to hunt waterfowl in the USA there have been many studies and tests performed by various researchers and ballistics experts on effectiveness of shot sizes to take ducks and geese. These groups and individuals include:

Ducks Unlimited
L. P. Brezny. Gun Digest Guide to Modern Shotgunning
Tom Roster, Shotshell Ballistics Editor, American Waterfowler magazine
See included T. Roster Lethality Table referenced by the Wisconsin Department of Natural Resources: **dnr.wi.gov/topic/hunt/documents/tomrosternontoxicshot.pdf - 19k - 2013-02-18**
California Waterfowl Association

Mr. Roster's data attached show the best selection for geese is steel shot size BBB and for ducks size #3's.

Therefore in order to maximize cleanly taking geese or ducks and minimize crippling you should be shooting two different shot sizes. Since the restriction for shot shells is now 25 total, hunters typically carry only the shot size for birds they expect to find the most opportunities in public areas. Unfortunately if they carry shot for ducks but have opportunities for geese, they will attempt to take the larger birds with the small shot size. This results in many crippled and lost birds due to the less effective shot size. The opposite is also true, that if the hunter is shooting the larger shot for geese, if taking ducks is attempted, the larger shot with more open patterns and fewer pellets per shell will cause more crippling of ducks.

With the opportunity to take 25 geese and 7 ducks in the field, it is logical and prudent to allow for the proper amount and shot size for these two different species. A 50 shot shell limit would allow hunters to carry the correct shot sizes for the given opportunities. Maintaining a 25 shell limit is neither logical from the standpoint of daily bag limits nor conducive to proper conservation and clean harvest of waterfowl.

Eric Boyd

©TOM ROSTER'S 2013 NONTOXIC SHOT LETHALITY TABLE©

Proven Nontoxic Shot Loads For Waterfowl & Upland Game Birds[1] *Load Velocity: 1,225 - 1,600 FPS* **ACTIVITY**	Typical Shooting Range of Activity (Yards)	Most Effective Nontoxic Shot Size(s) For Birds Listed Under ACTIVITY At The Distances Listed In The Second Column	Minimum Load Weight (Ounces)	Minimum Pellet Hits Needed on Lethal Areas for Clean Kills	Minimum Pattern Count Needed at Any Distance for Clean Kills (# of Pellets in 30" Circle)	Most Effective Choke(s) (Given in Lead Shot Choke Designations)	NOTE: The pellets in the steel shot loads listed in this table were traditional, highly spherical ball-shaped pellets of ~ 7.86 g/cc density and 90-95 DPH hardness. The HEVI-Shot pellets were of 12.0 g/cc density and slightly harder than traditional steel pellets.
Large Geese At Long Range	50-65	Steel BBB to T	1-1/4	1-2	50-55	Improved Modified	
Giant, Western, Atlantic and Interior Canadas	50-70	HEVI-Shot 2 to B	1-1/2	1-2	50-55	Improved Modified, Full	
Large Geese Over Decoys	35-50	Steel BB to BBB	1-1/4	1-2	50-55	Improved Cylinder, Modified	
	35-50	HEVI-Shot 2 to B	1-1/2	1-2	50-55	Improved Cylinder, Modified	
Medium/Small Geese Long Range	50-65	Steel BB to BBB	1-1/4	1-2	60-65	Improved Modified	
Snow, White-fronted, Lesser Canadas	50-65	HEVI-Shot 2	1-1/2	1-2	60-65	Improved Modified, Full	
Medium/Small Geese Over Decoys	35-50	Steel 2 to BB	1-1/8	1-2	60-65	Light Modified, Modified	
	35-50	HEVI-Shot 4 to 2	1-1/4	1-2	60-65	Improved Cylinder, Modified	
Large Ducks At Long Range	45-65	Steel 2 to 1	1-1/8	1-2	85-90	Improved Modified, Full	
Mallard, Black, Pintail, Goldeneye, Gadwall	45-65	HEVI-Shot 4	1-1/4	1-2	85-90	Improved Modified, Full	
Large Ducks Over Decoys	20-45	Steel 6 to 2	¾ - 1	1-2	85-90	I.C. (20-35 Yds), Mod. (35-45 Yds)	
	20-45	HEVI-Shot 6 to 4	1-1/8	1-2	85-90	I.C. (20-35 Yds), Mod. (35-45 Yds)	
Medium Ducks Over Decoys	20-45	Steel 6 to 3	1	1-2	115-120	I.C. (20-35 Yds), Mod. (35-45 Yds)	
Wigeon, Scaup, Shoveler	20-45	HEVI-Shot 6 to 4	1-1/8	1-2	115-120	I.C. (20-35 Yds), Mod. (35-45 Yds)	
Small Ducks Over Decoys	20-45	Steel 6 to 4	1	1-2	135-145	Mod. (20-35 Yds), Full (35-45 Yds)	
Teal, Ruddy, Bufflehead	20-45	HEVI-Shot 6	1-1/8	1-2	135-145	Mod. (20-35 Yds), Full (35-45 Yds)	
Ring-Necked Pheasants	20-50	Steel 3 to 2	1	2-3	90-95	I.C. (20-30 Yds), Mod. (30-50 Yds)	
	20-50	HEVI-Shot 6 to 4	1-1/8	2-3	90-95	I.C. (20-30 Yds), Mod. (30-50 Yds)	
Turkeys (Head and Neck Shots)	20-40	Steel 4	1-1/4	3-4	210-230	Full or Extra Full	
Northern Bobwhite Quail	20-30	Steel 7	5/8	1-2	170-190	Imp. Cyl., Light Modified	
Swatter Load For Wounded Birds	20-30	Steel 7 to 6	1	1	175	Improved Modified, Full	

This table summarizes Tom Roster's analyses to date of the waterfowl lethality data bases for certain of the 15 U.S. steel versus lead waterfowl shooting tests run between 1968 & 1982 & one steel-only pheasant shooting test plus lethality data bases owned by ammunition companies for birds taken with nontoxic shotshell loads Roster tested for them & the CONSEP organization.

Note: Steel #BBB (.190") and HEVI-Shot #2 (.150") have exhibited the best all-around performance for taking geese; steel #3 (.140") and HEVI-Shot #4 (.130") the best all-around performance for taking ducks; and steel #2 and HEVI-Shot #4 the best all-around performance for taking ring-necked pheasants.

[1]These findings are derived from testing 3" 20 gauge; 2¾", 3" and 3½" 12 gauge; and 3½" 10 gauge steel loads; plus 3" 20 gauge and 2¾" and 3" 12 gauge HEVI-Shot loads.

 For answers to questions on this table contact: Tom Roster, 1190 Lynnewood, Klamath Falls, OR, USA 97601. tomroster@charter.net

Tracking Number: (2015_004)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. Person or organization requesting the change (Required)

Name of primary contact person: James G. McCabe
Address: [redacted]
Telephone number: [redacted]
Email address: [redacted]

2. Rulemaking Authority (Required) - Reference to the statutory or constitutional authority of the Commission to take the action requested: The Fish and Game Code, Section: §5061 Rules and Regulations. Authorizes the Fish and Game Commission to establish regulations for commercial take, sale, transport, export or import of native reptiles. To date, the Commission has adopted two regulations under this authority. The first regulation is: CCR, Title 14, Section 651, Commercial Take of Native Reptiles and Amphibians for Scientific or Educational Institutions. The second regulation is: CCR, Title 14, Section 43, Captive Propagation and Commercialization of Native Reptiles. We are requesting the Commission to modify existing regulations or establish new regulations that would permit the collection of venom from native reptiles for the commercial production of vaccines, anti-venom and other therapeutics agents; for both domesticated animals and human use. The purpose is to produce effective products against the bites from native venomous snakes. CCR. Title 14, Section 43 pertains to the production of captive born reptiles for the purpose of selling them in the pet trade and has no application to the commercialization of venom or products produced from venom. CCR, Title 14, Section 651, Commercial Take of Native Reptiles and Amphibians for Scientific or Educational Institutions could be modified to accommodate the activities we are describing. We would need the Commission to expand the definition of scientific and educational organization to include commercial operations which would be permitted to maintain venomous reptiles for the purpose of venom extraction for the production of vaccines, antivenom and other therapeutic agents. §40. General Provisions Relating to Native Reptiles and Amphibians; (f) Biological Supply Houses and Exempt Organizations is another section that could be modified or additions made to the code to accommodate the commercialization of venom. These options are discussed in detail below in section 3. Overview.

3. Overview (Required) - Summarize the proposed changes to regulations: The Fish and Game Code, Section: 5061 authorizes the Fish and Game Commission to establish regulations for commercial take, sale, transport, export or import of native reptiles. We would like the Commission to create new regulations which would include the following points: **1.** Allow for the venom from native reptiles to be collected, processed and stored for commercial use to produce vaccines, antivenom and other therapeutic products. **2.** The new regulation(s) would make provisions for trained, experienced personnel to be permitted to hold and maintain native venomous reptiles under humane conditions for prolonged periods of time to allow for multiple venom extractions. **3.** Venomous reptiles maintained for the purpose of venom extraction will be exempt from bag limits as they will not be considered under the "sport take" provisions of the Fish and Wildlife regulations. **4.** Venomous reptiles used for the purpose of venom extraction would be classified as nuisance animals that would otherwise be destroyed as they pose a threat to domestic animals or human life. **5.** Individuals or Companies permitted to commercialize the venom from native reptiles will **not** be allowed to purchase native venomous reptiles or the venom from native reptiles in any form (i.e.: Lyophilized or "raw" unprocessed liquid) from a third party source. This is to discourage the commercial hunting of native snakes. CCR, Title 14, Section 651, Commercial Take of Native Reptiles and Amphibians for Scientific or Educational Institutions could be modified to accommodate the activities we are describing. We would need the Commission to expand the definition of "Organization" to include commercial operations which produce vaccines, antivenom and other therapeutic agents. §40. General Provisions Relating to Native Reptiles and Amphibians; (f) Biological Supply Houses and Exempt Organizations is another section that could be modified or additions made to the code to accommodate the commercialization of venom. One possible modification to section (f), (2) Organizations and Schools Exempt from Permit; could read: "Organizations that extract venom from native reptiles for biomedical research or therapeutic products are exempt from permit. Another possible option would be to create a paragraph (f), ("3") that could state: The Department may issue permits to owners of businesses that extract venom from reptiles for the production of Therapeutic/Biomedical products and/or biomedical research.

4. Rationale (Required) - Describe the problem and the reason for the proposed change: Our published research on the efficacy of the only commercially available canine rattlesnake vaccine lead us to the conclusion that the this vaccine is ineffective against the bite from the two most commonly encountered rattlesnakes in California, the Northern and Southern Pacific Rattlesnakes [Comparison of the protective effect of a commercially available western diamondback rattlesnake toxoid vaccine for dogs against envenomation of mice with western diamondback rattlesnake (Crotalus atrox), northern Pacific rattlesnake (Crotalus oreganus oreganus), and southern Pacific rattlesnake (Crotalus oreganus helleri) venom., Am J Vet Res. 2015 Mar;76(3):272-9., J. McCabe ,et al., article attached as part of the Supporting Documentation]. This is due to the fact that the vaccine is made from the venom of an unrelated species of rattlesnake and the antibodies produced by the vaccinated animal has no protective value as they are unable to bind and neutralize the venom from the bite of a Pacific Rattlesnake. Mr. Brockett and I would like to produce both canine and equine vaccine that would be effective for California and that it would require the use of venom from native rattlesnakes. The logical progression would be to then produce antivenom for domestic animals and ultimately to produce a regionally specific antivenom for humans. The Problem is that under the current regulations it is illegal to commercialize any part of a native animal. This makes it impossible to start a company to produce vaccine, antivenom or any other therapeutic

agents in the state of California using the biochemically unique venoms found in our state's native reptiles. We are proposing that the current regulations be modified or new regulations be written to permit qualified people /companies to collect, process, hold and commercially distribute products produced from the venom of reptiles that are medically relevant and critically needed. This would include provisions for the long term maintenance of venomous reptiles for the purpose of venom extraction and would allow for qualified people/companies to maintain rattlesnakes over the current bag limit. It should be pointed out that the law is currently being violated by the producer of the canine and equine vaccine, Red Rock Biologics, Woodland, CA. The Red Rock vaccine is produced from the venom of a native rattlesnake (Western Diamondback, Crotalus atrox). The only way we could use the existing regulations is to set up a business in another state and simply place an order with a recognized biological supply house for Pacific rattlesnakes. The snakes would be collected and shipped out of state. This would mean that the state of California would be losing business revenue in the form of taxes, employment for California residents and the loss of a company that generates valuable products targeted for use on the west coast. We would prefer to start a business in the state of California and feel it would be an asset to the state. Although we are initially focusing on a vaccine for veterinary use (given prophylactically to companion animals) we also recognize the need for a California specific antivenom for the treatment of snake bites for animals and humans. The following quote from Bryan G. Fry, world renowned herpetologist and venom researcher sums up the current dilemma regarding the treatment of Pacific Rattlesnake bites with the only FDA approved antivenom, CroFab: "In California alone, around 800 people are bitten by rattlesnakes every year. Although just a handful die, the venom is painful, debilitating, and can lead to lengthy hospital stays. To make things worse, Fry says that the antivenom that Americans use for rattlesnake bites—CroFab—is ineffective against the Southern Pacific rattler."It's notoriously poor," he says. "People have to be kept in the hospital for up to a week getting continuous infusions just to keep them alive." There are two problems. First, CroFab uses antibodies that are less allergenic than those in other antivenoms, but get cleared from the body very quickly. "You end up with very expensive urine," says Fry. Second, it doesn't contain antibodies that target the specific proteins used by the Southern Pacific rattlesnake. "They were relying on toxins to be similar to stuff from other rattlesnakes, but even within this one [subspecies], you get completely different venoms. It's been a debacle." [Source: http://phenomena.nationalgeographic.com/2014/01/27/rattlesnakes-two-hours-apart-pack-totally-different-venoms/] We hope that the Fish and Game Commission recognizes the need for and benefit from the commercialization of venom from native reptiles for the production of valuable and potentially lifesaving therapeutic products.

SECTION II: Optional Information

5. Date of Petition: Click here to enter text.

6. Category of Proposed Change

☐ Sport Fishing
☐ Commercial Fishing
☐ Hunting
☒ Other, please specify: The Fish and Game Code, Section: §5061 Rules and Regulations. Authorizes the Fish and Game Commission to establish regulations for commercial take, sale, transport, export or import of native reptiles. CCR, Title 14, Section 651, Commercial Take of

Native Reptiles and Amphibians for Scientific or Educational Institutions. §40. General Provisions Relating to Native Reptiles and Amphibians; (f) Biological Supply Houses and Exempt Organizations.

7. The proposal is to: (*To determine section number(s), see current year regulation booklet or https://govt.westlaw.com/calregs*)

☒ Amend Title 14 Section(s):The Fish and Game Code, Section: §5061 Rules and Regulations. Authorizes the Fish and Game Commission to establish regulations for commercial take, sale, transport, export or import of native reptiles. CCR, Title 14, Section 651, Commercial Take of Native Reptiles and Amphibians for Scientific or Educational Institutions. tific or Educational Institutions. §40. General Provisions Relating to Native Reptiles and Amphibians; (f) Biological Supply Houses and Exempt Organizations

☒ Add New Title 14 Section(s): The Fish and Game Code, Section: §5061 Rules and Regulations. Authorizes the Fish and Game Commission to establish regulations for commercial take, sale, transport, export or import of native reptiles. CCR, Title 14, Section 651, Commercial Take of Native Reptiles and Amphibians for Scientific or Educational Institutions tific or Educational Institutions. §40. General Provisions Relating to Native Reptiles and Amphibians; (f) Biological Supply Houses and Exempt Organizations

☐ Repeal Title 14 Section(s): Click here to enter text.

8. If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition Click here to enter text.

Or ☒ Not applicable.

9. Effective date: If applicable, identify the desired effective date of the regulation.

If the proposed change requires immediate implementation, explain the nature of the emergency: Although we would like to begin formulating a new canine/equine vaccine as soon as possible our request would not qualify as an emergency.

10. Supporting documentation: Identify and attach to the petition any information supporting the proposal including data, reports and other documents: We have attached the following documents in support of our petition: **#1.** A publication, co-authored by James McCabe, from the American Journal of Veterinary Research (March 2015, 76(3): 272-279). The significance of this publication is that it shows the current canine rattlesnake vaccine is ineffective against the bite of the most commonly encountered rattlesnake in the state of California and the need for regionally specific vaccines and antivenom produced from the venom of native rattlesnakes. **#2.** A publication from the Journal of Proteomics (March 2014, 99:68-83). The significance of this publication is to draw attention to the extreme variation in venom composition among different populations of Southern Pacific Rattlesnakes. This consequently results in the drastically variable degrees of neutralization by CroFab antivenom. This means that certain patients will receive massive amounts of antivenom with little benefit because it is unable to neutralize the venom due to its different chemical structure. CroFab is the product most commonly used in California (and the United States) to treat snake bites. The variability in venom composition between populations of Pacific Rattlesnakes is also the reason why any successful vaccine or antivenom produced in the future, for California, will require collecting venom from these well-defined populations to insure the product is efficacious. **#3.** Letters of support from two renowned scientists in the field of venom research who recognize the value

in producing regionally specific vaccine and antivenom as well as the valuable resource that would be made available to other researchers if a dependable source of venom was available.

11. Economic or Fiscal Impacts: Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: The commercialization of venom from native rattlesnakes would have a positive economic impact for the State of California. Venom would be utilized to produce canine and equine vaccines as well as antivenom and other therapeutics for human use. The production of these types of products would create employment opportunities, generate tax revenue for the State and more importantly produce products that would be tailor made to neutralize the effects from the bites of native rattlesnakes. The implementation of new regulations allowing for the commercialization of native rattlesnake venom would most likely have little or no impact on the revenues or expenditures to the California Department of Fish and Wildlife (CDFW). The long term benefits to the State of California would be in the production of vaccines and antivenom that could potentially save lives, reduce pain and suffering of patients and the expense of prolonged hospitalization associated with rattlesnake bites. The commercialization of native rattlesnake venom would also create a legal means by which universities, pharmaceutical and bio-technology companies could secure raw material for future research and development of other beneficial therapeutics.

12. Forms: If applicable, list any forms to be created, amended or repealed:

Not applicable at this time.

SECTION 3: FGC Staff Only

Date received: 11/2/2015

FGC staff action:

- ☒ Accept - complete
- ☐ Reject - incomplete
- ☐ Reject - outside scope of FGC authority

Tracking Number

Date petitioner was notified of receipt of petition and pending action: 11/16/2015

Meeting date for FGC consideration: Dec 2015/ Feb 2016

FGC action:

- ☐ Denied by FGC
- ☐ Denied - same as petition _____

Tracking Number

- ☐ Granted for consideration of regulation change

UNIVERSITY of
NORTHERN COLORADO

College of Natural and Health Sciences
School of Biological Sciences

To: California Department of Fish and Wildlife
From: Dr. Stephen P. Mackessy, Professor of Biology
Re: request for bag limit exemption on California rattlesnakes
Date: 10 April 2015

To whom it may concern:

I am writing this letter in support of James McCabe and Jim Brockett and their plan to develop a new rattlesnake vaccine for dogs and horses that is specifically formulated for California. A recent publication by James McCabe and co-authors has shown that the current vaccine available provides no protection against the bites inflicted by the most commonly encountered species of rattlesnake on the West Coast. The production of such a vaccine will require the maintenance of multiple snakes from many locations within the state, as there are significant geographic variations in venom composition in several species which occur in California. My understanding is that Mr. Brockett and Mr. McCabe are requesting an exemption from the current bag limit regulations for this reason, which I support. This work with California venomous snakes and the vaccine(s) resulting from it will also be a valuable resource for academic and biomedical researchers, as there is currently no supplier of locality-specific rattlesnake venom for species native to California.

Both Mr. Brockett and Mr. McCabe are uniquely qualified to accomplish this goal, as they have a combined total of over 80 years of experience working with venomous reptiles and currently hold permits to maintain non-native venomous snakes. Mr. Brockett is one of the most successful and respected animal trainers in the film industry. Mr. McCabe has worked in biomedical research for over 30 years, and his experience includes working in the Venom Research Laboratory of Dr. Findley Russell at USC.

In conclusion, I believe the proposed project will benefit pets as well as the research community. Please feel free to contact me if you have any questions concerning this letter of support.

Sincerely,

Dr. Stephen P. Mackessy, Professor of Biology
School of Biological Sciences
University of Northern Colorado
501 20th St., CB 92
Greeley, CO 80639-0017 USA

Tel: (970)-351-2429
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Comparison of the protective effect of a commercially available western diamondback rattlesnake toxoid vaccine for dogs against envenomation of mice with western diamondback rattlesnake (*Crotalus atrox*), northern Pacific rattlesnake (*Crotalus oreganus oreganus*), and southern Pacific rattlesnake (*Crotalus oreganus helleri*) venom

Charles C. Cates DVM

Erika V. Valore MS

Marcelo A. Couto DVM, PhD

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James G. McCabe BA

Received April 11, 2014.
Accepted September 30, 2014.

From the Division of Laboratory Animal Medicine, David Geffen School of Medicine, University of California-Los Angeles, Los Angeles, CA 90095. Dr. Cates' present address is Cedars Sinai Medical Center, Comparative Medicine Department, 8700 Beverly Blvd, Davis Room 7004, Los Angeles, CA 90048.

Address correspondence to Dr. Cates (charles.cates@cshs.org).

OBJECTIVE

To evaluate effectiveness of a commercially available toxoid manufactured from western diamondback (WD) rattlesnake (*Crotalus atrox*) venom against envenomation of mice with WD, northern Pacific (NP) rattlesnake (*Crotalus oreganus oreganus*), and southern Pacific (SP) rattlesnake (*Crotalus oreganus helleri*) venom.

ANIMALS

90 specific pathogen–free female mice.

PROCEDURES

Mice were allocated into 3 cohorts (30 mice/cohort). Mice received SC injections of *C atrox* toxoid (CAT) vaccine (n = 15/group) or adjuvant (15/group) at day 0 and again at 4 weeks. At 8 weeks, mice were challenge-exposed with 1 of 3 venoms. Survival until 48 hours was evaluated by use of log-rank analysis of survival curves and the *z* test for proportions.

RESULTS

6 of 15 WD-challenged CAT-vaccinated mice, 3 of 15 NP-challenged CAT-vaccinated mice, and 0 of 15 SP-challenged CAT-vaccinated mice survived until 48 hours. All adjuvant-only vaccinates survived ≤ 21 hours. Mean survival time of CAT vaccinates was longer than that of adjuvant-only vaccinates for all venoms (1,311 vs 368 minutes for WD, 842 vs 284 minutes for NP, and 697 vs 585 minutes for SP). Results of the *z* test indicated a significantly increased survival rate for vaccinates exposed to WD rattlesnake venom but not for vaccinates exposed to NP or SP rattlesnake venom. Log-rank analysis revealed a significant difference between survival curves of vaccinated versus unvaccinated mice exposed to NP but not WD or SP venom.

CONCLUSIONS AND CLINICAL RELEVANCE

CAT vaccination improved survival rate and survival time after challenge exposure with WD rattlesnake venom and may offer limited protection against NP rattlesnake venom but did not provide significant cross-protection against SP rattlesnake venom. (*Am J Vet Res* 2015;76:272–279)

In 2011, 5,700 incidents of snake envenomation in humans were reported by the American Association of Poison Control Hotlines.[1] The true number of envenomations likely is higher because reporting is not mandatory, many snakebites go unreported, some snake-bite victims do not seek treatment, and some treating physicians do not consult with a poison control center.[2,3] Although the incidence of rattlesnake envenomation in the pet population has not been quantified, it is thought to exceed that for humans (> 150,000 bites/y by 1 estimate[4]) because of a high rate of outdoor exposure, unreported or unnoticed incidents, and a presumed limited-threat judgment for bitten animals.[4,5]

A conditionally licensed WD rattlesnake (*Crotalus atrox*) toxoid vaccine is available for administration to dogs and horses at risk for snakebite and is intended to aid in the reduction of morbidity and deaths attributable to rattlesnake envenomation.[6,7] The authors are not aware of any data on evaluation of the effectiveness of the CAT vaccine in scientific journals.[8] Manufacturer data and advertisements suggest this CAT vaccine is efficacious against bites from WD rattlesnakes and also provides cross-protection against envenomation from other rattlesnake species.[9,a] However, analysis of snake venom reveals it to be a complex milieu of peptides and proteins, and venom from related species and subspecies of rattlesnakes can differ markedly in composition.[10-13] A vaccine that

ABBREVIATIONS

ADE	Antibody-dependent enhancement
CAT	*Crotalus atrox* toxoid
NP	Northern Pacific
OD	Optical density
SP	Southern Pacific
WD	Western diamondback

comprises venom from a single species might provide only limited protection against envenomation by other species of rattlesnakes. In California, companion animals are not typically exposed to WD rattlesnakes because these rattlesnakes are found only in sparsely populated areas in the southeast region of the state. Rather, pets are much more likely to encounter NP rattlesnakes (*Crotalus oreganus oreganus*) and SP rattlesnakes (*Crotalus oreganus helleri*), which inhabit heavily populated and traversed regions of central and coastal California. Therefore, we hypothesized that the CAT vaccine might provide limited cross-protection against 2 important species of rattlesnakes found in California. The purpose of the study reported here was to use rattlesnake envenomation of mice to evaluate the comparative effectiveness of the CAT vaccine against the venom of WD, NP, and SP rattlesnakes.

Materials and Methods

ANIMALS

Ninety specific pathogen–free outbred female Swiss Webster mice (4 to 6 weeks old) were obtained from a commercial source. Mice were allowed to acclimate for 72 hours. Mice were housed in groups (5 mice/cage) on corncob bedding with cotton nesting material in individually ventilated cages in an Association for Assessment and Accreditation of Laboratory Animal Care International–accredited biocontainment facility. All mice were fed standard laboratory rodent chow and provided with ad libitum access to reverse-osmosis-purified acidified water. The room was maintained at 20° to 21°C with relative humidity of 30% to 70%, 10 to 15 air changes/h, and a photoperiod of 12 hours of light to 12 hours of darkness. Use of the mice in this study was approved by the Institutional Animal Care and Use Committee of the University of California-Los Angeles.

EXPERIMENTAL PROCEDURES

A randomized, blinded, placebo-controlled study was conducted. On the basis of an a priori power analysis (power = 0.8, 0% censoring, and 50-to-50 ratio of control mice to experimental mice), the 90 mice were randomly selected by an individual unaffiliated with the study and assigned to treatment and control groups (45 mice/group). Treatment mice received an injection (0.2 mL, SC) of CAT vaccine[b] at day 0 and again at 4 weeks. Control mice received an injection (0.2 mL, SC) of pharmaceutical-grade aluminum hydroxide adjuvant[c] at day 0 and again at 4 weeks. Four weeks after administration of the second injection of CAT vaccine or adjuvant, mice were challenge-exposed with rattlesnake venom.

VENOM

The Society for the Study of Amphibians and Reptiles classification of the western rattlesnake (*Crotalus oreganus*) was used for the present study. The NP and SP rattlesnakes are 2 of 5 recognized subspecies of western rattlesnake, and the WD rattlesnake is a monotypic species with no recognized subspecies. Lyophilized WD rattlesnake venom was obtained.[d] The venom was collected from WD rattlesnakes throughout the range of these rattlesnakes within the United States. Venom of NP and SP rattlesnakes was collected from various regions throughout northern and southern California[14–16] **(Figure 1)**. Samples of NP rattlesnake venom were collected at Sanger (Fresno County), Sutter Butte (Sutter County), Lake Berryessa (Napa County), Vacaville (Solano County), Johnsondale (Tulare County), and Modesto (Stanislaus County). Samples of SP rattlesnake venom were collected at Rasnow Peak, Hidden Valley, Santa Rosa Valley, Carlisle Canyon, Lake Sherwood, and Oak Park (Ventura County); Acton, Castaic, Leona Valley, Topanga Canyon, Malibu Canyon, and Griffith Park (Los Angeles County); Oak Hills, Phelan, Devil's Canyon, and Big Bear (San Bernardino County); Idyllwild-Pine Cove and Garner Valley (Riverside County); and De Luz (San Diego County). Venom samples were processed in accordance with a standardized protocol. The final lyophilized venom product contained equal parts (vol/vol) from each sample location. In preliminary experiments, the LD_{50} was estimated for each venom on the basis of the animal-sparing up-and-down LD_{50} testing paradigm.[17–26] Those LD_{50} values then were used in the study as follows: WD rattlesnake venom, 2.8 mg/kg; NP rattlesnake venom, 1.7 mg/kg; and SP rattlesnake venom, 1.5 mg/kg. These LD_{50} values are similar to those published previously.[27–31]

Figure 1—Map of the distribution for WD rattlesnakes (*Crotalus atrox*; black-shaded area), NP rattlesnakes (*Crotalus oreganus oreganus*; light gray–shaded area), and SP rattlesnakes (*Crotalus oreganus helleri*; dark gray–shaded area) in California and locations for collection of venom samples (circles). The range of each of the rattlesnakes was obtained from previously published information.[14–16] Notice that major metropolitan population centers are located exclusively in the ranges of NP and SP rattlesnakes.

Table 1—Summary of survival data for mice inoculated with CAT vaccine or adjuvant only at 0 and 4 weeks and challenge-exposed 4 weeks later with venom of WD rattlesnakes (*Crotalus atrox*), NP rattlesnakes (*Crotalus oreganus oreganus*), and SP rattlesnakes (*Crotalus oreganus helleri*).

	WD rattlesnake venom		NP rattlesnake venom		SP rattlesnake venom	
Variable	**Vaccine**	**Adjuvant only**	**Vaccine**	**Adjuvant only**	**Vaccine**	**Adjuvant only**
No. of mice injected with venom	15	15	15	15	15	15
No. of mice that survived to 48 h after venom injection	6	0	3	0	0	0
Survival time (min)						
Mean	1,311	368	842	284	697	585
Minimum	121	238	82	160	295	114
Maximum*	2,880	422	2,880	401	1,440	1,269
P value†						
z test for proportions	0.006		0.068		—	
Log-rank analysis	0.146		0.010		0.166	

*An endpoint of 2,880 min (ie, 48 hours) for survival was determined prior to the study (ie, surviving mice were euthanized at 48 hours after venom injection). Despite the fact some mice were expected to live > 48 hours after venom injection, survival time was limited in this manner to avoid effects on reported mean survival times in surviving mice and is in accordance with commonly accepted practices for survival studies.[23] †Values were significant at $P \leq 0.05$.

— = Not applicable because there were no surviving mice in either of these groups.

VENOM CHALLENGE EXPOSURE

Three cohorts (30 mice/cohort [15 treated mice and 15 control mice]) were challenge-exposed with 1 of the 3 venoms at 4 weeks after the second injection of CAT vaccine or adjuvant. Venom was administered to each mouse via IP injection at twice the calculated LD_{50}. For injection, lyophilized venom was reconstituted in sterile water to create a stock solution of 5 mg/mL, which was then diluted as needed to provide the dose for administration. Mice were closely monitored for 48 hours after venom administration.

Before venom administration, body weight and baseline core body temperature were recorded. Temperature was obtained with a 1.5-cm-long thermistor probe inserted via the rectum into the colon; temperature was recorded once per hour for up to 10 hours and thereafter as needed. An observer who was unaware of the venom administered or vaccination status of the mice assessed their condition and determined when a mouse would be euthanized. Mice were euthanized by gradual-fill CO_2 inhalation when they became nonresponsive to stimuli, were in marked respiratory distress (agonal breathing or intermittent gasping), or had a prolonged period of moribundity (severely limited response to stimuli and core body temperature < 70% of the baseline core temperature for > 2 hours). Surviving mice were euthanized 48 hours after venom administration, and a postmortem blood sample was obtained via cardiocentesis.

ANTIBODY TITERS

Blood samples were collected from the retroorbital venous sinus of isoflurane-anesthetized mice 1 week before venom challenge exposure (ie, 3 weeks after the second injection of CAT vaccine or adjuvant) for use in determination of 2 sets of serum antibody titers. First, to verify that mice generated antibodies against the CAT vaccine, serial serum antibody titers of 3 randomly selected vaccinated mice were compared with serial serum antibody titers of 3 randomly selected adjuvant-only control mice. Second, to compare specificity of antibodies generated, dilutions (1:8,000) of serum obtained from 8 randomly selected vaccinated mice were tested against each of the 3 venoms. To generate serial titers and evaluate antibody specificity, 96-well ELISA plates were coated (100 µL/well) with reconstituted venom diluted in 0.1M carbonate buffer (1 µg/mL). Plates were sealed with acetate and incubated overnight at 22°C. After incubation, wells were washed (PBS solution with 0.05% Tween20) and then blocked by incubating on a plate shaker for 15 minutes at 22°C. Diluted serial serum samples were then applied to wells in triplicate. Plates were incubated on a plate shaker for 30 minutes at 22°C. Wells then were washed and horseradish peroxidase–conjugated goat anti-mouse IgG was added; plates were incubated on a plate shaker for 30 minutes at 22°C. Wells were then washed, and the chromogenic substrate tetramethylbenzidine was added. After incubation on a plate shaker for 10 minutes, the reaction was stopped by the addition of 2N sulfuric acid; plates then were immediately evaluated to determine the OD at 450 nm by use of an automated ELISA reader. The OD was used as an indicator of the presence of antivenom IgG as well as for comparisons of relative reactivity between venom types and general assessment of interindividual variation.

STATISTICAL ANALYSIS

Mean survival time in minutes and Kaplan-Meier survival curves were generated for the 3 venoms and saline (0.9% NaCl) solution control samples. A *z* test of proportions was used to compare survival rates of vaccinated versus control mice for all venoms. Log-rank analysis was used to compare Kaplan-Meier survival curves of vaccinated versus control mice for all venoms. Multilevel, mixed-effects linear regression modeling[e] was used to compare specificity of an antibody

titer of 1:8,000 for all venoms. Significance for all tests was set at $P \leq 0.05$.

Results

SURVIVAL RATE AND SURVIVAL TIME

Both survival rate and survival time were analyzed **(Table 1)**. For mice vaccinated with CAT vaccine, 6 of 15 mice challenge-exposed with WD rattlesnake venom, 3 of 15 mice challenge-exposed with NP rattlesnake venom, and 0 of 15 mice challenge-exposed with SP rattlesnake venom were alive at 48 hours after venom injection, whereas adjuvant-only control mice survived ≤ 21 hours after injection of any of the 3 rattlesnake venoms. Mean survival time of vaccinated mice was longer than that of adjuvant-only control mice for all venoms (1,311 vs 368 minutes for WD rattlesnake venom, 842 vs 284 minutes for NP rattlesnake venom, and 697 vs 585 minutes for SP rattlesnake venom). Survival analysis for individual venom revealed that results of the *z* test for proportions were significant ($P = 0.01$) only for WD rattlesnake venom. Log-rank analysis of survival curves revealed significant ($P = 0.01$) differences only for NP rattlesnake venom **(Figure 2)**. Maximum survival time was greatest for vaccinated mice, compared with survival time for adjuvant-only control mice, for all venoms. Notably, minimum survival time was greater for control mice than for vaccinated mice for both WD and NP rattlesnake venoms. This was evident on the Kaplan-Meier survival curve for WD rattlesnake venom as an initial increase in death of vaccinated mice, compared with that of control mice, at early time points (< 300 minutes after venom injection). Because of this finding, a log-rank analysis for WD rattlesnake venom that excluded early time points was conducted (n = 7 mice) and revealed a significant ($P = 0.004$) effect.

Student *t* test analysis of prestudy mean body weight and baseline core body temperature revealed that these variables did not differ significantly among any of the groups ($P = 0.08$ to 0.67; data not shown). No morbidity or deaths were associated with receiving the vaccine or adjuvant alone.

ANTIBODY TITERS

Antibody titers against all 3 rattlesnake venoms for the 3 vaccinated and 3 control mice were plotted **(Figure 3)**. Dilutions tested were 1:4,000, 1:8,000, 1:16,000, 1:32,000, 1:64,000, and 1:128,000. Mice vaccinated with CAT developed measurable antibody titers against all 3 venoms, whereas mice receiving only adjuvant had no evidence of reactive serum antibodies against any venom. The OD for a 1:8,000 dilution of serum obtained from 8 additional randomly selected vaccinated mice tested against all 3 venoms was plotted **(Figure 4)**. Comparison of OD for the various venoms suggested a decreasing reactivity as follows: the reactivity of WD rattlesnake venom was greater than that of NP rattlesnake venom, and the reactivity of NP rattlesnake venom was greater than that of SP rattlesnake venom. Analysis of a multilevel mixed-effects linear regression model with venom as the sole categorical predictor revealed significant ($P \leq 0.001$) differences in OD for each venom. Interindividual variation was also evident because the majority (6/8) of the mice had titers with OD values approaching or exceeding 1.0, whereas the remainder (2/8) had OD values < 0.5.

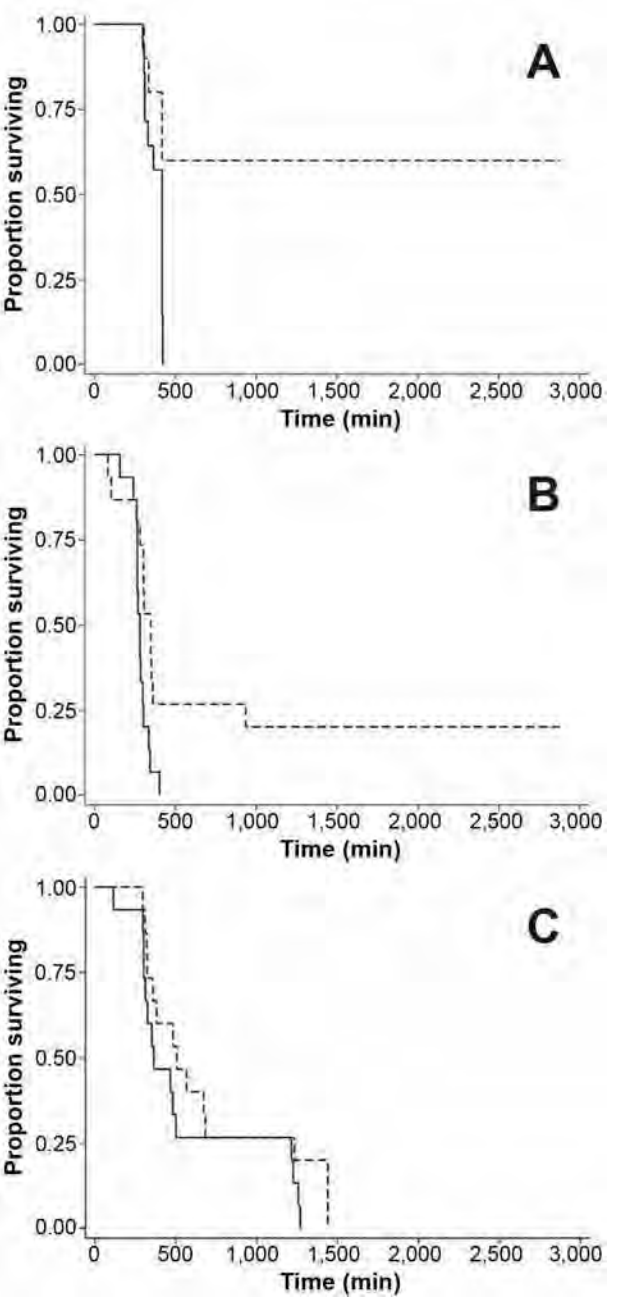

Figure 2—Kaplan-Meier survival curves for vaccinated mice (dashed lines) and adjuvant-only control mice (solid lines) after challenge exposure with WD rattlesnake venom (A), NP rattlesnake venom (B), and SP rattlesnake venom (C). There were 15 mice in each group. Time of challenge exposure (injection of venom) was designated as time 0. There was a significant ($P = 0.01$; log-rank analysis) difference in survival curves of vaccinated versus adjuvant-only mice after injection of only NP rattlesnake venom. In panel A, notice the possible early death phenomenon attributable to ADE of WD rattlesnake venom.

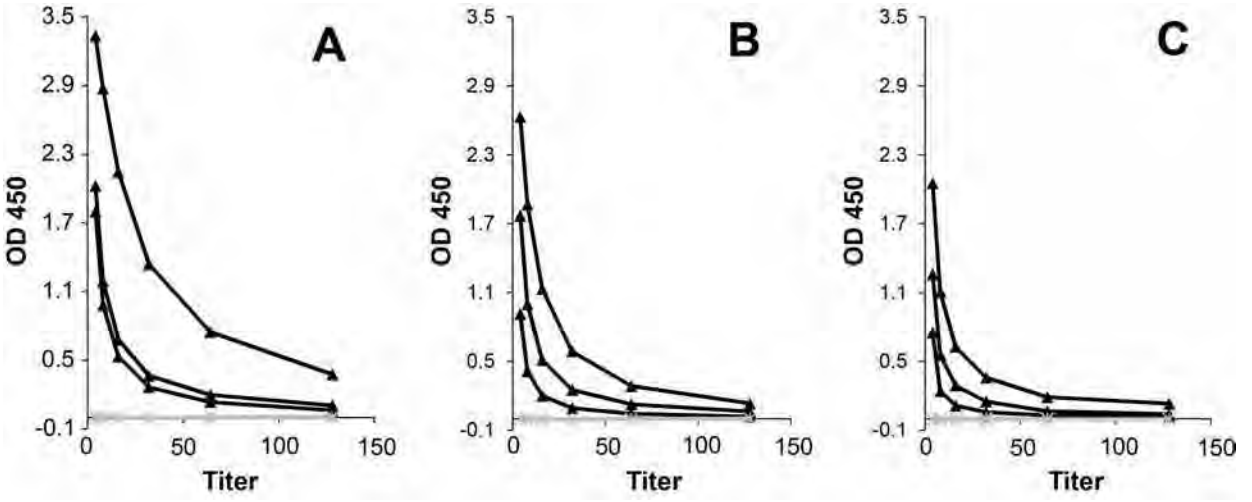

Figure 3—Serial serum dilution antibody titers for 3 vaccinated mice (black symbols) and 3 adjuvant-only control mice (gray symbols) against venom of WD rattlesnakes (A), NP rattlesnakes (B), and SP rattlesnakes (C) as determined by OD measured at 450 nm (OD 450). Each black symbol represents results for 1 mouse; the gray symbol represents results for 3 mice. Notice that the antibody response of vaccinated mice was greater than that of the control mice for all venoms. There was a pattern that specificity (ie, increased OD 450) was greater against venom of WD rattlesnakes than against venom of NP or SP rattlesnakes. The x-axis represents a dilution factor of 1:1,000. Dilutions tested were 1:4,000, 1:8,000, 1:16,000, 1:32,000, 1:64,000, and 1:128,000.

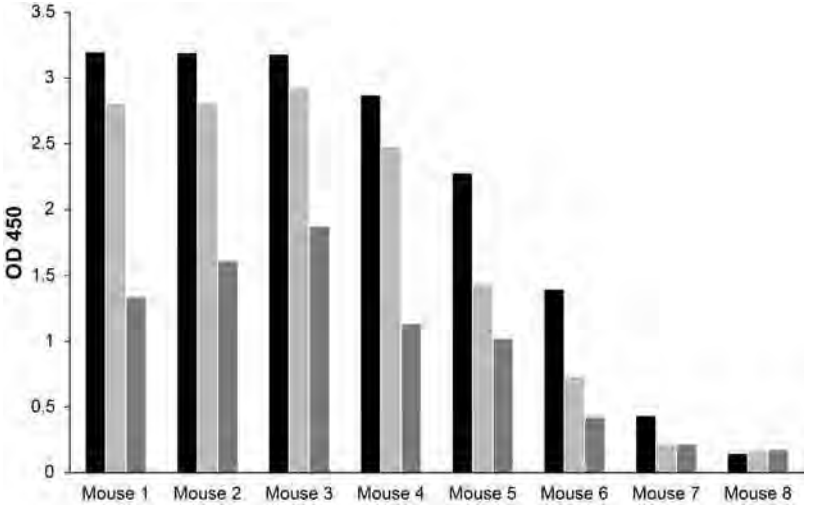

Figure 4—Single serum dilution (1:8,000) antibody titers for 8 randomly selected mice against venom of WD rattlesnakes (black bars), NP rattlesnakes (light gray bars), and SP rattlesnakes (dark gray bars). Notice the marked interindividual differences as well as differences in specificity among venoms (WD rattlesnake > NP rattlesnake > SP rattlesnakes venom). There was a significant ($P \leq 0.001$; multilevel mixed-effects linear regression) difference in OD 450 among venoms.

Discussion

In the present study, survival analysis after rattlesnake envenomation of mice was conducted in a randomized, blinded, placebo-controlled study to evaluate the comparative effectiveness of CAT vaccine against 3 rattlesnake venoms. The data reported included evaluation of survival rate (whether a mouse died ≤ 48 hours after venom injection) as well as evaluation of survival time (number of minutes a mouse survived after venom injection, up to 48 hours). Survival time is an important consideration in light of the fact a venom vaccine may be useful if it extends the course of the envenomation, thereby allowing additional time to seek primary medical treatments such as antivenin and intensive care. In addition, antibody titers of vaccinated and adjuvant-only control mice were compared as well as specificity of the antibodies generated against each of the 3 venoms. Overall, results of the challenge-exposure experiment indicated that CAT vaccination resulted in a significant increase in survival rate and survival time against injection with WD rattlesnake venom; equivocal results after injection of NP rattlesnake venom, which would likely require a greater number of mice to verify a difference; and no significant improvement in survival measures after injection of SP rattlesnake venom. Analysis of antibody titers revealed a clearly measurable antibody response in vaccinated mice, compared with that in adjuvant-only control mice, against all 3 venoms. The antibodies were most reactive against WD rattlesnake venom, with significantly less reactivity against venoms of the 2 other rattlesnake species.

Analysis of the data for the present study indicated that administration of CAT vaccine conferred an increase in survival rate and survival time in vaccinated versus control mice challenge-exposed with WD rattlesnake venom. Mean survival time was greater in vaccinated than in control mice, and survival rate improved significantly ($P = 0.01$; z test for proportions). Unexpectedly, results for log-rank analysis of

survival curves did not reveal significant differences. This result was particularly surprising because challenge exposure with NP rattlesnake venom had a significant effect, as determined by use of log-rank analysis, despite the fact there were only half as many survivors as for challenge exposure with WD rattlesnake venom. Notably, minimum survival time was greater for control versus vaccinated mice for both WD and NP rattlesnake venom (Table 1). This was also evident on the Kaplan-Meier survival curve for WD rattlesnake venom as an initial increase in death of vaccinated versus adjuvant-only control mice at early time points (< 300 minutes after venom injection; Figure 2). The early deaths may have sufficiently altered early time points of the curve of vaccinated mice after injection of WD rattlesnake venom such that statistical modeling resulted in a curve for vaccinated mice that was indiscernible from the curve for the control mice, despite the clear difference at later time points ($P = 0.004$ for log-rank analysis after 300 minutes). We propose that the early deaths could have been attributable to 1 factor or a combination of factors, such as genetic predisposition to venom sensitivity, injection near or into a vascular bed that hastened systemic exposure to venom, or an antibody-mediated early death phenomenon that has been observed in a laboratory setting when testing vaccines against viruses and bacterial toxins.[32–39]

Use of the vaccine may afford limited cross-protection against NP rattlesnake venom; however, the data are not entirely conclusive. Mean survival rate of vaccinated mice significantly ($P = 0.01$; log-rank analysis of survival curves) exceeded that of adjuvant-only control mice, which suggested a protective effect. However, results of the z test for proportions of survival time did not reveal significant ($P = 0.07$) differences. However, it is plausible that testing a larger population of mice may have allowed us to detect a more subtle effect by use of the z test of proportions.

The vaccine did not provide significant protection against SP rattlesnake venom, although the mice with the greatest survival time were in the vaccinated group. The CAT vaccine may have been less effective against SP rattlesnake venom because of the divergent molecular composition of that venom. For example, 1 population of SP rattlesnakes can produce Mojave toxin, a unique and powerful neurotoxin, which to date has not been found in WD or NP rattlesnake venoms.[15,40]

In addition to survival analysis, antibody titers were measured in a number of mice to verify an antibody response against the CAT vaccine (Figure 3). Compared with control mice, vaccinated mice had a variably robust antibody response, and initial titers suggested that the antibodies were more specific for WD rattlesnake venom than for the NP or SP rattlesnake venoms. On the basis of this observation, sera from 8 randomly selected vaccinated mice were evaluated for antibody specificity against each of the 3 venoms evaluated in the study (Figure 4). Linear regression analysis revealed significantly increased OD against WD rattlesnake venom, as compared with results against SP or NP rattlesnake venoms. The analysis indicated that antibodies generated by mice were most specific against the venom of manufacture (ie, WD rattlesnake venom), compared with specificity against the other 2 genetically distinct venoms. It should be emphasized that antibody titers were measured only to verify that mice generated an antibody response against the vaccine and to evaluate the specificity of that antibody response. The magnitude of the murine antibody response and how it may relate to survival of vaccinated dogs and horses (or the ability of clinicians to provide a prognosis for survival of vaccinated animals) in real-life situations were beyond the scope of the present study.

The present study had several potential confounders. First, on the basis of a previous manufacturer-designed study,[a] mice in the present study were injected with a vaccine dose of 0.2 mL, which could be from 50- to 1,500-fold as high (by volume) as manufacturer-recommended doses for dogs and horses.[6,7] Potentially, this could have resulted in a more robust antibody response and more enhanced protective benefit than typically would be afforded to companion animals. On the other hand, it should be mentioned that mice were challenge-exposed with an extremely high (twice the LD_{50}) dose of venom administered via the IP route commonly used in venom studies on mice. In most naturally occurring scenarios, companion animals receive SC or IM injection of venom, which results in slower and less immediately severe systemic effects[41] than were seen in the mice of the study reported here. In light of this, findings for the present study should be considered with the caveat that, in theory, the vaccine may improve survival rate and survival time, but these improvements remain to be definitively verified in practice settings for the specific species and situations of interest. Finally, it should be mentioned that we evaluated survival rate and survival time but did not directly assess morbidity. In actual envenomations, local effects such as severe necrosis, hemorrhage, and inflammation can cause substantial morbidity, which potentially can lead to severe incapacitation and death.[42–45] It remains to be determined whether vaccination has substantial effects to prevent or reduce important local sequelae after snake envenomation. Despite these drawbacks, there are a number of reasons investigators should use the described method of envenomation of mice, including that it is a well-accepted technique for venom analysis and antivenin evaluation, adheres to the concept of replacement in research (ie, use of mice instead of dogs or horses), and has been used in experiments conducted by the manufacturer to obtain USDA licensing for the CAT vaccine.

Data from the rattlesnake envenomation of mice reported here indicated that administration of the CAT vaccine resulted in a significant increase in survival

rate and survival time after injection of WD rattlesnake venom, equivocal results after injection of NP rattlesnake venom (possibly requiring a greater number of animals to confirm a difference), and no significant improvement in survival variables after injection of SP rattlesnake venom. Analysis of antibody titers confirmed a measurable antibody response in vaccinated versus adjuvant-only control mice and confirmed that specificity of the antibody response was significantly greater against the venom of manufacture. Overall, results of the present study suggested that vaccination with the CAT vaccine may provide limited cross-protection against NP rattlesnake venom but no significant cross-protection against SP rattlesnake venom. Future studies should include more in-depth analysis of antibody titers, testing of alternative vaccination strategies involving other venoms, and investigation into early deaths seen in some of the vaccinated mice. Such studies will be useful in validating results of the present study and providing increased insight into the real-world effectiveness of a rattlesnake venom vaccine.

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Footnotes

a. Taylor J, Moody L, Pollock H, et al. *Crotalus atrox* toxoid elicits a venom neutralizing antibody response in vaccinated dogs (abstr), in *Proceedings*. Western Vet Conf 2005.
b. Rattlesnake vaccine for dogs, serial No. 13-082, US veterinary license No. 407, Red Rocks Biologics, Woodland, Calif.
c. Alhydrogel 2%, lot No. AHG-35-01, InvivoGen Inc, San Diego, Calif.
d. Lot No. CAT 1412, Kentucky Reptile Zoo, Slade, Ky.
e. STATA, version 13, StataCorp, College Station, Tex.

References

1. Mowry JB, Spyker DA, Cantilena LR Jr, et al. 2012 Annual report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 30th annual report. *Clin Toxicol (Phila)* 2013;51:949–1229.
2. Gold BS, Dart RC, Barish RA. Bites of venomous snakes. *N Engl J Med* 2002;347:347–356.
3. Langley RL, Morrow WE. Deaths resulting from animal attacks in the United States. *Wilderness Environ Med* 1997;8:8–16.
4. Peterson M, Meerdink G. Venomous bites and stings. In: Kirk RW, ed. *Current veterinary therapy X*. Philadelphia: WB Saunders Co, 1989;177–186.
5. Berdoulay P, Schaer M, Starr J. Serum sickness in a dog associated with antivenin therapy for snake bite caused by *Crotalus adamanteus*. *J Vet Emerg Crit Care* 2005;15:206–212.
6. *Crotalus atrox* toxoid vaccine, canine [package insert]. Woodland, Calif: Red Rocks Biologics, 2013.
7. *Crotalus atrox* toxoid vaccine, equine [package insert]. Woodland, Calif: Red Rocks Biologics, 2014.
8. Armentano RA, Schaer M. Overview and controversies in the medical management of pit viper envenomation in the dog. *J Vet Emerg Crit Care (San Antonio)* 2011;21:461–470.
9. Hudson D. Once bitten.... *Covey Rise Magazine* 2007;Summer.
10. Aird SD. A quantitative assessment of variation in venom constituents within and between three nominal rattlesnake subspecies. *Toxicon* 1985;23:1000–1004.
11. Anaya M, Eppie D, Lieb CS, et al. Antibody detection of venom protein variation within a population of the rattlesnake *Crotalus v. viridis*. *J Herpetol* 1992;26:473–482.
12. Chippaux JP, Williams V, White J. Snake venom variability: methods of study, results and interpretation. *Toxicon* 1991;29:1279–1303.
13. Minton SA, Weinstein SA. Geographic and ontogenic variation in venom of the western diamondback rattlesnake (*Crotalus atrox*). *Toxicon* 1986;24:71–80.
14. Gloyd HK. The *viridis* group. In: *Special publication No. 4. The rattlesnakes, genera* Sistrurus *and* Crotalus. Chicago: Chicago Academy of Science, 1940;4:212–217.
15. French WJ, Hayes WK, Bush SP, et al. Mojave toxin in venom of *Crotalus helleri* (southern Pacific rattlesnake): molecular and geographic characterization. *Toxicon* 2004;44:781–791.
16. Douglas ME, Douglas MR, Schuett GW, et al. Phylogeography of the western rattlesnake (*Crotalus viridis*) complex, with emphasis on the Colorado Plateau. In: Schuett GW, Höggren M, Douglas ME, et al, eds. *Biology of the vipers*. Eagle Mountain, Utah: Eagle Mountain Publishing, 2002;11–50.
17. Rispin A, Farrar D, Margosches E, et al. Alternative methods for the median lethal dose (LD(50)) test: the up-and-down procedure for acute oral toxicity. *ILAR J* 2002;43:233–243.
18. Yam J, Reer PJ, Bruce RD. Comparison of the up-and-down method and the fixed-dose procedure for acute oral toxicity testing. *Food Chem Toxicol* 1991;29:259–263.
19. Environmental Protection Agency. Health effects test guidelines OPPTS 870.1100 acute oral toxicity. In: *Prevention, pesticides and toxic substances*. Washington, DC: US Government Printing Agency, 2002;1–35.
20. Dixon WJ, Massey FJ. Sensitivity experiments. In: *Introduction to statistical analysis*. 4th ed. New York: McGraw-Hill, 1983;428–441.
21. Sevcik C. LD50 determination: objections to the method of Beccari as modified by Molinengo. *Toxicon* 1987;25:779–783.
22. Organisation for Economic Co-operation and Development Environment Directorate. *Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology: guidance document on the recognition, assessment, and use of clinical signs as humane endpoints for experimental animals used in safety evaluation*. Series on testing and assessment No. 19. Paris: Organisation for Economic Co-operation and Development, 2000. Available at: ntp.niehs.nih.gov/iccvam/suppdocs/feddocs/oecd/oecd_gd19.pdf. Accessed Oct 22, 2014.
23. Organisation for Economic Co-operation and Development. Test No. 407 repeated dose 28-day oral toxicity study in rodents. In: *OECD guidelines for testing of chemicals*. Paris: Organisation for Economic Co-operation and Development, 2008. Available at: www.oecd-ilibrary.org/docserver/download/9740701e.pdf?expires=1413997327&id=id&accname=guest&checksum=F804CB5043DE166D0AAD9B6577A7FBA5. Accessed Oct 22, 2014.
24. Rowe AH, Rowe MP. Physiological resistance of grasshopper mice (*Onychomys* spp.) to Arizona bark scorpion (*Centruroides exilicauda*) venom. *Toxicon* 2008;52:597–605.
25. Dixon WJ. The up-and-down method for small samples. *J Am Stat Assoc* 1965;60:967–978.
26. Bruce RD. An up-and-down procedure for acute toxicity testing. *Fundam Appl Toxicol* 1985;5:151–157.
27. Chiszar D, Walters A, Urbaniak J, et al. Discrimination between envenomated and nonenvenomated prey by western diamondback rattlesnakes (*Crotalus atrox*): chemosensory consequences of venom. *Copeia* 1999;1999:640–648.
28. Mackessy SP. Evolutionary trends in venom composition in the western rattlesnakes (*Crotalus viridis sensu lato*): toxicity vs. tenderizers. *Toxicon* 2010;55:1463–1474.
29. Tu AT. Venom yield and lethal toxicity. In: *Rattlesnake venoms, their actions and treatment*. New York: M. Dekker, 1982;105.
30. Russell FE. Chemistry and pharmacology. In: *Snake venom*

poisoning. Reprint edition with corrections. Great Neck, NY: Scholium International, 1983;159.
31. Ernst CH, Ernst EM. *Crotalus organus*. In: *Venomous reptiles of the United States, Canada, and northern Mexico*. Baltimore: Johns Hopkins University Press, 2011;190.
32. Barrett AD, Gould EA. Antibody-mediated early death in vivo after infection with yellow fever virus. *J Gen Virol* 1986;67:2539–2542.
33. Blancou J, Andral B, Andral L. A model in mice for the study of the early death phenomenon after vaccination and challenge with rabies virus. *J Gen Virol* 1980;50:433–435.
34. Haubrich RH, Takeda A, Koff W, et al. Studies of antibody-dependent enhancement of human immunodeficiency virus (HIV) type 1 infection mediated by Fc receptors using sera from recipients of a recombinant gp160 experimental HIV-1 vaccine. *J Infect Dis* 1992;165:545–548.
35. He X, Sun X, Wang J, et al. Antibody-enhanced, Fc gamma receptor-mediated endocytosis of *Clostridium difficile* toxin A. *Infect Immun* 2009;77:2294–2303.
36. Mohamed N, Li J, Ferreira CS, et al. Enhancement of anthrax lethal toxin cytotoxicity: a subset of monoclonal antibodies against protective antigen increases lethal toxin-mediated killing of murine macrophages. *Infect Immun* 2004;72:3276–3283.
37. Porterfield JS. Antibody-mediated enhancement of rabies virus. *Nature* 1981;290:542.
38. Prabhakar BS, Nathanson N. Acute rabies death mediated by antibody. *Nature* 1981;290:590–591.
39. Vennema H, de Groot RJ, Harbour DA, et al. Early death after feline infectious peritonitis virus challenge due to recombinant vaccinia virus immunization. *J Virol* 1990;64:1407–1409.
40. Jurado JD, Rael ED, Lieb CS, et al. Complement inactivating proteins and intraspecies venom variation in *Crotalus oreganus helleri. Toxicon* 2007;49:339–350.
41. Chippaux JP. Toxicokinetics. In: *Snake venoms and envenomations*. Malabar, Fla: Krieger Publishing Co, 2006;112–115.
42. Dickinson CE, Traub-Dargatz JL, Dargatz DA, et al. Rattlesnake venom poisoning in horses: 32 cases (1973–1993). *J Am Vet Med Assoc* 1996;208:1866–1871.
43. Fielding CL, Pusterla N, Magdesian KG, et al. Rattlesnake envenomation in horses: 58 cases (1992–2009). *J Am Vet Med Assoc* 2011;238:631–635.
44. Hoose JA, Carr A. Retrospective analysis of clinical findings and outcome of cats with suspected rattlesnake envenomation in Southern California: 18 cases (2007–2010). *J Vet Emerg Crit Care (San Antonio)* 2013;23:314–320.
45. Hackett TB, Wingfield WE, Mazzaferro EM, et al. Clinical findings associated with prairie rattlesnake bites in dogs: 100 cases (1989–1998). *J Am Vet Med Assoc* 2002;220:1675–1680.

William K. Hayes, Ph.D.

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Department of Earth and Biological Sciences
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5 June 2015

To whom it concerns,

I am writing this letter in support of James McCabe and Jim Brockett, who intend to develop a new rattlesnake vaccine for dogs and horses that is specifically formulated for California snake species. The current vaccine, produced by Red Rock Biologics, consists of heat-treated Western Diamondback Rattlesnake (*Crotalus atrox*) venom. My own unpublished research shows that this venom is highly dissimilar to that of most California rattlesnake species (the Red Diamond Rattlesnake, *Crotalus ruber*, being an exception), and therefore will not generate protective antibodies to other rattlesnake venoms. Indeed, a recent publication by James McCabe has shown that the current vaccine provides no protection against the bites inflicted by the most commonly encountered species of rattlesnake on the west coast, *Crotalus oreganus*.

The production of such a vaccine will require the maintenance of multiple snakes from many locations within the state, as there are geographic variations in venom composition. My understanding is that Mr. Brockett and Mr. McCabe are requesting an exemption from the current bag limit regulations for this reason. In addition to their need for production of this vaccine, their extraction of venom from these snakes would also comprise a valuable resource for other academic and biomedical researchers, as there is currently no existing supplier of locality-specific rattlesnake venom for species native to California. I will share with Mr. Brockett and Mr. McCabe my unpublished data on geographic variation in venom of all California rattlesnake taxa so that they can plan accordingly which geographic locations to focus on, thereby reducing the total number of snakes they would need to sample and maintain (though the number will still exceed the current limit).

Both Mr. Brockett and Mr. McCabe are uniquely qualified to accomplish this goal, as they have a combined total of over 80 years of experience working with venomous reptiles and currently hold permits to maintain nonnative venomous snakes. Mr. Brockett is one of the most successful and respected animal trainers in the film industry. Mr. McCabe has worked in biomedical research for over 30 years. His experience includes working in the Venom Research Laboratory of Dr. Findley Russell at USC, and he has graciously provided my own laboratory with venom samples.

In conclusion, I believe the proposed project will benefit pets as well as the research community. Please feel free to contact me if you have any questions regarding this letter of support.

All best wishes,

William K. Hayes, Ph.D.
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Intraspecific venom variation in the medically significant Southern Pacific Rattlesnake (*Crotalus oreganus helleri*): Biodiscovery, clinical and evolutionary implications

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Crotalus

ABSTRACT

Due to the extreme variation of venom, which consequently results in drastically variable degrees of neutralization by CroFab antivenom, the management and treatment of envenoming by *Crotalus oreganus helleri* (the Southern Pacific Rattlesnake), one of the most medically significant snake species in all of North America, has been a clinician's nightmare. This snake has also been the subject of sensational news stories regarding supposed rapid (within the last few decades) evolution of its venom. This research demonstrates for the first time that variable evolutionary selection pressures sculpt the intraspecific molecular diversity of venom components in *C. o. helleri*. We show that myotoxic β-defensin peptides (aka: crotamines/small basic myotoxic peptides) are secreted in large amounts by all populations. However, the mature toxin-encoding nucleotide regions evolve under the constraints of negative selection, likely as a result of their non-specific mode of action which doesn't enforce them to follow the regime of the classic predator–prey chemical arms race. The hemorrhagic and tissue destroying snake venom metalloproteinases (SVMPs) were secreted in larger amounts by the Catalina Island and Phelan rattlesnake populations, in moderate amounts in the Loma Linda population and in only trace levels by the Idyllwild population. Only the Idyllwild population in the San Jacinto Mountains contained potent presynaptic neurotoxic phospholipase A_2 complex characteristic of Mohave Rattlesnake (*Crotalus scutulatus*) and Neotropical Rattlesnake (*Crotalus durissus terrificus*). The derived heterodimeric lectin toxins characteristic of viper venoms, which exhibit a diversity of biological activities, including anticoagulation, agonism/antagonism of platelet activation, or procoagulation, appear to have evolved under extremely variable selection pressures. While most lectin α- and β-chains evolved rapidly under the influence of positive Darwinian selection, the β-chain lectin of the

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Catalina Island population appears to have evolved under the constraint of negative selection. Both lectin chains were conspicuously absent in both the proteomics and transcriptomics of the Idyllwild population. Thus, we not only highlight the tremendous biochemical diversity in *C. o. helleri*'s venom-arsenal, but we also show that they experience remarkably variable strengths of evolutionary selection pressures, within each toxin class among populations and among toxin classes within each population. The mapping of geographical venom variation not only provides additional information regarding venom evolution, but also has direct medical implications by allowing prediction of the clinical effects of rattlesnake bites from different regions. Such information, however, also points to these highly variable venoms as being a rich source of novel toxins which may ultimately prove to be useful in drug design and development.

Biological significance

- These results have direct implications for the treatment of envenomed patients.
- The variable venom profile of *Crotalus oreganus helleri* underscores the biodiscovery potential of novel snake venoms.

1. Introduction

Knowledge of venom composition has increased dramatically with improvements in technology and the advent of new techniques, in particular the use of mass spectrometry in venom proteomics [1–15] and venom gland transcriptome analysis [16–27]. Snake venoms are complex secretions composed of numerous enzymes, toxins, peptides, small organic molecules, and inorganic components that have diverse modes of action on both prey and human victims [28–32]. Snake venom serves both predatory and defensive purposes [28–30,33–38]. Variation in venom profiles has been shown between species within the same genus [5,11,12,15,27,39–44] and between individuals within the same species, with the intraspecific differences found among geographic locales [2,11,12,45–52], between sexes [46,47,53] and between juveniles and adults [9,46,47,54,55]. Venom variation has also been reported between venom glands of a single individual [56]. Some authors have argued that venom diversity is the product of neutral evolutionary processes and not subject to natural selection [57,58], whereas others have argued that strong natural selection has driven adaptation to particular prey species [12,30,31,40,46,47,59–63].

Venom in reptiles originated from a single early recruitment event approximately 180 million years ago (mya) during the early Jurassic period and is a plesiotypic trait of the Toxicofera clade [10,12,18,20–23,30,31,40,64]. New World pit vipers are thought to have descended from a single ancestral Asian pit viper species that colonized the New World via the Bering land bridge [65,66], with rattlesnakes having a mid-Cenozoic origin in the Mexican highlands [67–69]. The venom arsenals of Crotaline snakes are characterized by a great diversity of venom-components; generalized venom "types" have been proposed, depending upon metalloprotease activity and toxicity [70]. Type I venoms possess high levels of metalloprotease activity and lower toxicity (>1.0 μg/g mouse body weight), whereas type II venoms have low metalloprotease activity and higher toxicity (<1.0 μg/g mouse body weight). The presence of these two venom types in a diversity of well-defined species clades suggests that it is not dependent upon phylogeny [49,52,70–72].

Crotalus oreganus helleri is a medium-sized rattlesnake inhabiting Baja California northward through southern California, and the Pacific islands of Santa Catalina (Los Angeles County, California) and Coronado Del Sur (Tijuana, Mexico) [67]. Pronounced tectonic activity in the region has produced considerable variation in available habitat [73]. The species utilizes habitat ranging from sea level to >3000 m and prey encountered are highly varied. Significant regional variation in venom composition exists [51,74], with both type I and type II venoms identified in local populations [49]; however this dichotomy of venom types fails to characterize the full extent of venom variability in the species. *C. o. helleri* is the most medically relevant species of the region and is responsible for the majority of severe envenomations in southern California [29,75]. Therefore, determining intraspecific variation of *C. o. helleri* venom components and the factors influencing their molecular evolution can yield important implications for clinical treatment of envenomation. Venom variation also offers substantial potential for bioprospecting and pharmaceutical discovery [8,18–23,30,40,76]. These variations have been the subject of many popular press reports that grossly misattribute them to unparalleled recent diversification of the venom [77] and thus display a fundamental lack of understanding on how venom evolves.

In this study, we investigated the diversity of toxins present in *C. o. helleri*, across its geographic range, using a combined proteomics–transcriptomics approach to investigate the relative molecular evolution and diversification within a given toxin type, and the relative expression levels of particular toxin types.

2. Materials and methods

2.1. Sampling

We sampled four southern California populations of *C. o. helleri* from areas with pronounced geological, elevational, and floristic differences. Human envenomations from snakes in these

different regions have exhibited distinct symptoms ranging from hemorrhage to muscle fasciculations to paralysis. The four populations chosen (Fig. 1) were: (1) Catalina Island, which is dominated by coastal sage scrub, interspersed with chaparral and oak woodland, has never been connected to the mainland [73] and has supported an isolated population since at least the Pleistocene; (2) Idyllwild in the San Jacinto Mountains has high altitude pine and cedar montane forests (elevation ~1600 m); (3) Loma Linda consists of low rolling hills covered with grasses and, on north facing slopes, *Salvia mellifera* and other shrubs; and (4) Phelan comprises a transition zone between High Desert (Mohave) and coastal mountain scrub. We sampled one snake from each region for transcriptome sequencing. We used the same snake for proteome analysis of the Phelan and Loma Linda populations, and a separate individual of same sex and size from the exact same locality for the other two locations in addition to two more specimens for each location other than Loma Linda, for which only one more specimen was obtained due to the rarity of *C. o. helleri* in this location. We used only adult specimens for venom analysis due to potential ontogenetic shifts in venom composition [9,70].

2.2. Transcriptome sequencing, phylogenetics, selection analyses, and structural analyses

2.2.1. Transcriptome sequencing

Total RNA was extracted from venom glands using the standard TRIzol Plus method (Invitrogen). Extracts were enriched for mRNA using standard RNeasy mRNA mini kit (Qiagen) protocol. mRNA was reverse transcribed, fragmented and ligated to a unique 10-base multiplex identifier (MID) tag prepared using standard protocols and applied to one PicoTitrePlate (PTP) for simultaneous amplification and sequencing on a Roche 454 GS FLX + Titanium platform (Australian Genome Research Facility). An average of 50,000 sequences were read for each library. Automated grouping and analysis of sample-specific MID reads informatically separated sequences from the other transcriptomes on the plates, which were then post-processed to remove low quality sequences before de novo assembly into contiguous sequences (contigs) using v 3.4.0.1 of the MIRA software program. Assembly details for the transcriptomes are shown in Supplementary Table 1. All raw reads have been deposited in the NCBI Sequence Read Archive (http://www.ncbi.nlm.nih.gov/sra/) with the accession numbers of: SRR871501 *C. o. helleri* (Catalina Island), SRR871502 *C. o. helleri* (Idyllwild), SRR871503 *C. o. helleri* (Loma Linda), and SRR871504 *C. o. helleri* (Phelan). Assembled contigs were processed using CLC Main Work Bench (CLC-Bio) and Blast2GO bioinformatic suite to provide Gene Ontology, BLAST and domain/Interpro annotation. The above analyses assisted in the rationalization of the large numbers of assembled contigs into phylogenetic 'groups' for detailed phylogenetic analyses outlined below.

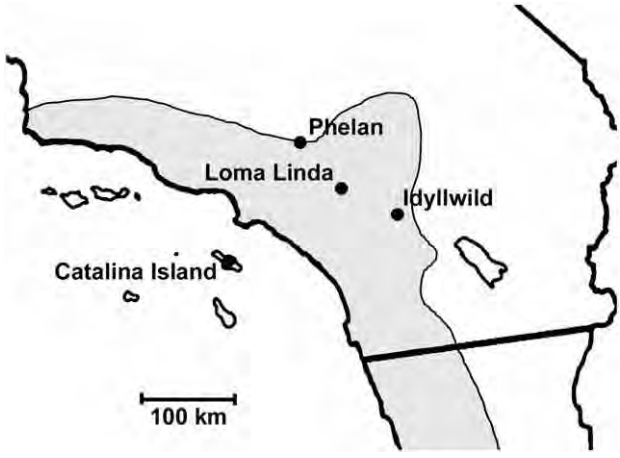

Fig. 1 – *C. o. helleri* populations investigated.

2.2.2. Selection analyses

Translated nucleotide sequences were aligned using MUSCLE 3.8 [78] and the alignments were manually inspected to rectify errors. All nucleotide sequences and multiple sequence alignments used for selection analyses are available as Supplementary file 2 and Supplementary Figs. 1–4, respectively. In order to reconstruct gene phylogenies for selection assessments, maximum-likelihood method implemented in PhyML [79] was employed on the nucleotide datasets and node support was evaluated with 1000 bootstrapping replicates. All the maximum-likelihood trees are provided as Supplementary Figs. 5–7, with the results of branch-site REL test mapped onto them. In order to detect the nature of selection and its influence on various venom-encoding genes of *C. o. helleri*, we utilized maximum-likelihood models implemented in Codeml of the PAML [80]. We employed site-specific models that estimate positive selection statistically as a non-synonymous-to-synonymous nucleotide-substitution rate ratio (ω) significantly greater than 1. For technical details regarding models/methods see [20,81]. FUBAR [82] implemented in HyPhy [83] was employed to provide additional support to the aforementioned analyses and to detect sites evolving under the influence of pervasive diversifying and purifying selection pressures. Mixed Effects Model Evolution (MEME) [82] was also employed to efficiently detect episodically diversifying sites. To clearly depict the proportion of sites under different regimes of selection, an evolutionary fingerprint analysis was carried out using the evolutionary selection distance (ESD) algorithm implemented in Datamonkey [84]. We further utilized the branch-site Random Effects Likelihood (REL) test [85] to identify lineages evolving under the influence of episodic diversifying selection pressures.

2.2.3. Structural analyses

To depict the natural selection pressures influencing the evolution of various *C. o. helleri* venom-components (only those with sufficient numbers of full-length sequences were analyzed in this regard: β-defensin, kallikrein and lectin), we mapped the sites under positive selection on the homology models created using Phyre 2 web server [86]. PyMOL 1.3 [87] was used to visualize and generate the images of homology models. ConSurf web server [88] was used for mapping the evolutionary selection pressures on the three-dimensional homology models.

Homology models of the presynaptic PLA_2 complex from *C. o. helleri* (Coh) (GenBank: GAKR01000015 [acid subunit] and GenBank: GAKR01000016 [basic subunit]) and the homologue from *Crotalus scutulatus scutulatus* (Css) (UniProt: P18998 [acid subunit] and UniProt: P62023 [basic subunit]) were built using the crystal structure of crotoxin from *Crotalus durissus terrificus* (Cdt)

(PDB: 3R0L; UniProt: P08878 [acid subunit]; UniProt: P0CG56 [basic subunit]) [89] as a template. Template to sequence alignments were generated using SPDBV [90,91] and exported as FASTA-formatted text. The 3R0L coordinates together with the alignment file were used for comparative modeling using MODELLER [92]. Images of these homology models were obtained using VMD [93] and Tachyon ray tracing. Charged surfaces were obtained by running the Adaptive Poisson–Boltzmann Solver APBS plug-in [94] to VMD. Representation in VMD was set to "orthographic", depth cueing was set to "off", and render mode was set to "GLSL".

2.3. *Proteomics*

2.3.1. *HPLC*

Lyophilized crude venom was diluted to a concentration of 3 mg/mL in Buffer A (0.065% TFA, 2% acetonitrile in Nanopure water) and centrifuged at 15,000 *g* for 10 min. The supernatant (100 μL) was fractionated on an ÄKTAmicro high-pressure liquid chromatography (HPLC) system (GE Healthcare Life Sciences, Piscataway, NJ, USA) fitted with two reversed-phase (RP) columns (SOURCE 5RPC ST polystyrene/divinyl benzene, 4.6 × 150 mm; GE Healthcare) run in series at a flow rate of 0.5 mL/min, using a linear gradient of 0–100% Buffer B (0.05% TFA, 80% acetonitrile in Nanopure water) over 40 column volumes. Protein elution was monitored at 214 nm using Unicorn 5.0 (GE Healthcare Life Sciences) software, and fractions were collected manually.

2.3.2. *LC–MS*

Each fraction was subjected to reduction and alkylation prior to enzymatic digestion using dithiothreitol and iodoacetamide, respectively, following the protocol outlined by Matsudaira [95]. Proteins were then digested with proteomics-grade porcine pancreatic trypsin (Sigma-Aldrich, St. Louis, MO, USA). We desalted samples using C_{18} ZipTips (EMD Millipore, Billerica, MA, USA) according to the manufacturer's protocol. The desalted tryptic peptides were resuspended in mobile phase A (2% acetonitrile, 0.1% formic acid in water). Liquid chromatography was conducted on a ThermoFinnigan LCQ Deca XP spectrometer (ThermoFinnigan, Waltham, MA, USA) equipped with a PicoView 500 nanospray apparatus using Xcalibur software (ver. 1.3; ThermoFinnigan, Waltham, MA, USA) for instrument control and data acquisition. Separation was performed on a 10-cm × 75-μm-i.d. C18 BioBasic bead column (New Objective, Woburn, MA, USA) by injecting 20-μL samples. Mobile phase B consisted of 98% acetonitrile, 2% water, and 0.1% formic acid. The gradient program was: 0% B at 0.18 mL/min for 7.5 min; 0% B at 0.35 mL/min for 0.5 min; linear gradient to 20% B at 15 min at 0.35 mL/min; linear gradient to 75% B at 55 min at 0.3 mL/min (flow rate constant for remainder of the program); linear gradient to 90% B at 60 min; hold at 90% B until 85 min; linear gradient to 0% B at 90 min; hold at 0% B until 120 min. Spectra were acquired in positive ion mode with a scan range of 300–1500 m/z. We converted MS/MS data into peak list files using ExtractMSn implemented in BioWorks (version 3.1; ThermoFinnigan) with the following parameters: peptide molecular weight range of 300–3500, threshold of 100,000, precursor mass tolerance of 1.4, and minimum ion count of 35. We conducted MS/MS database searches using Mascot (licensed, version 2.2, Matrix Science, Boston, MA, USA) against the National Center for Biotechnology Information non-redundant (NCBInr) database in the taxon Metazoa with a parent tolerance of 1.20 Da, fragment tolerance of 0.60 Da, and two missed trypsin cleavages allowed. We

Table 1 – C. o. *helleri* intraspecific proteomic and transcriptomic toxin presence.

Toxin molecular scaffold type	Catalina Island		Idyllwild		Loma Linda		Phelan	
	P	T	P	T	P	T	P	T
β-defensin	Large amounts, medium complexity	✓	Large amounts, medium complexity	✓	Large amounts, medium complexity	✓	Large amounts, medium complexity	✓
CNP-BPP	Medium amounts, low complexity	✓	Low amounts, low complexity	✓	Large amounts, low complexity	✓	Large amounts, low complexity	✓
CRiSP	Large amounts, medium complexity	✓	✖	✓	Medium amounts, low complexity	✓	Medium amounts, medium complexity	✖
Hyaluronidase	✖	✓	✖	✓	✖	✓	✖	✓
Kallikrein	Medium amounts, low complexity	✓	Medium amounts, high complexity	✓	Large amounts, high complexity		Large amounts, high complexity	✓
Kunitz	✖	✓	✖	✓	✖	✓	✖	✓
L-Amino acid oxidase	Medium amounts, low complexity	✓	Medium amounts, low complexity	✓	Medium amounts, low complexity	✓	Medium amounts, low complexity	✓
Lectin	Large amounts, medium complexity	✓	✖	✖	✖	✓	Low amounts, low complexity	✓
Nerve growth factor	Low amounts, low complexity	✓	✖	✓	Low amounts, low complexity	✓	✖	✖
Phospholipase A_2	Medium amounts, medium complexity	✓	Large amounts, high complexity	✓	Low amounts, low complexity	✓	Low amounts, low complexity	✓
Snake venom metalloprotease	Large amounts, medium complexity	✓	Not detected	✓	Medium amounts, high complexity	✓	Large amounts, high complexity	✓
Vascular endothelial growth factor	✖	✓	✖	✓	Low amounts, low complexity	✓	Low amounts, low complexity	✓
Vespryn	✖	✓	✖	✓	✖	✓	✖	✓

P = proteome.
T = transcriptome.

specified carbamidomethylation of cysteine and oxidation of methionine in Mascot as fixed and variable modifications, respectively.

2.3.3. MALDI ToF MS and MALDI ToF/ToF MS/MS

RP-HPLC fractions were submitted to the Institute for Integrated Research in Materials, Environments and Society at California State University, Long Beach, to determine whole protein molecular masses and protein identification/similarity. For MALDI ToF/ToF MS/MS analysis, tryptic peptides were mixed with α-cyano-4-hydroxy cinnamic acid (CHCA) matrix and directly spotted onto MALDI plates. MS spectra were collected using 1000 laser shots/spectrum, and MS/MS spectra from 3000 shots/spectrum. Peptides with signal-to-noise ratio above 15 in MS mode were selected for MS/MS analysis, with a maximum of 15 MS/MS spectra allowed per spot. Internal calibration was achieved using ToF/ToF Calibration Mixture (AB SCIEX). We searched MS/MS data against the NCBInr database within Metazoa using GPS Explorer, running Mascot (version 2.1) search engine with a peptide tolerance of 300 ppm, MS/MS tolerance of 0.8 Da, and one missed cleavage allowed. We specified carbamidomethylation of cysteine as a fixed modification, and the following as variable modifications: carbamyl, Gln/pyro-Glu (N-term Q), and Glu/pyro-Glu (N-term E). Mass spectrometry data for the peaks in Supplementary File 1 is presented in Supplementary Spreadsheet 1.

2.3.4. Statistical analyses

To confirm that population differences existed among the 11 snakes with the quantitative RP-HPLC data presented in Supplementary Spreadsheet 2, we subjected the percent protein present in each of the 11 toxin families (area under the peaks) to a 4 × 11 (population × toxin family) analysis of variance (ANOVA [96]), treating population as a between-subjects factor and toxin family as a within-subjects factor. We rank-transformed the data to avoid analysis of percentage data that summed to 100 for

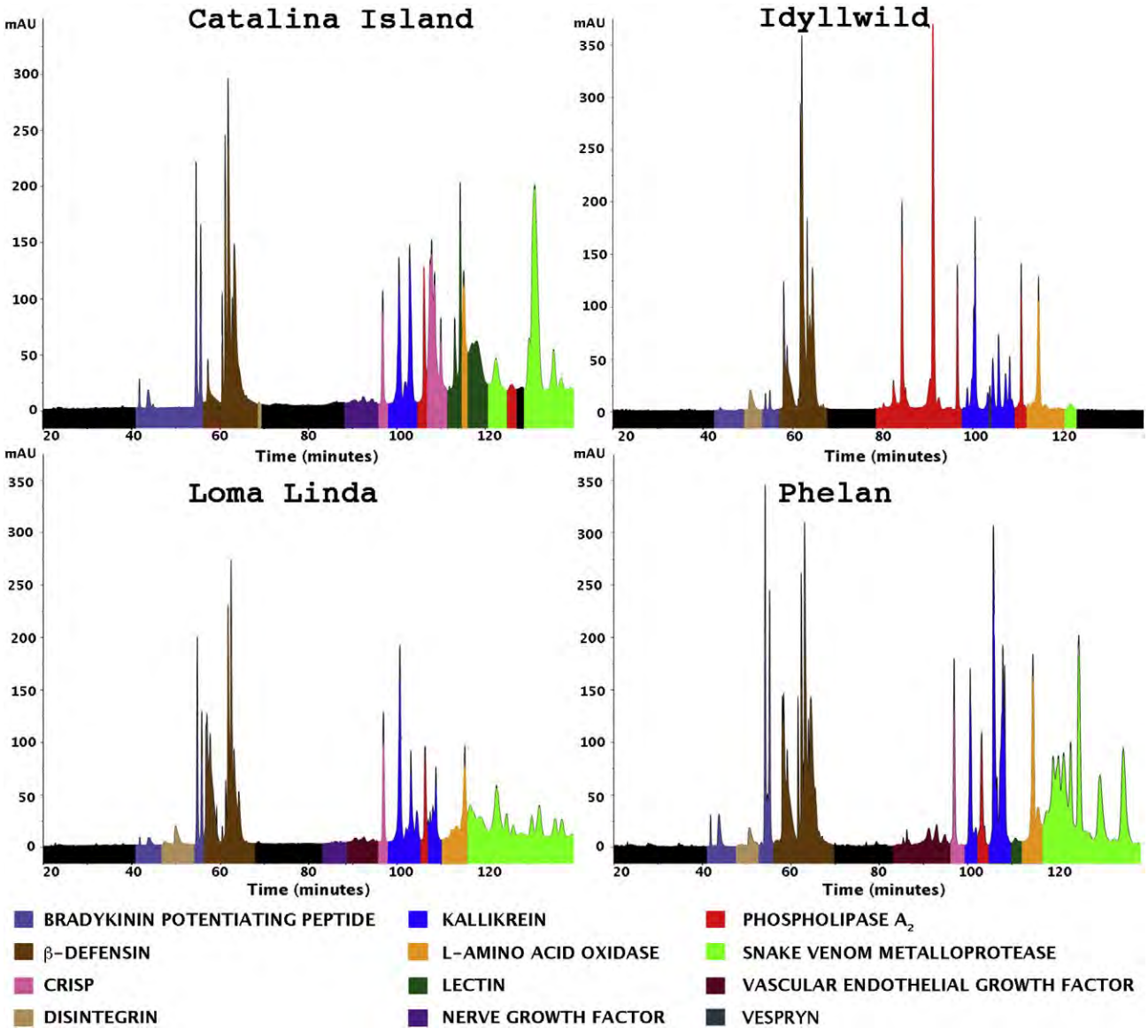

Fig. 2 – LC–MS/MS annotated RP-HPLC chromatograms from the four different *C. o. helleri* populations examined in this study.

each individual. Although our samples were small and data were somewhat non-normal and heteroscedastic, general linear models generally handle data well that fail to meet parametric assumptions and the results were extremely robust. We also ran a non-parametric Kruskal–Wallis ANOVA for each toxin family to compare the populations, which allowed us to confirm the results from the parametric ANOVA; this latter test requires no assumptions about data distribution [96]. We computed effect

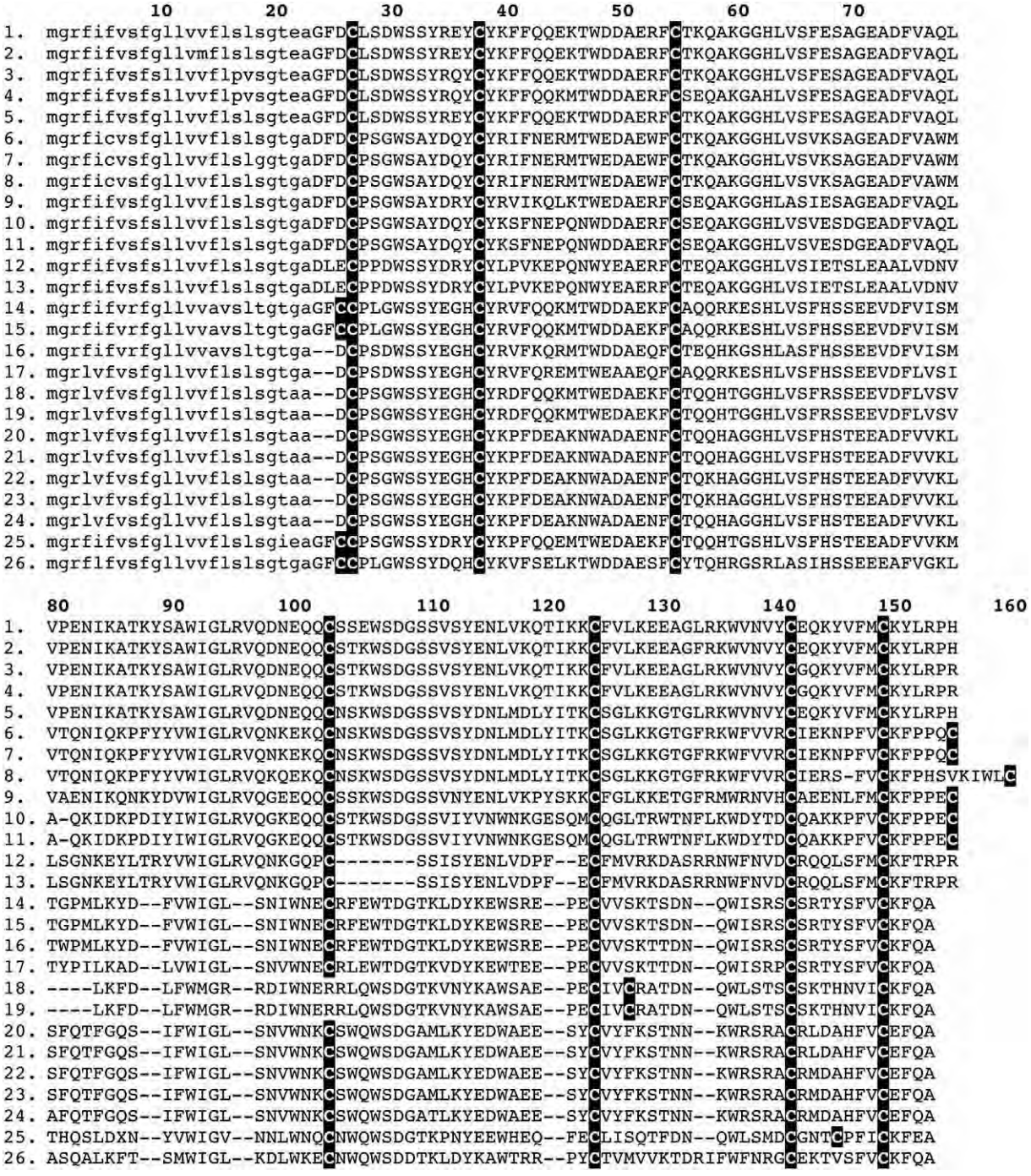

Fig. 3 – Sequence alignment of lectins from *C. o. helleri*: α) 1. GAKQ01000018 CohCI-5, 2. GALC01000015 CohLL-3, 3. GAKQ01000016 CohCI-3, 4. GAKS01000016 CohPH-3, 5. GAKQ01000015 CohCI-2, 6. GAKQ01000014 CohCI-1, 7. GALC01000013 CohLL-1, 8. GAKS01000014 CohPH-1, 9. GALC01000014 CohLL-2, 10. GAKQ01000017 CohCI-4, 11. GAKS01000017 CohPH-4, 12. GALC01000017 CohLL-5, 13. GALC01000016 CohLL-4; and β) 14. GALC01000020 CohLL-3, 15. GALC01000018 CohLL-1, 16. GALC01000022 CohLL-5, 17. GAKS01000021 CohPH-4, 18. GAKS01000022 CohPH-5, 19. GALC01000021 CohLL-4, 20. GAKQ01000022 CohCI-4, 21. GAKQ01000021 CohCI-3, 22. GAKQ01000020 CohCI-2, 23. GAKQ01000019 CohCI-1, 24. GAKS01000019 CohPH-1, 25. GAKS01000020 CohPH-3, 26. GAKS01000023 CohPH-6. CI = Catalina Island, LL = Loma Linda, PH = Phelan. Signal peptide is shown in lowercase, cysteines are highlighted in black.

sizes (approximate variance explained) as adjusted partial eta-squared (η^2) for the parametric ANOVA and as η^2 (computed as χ^2 / [total N – 1]) for the Kruskal–Wallis ANOVAs [96,97]. Eta-squared values ≥ 0.14 are generally deemed large [98]. We conducted these analyses using SPSS 13.0 for Windows, with alpha = 0.05. Following Nakagawa [99], we did not apply Bonferroni adjustments to multiple tests.

3. Results and discussion

Random sequencing recovered sequences for 13 different venom protein encoding gene families (Table 1), with all but Kunitz and Hyaluronidase recovered by both proteomics and transcriptomics. The inability of our combined approach to detect these two venom-components in both result sets may be due to a number of factors, such as, i) differential transcription/translation: not all toxins being replenished at equal stoichiometric rates or simultaneously; ii) technical limitation: the relative separation ability of the HPLC column utilized; iii) co-elution of toxins: one toxin type dominating another and thus obscuring the signal of a toxin present in significantly lower amounts; iv) transcriptomics: the non-exhaustive random sampling procedure utilized which would statistically be likely to recover the most abundant toxin types, with lower-level expressed toxins not recovered; and/or v) microRNA silencing: whereby toxin coding regions undergo transcription but not translation [100]. Lectin toxins, however, were conspicuously absent in both the proteomics and transcriptomics of the Idyllwild population. Sequences analyzed in this study have the GenBank accession numbers of: *C. o. helleri* (Catalina Island) GAKQ01000001–GAKQ01000026; *C. o. helleri* (Idyllwild) GAKR01000001–GAKR01000018; *C. o. helleri* (Loma Linda) GALC01000001–GALC01000026; and *C. o. helleri* (Phelan) GAKS01000001–GAKS01000031. It must be noted that in accordance with the new GenBank deposition rules to exclude fragments of less than 200 base pairs, only the full length sequences were deposited. Thus 27 β-defensins were not deposited, even though their processed and secreted toxin regions were sequenced (only regions of the signal peptide were incomplete). Thus, while these sequences could not be deposited into GenBank, they were utilized in the analyses and are included in the Supplementary material.

Our proteomics analyses revealed significant differences in the venoms of the four populations (Fig. 2), with venom RP-HPLC profiles within a population largely congruent among individuals (Supplementary Fig. 8; note: only two Loma Linda specimens were able to be analyzed due to the rarity of *C. o. helleri* in this locality). The parametric ANOVA yielded a highly significant interaction between population and toxin family ($F_{9.8,22.9} = 13.15$, $P < 0.001$, adjusted partial $\eta^2 = 0.31$; Greenhouse–Geisser adjustment of degrees-of-freedom applied), indicating that the distribution of toxins among the toxin families differed significantly among the populations. The Kruskal–Wallis ANOVAs confirmed that toxin quantity varied significantly among populations for some (nerve growth factor, cysteine-rich secretory protein [CRiSP], lectin; all $P = 0.21–0.35$, $\eta^2 = 0.86–0.97$) but not all toxin families. Five additional toxins (BPP, β-defensin, kallikrein, PLA_2, SVMP) approached significance ($P < 0.10$) with exceptional effect sizes ($\eta^2 > 0.63$). Thus, the ANOVAs confirmed population differences despite the small sample sizes.

Some toxin types were notable for being either highly conserved in their coding sequences (β-defensin, natriuretic), whereas others were extremely variable (kallikrein, lectin, PLA_2, SVMP). While the β-defensins and bradykinin potentiating peptides (BPPs) were of low complexity, our proteomics analyses of the relative expression levels revealed that they are expressed

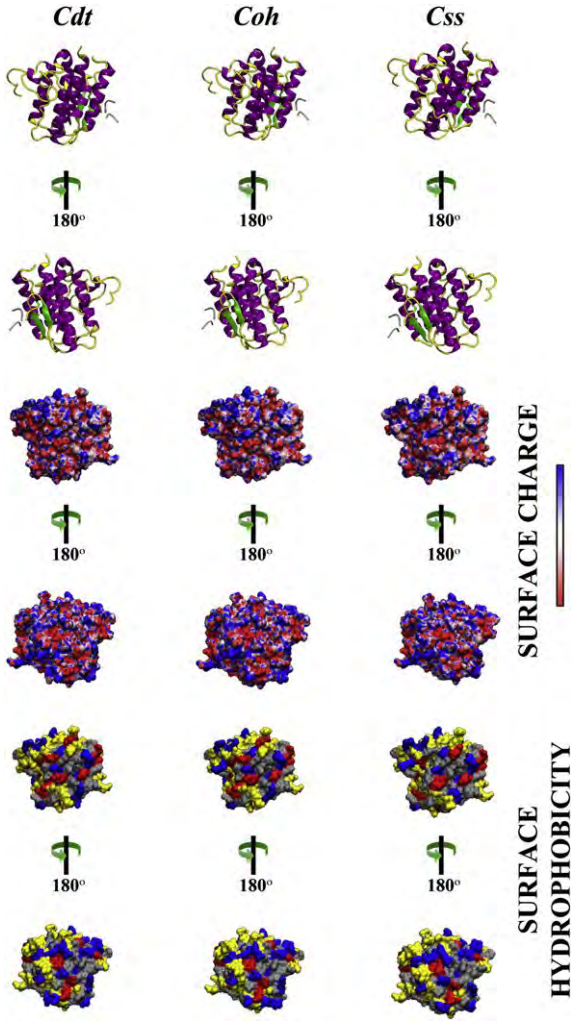

Fig. 4 – Comparative ribbon, surface charge and surface hydrophobicity of the hetrodimeric presynaptic neurotoxic phospholipase A_2 complex from the venoms of *Crotalus durissus terrificus* (Cdt) (PDB: 3R0L; UniProt: P08878 [acidic subunit]; UniProt: P0CG56 [basic subunit]), *C. o. helleri* (Coh) (GenBank: GAKR01000015 [acidic subunit] and GenBank: GAKR01000016 [basic subunit]) and *Crotalus scutulatus scutulatus* (Css) (UniProt: P18998 [acidic subunit] and UniProt: P62023 [basic subunit]). Cartoon images show helices in purple, sheets in green and other structural regions in yellow. Surface charge potentials were mapped on surfaces allowing for color scale data range values of –10.00 to +10.00 using the RWB coloring scheme. Surface residue hydrophicity mapping of residue-type surfaces depicts acidic residues in red, basic residues in blue, polar residues in yellow, and nonpolar residues in silver.

in very high amounts in all populations, with β-defensin in particular invariantly expressed in large quantities (Fig. 2). The multi-product natriuretic/BPP precursor was invariant within and between populations in both the plesiotypic natriuretic peptide domain and the apotypic (derived) BPP domains located within the propeptide region. In contrast, the lectin sequences were highly variable, including the apotyposis of novel cysteines which may facilitate novel structural folding or unique subunit formation with lectins or other toxin types (Fig. 3). Consistent with the proteomic results of this study and a previously published study of San Jacinto Mountain specimens [49] as well as observed notable clinical effects, only the Idyllwild population contained both the acidic and basic subunits of the neurotoxic PLA_2 complex type, with both chains virtually identical to the well-characterized potent presynaptic neurotoxins from *C. d. terrificus* and *C. s. scutulatus* (Fig. 4). It was also notable that the Idyllwild population secreted the lowest amount of SVMPs (Fig. 2), with only a single isoform obtained in the transcriptome and only detectable in trace levels in the proteome. In contrast, the other populations secreted SVMPs in large amounts, with the Phelan having the greatest complexity while the Catalina Island population had less complexity but a much higher relative expression level. This is consistent with the pattern observed for *C. s. scutulatus*, that there is an inverse relationship between the relative amount of neurotoxic PLA_2 and hemorrhagic SVMP [37,101,102]. Thus, it is quite evident how a biochemical arsenal with such variability in neurotoxic, hemotoxic and myotoxic venom-components can complicate clinical treatment of bite victims, not only through the production of highly variable clinical effects, but also as a consequence the reciprocal variability in the efficacy of antivenom binding. It should be noted that the venom proteomics of

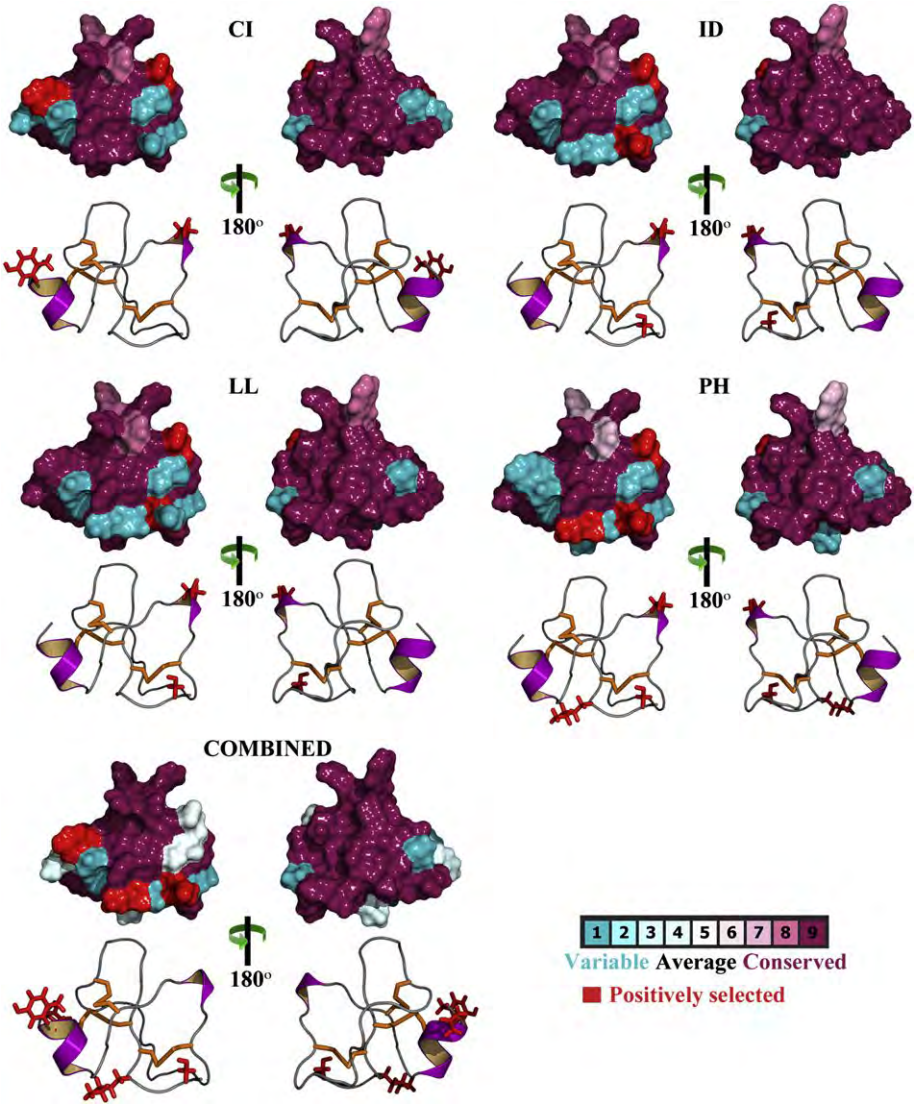

Fig. 5 – Molecular evolution of *C. o. helleri* β-defensins. Three-dimensional homology models (built using the PDB template 1Z99) of β-defensins with evolutionary conservation of amino acids mapped onto them, depicting the locations of positively selected sites (in red) detected by site-model 8 (PP ≥ 0.95, BEB). Schematic representation of the models, which not only depicts the locations of positively selected sites (red sticks) but also highlights disulfide bonds (orange sticks), α helices (purple) and β sheets (green), are also presented.

multiple animals (n = 3; except Loma Linda population, where these animals are extremely rare) from the same region were fairly similar. Hence, it can be safely assumed that the venom-gland transcriptomics of randomly chosen animals represents the overall venomics (genetic makeup of the venom gland) of the representative population.

Understanding the nature and strength of natural selection pressures, which sculpt genetic diversity, is the central theme of molecular evolutionary studies. Since non-synonymous mutations are more likely to influence the structure and function of a protein and hence in turn influence the fitness of the organism, evaluating the rate of accumulation of non-synonymous mutations (dN) in genes, relative to synonymous mutations (dS), as a ratio known as ω (or dN/dS ratio), is essential. We assessed the role of evolutionary selection pressures in shaping various venom proteins in different populations of *C. o. helleri* using various state-of-art selection assessment methodologies. We detected a significant influence of positive Darwinian selection on the evolution of most venom protein encoding genes in these snakes (Figs. 5–7; Tables 2–4; Supplementary Tables 2–5; Supplementary Figs. 1–7 and 9–11).

Site-specific selection assessments indicated that β-defensins, which were expressed in relatively large amounts by all *C. o. helleri* populations examined, followed a regime of weak positive selection: Catalina Island: ω = 1.33 and 3 positively selected (PS); Idyllwild: ω = 2.07 and 3 PS; Loma Linda: ω = 1.14 and 2 PS; Phelan: ω = 1.31 and 5 PS; All: ω = 1.18 and 11 PS (Fig. 5; Table 2). However, the mapping of mutations onto sequence alignments indicated that most hypermutable sites detected by site-specific methods in β-defensins were concentrated in the non-secreted regions of the toxin that are not likely to contribute in the envenoming process. It was also evident

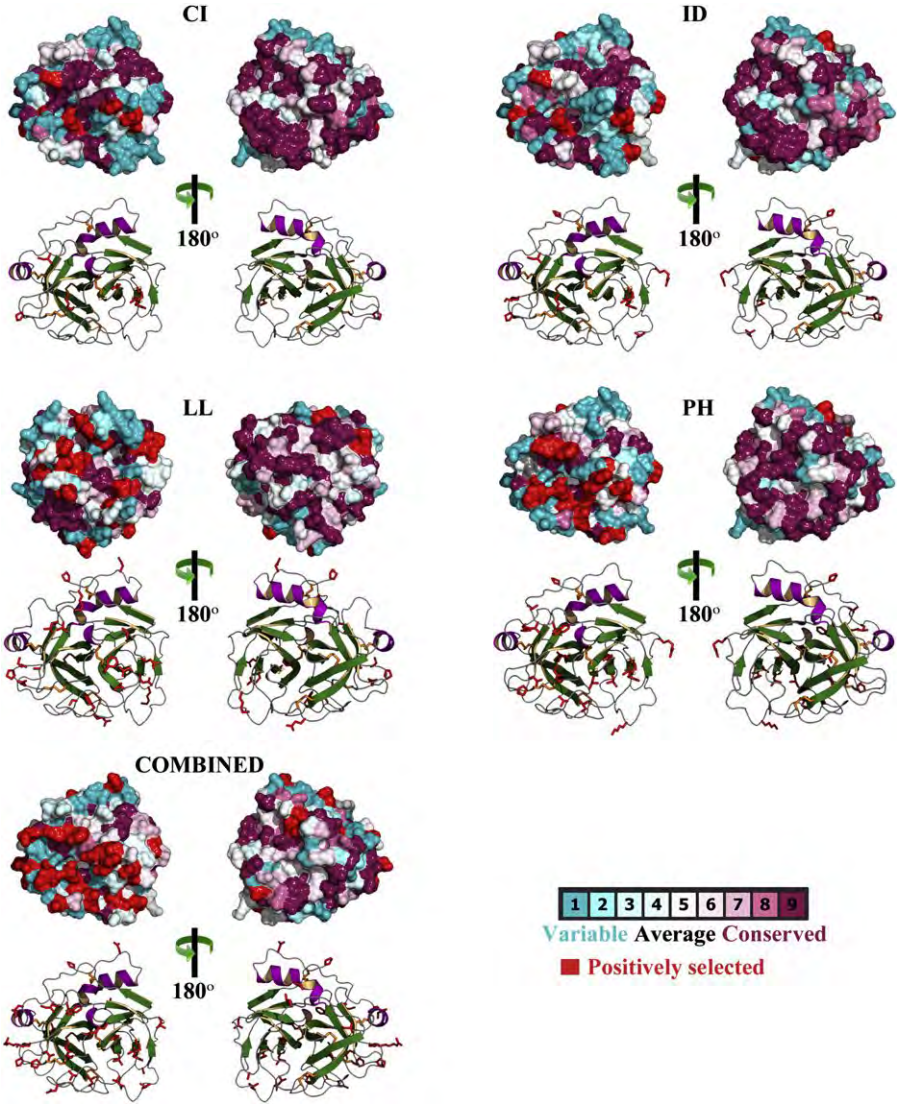

Fig. 6 – Molecular evolution of *C. o. helleri* kallikreins. Three-dimensional homology models (Loma Linda population modeled using the PDB template 1OP0; all others using 2AIQ) of kallikreins with evolutionary conservation of amino acids mapped onto them, depicting the locations of positively selected sites (in red) detected by site-model 8 (PP ≥ 0.95, BEB) are presented. Schematic representation of the models, which not only depicts the locations of positively selected sites (red sticks) but also highlights disulfide bonds (orange sticks), α helices (purple) and β sheets (green), are also presented.

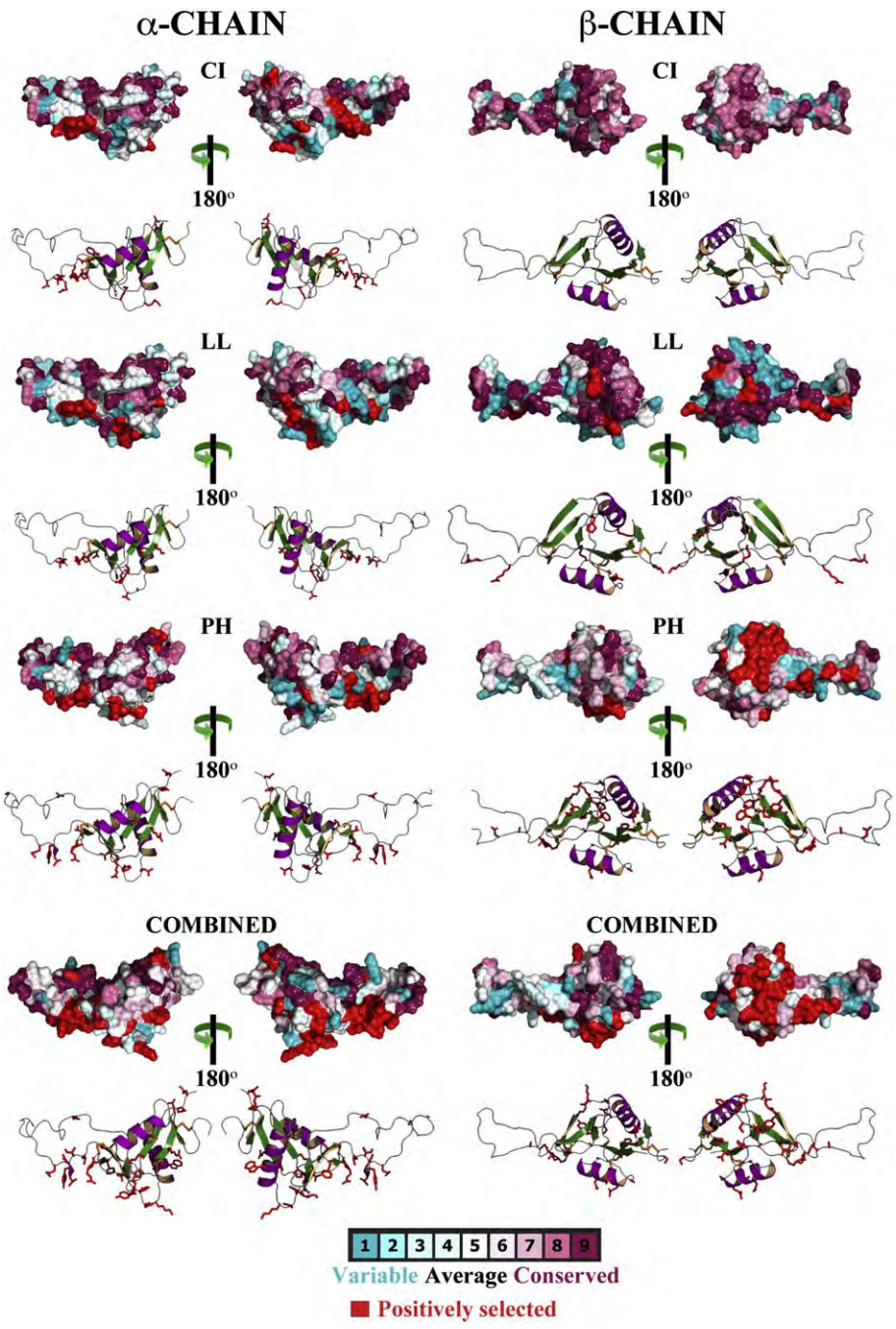

Fig. 7 – Molecular evolution of *C. o. helleri* lectin α- and β-chains. Three-dimensional homology models (α-chain lectins: Catalina Island population and the 'combined set' modeled using PDB template 1C3A; others using 1UMR; β-chain lectins: Loma Linda population modeled using the template 1V4L; all others using 1J34) of lectin α- and β-chains with evolutionary conservation of amino acids mapped onto them, depicting the locations of positively selected sites (in red) detected by site-model 8 (PP ≥ 0.95, BEB). Schematic representation of the models, which not only depicts the locations of positively selected sites (red sticks) but also highlights disulfide bonds (orange sticks), α helices (purple) and β sheets (green), are also presented.

that the entire stretch of nucleotides encoding the secreted region of β-defensins evolved under the extreme influence of negative selection, with 76% of residues being extremely well conserved (percent identity ≥ 90%; Supplementary Fig. 1). This was also supported by the results of MEME, an extremely accurate method of detecting episodic bursts of adaptation, which detected fewer episodically diversifying sites in β-defensins (Table 2). Mapping of variable sites on the structure of the β-defensin 'crotamine' from *C. d. terrificus* (PDB code: 1Z99 [103]), which is homologous and thus structurally very similar

Table 2 – C. o. *helleri* intraspecific venom dynamics: β-defensins.

Population	FUBAR [a]	MEME sites [b]	BSR [c]	PAML [d]	
				M8	M2a
CI	ω > 1 [e]: 0 ω < 1 [f]: 1	0	1	3 (2 + 1) 1.33	3 (2 + 1) 1.33
ID	ω > 1 [e]: 1 ω < 1 [f]: 0	0	2	3 (2 + 1) 2.07	3 (2 + 1) 2.07
LL	ω > 1 [e]: 0 ω < 1 [f]: 0	1	1	2 (0 + 2) 1.14	0 1.14
PH	ω > 1 [e]: 1 ω < 1 [f]: 1	0	4	5 (1 + 4) 1.31	2 (1 + 1) 1.31
Combined	ω > 1 [e]: 0 ω < 1 [f]: 0	4	6	11 (5 + 6) 1.18	6 (3 + 3) 1.16

ω: mean dN/dS.
Populations: CI = Catalina Island; ID = Idyllwild; LL = Loma Linda; PH = Phelan.
[a] Fast Unconstrained Bayesian AppRoximation.
[b] Sites detected as experiencing episodic diversifying selection (0.05 significance) by the Mixed Effects Model Evolution (MEME).
[c] Number of branches detected by the branch-site REL (random effects likelihood) test as episodically diversifying.
[d] Positively selected sites detected by the Bayes Empirical Bayes approach implemented in M8 and M2a. Sites detected at 0.99 and 0.95 significance are indicated in the parenthesis.
[e] Number of sites under pervasive diversifying selection at the posterior probability ≥ 0.9 (FUBAR).
[f] Number of sites under pervasive purifying selection at the posterior probability ≥ 0.9 (FUBAR).

Table 3 – C. o. *helleri* intraspecific venom dynamics: Kallikrein.

Population	FUBAR [a]	MEME sites [b]	BSR [c]	PAML [d]	
				M8	M2a
CI	ω > 1 [e]: 8 ω < 1 [f]: 5	6	4	7 (6 + 1) 1.35	7 (4 + 3) 1.31
ID	ω > 1 [e]: 20 ω < 1 [f]: 4	6	6	11 (2 + 9) 1.63	11 (2 + 9) 1.63
LL	ω > 1 [e]: 23 ω < 1 [f]: 8	9	9	24 (8 + 16) 1.60	15 (7 + 8) 1.57
PH	ω > 1 [e]: 22 ω < 1 [f]: 7	15	5	24 (10 + 14) 1.38	15 (7 + 8) 1.41
Combined	ω > 1 [e]: 27 ω < 1 [f]: 14	45	12	36 (18 + 18) 1.36	25 (13 + 11) 1.38

ω: mean dN/dS.
Populations: CI = Catalina Island; ID = Idyllwild; LL = Loma Linda; PH = Phelan.
[a] Fast Unconstrained Bayesian AppRoximation.
[b] Sites detected as experiencing episodic diversifying selection (0.05 significance) by the Mixed Effects Model Evolution (MEME).
[c] Number of branches detected by the branch-site REL (random effects likelihood) test as episodically diversifying.
[d] Positively selected sites detected by the Bayes Empirical Bayes approach implemented in M8 and M2a. Sites detected at 0.99 and 0.95 significance are indicated in the parenthesis.
[e] Number of sites under pervasive diversifying selection at the posterior probability ≥ 0.9 (FUBAR).
[f] Number of sites under pervasive purifying selection at the posterior probability ≥ 0.9 (FUBAR).

to β-defensin, revealed that the N-terminal positions 23 (Y in sequence 1; Supplementary Fig. 1) and 25 (R in sequence 1; Supplementary Fig. 1) as well as the C-terminal residues in position 61 (K in sequence 1; Supplementary Fig. 1), 62 (S in sequence 1; Supplementary Fig. 1), and 63 (G in sequence 1; Supplementary Fig. 1) are structurally more flexible (for the remaining positively selected amino acids 3D-structure coordinates were not resolved). This can be explained by the fact that these locations in the protein structure fall outside the disulfide bond-stabilized core. Although the highly conserved positions, such as 28 (K), 53 (R), 54 (W), and 55 (R; all referred to in sequence 1; Supplementary Fig. 1) were also solvent exposed, they were located inside the disulfide bridge-stabilized protein core and thus experienced heavy constraints of negative selection. However, the lack of variation in secreted regions of β-defensins may be indicative of their unique mode of action as peptides non-specifically target and destabilize the negatively charged microbial membranes using their cationic amino acid residues, resulting in membrane permeabilization [104]. Not-surprisingly, 29% of the residues in *C. o. helleri* β-defensins were cationic (K, R and H) and were extremely well conserved (percent identity ≥ 80%; Supplementary Fig. 1). Hence, it is expected that the evolutionary constraints favor the preservation of cationic residues required for toxicity. The branch-site REL (BSR) test, which significantly identifies lineages that follow the regime of episodic diversification, clearly highlighted the differences in strengths of evolutionary selection pressures acting upon β-defensins in *C. o. helleri* populations (Supplementary Fig. 5). In the Phelan population this test detected as many as four episodically diversifying branches in β-defensin gene lineage, while detecting only one branch each in Catalina Island and Loma Linda populations, and two branches in the Idyllwild population (Supplementary Fig. 5).

While the kallikreins found in each of the *C. o. helleri* populations examined were found to be rapidly evolving under the influence of positive selection [Catalina Island: ω = 1.35 and 7 PS; Idyllwild: ω = 1.63 and 11 PS; Loma Linda: ω = 1.60 and 24 PS; Phelan: ω = 1.38 and 24 PS; All: ω = 1.36 and 36 PS] (Fig. 6; Supplementary Fig. 2), the number of positively selected sites detected by M8's Bayes empirical Bayes (BEB) approach, varied from 7 to 24, highlighting the differential rate of evolution of kallikreins in various *C. o. helleri* populations (Table 3). The number of branches detected by the BSR test as episodically diversifying in kallikrein encoding genes varied from 4 to 10 in various populations (Supplementary Fig. 6), again highlighting the differential role of selection in shaping these venom protein encoding genes.

Lectin α-chain [Catalina Island: ω = 2.36 and 15 PS; Loma Linda: ω = 2.51 and 14 PS; Phelan: ω = 3.07 and 16 PS; All: ω = 2.23 and 27 PS] and lectin β-chain [Catalina Island: ω = 0.46 and 0 PS; Loma Linda: ω = 2.73 and 11 PS; Phelan: ω = 2.34 and 28 PS; All: ω = 2.29 and 29 PS] were found to evolve under the significant

Table 4 – C. o. *helleri* intraspecific venom dynamics: Lectins.

Population	FUBAR [a]	MEME sites [b]	BSR [c]	PAML [d]	
				M8	M2a
α chain					
CI	ω > 1 [e]: 12 ω < 1 [f]: 5	2	4	15 (8 + 7) 2.36	12 (5 + 7) 2.34
LL	ω > 1 [e]: 15 ω < 1 [f]: 2	1	3	14 (7 + 7) 2.51	12 (5 + 7) 2.51
PH	ω > 1 [e]: 15 ω < 1 [f]: 4	0	4	16 (8 + 8)	13 (7 + 6)
Combined	ω > 1 [e]: 26 ω < 1 [f]: 6	7	7	27 (14 + 13) 2.23	23 (14 + 9) 2.24
β chain					
CI	ω > 1 [e]: 0 ω < 1 [f]: 1	0	0	0 0.46	0 0.46
LL	ω > 1 [e]: 2 ω < 1 [f]: 0	0	1	11 (0 + 11) 2.73	2 (0 + 2) 2.73
PH	ω > 1 [e]: 16 ω < 1 [f]: 2	5	6	28 (12 + 16) 2.34	22 (9 + 13) 2.34
Combined	ω > 1 [e]: 22 ω < 1 [f]: 2	5	6	29 (16 + 13) 2.29	20 (11 + 9) 2.31

ω: mean dN/dS.
Populations: CI = Catalina Island; ID = Idyllwild; LL = Loma Linda; PH = Phelan.
[a] Fast Unconstrained Bayesian AppRoximation.
[b] Sites detected as experiencing episodic diversifying selection (0.05 significance) by the Mixed Effects Model Evolution (MEME).
[c] Number of branches detected by the branch-site REL (random effects likelihood) test as episodically diversifying.
[d] Positively selected sites detected by the Bayes Empirical Bayes approach implemented in M8 and M2a. Sites detected at 0.99 and 0.95 significance are indicated in the parenthesis.
[e] Number of sites under pervasive diversifying selection at the posterior probability ≥ 0.9 (FUBAR).
[f] Number of sites under pervasive purifying selection at the posterior probability ≥ 0.9 (FUBAR).

influence of positive selection (Table 4; Supplementary Fig. 3). However, β-chain of the Catalina Island population was remarkably revealed to have evolved under the influence of negative selection (ω = 0.46, 0 PS; Table 4; Supplementary Fig. 4). Other than at position 56, amino acid residues in all other positions were invariant (Supplementary Fig. 4). The rapid rate of molecular evolution observed in lectins is consistent with the great diversity of novel sequences recovered, including the apotyposis or the derivation of novel cysteine residues (Fig. 3). The rapid accumulation of hypermutable sites under the influence of positive selection in β-chain lectins from all *C. o. helleri* populations except those from Catalina Island, where the toxin-encoding gene has evolved under strong negative selection, is intriguing and warrants further experimental evaluations to understand the stark differences in the magnitude of selection pressures. While the BSR test detected a few lineages as episodically diversifying in the α-chain lectins of various populations, the results of this test in the β-chain lectins were particularly interesting (Supplementary Fig. 7). This test failed to detect any branch in the Catalina Island population, while detecting a single branch in Loma Linda population as episodically diversifying (Supplementary Fig. 7). In contrast, as many as 6 branches were detected as following the regime of episodic adaptation in β-chain lectins of the Phelan population (Supplementary Fig. 7). Similar to the results of all state-of-art selection assessment methods outlined above, the evolutionary fingerprints of venom-encoding genes in *C. o. helleri* clearly depicted the differential influence of natural selection on their evolution (Supplementary Figs. 9–11).

The structure and surface chemistry of the presynaptic PLA_2 complex from *C. o. helleri* is very well conserved when compared to the homologues from *C. d. terrificus* and *C. s. scutulatus* (Fig. 4). Both amino acid type distribution on the protein surface as well as studying surface charges and surface hydrophobicity of all three PLA_2 complexes revealed only minor differences. While the positive and negative charged patches in globo were located in the same positions, minimal differences were observed in the size and charge of these surface regions. Since the PLA_2s of *C. d. terrificus* and *C. s. scutulatus* are well-characterized to be potent neurotoxins (cf. [89,105]), we conclude that the described similarities of *C. o. helleri* PLA_2 to the former ones are responsible for neurotoxic effects of PLA_2s observed in the *C. o. helleri* population. The precise evolutionary regimes followed by genes encoding PLA_2 and SVMPs in these snakes remain to be elucidated.

Thus, it is evident that *C. o. helleri* venom-encoding genes have experienced differential evolutionary selection pressures. Differential rate of molecular evolution or expression occurred not only between toxin types within the venom of a particular population, but also for the same toxin type between populations. These results demonstrate that the different populations of *C. o. helleri* follow distinct evolutionary trajectories, with the differential venom profiles likely driven by variation in predatory ecology. This is a reflection of the complex evolutionary history of this species, which ranges from sea level to high mountain peaks and occupies a diverse range of habitats. These habitats possess differing lizard and mammal prey assemblages [106–108], and evidence from other snakes suggests that strong natural selection has driven venom adaptation to particular prey species [12,20,21,30,31,40,46,47,59,61–63,109]. Although climate might be expected to influence venom composition, our data suggest otherwise concerning the dichotomy of type I (proteolytic or "tenderizer") versus type II (more toxic) venoms [70]. It has been suggested that snakes at higher elevation with the greatest temperature fluctuations could be expected to possess a type I venom to facilitate digestion [70]. However, the population that faces the highest temperature fluctuations (Idyllwild) possesses a type II venom that lacks almost entirely the metalloproteases typical of type I venoms. These results also indicate significant differences in potential human envenomation profiles, consistent with the complex clinical picture previously observed, with some populations being hemorrhagic while others are neurotoxic. The exquisite diversity of venom-components highlighted in this study and the variation in intensity and the nature of natural selection shaping the molecular toxin scaffolds may not only result in distinct envenoming profiles but may also induce variable responses to antivenom. Hence, understanding the true molecular diversity of venom and the evolutionary forces that shape them not only

aids in the prediction of clinical effects but also reveals that these highly variable venoms are a rich source of novel toxins, some of which may have significant potential for use as lead compounds in drug design and development. Thus, the results of this study not only contribute to the body of knowledge regarding venom evolution but also have applied outcomes both from a clinical perspective and also from drug design. These results will also be useful in science communication to demonstrate that there is indeed significant variation in the venom of this medically important species, but that such evolution has not occurred recently but rather the venom diversity seen today is reflective of the long evolutionary history, not of recent changes as popularly misunderstood. Thus this species is a model for the broader penetration of lay-person understanding of venom diversity and the clinical and economic importance of such variation.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.jprot.2014.01.013.

REFERENCES

[1] Ali SA, Yang D, Jackson TN, Undheim EA, Koludarov I, Wood K, et al. Venom proteomic characterization and relative antivenom neutralization of two medically important Pakistani elapid snakes (*Bungarus sindanus* and *Naja naja*). J Proteomics 2013;89:15–23.

[2] Boldrini-Franca J, Correa-Netto C, Silva MM, Rodrigues RS, De La Torre P, Perez A, et al. Snake venomics and antivenomics of *Crotalus durissus* subspecies from Brazil: assessment of geographic variation and its implication on snakebite management. J Proteomics 2010;73:1758–76.

[3] Calvete JJ. Antivenomics and venom phenotyping: a marriage of convenience to address the performance and range of clinical use of antivenoms. Toxicon 2010;56:1284–91.

[4] Calvete JJ. Proteomic tools against the neglected pathology of snake bite envenoming. Expert Rev Proteomics 2011;8:739–58.

[5] Calvete JJ, Escolano J, Sanz L. Snake venomics of *Bitis* species reveals large intragenus venom toxin composition variation: application to taxonomy of congeneric taxa. J Proteome Res 2007;6:2732–45.

[6] Calvete JJ, Juarez P, Sanz L. Snake venomics. Strategy and applications. J Mass Spectrom 2007;42:1405–14.

[7] Calvete JJ, Pérez A, Lomonte B, Sánchez EE, Sanz L. Snake venomics of *Crotalus tigris*: the minimalist toxin arsenal of the deadliest Neartic rattlesnake venom. Evolutionary clues for generating a pan-specific antivenom against crotalid type II venoms. J Proteome Res 2012;11:1382–90.

[8] Calvete JJ, Sanz L, Angulo Y, Lomonte B, Gutierrez JM. Venoms, venomics, antivenomics. FEBS Lett 2009;583:1736–43.

[9] Calvete JJ, Sanz L, Cid P, de la Torre P, Flores-Díaz M, Dos Santos MC, et al. Snake venomics of the Central American rattlesnake *Crotalus simus* and the South American *Crotalus durissus* complex points to neurotoxicity as an adaptive paedomorphic trend along *Crotalus* dispersal in South America. J Proteome Res 2009;9:528–44.

[10] Fry BG, Lumsden NG, Wuster W, Wickramaratna JC, Hodgson WC, Kini RM. Isolation of a neurotoxin (alpha-colubritoxin) from a nonvenomous colubrid: evidence for early origin of venom in snakes. J Mol Evol 2003;57:446–52.

[11] Fry BG, Wickramaratna JC, Hodgson WC, Alewood PF, Kini RM, Ho H, et al. Electrospray liquid chromatography/mass spectrometry fingerprinting of *Acanthophis* (death adder) venoms: taxonomic and toxinological implications. Rapid Commun Mass Spectrom 2002;16:600–8.

[12] Fry BG, Wuster W, Ryan Ramjan SF, Jackson T, Martelli P, Kini RM. Analysis of Colubroidea snake venoms by liquid chromatography with mass spectrometry: evolutionary and toxinological implications. Rapid Commun Mass Spectrom 2003;17:2047–62.

[13] Georgieva D, Arni RK, Betzel C. Proteome analysis of snake venom toxins: pharmacological insights. Expert Rev Proteomics 2008;5:787–97.

[14] Gutierrez JM, Lomonte B, Leon G, Alape-Giron A, Flores-Diaz M, Sanz L, et al. Snake venomics and antivenomics: proteomic tools in the design and control of antivenoms for the treatment of snakebite envenoming. J Proteomics 2009;72:165–82.

[15] Gutierrez JM, Sanz L, Escolano J, Fernandez J, Lomonte B, Angulo Y, et al. Snake venomics of the Lesser Antillean pit vipers *Bothrops caribbaeus* and *Bothrops lanceolatus*: correlation with toxicological activities and immunoreactivity of a heterologous antivenom. J Proteome Res 2008;7:4396–408.

[16] Casewell NR, Harrison RA, Wuster W, Wagstaff SC. Comparative venom gland transcriptome surveys of the saw-scaled vipers (Viperidae: *Echis*) reveal substantial intra-family gene diversity and novel venom transcripts. BMC Genomics 2009;10:564.

[17] Ching AT, Rocha MM, Paes Leme AF, Pimenta DC, de Fatima DFM, Serrano SM, et al. Some aspects of the venom proteome of the Colubridae snake *Philodryas olfersii* revealed from a Duvernoy's (venom) gland transcriptome. FEBS Lett 2006;580:4417–22.

[18] Fry BG, Roelants K, Winter K, Hodgson WC, Griesman L, Kwok HF, et al. Novel venom proteins produced by differential domain-expression strategies in beaded lizards and gila monsters (genus *Heloderma*). Mol Biol Evol 2010;27:395–407.

[19] Fry BG, Scheib H, de LMJdA I, Silva DA, Casewell NR. Novel transcripts in the maxillary venom glands of advanced snakes. Toxicon 2012;59:696–708.

[20] Fry BG, Undheim EA, Ali SA, Jackson TN, Debono J, Scheib H, et al. Squeezers and leaf-cutters: differential diversification

and degeneration of the venom system in toxicoferan reptiles. Mol Cell Proteomics 2013;12:1881–99.
[21] Fry BG, Vidal N, Norman JA, Vonk FJ, Scheib H, Ramjan SF, et al. Early evolution of the venom system in lizards and snakes. Nature 2006;439:584–8.
[22] Fry BG, Winter K, Norman JA, Roelants K, Nabuurs RJA, van Osch MJP, et al. Functional and structural diversification of the Anguimorpha lizard venom system. Mol Cell Proteomics 2010;9:2369–90.
[23] Fry BG, Wroe S, Teeuwisse W, van Osch MJ, Moreno K, Ingle J, et al. A central role for venom in predation by *Varanus komodoensis* (Komodo dragon) and the extinct giant *Varanus* (*Megalania*) *priscus*. Proc Natl Acad Sci U S A 2009;106:8969–74.
[24] Rokyta D, Lemmon A, Margres M, Aronow K. The venom-gland transcriptome of the eastern diamondback rattlesnake (*Crotalus adamanteus*). BMC Genomics 2012;13:312.
[25] Rokyta DR, Wray KP, Margres MJ. The genesis of an exceptionally lethal venom in the timber rattlesnake (*Crotalus horridus*) revealed through comparative venom-gland transcriptomics. BMC Genomics 2013;14:394.
[26] Wagstaff SC, Harrison RA. Venom gland EST analysis of the saw-scaled viper, *Echis ocellatus*, reveals novel alpha9beta1 integrin-binding motifs in venom metalloproteinases and a new group of putative toxins, renin-like aspartic proteases. Gene 2006;377:21–32.
[27] Wagstaff SC, Sanz L, Juarez P, Harrison RA, Calvete JJ. Combined snake venomics and venom gland transcriptomic analysis of the ocellated carpet viper, *Echis ocellatus*. J Proteomics 2009;71:609–23.
[28] Anaya M, Rael ED, Lieb CS, Perez JC, Salo RJ. Antibody detection of venom protein variation within a population of the rattlesnake *Crotalus v. viridis*. J Herpetol 1992;26:473–82.
[29] Bush SP, Green SM, Moynihan JA, Hayes WK, Cardwell MD. Crotalidae polyvalent immune fab (ovine) antivenom is efficacious for envenomations by Southern Pacific rattlesnakes (*Crotalus helleri*). Ann Emerg Med 2002;40:619–24.
[30] Casewell NR, Wuster W, Vonk FJ, Harrison RA, Fry BG. Complex cocktails: the evolutionary novelty of venoms. Trends Ecol Evol 2013;28:219–29.
[31] Fry BG, Casewell NR, Wuster W, Vidal N, Young B, Jackson TN. The structural and functional diversification of the Toxicofera reptile venom system. Toxicon 2012;60:434–48.
[32] Mackessy SP, Baxter LM. Bioweapons synthesis and storage: the venom gland of front-fanged snakes. Zool Anz 2006;245:147–59.
[33] Chippaux J-P, Williams V, White J. Snake venom variability: methods of study, results and interpretation. Toxicon 1991;29:1279–303.
[34] Chiszar DA, Walters A, Urbaniak J, Smith HM, Mackessy SP. Discrimination between envenomated and non-envenomated prey by western diamondback rattlesnakes (*Crotalus atrox*): chemosensory consequences of venom. Copeia 1999:640–8.
[35] Heatwole H, Poran NS. Resistances of sympatric and allopatric eels to sea-snake venoms. Copeia 1995:136–47.
[36] Jansa SA, Voss RS. Adaptive evolution of the venom-targeted vWF protein in opossums that eat pitvipers. PLoS One 2011;6.
[37] Massey DJ, Calvete JJ, Sanchez EE, Sanz L, Richards K, Curtis R, et al. Venom variability and envenoming severity outcomes of the *Crotalus scutulatus scutulatus* (Mojave rattlesnake) from Southern Arizona. J Proteomics 2012;75:2576–87.
[38] Owings D, Coss R. Hunting California ground squirrels: constraints and opportunities for Northern Pacific rattlesnakes. In: Hayes WK, Cardwell MD, Beaman KR, Bush SP, editors. Biology of the rattlesnakes. Loma Linda: Loma Linda University Press; 2008. p. 155–68.
[39] Angulo Y, Escolano J, Lomonte B, Gutierrez JM, Sanz L, Calvete JJ. Snake venomics of Central American pitvipers: clues for rationalizing the distinct envenomation profiles of *Atropoides nummifer* and *Atropoides picadoi*. J Proteome Res 2008;7:708–19.
[40] Fry BG, Scheib H, van der Weerd L, Young B, McNaughtan J, Ramjan SF, et al. Evolution of an arsenal: structural and functional diversification of the venom system in the advanced snakes (Caenophidia). MCP 2008;7:215–46.
[41] Lomonte B, Escolano J, Fernandez J, Sanz L, Angulo Y, Gutierrez JM, et al. Snake venomics and antivenomics of the arboreal neotropical pitvipers *Bothriechis lateralis* and *Bothriechis schlegelii*. J Proteome Res 2008;7:2445–57.
[42] Sanz L, Gibbs HL, Mackessy SP, Calvete JJ. Venom proteomes of closely related *Sistrurus* rattlesnakes with divergent diets. J Proteome Res 2006;5:2098–112.
[43] Tashima AK, Sanz L, Camargo AC, Serrano SM, Calvete JJ. Snake venomics of the Brazilian pitvipers *Bothrops cotiara* and *Bothrops fonsecai*. Identification of taxonomy markers. J Proteomics 2008;71:473–85.
[44] van der Weyden L, Hains PG, Broady KW. Characterisation of the biochemical and biological variations from the venom of the death adder species (*Acanthophis antarcticus*, *A. praelongus* and *A. pyrrhus*). Toxicon 2000;38:1703–13.
[45] Castro EN, Lomonte B, Del Carmen Gutiérrez M, Alagón A, Gutiérrez JM. Intraspecies variation in the venom of the rattlesnake *Crotalus simus* from Mexico: different expression of crotoxin results in highly variable toxicity in the venoms of three subspecies. J Proteomics 2013;87:103–21.
[46] Daltry JC, Ponnudurai G, Shin CK, Tan NH, Thorpe RS, Wuster W. Electrophoretic profiles and biological activities: intraspecific variation in the venom of the Malayan pit viper (*Calloselasma rhodostoma*). Toxicon 1996;34:67–79.
[47] Daltry JC, Wuster W, Thorpe RS. Diet and snake venom evolution. Nature 1996;379:537–40.
[48] Forstner M, Hilsenbeck R, Scudday J. Geographic variation in whole venom profiles from the mottled rock rattlesnake (*Crotalus lepidus lepidus*) in Texas. J Herpetol 1997:277–87.
[49] French WJ, Hayes WK, Bush SP, Cardwell MD, Bader JO, Rael ED. Mojave toxin in venom of *Crotalus helleri* (Southern Pacific Rattlesnake): molecular and geographic characterization. Toxicon 2004;44:781–91.
[50] Mackessy SP. Evolutionary trends in venom composition in the Western Rattlesnakes (*Crotalus viridis* sensu lato): toxicity vs. tenderizers. Toxicon 2010;55:1463–74.
[51] Salazar AM, Guerrero B, Cantu B, Cantu E, Rodríguez-Acosta A, Pérez JC, et al. Venom variation in hemostasis of the Southern Pacific rattlesnake (*Crotalus oreganus helleri*): isolation of hellerase. Comp Biochem Physiol C: Toxicol Pharmacol 2009;149:307–16.
[52] Wilkinson JA, Glenn JL, Straight RC, Sites Jr JW. Distribution and genetic variation in venom A and B populations of the Mojave rattlesnake (*Crotalus scutulatus scutulatus*) in Arizona. Herpetol 1991:54–68.
[53] Menezes MC, Furtado MF, Travaglia-Cardoso SR, Camargo AC, Serrano SM. Sex-based individual variation of snake venom proteome among eighteen *Bothrops jararaca* siblings. Toxicon 2006;47:304–12.
[54] Lopez-Lozano JL, de Sousa MV, Ricart CA, Chavez-Olortegui C, Flores Sanchez E, Muniz EG, et al. Ontogenetic variation of metalloproteinases and plasma coagulant activity in venoms of wild *Bothrops atrox* specimens from Amazonian rain forest. Toxicon 2002;40:997–1006.
[55] Mackessy SP. Venom ontogeny in the Pacific rattlesnakes *Crotalus viridis helleri* and *C. v. oreganus*. Copeia 1988:92–101.
[56] Johnson EK, Kardong KV, Ownby CL. Observations on white and yellow venoms from an individual Southern Pacific rattlesnake (*Crotalus viridis helleri*). Toxicon 1987;25:1169–80.

[57] Mebs D. Toxicity in animals. Trends in evolution? Toxicon 2001;39:87–96.
[58] Sasa M. Diet and snake venom evolution: can local selection alone explain intraspecific venom variation? Toxicon 1999;37:249–52 [author reply 53–60].
[59] Aird SD. Ophidian envenomation strategies and the role of purines. Toxicon 2002;40:335–93.
[60] Brust A, Sunagar K, Undheim EA, Vetter I, Yang DC, Casewell NR, et al. Differential evolution and neofunctionalization of snake venom metalloprotease domains. MCP 2013;12:651–63.
[61] Gibbs HL, Mackessy SP. Functional basis of a molecular adaptation: prey-specific toxic effects of venom from *Sistrurus* rattlesnakes. Toxicon 2009;53:672–9.
[62] Pawlak J, Mackessy SP, Fry BG, Bhatia M, Mourier G, Fruchart-Gaillard C, et al. Denmotoxin, a three-finger toxin from the colubrid snake *Boiga dendrophila* (mangrove catsnake) with bird-specific activity. J Biol Chem 2006;281:29030–41.
[63] Sunagar K, Johnson WE, O'Brien SJ, Vasconcelos V, Antunes A. Evolution of CRISPs associated with toxicoferan-reptilian venom and mammalian reproduction. Mol Biol Evol 2012;29:1807–22.
[64] Vidal N, Hedges SB. The phylogeny of squamate reptiles (lizards, snakes, and amphisbaenians) inferred from nine nuclear protein-coding genes. C R Biol 2005;328:1000–8.
[65] Parkinson CL. Molecular systematics and biogeographical history of pitvipers as determined by mitochondrial ribosomal DNA sequences. Copeia 1999:576–86.
[66] Parkinson CL, Campbell JA, Chippindale PT, Schuett G. Multigene phylogenetic analysis of pitvipers, with comments on their biogeography. In: Schuett GW, Hoggren M, Douglas ME, Greene HW, editors. Biology of the vipers. Eagle Mountain Publishing; 2002. p. 93–110.
[67] Klauber LM. Rattlesnakes: their habits, life histories, and influence on mankind. Univ of California Press; 1997.
[68] Knight A, Styer D, Pelikan S, Campbell JA, Densmore LD, Mindell DP. Choosing among hypotheses of rattlesnake phylogeny: a best-fit rate test for DNA sequence data. Syst Biol 1993;42:356–67.
[69] Kraus F, Mink DG, Brown WM. Crotaline intergeneric relationships based on mitochondrial DNA sequence data. Copeia 1996:763–73.
[70] Mackessy S. Venom composition in rattlesnakes: trends and biological significance. In: Hayes WK, Cardwell MD, Beaman KR, Bush SP, editors. The biology of rattlesnakes. Loma Linda: Loma Linda University Press; 2008. p. 495–510.
[71] Pook CE, Wüster W, Thorpe RS. Historical biogeography of the western rattlesnake (Serpentes: Viperidae: *Crotalus viridis*), inferred from mitochondrial DNA sequence information. Mol Phylogenet Evol 2000;15:269–82.
[72] Werman SD. Phylogeny and the evolution of β-neurotoxic phospholipases A2 (PLA2) in the venoms of rattlesnakes, *Crotalus* and *Sistrurus* (Serpentes: Viperidae). In: Hayes WK, Cardwell MD, Beaman KR, Bush SP, editors. The biology of rattlesnakes. Loma Linda: Loma Linda University Press; 2008. p. 511–36.
[73] Schoenherr AA. A natural history of California. Berkeley: University of California Press; 1992.
[74] Jurado JD, Rael ED, Lieb CS, Nakayasu E, Hayes WK, Bush SP, et al. Complement inactivating proteins and intraspecies venom variation in *Crotalus oreganus helleri*. Toxicon 2007;49:339–50.
[75] Wasserberger J, Ordog G, Merkin TE. Southern Pacific Rattlesnake bite: a unique clinical challenge. J Emerg Med 2006;31:263–6.
[76] Vonk FJ, Jackson K, Doley R, Madaras F, Mirtschin PJ, Vidal N. Snake venom: from fieldwork to the clinic: recent insights into snake biology, together with new technology allowing high-throughput screening of venom, bring new hope for drug discovery. Bioessays 2011;33(4):269–79.
[77] Hayes WK, Mackessy SP. Sensationalistic journalism and tales of snakebite: are rattlesnakes rapidly evolving more toxic venom? Wilderness Environ Med 2010;21:35–45.
[78] Edgar RC. MUSCLE: multiple sequence alignment with high accuracy and high throughput. Nucleic Acids Res 2004;32:1792–7.
[79] Guindon S, Dufayard JF, Lefort V, Anisimova M, Hordijk W, Gascuel O. New algorithms and methods to estimate maximum-likelihood phylogenies: assessing the performance of PhyML 3.0. Syst Biol 2010;59:307–21.
[80] Yang Z. PAML 4: phylogenetic analysis by maximum likelihood. Mol Biol Evol 2007;24:1586–91.
[81] Low DH, Sunagar K, Undheim EA, Ali SA, Alagon AC, Ruder T, et al. Dracula's children: molecular evolution of vampire bat venom. J Proteomics 2013;89:95–111.
[82] Murrell B, Wertheim JO, Moola S, Weighill T, Scheffler K, Kosakovsky Pond SL. Detecting individual sites subject to episodic diversifying selection. PLoS Genet 2012;8: e1002764.
[83] Pond SLK, Frost SDW, Muse SV. HyPhy: hypothesis testing using phylogenies. Bioinformatics 2005;21:676–9.
[84] Pond SL, Scheffler K, Gravenor MB, Poon AF, Frost SD. Evolutionary fingerprinting of genes. Mol Biol Evol 2010;27:520–36.
[85] Pond SLK, Murrell B, Fourment M, Frost SD, Delport W, Scheffler K. A random effects branch-site model for detecting episodic diversifying selection. Mol Biol Evol 2011;28:3033–43.
[86] Kelley LA, Sternberg MJ. Protein structure prediction on the Web: a case study using the Phyre server. Nat Protoc 2009;4:363–71.
[87] DeLano WL. The PyMOL molecular graphics system. Scientific D; 2002 [San Carlos, CA].
[88] Armon A, Graur D, Ben-Tal N. ConSurf: an algorithmic tool for the identification of functional regions in proteins by surface mapping of phylogenetic information. J Mol Biol 2001;307:447–63.
[89] Faure G, Xu H, Saul FA. Crystal structure of crotoxin reveals key residues involved in the stability and toxicity of this potent heterodimeric beta-neurotoxin. J Mol Biol 2011;412:176–91.
[90] Guex N, Peitsch MC, Schwede T. Automated comparative protein structure modeling with SWISS-MODEL and Swiss-PdbViewer: a historical perspective. Electrophoresis 2009;30(Suppl. 1):S162–73.
[91] Guex N, Peitsch MC. SWISS-MODEL and the Swiss-PdbViewer: an environment for comparative protein modeling. Electrophoresis 1997;18:2714–23.
[92] Sali A. Comparative protein modeling by satisfaction of spatial restraints. Mol Med Today 1995;1:270–7.
[93] Humphrey W, Dalke A, Schulten K. VMD: visual molecular dynamics. J Mol Graph 1996;14(33-8):27–8.
[94] Baker NA, Sept D, Joseph S, Holst MJ, McCammon JA. Electrostatics of nanosystems: application to microtubules and the ribosome. Proc Natl Acad Sci U S A 2001;98:10037–41.
[95] Matsudaira PT. A practical guide to protein and peptide purification for microsequencing: access online via Elsevier; 1993.
[96] Green SB, Salkind NJ. Using SPSS for Windows and Macintosh: analyzing and understanding data. 4th ed. Upper Saddle River, NJ, USA: Pearson Prentice Hall; 2005.
[97] Revell TK, Hayes WK. Desert iguanas (*Dipsosaurus dorsalis*) sleep less when in close proximity to a rattlesnake predator (*Crotalus cerastes*). J Herpetol 2009;43:29–37.
[98] Cohen J. Statistical power analysis for the behavioral sciences. 2nd ed. Hillsdale, New Jersey, USA: Erlbaum; 1988.

[99] Nakagawa S. A farewell to Bonferroni: the problems of low statistical power and publication bias. Behav Ecol 2004;15:1044–5.
[100] Durban J, Perez A, Sanz L, Gomez A, Bonilla F, Rodriguez S, et al. Integrated "omics" profiling indicates that miRNAs are modulators of the ontogenetic venom composition shift in the Central American rattlesnake, *Crotalus simus simus*. BMC Genomics 2013;14:234.
[101] Glenn JL, Straight R. Mojave rattlesnake *Crotalus scutulatus scutulatus* venom: variation in toxicity with geographical origin. Toxicon 1978;16:81–4.
[102] Glenn JL, Straight RC, Wolfe MC, Hardy DL. Geographical variation in *Crotalus scutulatus scutulatus* (Mojave rattlesnake) venom properties. Toxicon 1983;21:119–30.
[103] Fadel V, Bettendorff P, Herrmann T, de Azevedo Jr WF, Oliveira EB, Yamane T, et al. Automated NMR structure determination and disulfide bond identification of the myotoxin crotamine from *Crotalus durissus terrificus*. Toxicon 2005;46:759–67.
[104] Radis-Baptista G, Kerkis I. Crotamine, a small basic polypeptide myotoxin from rattlesnake venom with cell-penetrating properties. Curr Pharm Des 2011;17:4351–61.
[105] Gopalakrishnakone P, Hawgood BJ, Holbrooke SE, Marsh NA, Santana De Sa S, Tu AT. Sites of action of Mojave toxin isolated from the venom of the Mojave rattlesnake. Br J Pharmacol 1980;69:421–31.
[106] Dugan EA, Hayes WK. Diet and feeding ecology of the red diamond rattlesnake, *Crotalus ruber* (Serpentes: Viperidae). Herpetol 2012;68:203–17.
[107] Peeters HJ. Mammals of California. University of California Press; 2004.
[108] Stebbins RC. A field guide to western reptiles and amphibians. Third Edition. Houghton Mifflin Company; 2003.
[109] Pawlak J, Mackessy SP, Sixberry NM, Stura EA, Le Du MH, Menez R, et al. Irditoxin, a novel covalently linked heterodimeric three-finger toxin with high taxon-specific neurotoxicity. FASEB J 2009;23:534–45.

State of California – Fish and Game Commission
PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATION CHANGE
FGC 1 (NEW 10/23/14) Page 1 of 3

Tracking Number: 2015-006 (~~Click here to enter text.~~)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. **Person or organization requesting the change (Required)**
   Name of primary contact person: Dennis Thibeault, Vice President Forestry, Mendocino Redwood Company, LLC
   Address: [redacted]
   Telephone number: [redacted]
   Email address: [redacted]

2. **Rulemaking Authority (Required)** - Reference to the statutory or constitutional authority of the Commission to take the action requested: California Fish & Game Code § 1580; California Fish & Game Code § 2855; California Public Resources Code § 36600, 36700 , 36725[(a),(e)]

3. **Overview (Required)** - Summarize the proposed changes to regulations: Remove special closure regulations for Rockport Rocks in 14 CCR § 632 (b)(17)

4. **Rationale (Required)** - Describe the problem and the reason for the proposed change: The above-mentioned special closure was enacted on a parcel private property owned by Mendocino Redwood Company, LLC (MRC). The special closure as currently written prohibits complete access to this parcel of land from March 1 to August 31. MRC was never informed—neither verbally nor in writing—by the California Department of Fish and Wildlife or the North Coast Regional Stakeholders Group about including Rockport Rocks in a special closure when formally proposed in 2010. Evidence from historical documents establishing the North Coast Marine Protected Area (MPA) indicate that the designation of Rockport Rocks as a special closure area was an unintentional error because it was mistakenly assumed to be a part of the Coastal National Monument managed by the Bureau of Land Management. The CDFW is also on record stating that MPAs "will not affect private property rights" and that the "MPA designation process must take into account existing California State Lands Commission leases, California Fish and Game Commission state water bottom and kelp leases, tide and submerged lands grants, private tidelands, and any other legal entitlements." Overall, had these facts been disclosed during the MLPA process, this area would have been removed from the original proposal prior to the Commission's vote on the matter.

SECTION II: Optional Information

5. Date of Petition: November 17, 2015

6. Category of Proposed Change

☐ Sport Fishing
☐ Commercial Fishing
☐ Hunting
☒ Other, please specify: Special Closure Area for

7. The proposal is to: (*To determine section number(s), see current year regulation booklet or https://govt.westlaw.com/calregs*)

☐ Amend Title 14 Section(s):Click here to enter text.
☐ Add New Title 14 Section(s): Click here to enter text.
☒ Repeal Title 14 Section(s): 14 CCR § 632 (b)(17)

8. If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition Click here to enter text.
Or ☒ Not applicable.

9. Effective date: If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency: As soon as possible; the designation of Rockport Rocks special closure area was an unintentional error as all the facts of ownership were neither made available to the CDFW nor the Commission during the special closure designation process.

10. Supporting documentation: Identify and attach to the petition any information supporting the proposal including data, reports and other documents: Supplementary information including a cover letter substantiating MRC's case is attached to this petition.

11. Economic or Fiscal Impacts: Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: Designation of Rockport Rocks as a special closure is a potential encumbrance to MRC being able to sell the parcel or sell a conservation easement to an interested party.

12. Forms: If applicable, list any forms to be created, amended or repealed:

Click here to enter text.

SECTION 3: FGC Staff Only

Date received: Click here to enter text.

FGC staff action:
☒ Accept - complete

☐ Reject - incomplete
☐ Reject - outside scope of FGC authority

Tracking Number

Date petitioner was notified of receipt of petition and pending action: 11/24/15

Meeting date for FGC consideration: Receive 12/9/15, Action 2/10/16

FGC action:
☐ Denied by FGC
☐ Denied - same as petition _____

Tracking Number

☐ Granted for consideration of regulation change

Allweather Wood™ Humboldt Redwood™ Mendocino

November 23, 2015

Mr. Jack Baylis, President
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

Dear Mr. Baylis

We have recently been made aware a parcel of our property, referred to as "Rockport Rocks," was included in a special closure area during the Marine Life Protection Act (MLPA) designation process. Unfortunately this occurred without any type of notification to us from the California Department of Fish and Wildlife (CDFW) or the North Coast Regional Stakeholders Group (NCRSG). MRC's ownership of Rockport Rocks (aka "Sea Lion Rock") is well-established by a patent, grant deed, and numerous historical documents and photographs spanning nearly a century and are available upon request.

This special closure, 14 CCR § 632(b)(17), inhibits our private property rights and our ability to enjoy our property. We provide limited public access to Rockport Beach and the beach is visited and enjoyed by hundreds of employees, family and friends every year. The seasonal closure, which goes from March 1 to August 31, effectively prohibits access to this parcel of land by the property owner, and potentially limits recreational and educational activities (e.g., fishing, abalone diving, kayaking, kelp harvesting, bird watching, tidepooling, etc.) in nearshore waters historically enjoyed by visitors to Rockport Beach.

The public nature of the special closure has also created a potential encumbrance to MRC's ability to sell the parcel or negotiate a conservation easement with an interested party should it ever decide to do so. In 2011, the Bureau of Land Management (BLM) and the United States Fish and Wildlife Service indicated interest in acquiring Rockport Rocks for conservation purposes in the Report "Potential Murre Restoration Projects Northern California".

Our investigation into this matter leads us to conclude that the inclusion of MRC property in a special closure was done in error. First, documents for the MLPA process suggest that the CDFW and the NCRSG assumed that Rockport Rocks were part of the publically owned California Coastal National Monument system administered by the BLM. Secondly, the CDFW stated in a memorandum dated 1/31/08 from John Ugoretz to the MLPA Stakeholder Group that MPAs "will not affect private property rights" and that the "MPA designation process must take into account existing California State Lands Commission leases, California Fish and Game Commission state water bottom and kelp leases, tide and submerged lands grants, private tidelands, and any other legal entitlements". In fact, the Vizcaino Rocks special closure, located 0.6 miles to the south of Rockport Rocks, clearly embodies this philosophy as it has a modified boundary that extends 300' from only the seaward side of the rock, presumably because a buffer around the entire rock would overlap with a private beach owned by the Save-the-Redwoods League.

We conclude had CDFW, NCRSG, or the Commission known MRC was the owner of Rockport Rocks, this special closure would not have been included in the final rulemaking package that was eventually adopted. Based on the facts presented here, we kindly request that the Commission remove the special closure regulations on Rockport Rocks.

If you have any questions, would like documentation of the above statements or would like to discuss the matter further, please give me a call at (707) 463-5112 or email me at dthibeault@mendoco.com.

Sincerely,

Dennis Thibeault
Vice President Forestry

ABOUT MRC

Mendocino Redwood Company (MRC) was created in 1998 from lands purchased in Mendocino and Sonoma counties with the publicly declared mission to be good stewards of the forest and at the same time run a successful business. We have made significant progress in that regard:

1. *Adopting policies to make MRCs forestlands FSC certified (since November 2000);*
2. *Adding more than 1 billion board feet of redwood and Douglas fir trees by lowering the rate of harvest;*
3. *Defining of old growth down to the level of an individual tree, along with implementation of a policy to protect all individual old growth trees across our property;*
4. *Elimination of traditional clear cutting from our property;*
5. *Long term investments to improve habitat for fish across the property by controlling or holding back more than 1 million cubic yards of sediment (more than 100,000 dump trucks of dirt) from the coastal streams flowing through our forest;*
6. *Removal of more than 36 long time fish barriers, increasing fish bearing streams by more than 20 miles.*
7. *Operating as an open and transparent business; including an open invitation to take interested individuals anywhere in the forest;*
8. *Completing a substantial rebuild of our Ukiah sawmill, assuring that Mendocino County will have infrastructure in the processing of wood products for many years to come; and*
9. *Employing about 300 skilled employees in Mendocino County earning family-level wages and benefits.*

From:	Kerry Kriger
To:	Sonke Mastrup; FGC@fgc.ca.gov
Cc:	Chuck Bonham; John Laird
Subject:	DFW bullfrog policies - please respond
Date:	Sunday, November 01, 2015 11:08:02 AM

Dear Sonke Mastrup and the Fish & Game Commission of California,
I sent the letter pasted below to Director Bonham and Secretary Laird on August 26th but have not received a response. I would appreciate a response as soon as possible.
Thank you,

Dr. Kerry Kriger
SAVE THE FROGS!
Founder, Executive Director, Ecologist & California Taxpayer
www.savethefrogs.com
www.savethefrogs.com/kerry-kriger
[redacted]

SAVE THE FROGS! is the world's leading amphibian conservation organization. We work in California, across the USA, and around the world to prevent the extinction of amphibians, and to create a better planet for humans and wildlife. Since 2008, SAVE THE FROGS! has organized over 1,600 educational events in 60 countries to raise awareness for endangered amphibians.

##############################

Dear John and Chuck,

DFW's Betsy Bolster informs us that the DFW only has one total employee dedicated to amphibians and reptiles, and that this is causing continued delays in releasing the DFW's amphibian conservation strategy report "A Guiding Vision for the Conservation and Management of California's Reptiles and Amphibians", which I believe has been in production for four years, an inordinately long time for a report. Given that amphibians and reptiles comprise two out of the five classes of vertebrates in the state, can you please immediately authorize additional staff to (1) complete the above mentioned document and (2) to develop a strategy for the DFW to discontinue issuing permits for the importation of bullfrogs or at the very least to charge importers a high fee for permits, which would deter applications and also fund DFW so that the Department could conduct disease testing of incoming amphibians and enforce regulations related to these infected amphibians.

On a related note, at its February meeting the FGC instructed the DFW to report back to the FGC on its progress related to dealing with the state's bullfrog importation problems but to the best of my knowledge the DFW has not followed through. I would appreciate if you could tell me when the DFW plans to report back on this issue.

Thank you!
Kerry

Coastside Fishing Club
P.O. Box 5501
San Mateo, CA 94402

November 19, 2015

Jack Baylis, President
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

SUBJECT: Request for December Agenda Item on Crab Closure

Dear President Baylis:

On behalf of the recreational fishing community, we ask that the Fish and Game Commission's December 9 meeting include a specific agenda item to discuss the ongoing closures of the recreational Dungeness and rock crab fisheries.

On November 7, 2015, the Commission took emergency regulatory action to delay the opening of the recreational Dungeness crab season and to close the rock crab season throughout the State. The Commissioners noted the gravity of this emergency action and assured stakeholders that the fishery would reopen as soon as it is safe. The Department of Fish and Wildlife committed to weekly testing at each port.

Given the extraordinary nature of this action and the continued closures, there is a genuine need for the Commission and the Department to review the status of the closure and the results of the weekly tests at each port. We are aware that the commercial fishing sector strongly objects to the county-by-county regulatory approach adopted by the Commission for recreational anglers, preferring to delay the recreational opener and tie it to a statewide commercial opening date.

Respectfully submitted.

Marc Gorelnik
Coastside Fishing Club

From:	Tom Handley
To:	FGC
Subject:	Petition BCD-001
Date:	Thursday, October 15, 2015 9:03:41 AM

Greetings,

I am writing in regards to the petition submitted by Curtis Haney, tracking number (BCD-001) and am requesting amending Title 14 Section(s):Chapter 4, Section 29.05 (b) (1)
to include the public harvesting of Goose Neck Barnacles for personal consumption. The harvesting of these mollusks pose not more threat to the environment than the already allowed harvesting of mussels. The barnacles are tasty, nutritious, and as far as I know have a healthy population whereby harvesting for personal consumption would not threaten the species's survival.

Thank You,
Tom Handley
Berkeley, CA

From:	Polly Shaw
To:	FGC
Subject:	SUPPORT FOR PETITION SUBMITTED BY CURTIS HANEY, TRACKING NUMBER (BCD-001)
Date:	Friday, October 16, 2015 2:56:05 PM

October 16, 2015

Fish & Game Commission
1416 Ninth St.
Room 1320
Sacramento, CA 95814

RE: SUPPORT FOR PETITION SUBMITTED BY CURTIS HANEY, TRACKING NUMBER (BCD-001) REQUESTING THE AMENDING OF TITLE 14 SECTION(S):CHAPTER 4, SECTION 29.05 (b) (1)

To the Fish and Game Commission;

I am an avid, law-abiding foodie who asks you to change the rules to allow the harvest Goose Neck Barnacles for personal consumption. It's illogical that harvesting them is prohibited, and the decision seems to be based on no science or facts.

Simply put, they're delicious and numerous. And they are hard as heck to harvest, so it's very difficult to pick very many and risk hurting the population. They are as abundant and self-replenishing as mussels. They should be held to the same seasonal and weight harvest rules as mussels, since they're no different.

I have unwittingly been harvesting them once a year at Thanksgiving, without realizing it was prohibited. It makes for a lovely activity and a real present to myself for dinner.

I thoroughly support the petition of Curtis Haney, tracking number BCD-001, requesting the amending of Title 14 Sections: Chapter 4, Section 29.05(b)(1).

Please lift the ban on harvesting Gooseneck Barnacles. Thank you for your consideration.

Polly Shaw


From:	Roy Coto
To:	FGC
Cc:	
Subject:	PETETION TO CHANGE A CURRENT FISH AND GAME COMMISSION REGULATION
Date:	Monday, October 19, 2015 7:41:09 AM

Sirs
I understand that on December 9-10, 2015 the petition submitted by Curtis Haney, tracking number (BCD-001) requesting the amending of Title 14 Section(s):Chapter 4, Section 29.05 (b) (1)
will up for consideration. I would urge you to accept this petition and amend the regulation on goose neck barnacles.

Roy Coto

From:	David Le
To:	FGC
Subject:	Please allow harvesting of gooseneck barnacles
Date:	Sunday, November 22, 2015 2:36:20 PM

Dear Fish and Game,

I am writing to add my support to the petition to allow for the harvesting of gooseneck barnacles.
These animals grow in great abundance along our coastline. The limited harvesting by private individuals would do little to impact the overall population.

Thank you,
David

From:	Jean Lundeen
To:	FGC
Subject:	Support for petition to allow harvesting of goose neck barnacles
Date:	Sunday, November 22, 2015 12:08:20 PM

Hello

I support the petition submitted by Curtis Haney, tracking number (BCD-001) requesting the amending of Title 14 Section(s):Chapter 4, Section 29.05 (b) (1)

Please change the regulation so that the public can harvest Goose Neck Barnacles for personal consumption. I understand these are very delicious and would enjoy the opportunity to harvest some. I understand they are not threatened so I hope this can be done.

Thank you,

Jean Lundeen

From:	Carol Reed
To:	FGC
Subject:	amending Title 14 sec. Chap 4, sec29.05(b)(1)
Date:	Saturday, November 21, 2015 11:21:32 PM

Dear Fish and Game Commission,

I writing to you to request a revision on the rule regarding the personal harvesting of (Gooseneck), Leaf Barnacles. They are considered a delicacy in Spain and are allowed to be harvested in Alaska. We previously collected then and they are delicious, a member of the lobster family. Harvesting times are limited to low tides. We previously collected them when we gathered mussels. Presently I have seen more barnacles then muscles in some locations.
Please add them back into the recreational take species.

Please consider the petition submitted by Curtis Haney, tracking number (BCD-001) requesting the amendment of Title 14 Section(s):Chapter 4, Section 29.05 (b) (1)

Thank you,
Carol Reed
Diver, fisher person and supporter of sustainable harvests.

From: Pat Grady
To: FGC
Subject: Roosevelt Elk in Del Norte Cty, CA
Date: Friday, November 13, 2015 2:46:05 PM

I am writing in regard to the future management of the Roosevelt Elk that are located in Del Norte County, CA. I know that many local people delight in seeing the elk in various places along the highway; it is one of the things that makes living here so special. There are many who do not approve of the lottery, but people don't know where to turn to make their voices heard. Also, the elk are one of the unique elements that draw tourists to our area; we should be celebrating them, not killing the finest surviving examples of these unique creatures so someone can hang another head on their wall. I have never had a problem with people legally hunting for 'groceries', but to hold a lottery to win a chance to kill – not cull – the elk who now grace our county lands is reprehensible and reflects poor stewardship on the part of all entities responsible.

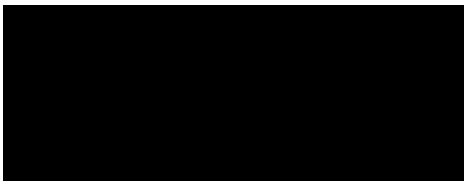
I was appalled by the front page local news article where someone proudly spoke of the 'trophy' bull he had hunted through the lottery. Responsible management of the herd(s), in my opinion, means culling only weaker members and females when needed, NOT stripping an already small gene pool of the superior genes you want passed on: that is not culling, that is a lottery for killing. I strongly suggest that you do some serious surveys and counts before hunting of any of the elk at any time. How else can you determine what are sustainable and responsible hunting practices? This needs to be done first! Officials admit that they have no idea how many elk are actually here, but they assume that there are "plenty of elk" for people to kill for no good reason.

I also believe that you need to determine ways to help maintain and improve the genetic integrity of the herds; to do so, the state must work to create wildlife corridors so the elk can continue their natural movements without being slaughtered as they move from public lands through private lands where they are hunted without regard to the future or the best interest of the elk or county. There also need to be corridors that allow the elk to travel to increase genetic diversity. It is not so long since they were virtually extinct – we should be working to improve the limited gene pool that remains, not to decimate it further. Wildlife corridors are being recognized as an important tool for conservation throughout our country; we need to do this for this signature species at least.

I hope that all officials involved will seriously consider viewing the elk as a precious resource – not of some lottery dollars – but as an important part of the biological diversity and great overall natural value of our area. The elk are part and parcel of the incredible ecosystem attracts people here, and it doesn't make sense to decimate the few remaining herds indiscriminately.

Thank you for your time and consideration.

Patricia Grady



From: [redacted]
To: [redacted]
Subject: "Who really pays for wildlife in the U.S?"
Date: Monday, November 09, 2015 2:24:06 PM

- Attention:
- Mr. Jack Baylis, President
- Mr. Jim Kellogg, Vice President
- Mrs. Jacque Hostler-Carmesin, Member
- Mr. Anthony C. Williams, Member
- Mr. Eric Sklar, Member
- Sonke Mastrup

Most of you are doing a wonderful job, and we Californians are very grateful!
I am sending the following article for your information; I found it very enlightening. Since less than 6% of Americans hunt, we, the other 94%+ request (demand?) that OUR wildlife and Public Lands should no longer be managed for the benefit of a tiny minority. There are months when a non-hunter is taking their life and their pets lives into their hands by daring to use OUR Public lands! I think it may clarify your jobs when you realize exactly WHO you are managing OUR lands for.

http://www.mountainlion.org/featureimages/whopaysforwildlife/USA-O-NRWM-Smith-Molde-2014-Wildlife-Conservation-Management-Funding-in-the-US.pdf

"Who really pays for wildlife in the U.S?" Using public information about budgets of various conservation, wildlife advocacy, and land management agencies and non-profit organizations, published studies and educated assumptions regarding sources of Pittman-Robertson Act and Dingle-Johnson Act federal excise monies from the sale of sporting equipment, the authors contend that approximately ***95% of federal, 88% of non-profit, and 94% of total funding for wildlife conservation and management come from the non-hunting public.*** **The authors further contend that a proper understanding and accurate public perception of this funding question is a necessary next step in furthering the current debate as to whether and how much influence the general public should have at the wildlife policy-making level, particularly within state wildlife agencies...wildlife is unequivocally a public Wildlife Conservation... asset under the Public Trust Doctrine, a better understanding and definition of how wildlife management is financed in this country, particularly the portion attributable to the general public, would be of considerable help in deciding whether the general public's interest is adequately represented in our current wildlife management system.**

WILDLIFE CONSERVATION & MANAGEMENT FUNDING IN THE U.S. By Mark E. Smith1 Donald A. Molde2 October 2014 EXECUTIVE SUMMARY The authors present a novel approach to help answer the question "Who really pays for wildlife in the U.S?" Using public information about budgets of various conservation, wildlife advocacy, and land management agencies and non-profit organizations, published studies and educated assumptions regarding sources of Pittman-Robertson Act and Dingle-Johnson Act federal excise monies from the sale of sporting equipment, the authors contend that approximately 95% of federal, 88% of non-profit, and 94% of total funding for wildlife conservation and management come from the non-hunting public. The authors further contend that a proper understanding and accurate public perception of this funding question is a necessary next step in furthering the current debate as to whether and how much influence the general public should have at the wildlife policy-making level, particularly within state wildlife agencies. INTRODUCTION With increased awareness and interest of the general (non consumptive) public in controversial wildlife management issues such as fur trapping, predator control, trophy hunting, coyote killing contests and wolf reintroduction, a debate is before us as to whether the general public is or should be afforded a proper voice in wildlife management decisions. Sportsmen favor the current system, which places a heavy emphasis on their interests through favorable composition of wildlife commissions and a continued emphasis on ungulate management. Nonhuman predators (wolves, mountain lions, coyotes,

ravens and others) are disfavored by wildlife managers at all levels as competition for sportsmen and are treated as second-class citizens of the animal kingdom. Sportsmen suggest this bias is justified because “Sportsmen pay for wildlife,” a refrain heard repeatedly when these matters are discussed. Agency personnel and policy foster this belief as well. Do sportsmen really pay for wildlife? Is it a fact or an unfounded assertion or something in between? Are there ways of looking at financial and other information to test the merit of this claim? While wildlife is unequivocally a public Wildlife Conservation & Management Funding in the U.S. Smith & Molde, Oct. 2014 2 asset under the Public Trust Doctrine (see, for example, SCOUS 1842 and Horner 2000), a better understand and definition of how wildlife management is financed in this country, particularly the portion attributable to the general public, would be of considerable help in deciding whether the general public’s interest is adequately represented in our current wildlife management system. Summary of Findings While this question is not easy to answer and the information may be murky, we have devised a novel approach, using available public information and certain helpful assumptions to offer a perspective on this question, which, to our knowledge, has not been previously presented. The results are expressed both in terms of annual budgets by organization (Table 1) and acreages under management (Table 2). In summary, approximately 95% of federal, 88% of nonprofit, and 94% of total funding for wildlife conservation and management come from the non-hunting public. This runs counter to the common position promoted by many hunter-centric organizations and even to what state wildlife agencies often cite (e.g. Mayer, 2012). Another example of this is a motto of the Rocky Mountain Elko Foundation: “Hunting is Conservation.” Obviously hunting per se is not conservation, but they claim that hunting funds conservation, nearly exclusively. The data in Table 1 shows that the financial contribution from hunters is a small portion of the total. Of the 8 largest federally funded wildlife programs listed in the top half of Table 1, a total of $18.7 billion is spent annually on wildlife, land management and related programs (including hunter education). Approximately 5.3% of the combined operating budgets (top half of Table 1) and 4.9% of the land acquisition costs (Table 2) are funded by hunters or through hunting-related activities. The 10 largest non-profit conservation organizations contribute $2.5 billion annually to habitat and wildlife conservation; of this, 12.3% comes from hunters and 87.7% from the non-hunting public (bottom half of Table 1). Methodology In Tables 1 & 2 values have been assigned for the portion of funding derived from hunters or hunting-related activities. The difference between “hunter” and “hunting related” as well as the allocation of Pittman-Robertson and DingellJohnston Act funds are discussed in the section entitled Pittman-Robertson & Dingell-Johnson Acts. The allocations for the other items are discussed in the sections entitled General Tax Revenue and Duck Stamp Act. State funding was not considered in this study, in part because most state wildlife agency funding flows from the federal government (about 70% in Nevada’s case), and in part because it would be a task larger than our resources allowed. It is also generally true that the state funding (e.g. hunter license and tag Wildlife Conservation & Management Funding in the U.S. Smith & Molde, Oct. 2014 3 sales) is rarely adequate to cover the direct costs of administering the related programs; therefore, state-level funding can reasonably be classified as hunting or sportsmen services rather than wildlife management. State-owned public lands are considered in terms of the acreage under management in Table 2. Also not considered is the portion that each agency or organization actually spends on conservation versus other activities. For example, most state wildlife agencies spent only a small portion of their total funding on conservation. Other organizations, such as the government funded National Wildlife Refuge System and the donor funded Nature Conservancy, spend the great majority of their funding on conservation. This differential was ignored in our analysis. Table 1: Summary of Conservation Funding by Source (M = million US dollars) Activities Funded by Hunters Source Total Annual Funding, $ % of Total $ Activities Funded by Non-hunting Public, $ National Wildlife Refuge System (operating budget, see Table 2 for land purchase funding) $276M 4.6% $13M $263M Pittman-Robertson & Dingell-Johnson Acts Funds: Funding based on hunting activities Funding based on population $882M 14.5% 4.6% $128M $35M $719M USDA Wildlife Services $89M 4.6% $4 $85M USDI Fish & Wildlife $2,795M 4.6% $129M $2,666M US BLM $1,200M 4.6% $56M $1,144M US Forest Service $9,779M 4.6% $453M $9,326M National Park System $3,650M 4.6% $169M $3,481M SUBTOTAL Federal Funding $18,671M 5.3% $986M $17,685M 94.7% Nature Conservancy $859M 4.6% $40M $819M Land Trusts (all, except N.C) $535M 4.6% $25M $510M Wildlife Conservation Society $230M 4.6% $11M $219M World Wildlife Fund $204M 4.6% $9M $195M Ducks Unlimited $147M 99% $146M $1M The Conservation Fund $138M 4.6% $6M $132M Natural Resources Defense Council $123M 4.6% $6M $117M National Wildlife Federation $93M 4.6% $4M $89M National Audubon Society $89M 4.6% $4M $85M Rocky Mountain Elk Foundation $54M 99% $53M $1M SUBTOTAL Non-profit Organizations

$2,472M 12.3% $304M $2,168M 87.7% TOTAL Federal & Non-profits $21,143M 6.1% $1,290M $19,853M 93.9% In our analyses we included those agencies and organizations commonly considered by the public to have as their focus habitat and wildlife management Wildlife Conservation & Management Funding in the U.S. Smith & Molde, Oct. 2014 4 or conservation (e.g. U.S. Department of the Interior Fish & Wildlife Service (FWS), National Wildlife Refuge System, Nature Conservancy, Audubon). We also included agencies and organizations whose primary purpose is to conserve or manage the lands that host wildlife (the U.S. Forest Service (USFS), U.S. Bureau of Land Management (US BLM), the state equivalents, the various land trusts). The organizations that manage habitat, such as the US BLM and the many private land trusts, are included herein because wildlife requires habitat. The goals of these organizations include various combinations of habitat management and conservation, biological diversity (necessary to ensure robust populations), food and water supply, watershed protection, migration corridor management, and other issues critical to wildlife conservation and management. A potentially controversial choice was to include the U.S. Department of Agriculture Wildlife Services. Their core function is to control native carnivores such as wolves, bears, and coyotes, ostensibly to protect agriculture and improve hunter opportunity (Bruskotter, 2011). Arguably they accomplish neither since most livestock mortality is due to weather, birthing, and disease, while most wildlife mortality is due to lack of food, impacts to habitat, and disease. While predator control is wildlife management it is not conservation. Nevertheless, we have included their budget in our funding analyses. Table 2: Summary of Land Under Direct Management (M = million acres) Land Purchases Funded by Hunters Land Purchases Funded by Non-hunting Public Source Land Under Management, acres % acres acres National Wildlife Refuge System Funding based on hunting activities Funding based on population 150M 1.7% 4.6% 2.6M 6.8M 140.6M US BLM 248M 4.6% 9.9M 236.5M US Forest Service (note A) 193M 4.6% 7.7M 184.1M National Park Service 84M 4.6% 3.4M 80.1M State Lands (all states) 197M 4.6% 7.9M 187.9M SUBTOTAL State & Federal Funding 872M 4.9% 42.8M 829.2M 95.1% Nature Conservancy 119M 4.6% 4.8M 113.5M Land Trusts (all) 47M 4.6% 1.9M 44.8M SUBTOTAL Non-profit Organizations 166M 4.6% 7.7M 158.3M 95.4% TOTALS 1,038M 4.9% 50.5M 987.5M 95.1% Note A. The USFS indirectly or cooperatively manages 600M acres. Wildlife Conservation & Management Funding in the U.S. Smith & Molde, Oct. 2014 5 SOURCES OF FUNDING & ALLOCATIONS The sources of our funding and land acreage figures were, in most cases, the official websites for the named agencies or organizations. The total acreage under management by land trusts was obtained from the Land Trust Alliance (http://www.landtrustalliance.org). Pittman-Robertson Act and Dingell-Johnston Act revenue were obtained from the most recently published federal budgets for the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) and US Fish and Wildlife Services (FWS), the agencies responsible for collecting and administering these funds, respectively. See the section entitled PittmanRobertson and Dingell-Johnston Acts for a detailed discussion of how those revenues were allocated, as well as a brief discussion of the two Acts. General Tax Revenue Most of the federal programs relevant to wildlife management and conservation are funded from general tax revenue such as personal and corporate income taxes. The key exceptions to this are the tax transfers made to the states under three well known acts (and their amendments): the Federal Aid in Wildlife Restoration Act of 1937 (more commonly known as the Pittman-Robertson Act or PRA), the Federal Aid in Sport Fish Restoration Act (Dingell-Johnston Act or DJA), and the Migratory Bird Hunting Stamp Act (Duck Stamp Act). Each of these acts is discussed in more detail in subsequent sections. Rather than attempt an allocation of general tax revenue funding to “hunter funding” and “non-hunting public funding” by some complex analysis of demographics, we chose the simpler, and possibly equally accurate, method of allocation based on the percent of the population who hunts. According to the US FWS (2013), there were 14,631,327 hunting licenses issued by all US states in 2013, down from 14,960,522 in 2012. There are two important bias in these statistics: hunters who purchased licenses in more than one state are counted for each state; and most states exempt youth from license requirements (e.g. Nevada hunters under the age of 12 years are not required to purchase a license, in some states the age is 16). We could not find any published analyses on either, so we have made no change to the data published by the FWS. It is likely that both figures are small and each acts to reduce the effect of the other. According to the US Census Bureau (2013), the US population in July 2013 was 316,128,839. Dividing that into the number of hunting licenses sold in 2013 suggests that 4.6% of the population, and therefore the same percentage of general tax revenue is paid by hunters. That figure has been used in Tables 1 & 2. An important side note is that while the US population increases annually, the number of hunting licenses sold is on the decline. Wildlife Conservation & Management Funding in the U.S. Smith & Molde, Oct. 2014 6 Duck Stamp Act Funding

of wildlife land gets a lot of attention among sportsmen and other outdoor enthusiasts. One of the most common to come up in discussion is the Duck Stamp program and the land that it has successful protected as refuges under the National Wildlife Refuge System. The federal government estimates that 1.9% of the 150,000,000 acres (or 2,850,000 acres) of land managed under this program was acquired with funds from programs including duck stamp sales (USFW, 2014; Lin, 2014). It has been estimated that collectors purchase 10% of duck stamps. Duck stamps allow free access to refuges that otherwise charge an entrance fee, and an unknown portion of the public purchases them for this purpose. To determine the total hunter-sourced portion of the National Wildlife Refuge System acreage, we combined 90% of the 1.9% with the hunter portion of general tax revenue (4.6%). Considering the four main federal agencies, the combined state-owned lands, and the collective non profits falling in the category of land trusts, there are 1.038 billion acres of wildlife habitat under conservation management, of which about 4.9% were funded by hunter and 95.1% funded by the non-hunting public. Pittman-Robertson & Dingell-Johnson Acts The process of determining the portion of the Pittman-Robertson Act (PRA) & Dingell-Johnson Act (DJA) excise taxes generated by hunting-related activities is both complex and imprecise. In the end, any such analysis can only be an estimate, since the revenue is not tracked in sufficient detail to allow a precise allocation. Our approach was to both recognize and minimize the biases created by our assumptions in these analyses. The approach taken in this study is briefly summarized here. Beginning in 1919, there has been an excise tax on firearms and ammunition (10 to 11% of the wholesale price). This tax was originally administered under the US Treasury, and the income went into the general fund. In 1937, the Pittman-Robertson Act transferred this tax to administration by the FWS for the exclusive purposes of wildlife management, hunting management, and hunter education. The Dingell-Johnston Act (1950), as amended by the Wallop and Breaux Act (1984), extended the excise tax to archery equipment, fishing supplies, recreational boat import duties, and marine fuel sales. PRA and DJA funding totaled $522 million and $360 million, respectively, for the 2013 fiscal year. Our analyses consider funding allocations in two portions: the first based on activity (hunting related versus non-hunting related), and the second on general population (hunters versus the non-hunting public). This section discusses the former; the latter uses the same allocation as for the other categories. We used this split approach for the PRA and DJA funds because firearms, ammunition, and archery equipment are purchased by both hunters and non-hunters and Wildlife Conservation & Management Funding in the U.S. Smith & Molde, Oct. 2014 7 these are used for both hunting and non-hunting purposes. Therefore, putting the total revenue into either the “hunter” or “non-hunting public” categories would have created a strong bias. The next step was to consider the nature of the purchases that generate the excise taxes collected. According to the ATF (Hogue, 2013), the PRA revenue is generated in the following proportions: o 31% from handgun (pistols and revolvers) production o 37% from long guns (rifles and shotguns) production o 31% from ammunition production o 1% from archery equipment production Dingell-Johnston Act revenue is generated in the following proportions, according to US DF&W statistics (Michigan): o 54% from motorboat fuel o 15% from small engine fuel o 16% from fishing equipment, tackle, trolling motors o 9% from interest on trust fund deposits o 6% from import duties on boats Of these funds, we next made an estimate of the portion of the revenue generated from hunting. We used a variety of sources of information to produce these estimates, principally the following. From ATF statistics on sales of firearms by type (ATF, 2011), we identified those types of firearms that are used principally for hunting. We used the following allocations: traditional rifles and shotgun sales were allocated to hunting; modern sporting rifles (including tactical shotguns) were allocated principally (but not exclusively) to non-hunting. The results was a combined allocation of 40% of long guns to hunting. Handgun sales were allocated 5% to hunting based on anecdotal evidence. Statistics for ammunition sales published by industry sources (LuckyGunner, 2012 & 2013; Bushmann, 2014) were used to determine the approximate percentage of sales by caliber. Each caliber was then assigned to one of three categories: principally hunting, principally non-hunting, or split. Examples of ammunition classified herein as principally for hunting include .243 Winchester, .30-06 Springfield and .308 Winchester (traditional deer and elk calibers). Principally non-hunting ammunition include .380 acp, 9 mm parabellum (aka 9mm Luger), .45 acp, .338 Lapua and .50 BMG. Calibers considered to be used for both hunting and non-hunting include shotgun shells in all gauges, .223 Remington, 5.56x45mm, 7.62x39mm, and large bore magnum handgun calibers such as .44 Remington Magnum and .500 S&W Magnum. Based on the relative sales statistics, considerably less than 20% of ammunition sales appear to be hunting related, but 20% was used in our analysis; this higher figure was used because 2013 represented an anomaly in sales statistics, with sales more Wildlife Conservation & Management Funding in the U.S. Smith & Molde,

Oct. 2014 8 heavily weighted towards self-defense and tactical than a multi-year average would suggest. Of the DJA revenue, the only category related to hunting is small engine fuel sales, some of which is likely used for waterfowl hunting. Our research did not find any data on allocation of these sales; we assumed 15% is derived from hunting-related activities. Table 3 summarizes the allocations and presents the estimated total funding generated by hunting-related activities. The estimate of 14.5% is consistent with the results published by other authors, a commonly cited range being 14% to 22% of the DJA funds alone (Lin, 2014), which equates to 8% to 13% of the combined PRA and DJA funds. Table 3: Allocation of Excise Tax Revenue Based on Activity (M = million US dollars) Proportion Derived from Hunting Excise Tax Source Activities Total Tax Revenue, $ % $ Handguns (revolvers, pistols) 164M 5 8M Long guns (rifles, shotguns, MSRs) 194M 40 78M Ammunition (all calibers) 163M 20 33M Archery equipment and supplies 4M 33 1M Fuel, motor boats 194M 0 0 Fuel, small engine 54M 15 8M Fishing equipment 59M 0 0 Interest on reserves 32M 0 0 Import duties on boats 22M 0 0 TOTALS $882M 14.5% $128M Another way to estimate the portion of PRA funds generated by hunting activity is to compare the number of guns used for hunting with total gun ownership. There are an estimated 270 to 310 million firearms in America (Krouse, 2012; GunPolicy; Crime Prevention Research Center, 2014). There are 14.6 million licensed hunters (FWS, 2013), though the number of licensed hunters who actually hunt is unknown. If we make an assumption that the average hunter owns 3 guns for hunting (e.g. two rifles and a shotgun), then 43.8 million guns are used for hunting, or 14.1 to 16.2% of the total. This would suggest that 8.8 to 10.1% of the combined PRA and DJA funds are huntingsourced. If we increase the per-hunter ownership assumption to 5 guns, the Wildlife Conservation & Management Funding in the U.S. Smith & Molde, Oct. 2014 9 portion of combined funding increase to 14.8 to 16.9%. Both ranges compare well with the 14.5% figure cited in Table 3. Possible Biases In Our Analyses of PRA & DJA Revenue A large portion of the PRA funds are set aside by law for hunter-specific uses rather than conservation or wildlife management. For example one half of the taxes generated from handguns and archery equipment are set aside exclusively for hunter education, which is principally about firearms safety (i.e., Hunter Ed); this totaled 15.9% of the PRA revenue in fiscal 2013. While one may reasonably argue that this money is not wildlife conservation funding, we have elected to ignore this issue. This creates a small bias in favor of the hunter-funding category. Fiscal 2013 was a record-setting year for firearm and ammunition sales, based on worries in the gun community about new federal gun control legislation following the Sandy Hook shootings and the reelection of President Obama. This increased the PRA funding, both in terms of the total dollars and the PRA percentage of the combined PRA and DJA revenues. This, in turn, increased the apparent hunting allocation over a multi-year average. At the same time the types of guns and ammunition which saw the greatest sales increases in 2013 were not traditional hunting equipment but rather modern sporting riflesa or MSRs), tactical shotguns, tactical and self defense ammunition. For example, 9mm handgun ammunition sales increased to 21.4% of the total in 2013 from 14.2% in 2012 (LuckyGunner, 2012 & 2013). According to the National Shooting Sports Foundation survey, “82% of recent purchases were AR-platform rifles” (NSSF, 2013). The disproportionate increase in sales of pistols, tactical long guns, and the related ammunition decreased the apparent hunting contribution. The net affect was not estimated. We applied 40% of long gun sales in 2013 to hunting sales, though the statistics suggest that this number should be lower. If, for example, the above NSSF quote is accurate and 82% of recent sales were AR platforms, and if AR platforms are principally not used for hunting as other surveys and anecdotal evidence suggest, the actual percentage allocated to hunting could be overstated by 10 percentage points or more. a Modern Sporting Rifles is an industry term for the class of rifles sometimes referred to assault rifles, assault weapons or tactical rifles. For the purposes of this paper the term is used for the class of rifles that include AR-10, AR-15, AK-47 and Uzi-style platforms and their variants. While many in the public and media seem to focus on the appearance, the most important features in terms of our use of this classification are the semi-automatic action, carbine length, and the use of a detachable magazine. Wildlife Conservation & Management Funding in the U.S. Smith & Molde, Oct. 2014 10 CLOSING COMMENTS Gill (1996) concluded that the narrowly based funding of state wildlife agencies has ‘‘blurred the essential distinction between public interest and special interest and inevitably eroded both scientific credibility and public trust.’’ We would argue that it is the perception not the reality that has blurred the distinction. For example, then director of the Nevada Department of Wildlife Ken Mayer wrote to the legislative sunset subcommittee “…the contribution to NDOW’s operating budgets from sportsmen is 79 percent of total funding” (Mayer, 2012). He was assuming that all of the federal excise tax transfers were hunter-sourced. This is a misrepresentation often used to manipulate public opinion

and influence policy. This narrative "…logically encourages those who pay via licenses and permits for the privilege of using wildlife to expect greater benefits…Because [it's believed that] hunters pay the bills, it is not surprising that they are given much attention and wield a great deal of influence…" (Jacobson et al, 2010). Modern wildlife management has wandered far from the original path of the Public Trust Doctrine and the North American Wildlife Conservation Model from which it flows (SCOUS, 1842; Horner, 2000). Smith (1980) identified three criteria that need to be met for the Public Trust Doctrine to be effective: 1. The general public must be aware of their legal standing with respect to public ownership of wildlife; 2. This standing and the rights associated with it must be enforceable against the government so that the public can hold it accountable; and, 3. Interpretation of these rights must be adaptable to contemporary concerns, such as biodiversity and species extinction. All three are impaired when the basis of public debate is a myth. It's time that we call for honest dialog from our state and federal agencies and transparency in wildlife policy making. ACKNOWLEDGEMENTS We would like to express our deepest gratitude to the many professionals who provided review, editing and critical input into the development of this paper. Especially noteworthy are Wendy Keefover of the Humane Society of the United States and Harley Shaw, retired, Arizona Game & Fish Department who provided invaluable review and editing support. REFERENCES Bruskotter, Jeremy T. (2011), "Rescuing wolves from politics: wildlife as a public trust resource." Science magazine, Vol. 333, pg. 1818-1829, September 30. Wildlife Conservation & Management Funding in the U.S. Smith & Molde, Oct. 2014 11 Bureau of Alcohol, Tobacco, Firearms and Explosives (2011), "Annual firearms manufacturers and export report." Bushmann, Ron (2014), "New Business Year 2014." Shooting Industry magazine, January. Crime Prevention Research Center (2014), "Comparing murder rates and gun ownership across countries." March 31. http://crimepreventionresearchcenter.org/2014/03/comparing-murder-ratesacross-countries/ GunPolicy.org, "Number of privately owned firearms." http://www.gunpolicy.org/firearms/region/united-states Hogue, Thomas K. (2013), personal communication with Congressional Research Service as reported in "Guns, excise taxes, and wildlife restoration." March 12. Horner, S. M. (2000), "Embryo, not fossil: breathing life into the public trust in wildlife." University of Wyoming College of Law, Land and Water Law Review 35:1–66. Hunter Ed, http://www.hunter-ed.com/nevada/studyGuide/201034 Jacobson, Cynthia A., Organ, John F., Decker, Daniel J., Batcheller, Gordon R. and Carpenter, Len (2010), "A conservation institution for the 21st century: implications for state wildlife agencies." Journal of Wildlife Management 74(2), pgs. 203-209, DOI: 10.2193/2008-485. Krouse, William J. (2012), "Gun Control Legislation." Congressional Research Service, November 14. Lin, Doris (2014), "Do hunters pay for wildlife conservation?" http://animalrights.about.com/od/wildlife/f/Do-Hunters-Pay-For-WildlifeConservation.htm LuckyGunner (2013), retail sales statistics. http://www.luckygunner.com/labs/2013-ammo-stats/ LuckyGunner (2012), retail sales statistics. http://www.luckygunner.com/labs/2012-ammo-stats/ Mayer, Kenneth (2012), former director of the Nevada Department of Wildlife, in a letter to Assemblywoman Irene Bustamante Adams, Chair, Sunset Subcommittee of the Legislative Commission, Nevada State Legislature, May 24. Michigan Government official website, "Facts about conservation and DingellJohnson funding." https://www.michigan.gov/documents/dnr/DingellJohnson_Fact_Sheet_398759_7.pdf National Shooting Sports Foundation (NSSF, 2013), "NSSF Report modern sporting rifle (MSF) comprehensive consumer report 2013." https://www.nsf.org Wildlife Conservation & Management Funding in the U.S. Smith & Molde, Oct. 2014 12 Smith, F.E. (1980), "The public trust doctrine, instream flows and resources." California Water Policy Center and U.S. Fish & Wildlife Service, Newton Corner, Massachusetts. Supreme Court of the United States, SCOUS (1842), Martin v. Waddell, 41 U.S. 234. U.S. Fish & Wildlife Services (2013), "National hunting license report." http://wsfrprograms.fws.gov/Subpages/LicenseInfo/HuntingLicCertHistory200420 13.pdf U.S. Fish & Wildlife Services (2014), "National Wildlife Refuge System." http://www.fws.gov/refuges/policiesandbudget/budget.html U.S. Census Bureau (2013), http://www.census.gov/# 1 Mr. Smith has 35 years of experience in environmental and resource management and has published extensively on these topics. He has a master's degree in engineering from the University of Nevada, Reno. Mr. Smith is the managing director of the Mark E. Smith Foundation and co-founder of Nevadans for Responsible Wildlife Management (www.NRWM.org). 2 Dr. Molde is a retired physician, former board member of Defenders of Wildlife, and a wildlife advocate with 40 years experience. He is a co-founder of Nevadans for Responsible Wildlife Management (www.NRWM.org).

Blessings, Jane Eagle

When people say, "I couldn't foster because it would be too hard to give a dog up." We say, "How can it be harder than knowing a dog died because no foster home stepped up?" and that's why we do it time and time again.

State of California
Department of Fish and Wildlife

Memorandum

Date: October 14, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Items for the December 9-10, 2015 Fish and Game Commission Meeting Re: Request for Notice Authorization to Amend Salmon Fishing Regulations for 2016 (two ISORs; one to amend Section 27.80(c); the second to amend 27.80(d)).**

Attached for the Fish and Game Commission's (Commission) December 9-10, 2015 meeting are two rulemaking proposals for the 2016 Ocean Salmon fishing season. The first package proposes to amend subsection 27.80(c) to establish open fishing days, bag limits and minimum size restrictions for April 2016. The second package proposes to amend subsection 27.80(d) to establish open fishing days, bag limits and minimum size restrictions for the salmon season in effect on or after May 1, 2016.

Existing Title 14 regulations specify ocean salmon recreational fishing regulations that were valid only for the 2015 season. The proposed amendments to Section 27.80(c) contained in the first ISOR would allow the Commission to adopt regulations at its March teleconference meeting that would establish any ocean salmon recreational fishing regulations for the month of April 2016, in conformance with federal rules.

The proposed amendments to Section 27.80(d) contained in the second ISOR would allow the Commission to adopt regulations at its April teleconference meeting that would establish any ocean salmon recreational fishing regulations on or after May 1, 2016, in conformance with federal rules that will be recommended by the Pacific Fishery Management Council on April 14, 2016. The range of alternatives (open fishing days/times, areas, size limits, bag limits) contained in the second ISOR are the same as those contained in the first ISOR, but the resulting regulations apply only for May 1, 2016 through the end of the year.

The Department of Fish and Wildlife (Department) requests the Commission authorize publication of notice of its intent to amend the above referenced subsections of Section 27.80, Title 14, CCR, to establish ocean salmon recreational fishing regulations for the 2016 fishing season. While the proposed rulemakings are related, they should be noticed separately to conform to timelines driven by the federal regulatory process.

If you have any questions or need additional information, please contact Dr. Craig Shuman, Regional Manager of the Marine Region, at (805) 568-1246. The public notice for this rulemaking should identify Environmental Scientist, Barry Miller as the Department's point of contact. Mr. Miller can be reached at (707) 576-2860 or by email at Barry.Miller@wildlife.ca.gov.

Attachments

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STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Subsection (c) of Section 27.80, Title 14, California Code of Regulations
Re: Ocean Salmon Recreational Fishing – April 2016 Season

I. Date of Initial Statement of Reasons: September 21, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 9, 2015
Location: San Diego, CA

(b) Discussion Hearing: Date: February 10, 2016
Location: Sacramento, CA

(c) Adoption Hearing: Date: March 15, 2016
Location: Teleconference

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

The Pacific Fishery Management Council (PFMC) coordinates west coast management of recreational and commercial ocean salmon fisheries in the federal fishery management zone (three to 200 miles offshore) along the coasts of Washington, Oregon and California. The annual PFMC ocean salmon regulation recommendations are subsequently implemented by the National Marine Fisheries Service (NMFS) effective on May 1 of each year.

California's recreational salmon fishing regulations need to conform to the federal regulations to achieve optimum yield in California under the federal Salmon Fishery Management Plan. The Fish and Game Commission (Commission) adopts regulations for the ocean salmon recreational fishery in State waters (zero to three miles offshore) which are consistent with these federal fishery management goals.

It is critical to have consistent State and federal regulations establishing season dates, bag/size limits and other management measures, and also critical that the State and federal regulations be effective concurrently in order to maintain continuity of management and enforcement. Conformance with federal regulations is also necessary to maintain continued State authority over its recreational salmon fishery and avoid federal preemption under the Magnuson-Stevens Fishery Conservation Act [16 USC §1856 (b)(1)].

On May 1, 2015, NMFS implemented the 2015 federal ocean salmon regulations, which included the PFMC's recommendation to open the California ocean salmon recreational fishing season south of Horse Mountain on April 2, 2016. While federal waters south of Horse Mountain will open on April 2, 2016, State waters in this area will not open unless the Commission takes regulatory action to do so.

The 2016 season opening dates were not adopted into the State's ocean salmon regulations in 2015 as a matter of precaution, in order to account for the possibility that these dates, along with minimum size limits, bag limits, and open fishing days, or other management measures, may be modified by NMFS and PFMC based on the most up-to-date salmon abundance information. Fishery monitoring and escapement information needed for target stocks and salmon species of special concern, including Sacramento River Winter-run Chinook which is listed as endangered under both federal and State Endangered Species Acts, is not available until the winter or early spring of 2016.

Concurrent Regulatory Action

The Commission will consider the most up-to-date information before determining if ocean salmon fishing should be authorized for April 2016. The proposed regulations would allow the Commission to adopt the April 2 opening date, or a later date in April, along with other fishery management measures for State waters that would be effective through April 30, 2016.

Two separate Commission actions are necessary to conform the State regulations to federal rules that will apply in 2016. The first action would amend subsection 27.80(c), establishing salmon fishing regulations for the month of April 2016 consistent with federal regulations for the federal fishery management zone off California. Recreational salmon fishing regulations for May 1 through the end of 2016 will be considered in the second rulemaking action, tentatively scheduled for adoption in April 2016.

Present Regulations

Regulations for 2015 [subsections 27.80(c) and (d)] authorized ocean salmon recreational fishing seven days per week north of Horse Mountain including Humboldt Bay from May 1 to September 7, 2015. Between Horse Mountain and Point Arena, ocean salmon recreational fishing was authorized seven days per week from April 4 to November 8, 2015. Between Point Arena and Pigeon Point, ocean salmon recreational fishing was authorized seven days per week from April 4 to October 31, 2015. Between Pigeon Point and Point Sur, ocean salmon recreational fishing was authorized seven days per week from April 4 to September 7, 2015. For areas south of Point Sur, ocean salmon recreational fishing was authorized seven days per week from April 4 to July 19, 2015. The bag limit for all areas in 2015 was two fish per day (all species except coho). The areas north of Point Arena had a minimum size limit of 20 inches total length. The area between Point Arena and Pigeon Point had a minimum size limit of 24 inches total length through April 30, 2015 and 20 inches total length

thereafter. Areas south of Pigeon Point had a minimum size limit of 24 inches total length through May 31, 2015 and 20 inches total length thereafter. Since the existing regulations pertained only to the 2015 season, amendment of these regulations is essential to allow for any fishing in State waters during 2016.

Proposed Regulations

For public notice purposes and to facilitate Commission discussion, the Department of Fish and Wildlife (Department) is proposing the following regulations to encompass the range of federal ocean salmon regulations that are expected to be in effect April 2 through April 30, 2016. This approach will allow the Commission to adopt State ocean salmon recreational fishing regulations to conform to those in effect in federal ocean waters shortly after the federal rules are promulgated.

(1) North of Horse Mountain and in Humboldt Bay: The fishery shall remain closed in this area during April. The remainder of the 2016 season will be decided in April by the PFMC and Commission and the section will be amended pursuant to the regulatory process.

(2) Between Horse Mountain and Point Arena: The season, if any, may open on a date within the range of April 2 through April 30, 2016. The proposed daily bag limit will be from zero to two fish, and the proposed minimum size will be from 20 to 26 inches total length. The exact opening date, along with daily bag limit, minimum size, and days of the week open will be determined by the Commission, considering federal regulations applicable to this area for April 2016.

(3) Between Point Arena and Pigeon Point: The season, if any, may open on a date within the range of April 2 through April 30, 2016. The proposed daily bag limit will be from zero to two fish, and the proposed minimum size will be from 20 to 26 inches total length. The exact opening date, along with daily bag limit, minimum size, and days of the week open will be determined by the Commission, considering federal regulations applicable to this area for April 2016.

(4) Between Pigeon Point and Point Sur: The season, if any, may open on a date within the range of April 2 through April 30, 2016. The proposed daily bag limit will be from zero to two fish, and the proposed minimum size will be from 20 to 26 inches total length. The exact opening date, along with daily bag limit, minimum size, and days of the week open will be determined by the Commission, considering federal regulations applicable to this area for April 2016.

(5) South of Point Sur: The season, if any, may open on a date within the range of April 2 through April 30, 2016. The proposed daily bag limit will be from zero to two fish, and the proposed minimum size will be from 20 to 26 inches total length. The exact opening date, along with daily bag limit, minimum size, and days of the week open will be

determined by the Commission, considering federal regulations applicable to this area for April 2016.

It is the policy of the State to encourage the conservation, maintenance, and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the State for the benefit of all the citizens of the State. In addition, it is the policy of the State to promote the development of local fisheries and distant-water fisheries based in California in harmony with international law respecting fishing and the conservation of the living resources of the ocean and other waters under the jurisdiction and influence of the State. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use, taking into consideration the necessity of regulating individual sport fishery bag limits to the quantity that is sufficient to provide a satisfying sport. Adoption of scientifically-based ocean salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of salmon to maintain their continued existence.

The benefits of the proposed regulations are concurrence with federal law, sustainable management of ocean salmon resources, and promotion of businesses that rely on recreational ocean salmon fishing.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 205, 220, 240, 316.5 and 2084, Fish and Game Code.

Reference: Sections 200, 202, 205, 316.5 and 2084, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None.

(d) Identification of Reports or Documents Supporting Regulation Change:

Pacific Fishery Management Council. April 2015. Preseason Report III: Council Adopted Management Measures and Environmental Assessment Part 3 for 2015 Ocean Salmon Fishery Regulations. (http://www.pcouncil.org/wp-content/uploads/2015/04/Preseason_Report_III_2015_FINAL.pdf)

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

No public meetings are being held prior to the notice publication. The 45-day comment period provides adequate time for review of the proposed amendments.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified by or brought to the attention of Commission staff that would have the same desired regulatory effect.

(b) No Change Alternative:

The no change alternative would maintain existing regulations which do not provide an ocean salmon recreational fishing season for 2016. Federal regulations are anticipated to open the ocean salmon recreational fishing regulations south of Horse Mountain on April 2, 2016. The State must conform its ocean recreational fishing regulations for salmon in State waters (zero to three miles offshore) to the federal regulations for consistency and to avoid public confusion. Preemption of State regulatory authority by the NMFS could occur if State regulations are in conflict with federal regulations.

(c) Consideration of Alternatives:

In view of the information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are necessary.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The Department anticipates status quo fishing levels for April 2016 as compared to the April 2015 ocean salmon sport fishing season.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate that the proposed regulations will have any impact on the creation or elimination of jobs, the creation or elimination of businesses or the expansion of businesses in California.

The Commission anticipates benefits to the health and welfare of California residents. Salmon sport fishing contributes to increased mental health of its practitioners, provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of California's natural resources.

The Commission anticipates benefits to the State's environment in the sustainable management of salmon resources.

Additional benefits of the proposed regulations are concurrence with federal law, and promotion of businesses that rely on recreational ocean salmon fishing.

The Commission does not anticipate benefits to worker safety.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VII. Economic Impact Assessment:

The proposed regulatory action would conform the State regulations to federal rules that will apply for the month of April 2016.

(a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State:

The Commission does not anticipate any impacts on the creation or elimination of jobs due to the proposed regulation. The Commission anticipates status quo fishing levels for April 2016 as compared to the April 2015 ocean salmon sport fishing season.

(b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State:

The Commission does not anticipate any impacts on the creation of new business or the elimination of existing businesses due to the proposed regulation. The Commission anticipates status quo fishing levels for April 2016 as compared to the April 2015 ocean salmon sport fishing season.

(c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State:

The Commission does not anticipate any impacts on the expansion of businesses in California due to the proposed regulation. The Commission anticipates status quo fishing levels for April 2016 as compared to the April 2015 ocean salmon sport fishing season.

(d) Benefits of the Regulation to the Health and Welfare of California Residents:

The Commission anticipates health and welfare benefits to California residents from recreation in, and enjoyment of, a sustainable and satisfying salmon fishery.

(e) Benefits of the Regulation to Worker Safety:

The proposed regulations conform to federal fisheries management allowable harvest levels, and ensure a sustainable fishery. As such, the agency is not aware of any consequences to worker safety that could arise from the proposed regulations.

(f) Benefits of the Regulation to the State's Environment:

The Commission anticipates benefits to the environment. Adoption of scientifically-based ocean salmon seasons, size limits, and bag and possession limits ensures sufficient residual populations of salmon and their continued existence.

(g) Other Benefits of the Regulation:

The proposed regulations will provide for resource sustainability thus ensuring the continuation and future enjoyment of the salmon fishery. Maintaining healthy populations of salmon will also translate into sustained economic contributions to the State.

The proposed regulations will ensure consistent State and federal regulations establishing season dates, bag/size limits and other management measures in order to maintain continuity of management and enforcement. Conformance with federal regulations is also necessary to maintain continued State authority over its recreational salmon fishery and avoid federal preemption under the Magnuson-Stevens Fishery Conservation Act

Informative Digest (Policy Statement Overview)

The Pacific Fishery Management Council (PFMC) coordinates west coast management of recreational and commercial ocean salmon fisheries in the federal fishery management zone (three to 200 miles offshore) along the coasts of Washington, Oregon and California. The annual PFMC ocean salmon regulation recommendations are subsequently implemented by the National Marine Fisheries Service (NMFS) effective on May 1 of each year.

California's recreational salmon fishing regulations need to conform to the federal regulations to achieve optimum yield in California under the federal Salmon Fishery Management Plan. The Fish and Game Commission (Commission) adopts regulations for the ocean salmon recreational fishery in State waters (zero to three miles offshore) which are consistent with these federal fishery management goals.

Present Regulations
Regulations for 2015 [subsections 27.80(c) and (d)] authorized ocean salmon recreational fishing seven days per week north of Horse Mountain including Humboldt Bay from May 1 to September 7, 2015. Between Horse Mountain and Point Arena, ocean salmon recreational fishing was authorized seven days per week from April 4 to November 8, 2015. Between Point Arena and Pigeon Point, ocean salmon recreational fishing was authorized seven days per week from April 4 to October 31, 2015. Between Pigeon Point and Point Sur, ocean salmon recreational fishing was authorized seven days per week from April 4 to September 7, 2015. For areas south of Point Sur, the ocean salmon recreational fishing season was authorized seven days per week from April 4 to July 19, 2015. The bag limit for all areas in 2015 was two fish per day (all species except coho). The areas north of Point Arena had a minimum size limit of 20 inches total length. The area between Point Arena and Pigeon Point had a minimum size limit of 24 inches total length through April 30, 2015 and 20 inches total length thereafter. Areas south of Pigeon Point had a minimum size limit of 24 inches total length through May 31, 2015 and 20 inches total length thereafter. Since the existing regulations pertained only to the 2015 season, amendment of these regulations is essential to allow for any fishing in State waters during 2016.

Proposed Regulations
Two separate Commission actions are necessary to conform State regulations to federal rules that will apply in 2016. The first action would amend subsection 27.80(c), establishing salmon fishing regulations for the month of April 2016 consistent with federal regulations for the federal fishery management zone off California. Recreational salmon fishing regulations for May 1 through the end of 2016 will be considered in the second rulemaking action, tentatively scheduled for adoption in April 2016.

For public notice purposes and to facilitate Commission discussion, the Department of Fish and Wildlife (Department) is proposing the following regulations to encompass the range of federal ocean salmon regulations that are expected to be in effect April 2 through April 30, 2016. This approach will allow the Commission to adopt State ocean salmon recreational fishing regulations to conform to those in effect in federal ocean waters shortly after the federal rules are promulgated.

(1) North of Horse Mountain and in Humboldt Bay: The fishery shall remain closed in this area during April. The remainder of the 2016 season will be decided in April by the PFMC and Commission and the section will be amended pursuant to the regulatory process.

(2) South of Horse Mountain: The season, if any, may open on a date within the range of April 2 through April 30, 2016. The proposed daily bag limit will be from zero to two fish, and the proposed minimum size will be from 20 to 26 inches total length. The exact opening date, along with daily bag limit, minimum size, and days of the week open will be determined by the Commission, considering federal regulations applicable to each area for April 2016 and may be different for each area.

The benefits of the proposed regulations are concurrence with federal law, sustainable management of ocean salmon resources, and promotion of businesses that rely on recreational ocean salmon fishing.

The proposed regulations are neither inconsistent nor incompatible with existing State regulations. The legislature has delegated authority to the Commission to adopt sport fishing regulations in general (Sections 200, 202 and 205, Fish and Game Code) and salmon sport fishing regulations specifically (Section 316.5, Fish and Game Code). The proposed regulations are consistent with regulations for sport fishing in marine protected areas (Section 632, Title 14, CCR) and with general sport fishing regulations in Chapters 1 and 4 of Subdivision 1 of Division 1, Title 14, CCR. Commission staff has searched the California Code of Regulations and has found no other State regulations related to the recreational take of salmon in the ocean.

Regulatory Language

Subsection (c) of Section 27.80, Title 14, CCR, is amended to read:

§ 27.80. Salmon

. . .

(c) Open Fishing Days, Daily Bag Limits, and Minimum Size in effect ~~April 4~~April 2 through April 30, ~~2015~~2016.
(1) North of Horse Mountain (40°05'00" N. lat.) and in Humboldt Bay.
(A) Closed to salmon fishing.
(2) Between Horse Mountain and Point Arena (38°57'30" N. lat.).
(A) Open to salmon fishing ~~from April 4 to April 30~~[varied dates within the range from April 2 to April 30, may include periodic closures], ~~2015~~2016. Fishing is authorized ~~7~~[0-7] days per week [specify open days of week and date range as needed].
(B) Daily Bag Limit: ~~2~~[0-2] salmon per day. See subsection (b) above and subsection (e) below.
(C) Minimum Size: ~~20~~[20-26] inches total length.
(3) Between Point Arena and Pigeon Point (37°11'00" N. lat.).
(A) Open to salmon fishing ~~from April 4 to April 30~~[varied dates within the range from April 2 to April 30, may include periodic closures], ~~2015~~2016. Fishing is authorized ~~7~~[0-7] days per week [specify open days of week and date range as needed].
(B) Daily Bag Limit: ~~2~~[0-2] salmon per day. See subsection (b) above and subsection (e) below.
(C) Minimum Size: ~~24~~[20-26] inches total length.
(4) Between Pigeon Point and Point Sur (36°18'00" N. lat.).
(A) Open to salmon fishing ~~from April 4 to April 30~~[varied dates within the range from April 2 to April 30, may include periodic closures], ~~2015~~2016. Fishing is authorized ~~7~~[0-7] days per week [specify open days of week and date range as needed].
(B) Daily Bag Limit: ~~2~~[0-2] salmon per day. See subsection (b) above and subsection (e) below.
(C) Minimum Size: ~~24~~[20-26] inches total length.
(5) South of Point Sur.
(A) Open to salmon fishing ~~from April 4 to April 30~~[varied dates within the range from April 2 to April 30, may include periodic closures], ~~2015~~2016. Fishing is authorized ~~7~~[0-7] days per week [specify open days of week and date range as needed].
(B) Daily Bag Limit: ~~2~~[0-2] salmon per day. See subsection (b) above and subsection (e) below.
(C) Minimum Size: ~~24~~[20-26] inches total length.
. . .

Note: Authority cited: Sections 200, 202, 205, 220, 240, 316.5 and 2084, Fish and Game Code. Reference: Sections 200, 202, 205, 316.5 and 2084, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Subsection (d) of 27.80
Title 14, California Code of Regulations
Re: Ocean Salmon Sport Fishing Regulations effective May 1, 2016

I. Date of Initial Statement of Reasons: September 21, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 9, 2015
Location: San Diego, CA

(b) Discussion Hearing: Date: February 10, 2016
Location: Sacramento, CA

(c) Adoption Hearing: Date: April 18, 2016
Location: Teleconference

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

The Pacific Fishery Management Council (PFMC) coordinates west coast management of recreational and commercial ocean salmon fisheries in the federal fishery management zone (three to 200 miles offshore) along the coasts of Washington, Oregon and California. The annual PFMC ocean salmon regulation recommendations are subsequently implemented by the National Marine Fisheries Service (NMFS) effective on May 1 of each year.

California's recreational salmon fishing regulations need to conform to the federal regulations to achieve optimum yield in California under the federal Salmon Fishery Management Plan. The Fish and Game Commission (Commission) adopts regulations for the ocean salmon recreational fishery in State waters (zero to three miles offshore) which are consistent with these federal fishery management goals.

It is critical to have consistent State and federal regulations establishing season dates, bag/size limits and other management measures, and also critical that the State and federal regulations be effective concurrently in order to maintain continuity of management and enforcement. Conformance with federal regulations is also necessary to maintain continued State authority over its recreational salmon fishery and avoid federal preemption under the Magnuson-Stevens Fishery Conservation

Act [16 USC §1856 (b)(1)].

PFMC Regulatory Outlook
On March 14, 2016, the PFMC will propose a suite of ocean salmon fishery regulatory options after reviewing the most up-to-date salmon abundance information for target stocks and salmon species of special concern, including Sacramento River Winter Run Chinook which is listed as endangered under both federal and State Endangered Species Acts. These options will go out for public review and the final PFMC recommendations for federal waters will be made on April 14, 2016. The federal regulations will go into effect on or after May 1, 2016 and may include:

1. the minimum size of salmon that may be retained;

2. the number of rods anglers may use (e.g., one, two, or unlimited);

3. the type of bait and/or terminal gear that may be used (e.g., amount of weight, hook type, and type of bait or no bait);

4. the number of salmon that may be retained per angler-day or period of days;

5. the definition of catch limits to allow for combined boat limits versus individual angler limits;

6. the allowable fishing dates and areas; and

7. the overall number of salmon that may be harvested, by species and area.

The range of proposed regulatory options available for the Commission's consideration is designed to encompass the range of options that will be under consideration by the PFMC.

Commission Regulatory Outlook
Although there are no proposed PFMC regulatory options to consider until March, the ocean salmon sport fishing regulations in effect on or after May 1, 2016 could range from no fishing in all areas off the California coast to limited salmon fishing for varied areas and dates between May 1 and November 13, 2016. The final PFMC recommendations made on April 14, 2016 will serve as the basis for the State's ocean salmon sport fishery regulations for May 2016 through the end of the year.

Present Regulations
Regulations for 2015 [subsections 27.80(c) and (d)] authorized ocean salmon recreational fishing seven days per week north of Horse Mountain including Humboldt Bay from May 1 to September 7, 2015. Between Horse Mountain and Point Arena, ocean salmon recreational fishing was

authorized seven days per week from April 4 to November 8, 2015. Between Point Arena and Pigeon Point, ocean salmon recreational fishing was authorized seven days per week from April 4 to October 31, 2015. Between Pigeon Point and Point Sur, ocean salmon recreational fishing was authorized seven days per week from April 4 to September 7, 2015. For areas south of Point Sur, ocean salmon recreational fishing was authorized seven days per week from April 4 to July 19, 2015. The bag limit for all areas in 2015 was two fish per day (all species except coho). The areas north of Point Arena had a minimum size limit of 20 inches total length. The area between Point Arena and Pigeon Point had a minimum size limit of 24 inches total length through April 30, 2015 and 20 inches total length thereafter. Areas south of Pigeon Point had a minimum size limit of 24 inches total length through May 31, 2015 and 20 inches total length thereafter. Since the existing regulations pertained only to the 2015 season, amendment of these regulations is essential to allow for any fishing in State waters during 2016.

Concurrent Regulatory Action

Two separate Commission actions are necessary to conform the State regulations to federal rules that will apply in 2016. This proposed regulation will amend subsection 27.80(d), establishing ocean salmon sport fishing regulations (e.g., open/closed days, minimum size limits, bag limits) that would be effective for May 2016 through the end of the year. The Commission also will be considering ocean salmon sport fishing regulations that would be effective for the period April 2-30, 2016 in a separate rulemaking package, tentatively scheduled for adoption in March 2016.

Proposed Regulations

For public notice purposes and to facilitate Commission discussion, the Department of Fish and Wildlife (Department) is proposing the following regulations to encompass the range of federal ocean salmon regulations that are expected to be in effect on or after May 1, 2016. This approach will allow the Commission to adopt State ocean salmon recreational fishing regulations to conform to those in effect in federal ocean waters shortly after the federal rules are promulgated.

(1) North of Horse Mountain and in Humboldt Bay: The season, if any, may occur within the range of May 1 through September 30, 2016. The proposed daily bag limit will be from zero to two fish, and the proposed minimum size will be from 20 to 26 inches total length. The exact opening and closing dates, along with daily bag limit, minimum size, and days of the week open will be determined by the Commission, considering federal regulations applicable to this area for May through September 2016.

(2) Between Horse Mountain and Point Arena: The season, if any, may occur within the range of May 1 to November 13, 2016. The proposed daily bag limit will be from zero to two fish, and the

proposed minimum size will be from 20 to 26 inches total length. The exact opening and closing dates, along with daily bag limit, minimum size, and days of the week open will be determined by the Commission, considering federal regulations applicable to this area for May through November 2016.

(3) Between Point Arena and Pigeon Point: The season, if any, may occur within the range of May 1 to November 13, 2016. The proposed daily bag limit will be from zero to two fish, and the proposed minimum size will be from 20 to 26 inches total length. The exact opening and closing dates, along with daily bag limit, minimum size, and days of the week open will be determined by the Commission, considering federal regulations applicable to this area for May through November 2016.

(4) Between Pigeon Point and Point Sur: The season, if any, may occur within the range of May 1 to October 2, 2016. The proposed daily bag limit will be from zero to two fish, and the proposed minimum size will be from 20 to 26 inches total length. The exact opening and closing dates, along with daily bag limit, minimum size, and days of the week open will be determined by the Commission, considering federal regulations applicable to this area for May through October 2016.

(5) South of Point Sur: The season, if any, may occur within the range of May 1 to October 2, 2016. The proposed daily bag limit will be from zero to two fish, and the proposed minimum size will be from 20 to 26 inches total length. The exact opening and closing dates, along with daily bag limit, minimum size, and days of the week open will be determined by the Commission, considering federal regulations applicable to this area for May through October 2016.

It is the policy of the State to encourage the conservation, maintenance, and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the State for the benefit of all the citizens of the State. In addition, it is the policy of the State to promote the development of local fisheries and distant-water fisheries based in California in harmony with international law respecting fishing and the conservation of the living resources of the ocean and other waters under the jurisdiction and influence of the State. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use, taking into consideration the necessity of regulating individual sport fishery bag limits to the quantity that is sufficient to provide a satisfying sport. Adoption of scientifically-based ocean salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of salmon to ensure their continued existence.

The benefits of the proposed regulations are concurrence with federal law, sustainable management of ocean salmon resources, and promotion of businesses that rely on recreational ocean salmon fishing.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 205, 220, 240, 316.5 and 2084, Fish and Game Code.

Reference: Sections 200, 202, 205, 316.5 and 2084, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None.

(d) Identification of Reports or Documents Supporting Regulation Change:

Pacific Fishery Management Council. The Fishery Management Plan for Commercial and Recreational Salmon Fisheries Off the Coasts of Washington, Oregon, and California as Revised Through Amendment 18. September 2014.
(http://www.pcouncil.org/wp-content/uploads/FMP_through_A-18_Final.pdf)

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

No public meetings are being held prior to the notice publication. The 45-day comment period provides adequate time for review of the proposed amendments.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified by or brought to the attention of Commission staff that would have the same desired regulatory effect.

(b) No Change Alternative:

The no change alternative would maintain existing regulations which do not provide an ocean salmon recreational fishing season within the May to November 2016 period. The State must conform its ocean recreational fishing regulations for salmon in State waters (zero to three miles offshore) to the federal regulations for consistency and to avoid public confusion. Preemption of State regulatory authority by the NMFS could occur if State regulations are in conflict with federal regulations.

(c) Consideration of Alternatives:

In view of the information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are necessary.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, including the Ability of California Businesses to Compete with Businesses in Other States:

Although the recommendations of the PFMC for the 2016 ocean salmon season are unknown at this time, the Department anticipates that recreational salmon fishing effort will be similar to the 2015 season. For the purpose of evaluating potential economic impacts of the 2016 ocean salmon regulations, the Commission analyzed possible reductions in ocean salmon recreational effort ranging from zero (no change) to 100-percent. The base year used for estimating the 2016 economic impacts is the 2014 salmon season, the latest full year of economic data.

For the first two projections for 2016, representing 100-percent (120,300 angler days), and 50-percent (60,150 angler days) levels of ocean salmon angling effort, there are not likely to be significant statewide adverse economic impacts directly affecting businesses, including the ability of California businesses to compete with businesses in other states. The elimination of ocean recreational salmon angling or the 0-percent (zero angler days) projection could constitute a significant decline in revenue to a number of businesses associated with recreational ocean angling. However, such a closure would be undertaken with the intent of ensuring the health of the resource and thus prevent longer term adverse economic impacts.

Data from the Department indicate that during the 2014 salmon season, recreational fishermen participated in 120,300 angler days of ocean salmon fishing and generated an estimated $20.2 million (2015$) in total economic output to the State. The projected levels of fishing effort for the 2016 salmon season are 120,300 angler days, 60,150 angler days, and

zero angler days, equivalent to 100, 50, and 0-percent levels of effort, respectively. At the projected 2016 levels of angler effort, the associated fishing expenditures by fishermen would generate an estimated $20.2 million, $10.1 million and $0.00 (2015$) in total economic output for the State, respectively. Thus, relative to the 2014 salmon season, the total incremental effects (direct, indirect, and induced) of the 2016 projections on State economic output range from no change (the same $20.2 million); a 50-percent decrease ($10.1 million); to an 100-percent decline (-$20.2 million) total economic output from the recreational salmon fishery.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

Approximately 164 jobs were indirectly supported by recreational ocean salmon angling during the 2014 salmon season. Thus, relative to the 2014 salmon season, the 2016 projections (100, 50, and 0-percent levels of effort) represent potential incremental effects on employment ranging from no change to a loss of 82 to 164 jobs statewide.

The Commission anticipates benefits to the health and welfare of California residents. Salmon sport fishing contributes to increased mental health of its practitioners, provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of California's natural resources.

The Commission anticipates benefits to the State's environment in the sustainable management of salmon resources.

Additional benefits of the proposed regulations are concurrence with federal law, and promotion of businesses that rely on recreational ocean salmon fishing.

The Commission does not anticipate benefits to worker safety.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VII. Economic Impact Assessment

The PFMC coordinates west coast management of recreational and commercial ocean salmon fisheries in the federal fishery management zone (three to 200 miles offshore) along the coasts of Washington, Oregon and California. The annual PFMC ocean salmon regulation recommendations are subsequently implemented by the NMFS effective on May 1 of each year.

Although the recommendations of the PFMC for the 2016 ocean salmon season are unknown at this time, the Department anticipates that recreational salmon fishing effort will be similar to the 2015 season. For the purpose of evaluating potential economic impacts of the 2016 ocean salmon regulations, the Commission analyzed possible reductions in ocean salmon recreational effort ranging from zero (no change) to 100-percent (see Tables 1 and 2).

Table 1

Total Projected Economic Contribution Of California's Ocean Salmon Sport Fishery -- Calculations Worksheet and Summary Tables

Projected Economic Impacts Of 2016 Salmon Fishery To California's Economy *9/11/2015*

Ocean Salmon Angling	Number of Salmon Angler Trips (days)	Direct Impact (2015$)	Final Economic Output Impact (2015$)	Earnings Impact (2015$)	Employment (# jobs)	State & Local Taxes (2015$)
100% Seasonal Activity Level	120,300	$ 14,178,906	$ 20,165,572	$ 8,037,875	164	$ 1,463,720
50% Seasonal Activity Level	60,150	$ 7,089,453	$ 10,082,786	$ 4,018,937	82	$ 731,860
0% Seasonal Activity Level	0	$ -	$ -	$ -	0	$ -
Economic Multipliers*			*1.4222*	*0.5669*	*11.5659*	*0.1032*

Note:
**Multipliers are derived from MIG IMPLAN economic models for the State of California.*
All dollar amounts are adjusted to year 2015 prices, denoted as 2015$, using US Dept of Commerce Implicit Price Deflators for Gross Domestic Product - Table 1.1.9. http://www.bea.gov

Table 2

Projected Incremental Change from 2014 Fishing Levels, in Angler Trips						
Impact Summary for Projected 2016 Ocean Salmon Angling Levels, Compared to 2014 Levels	Incremental Change in Number of Salmon Angler Trips (days)	Incremental Direct Impact (2015$)	Incremental Final Economic Output Impact (2015$)	Incremental Earnings Impact (2015$)	Incremental Employment Impact (# jobs)	Incremental State & Local Tax Impact (2015$)
100% Seasonal Activity Level	0	$ -	$ -	$ -	0	$ -
50% Seasonal Activity Level	(60,150)	$ (7,089,453)	$ (10,082,786)	$ (4,018,937)	-82	$ (731,860)
0% Seasonal Activity Level	(120,300)	$ (14,178,906)	$ (20,165,572)	$ (8,037,875)	-164	$ (1,463,720)

The following projections cover this expected range. The base year used for estimating the 2016 economic impacts is the 2014 salmon season, the latest full year of economic data. In 2014, the ocean salmon recreational fishery generated an estimated $20.2 million (2015$) in total economic output to the State. A 50-percent reduction in the fishery would amount to a $10.1 million reduction and a closure of ocean salmon recreational angling could result in a $20.2 million drop in total economic output for the State, relative to the 2014 season. As a general rule, for every 5,000 salmon harvested in the ocean recreational fishery, there is approximately $1.0 million in potential total economic contribution to the State.

However, substitute fishing resources and recreational activities for anglers may offset the potential losses to fishing port business and jobs described below.

(a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State:

Using the 2014 salmon season as a base year for comparison, the California ocean salmon recreational fishery supports an estimated 164 jobs in the State. Generally, for every 5,000 salmon harvested in the ocean recreational fishery, there are approximately 7.3 jobs supported in the State. Three projected fishing activity levels were evaluated, which entail various levels of restrictions on the ocean salmon recreational fishery, as follows:

Projection 1. A seasonal level of fishing activity of 120,300 angler days.

Relative to the 2014 season's estimated angler activity of 120,300 days, Projection 1 (100-percent) represents no change to the 2014 number of angler days. This projected change could result in no net change in the number of jobs in California businesses that support the salmon recreational fishery.

Projection 2. A seasonal level of fishing activity of 60,150 angler days, or approximately 50-percent of fishing activity in Projection 1.

Compared to the 2014 season, this represents a 50-percent incremental reduction in angler days. This projected change could result in the potential loss of 82 jobs to California businesses that support the salmon recreational fishery.

Projection 3. A seasonal level of fishing activity of zero angler days, or approximately 0-percent level of fishing activity in Projection 1.

Compared to the 2014 season, this represents a 100-percent incremental reduction in angler days. This projected change could result in a loss of 164 jobs in those California businesses that support the ocean salmon recreational fishery.

(See Tables 1 and 2 above for details on how employment, wages, economic output for the State of California, and effects on State and local taxes are derived.)

(b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State:

The three projections of expected fishing activity represent potential indirect impacts to businesses providing goods and services to the ocean salmon recreational fishermen, as follows:

Projection 1. A seasonal level of fishing activity of 120,300 angler days.

Relative to the 2014 season, Projection 1 represents no potential indirect impact to businesses.

Projection 2. A seasonal level of fishing activity of 60,150 angler days, or approximately 50-percent of fishing activity in Projection 1.

Relative to the 2014 season, Projection 2 represents a potential indirect impact to businesses of approximately $10.1 million in reduced economic output statewide. This may result in reduced demand for new businesses or the potential elimination of businesses in the State in some localized areas that lack industry diversification and have a heavy reliance on recreational fishing and tourism. Many ocean fishing port businesses offer alternative, substitute, fishing resources and activities for salmon anglers.

Projection 3. A seasonal level of fishing activity of zero ocean salmon angler days, or approximately 0-percent of fishing activity in Projection 1.

Relative to the 2014 season, Projection 3 represents a potential indirect impact to businesses of approximately $20.2 million in reduced economic output statewide. This may greatly reduce the creation of new businesses and result in the elimination of existing businesses in the State in some localized areas that lack industry diversification and have a heavy reliance on recreational fishing and tourism. Many ocean fishing port businesses offer alternative, substitute, fishing resources and activities for salmon anglers.

(c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State:

Projection 1. A seasonal level of fishing activity of 120,300 angler days.

Relative to the 2014 season, Projection 1 represents no change in economic impacts to businesses.

Projection 2. A seasonal level of fishing activity of 60,150 angler days, or approximately 50-percent of fishing activity in Projection 1. Relative to the 2015 season, Projection 2 represents a potential indirect impact to businesses of approximately $10.1 million in decreased economic output statewide. In the short term, this decrease in economic output may induce some businesses to contract their business activities in the recreational salmon fishing arena.

Projection 3. A seasonal level of fishing activity of no angler days, or approximately 0-percent of fishing activity in Projection 1. Relative to the 2014 season, Projection 3 represents a potential indirect impact to businesses of approximately $20.2 million in reduced economic output statewide. This may affect businesses in the State, offering goods and services to ocean salmon anglers. Some level of reduced demand for terminal tackle and equipment used in ocean salmon fishing would likely occur. This may negatively affect investments and expansion by existing businesses in the State.

(d) Benefits of the Regulation to the Health and Welfare of California Residents:

The proposed regulations are to conform to federal fisheries management allowable harvest levels, intended to sustain the fishery for the enjoyment of all California residents.

(e) Benefits of the Regulation to Worker Safety:

The proposed regulations are to conform to federal fisheries management allowable harvest levels, and intended to sustain the fishery. As such, the agency is not aware of any consequences to worker safety that could arise from the proposed regulations.

(f) Benefits of the Regulation to the State's Environment:

The proposed regulations comply with federal law and sustainable management practices designed to safeguard California’s ocean salmon resources.

(g) Other Benefits of the Regulation:

Concurrence with Federal Law: California’s sport and commercial ocean salmon fishing regulations need to conform to the new federal regulations to achieve optimum yield in California. The PFMC annually reviews the status of west coast salmon populations. As part of that process, it recommends west coast adult salmon fisheries regulations aimed at meeting biological and fishery allocation goals specified in law or

established in the federal Salmon Fishery Management Plan. These recommendations coordinate west coast management of sport and commercial ocean salmon fisheries off the coasts of Washington, Oregon, California, and California inland sport salmon fisheries. These recommendations are subsequently implemented as ocean fishing regulations by the NMFS and as sport salmon regulations for State marine and inland waters by the Commission.

Continuation of activities dependent on the salmon fishery: Resource sustainability supports the continuation of activities dependent on the salmon fishery. Maintaining healthy populations of salmon can translate into significant economic contributions to the State: In 2014, recreational ocean salmon activities contributed as much as $20.2 million in total economic output, $8.0 million in wages, and 164 jobs for Californians.

Informative Digest (Policy Statement Overview)

The Pacific Fishery Management Council (PFMC) coordinates west coast management of recreational and commercial ocean salmon fisheries in the federal fishery management zone (three to 200 miles offshore) along the coasts of Washington, Oregon and California. The annual PFMC ocean salmon regulation recommendations are subsequently implemented by the National Marine Fisheries Service (NMFS) effective on May 1 of each year.

California's recreational salmon fishing regulations need to conform to the federal regulations to achieve optimum yield in California under the federal Salmon Fishery Management Plan. The Fish and Game Commission (Commission) adopts regulations for the ocean salmon recreational fishery in State waters (zero to three miles offshore) which are consistent with these federal fishery management goals.

Present Regulations
Regulations for 2015 [subsections 27.80(c) and (d)] authorized ocean salmon recreational fishing seven days per week north of Horse Mountain including Humboldt Bay from May 1 to September 7, 2015. Between Horse Mountain and Point Arena, ocean salmon recreational fishing was authorized seven days per week from April 4 to November 8, 2015. Between Point Arena and Pigeon Point, ocean salmon recreational fishing was authorized seven days per week from April 4 to October 31, 2015. Between Pigeon Point and Point Sur, ocean salmon recreational fishing was authorized seven days per week from April 4 to September 7, 2015. For areas south of Point Sur, the ocean salmon recreational fishing season was authorized seven days per week from April 4 to July 19, 2015. The bag limit for all areas in 2015 was two fish per day (all species except coho). The areas north of Point Arena had a minimum size limit of 20 inches total length. The area between Point Arena and Pigeon Point had a minimum size limit of 24 inches total length through April 30, 2015 and 20 inches total length thereafter. Areas south of Pigeon Point had a minimum size limit of 24 inches total length through May 31, 2015 and 20 inches total length thereafter. Since the existing regulations pertained only to the 2015 season, amendment of these regulations is essential to allow for any fishing in State waters during 2016.

Proposed Regulations
Two separate Commission actions are necessary to conform the State regulations to federal rules that will apply in 2016. This proposed regulation would amend subsection 27.80(d), establishing salmon fishing regulations for May 1 through the end of 2016. Recreational salmon fishing regulations for the month of April 2016 will be considered in a separate rulemaking action, tentatively scheduled for adoption in March 2016.

For public notice purposes and to facilitate Commission discussion, the Department of Fish and Wildlife is proposing the following regulations to encompass the range of federal ocean salmon regulations that are expected to be in effect on or after May 1, 2016. This approach will allow the Commission to adopt State ocean salmon recreational fishing regulations to conform to those in effect in federal ocean waters.

(1) North of Horse Mountain and in Humboldt Bay: The season, if any, may occur within the range of May 1 through September 30, 2016.

(2) Between Horse Mountain and Pigeon Point: The season, if any, may occur within the range of May 1 to November 13, 2016.

(3) South of Pigeon Point: The season, if any, may occur within the range of May 1 to October 2, 2016.

(4) For all areas, the proposed daily bag limit will be from zero to two fish, and the proposed minimum size will be from 20 to 26 inches total length.

The exact opening and closing dates, along with daily bag limit, minimum size, and days of the week open will be determined in April by the Commission considering federal regulations and may be different for each subarea.

The benefits of the proposed regulations are concurrence with federal law, sustainable management of ocean salmon resources, and promotion of businesses that rely on recreational ocean salmon fishing.

The proposed regulations are neither inconsistent nor incompatible with existing State regulations. The legislature has delegated authority to the Commission to adopt sport fishing regulations in general (Sections 200, 202 and 205, Fish and Game Code) and salmon sport fishing regulations specifically (Section 316.5, Fish and Game Code). The proposed regulations are consistent with regulations for sport fishing in marine protected areas (Section 632, Title 14, CCR) and with general sport fishing regulations in Chapters 1 and 4 of Subdivision 1 of Division 1, Title 14, CCR. Commission staff has searched the California Code of Regulations and has found no other State regulations related to the recreational take of salmon in the ocean.

Regulatory Language

Subsection (d) of Section 27.80, Title 14, CCR, is amended to read:

§27.80. Salmon.

. . .

(d) Open Fishing Days, Daily Bag Limits, and Minimum Size in effect on or after May 1, ~~2015~~2016.
(1) North of Horse Mountain (40°05'00" N. lat.) and in Humboldt Bay.
(A) Open to salmon fishing ~~May 1 to September 7~~[varied dates within the range from May 1 to September 30, may include periodic closures], ~~2015~~2016. Fishing is authorized ~~7~~[0-7] days per week [specify open days of week and date range as needed].
Exception: See Section 27.75 for specific fishery closure areas around the Smith, Klamath and Eel rivers.
(B) Daily Bag Limit: ~~2~~[0-2] salmon per day. See subsection (b) above and subsection (e) below.
(C) Minimum Size: ~~20~~[20-26] inches total length [specify date range as needed].
(2) Between Horse Mountain and Point Arena (38°57'30" N. lat.).
(A) Open to salmon fishing ~~May 1 to November 8~~[varied dates within the range from May 1 to November 13, may include periodic closures], ~~2015~~2016. Fishing is authorized ~~7~~[0-7] days per week [specify open days of week and date range as needed].
(B) Daily Bag Limit: ~~2~~[0-2] salmon per day. See subsection (b) above and subsection (e) below.
(C) Minimum Size: ~~20~~[20-26] inches total length [specify date range as needed].
(3) Between Point Arena and Pigeon Point (37°11'00" N. lat.).
(A) Open to salmon fishing ~~May 1 to October 31~~[varied dates within the range from May 1 to November 13, may include periodic closures], ~~2015~~2016. Fishing is authorized ~~7~~[0-7] days per week [specify open days of week and date range as needed].
(B) Daily Bag Limit: ~~2~~[0-2] salmon per day. See subsection (b) above and subsection (e) below.
(C) Minimum Size: ~~24 inches total length through April 30, 2015 and 20 inches total length thereafter~~[20-26] inches total length [specify date range as needed].
(4) Between Pigeon Point and Point Sur (36°18'00" N. lat.).
(A) Open to salmon fishing ~~May 1 to September 7~~[varied dates within the range from May 1 to October 2, may include periodic closures], ~~2015~~2016. Fishing is authorized ~~7~~[0-7] days per week [specify open days of week and date range as needed].
(B) Daily Bag Limit: ~~2~~[0-2] salmon per day. See subsection (b) above and subsection (e) below.
(C) Minimum Size: ~~24 inches total length through May 31, 2015 and 20 inches total length thereafter~~[20-26] inches total length [specify date range as needed].
(5) South of Point Sur.
(A) Open to salmon fishing ~~May 1 to July 19~~[varied dates within the range from May 1 to October 2, may include periodic closures], ~~2015~~2016. Fishing is authorized ~~7~~[0-7] days per week [specify open days of week and date range as needed].
(B) Daily Bag Limit: ~~2~~[0-2] salmon per day. See subsection (b) above and subsection (e) below.

(C) Minimum Size: ~~24 inches total length through May 31, 2015 and 20 inches total length thereafter~~[20-26] inches total length [specify date range as needed].

. . .

Note: Authority cited: Sections 200, 202, 205, 220, 240, 316.5 and 2084, Fish and Game Code. Reference: Sections 200, 202, 205, 316.5 and 2084, Fish and Game Code.

Sent by regular mail

October 7, 2015

Sonke Mastrup, Executive Director
California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

From: Charles Friend
Lessee: M-430-04
And M-430-05
Tomales Bay Oyster Co.
Tomales Bay

Charles Friend
P.O. Box 847
Marshall, CA
94940

Dear Mr. Mastrup:

I write today asking to be placed on the Fish and Game Commission Calendar at the earliest opportunity for the purpose of amending Lease No. M-430-05 to include an oyster cultivation method not now listed as an approved method for this lease.

I specifically want to include 'FLOATS' in the list of approved methods. Further, I am suggesting that the approved methods for my outer bay lease M-430-04 be incorporated into the M-430-05 lease making both leases Identical as to approved methods of cultivation.

Therefore, the approved list of cultivation methods for M-430-05 Should read as follows: Longlines, rafts, stakes , rack and bag, rack and tray Floats, and bottom culture.

Please advise me with respect to this request.

Sincerely,

Charles Friend

RECORDING REQUESTED BY AND)
WHEN RECORDED MAIL TO:)
)
State of California)
Fish and Game State)
1416 Ninth Street, 13th Floor)
Sacramento, CA 95814)

Space Above Line for Recorder's Use Only

LEASE GRANTING THE EXCLUSIVE PRIVILEGE OF CONDUCTING AQUACULTURE AT STATE WATER BOTTOM NO. M-000-00

THIS LEASE GRANTING THE EXCLUSIVE PRIVILEGE OF CONDUCTING AQUACULTURE AT STATE WATER BOTTOM NO. M-000-00 ("Lease") is made and entered into as of [DATE], by and between [NAME], ("Tenant") and the California Fish and Game Commission ("State") with reference to the following facts:

RECITALS

Tenant wishes to lease a State Water Bottom for the purpose of propagating, cultivating, maintaining and harvesting aquatic plants and/or animals in marine waters of the state.

Fish and Game Code section 15400 authorizes the State to lease to any person the exclusive privilege to conduct aquaculture in any designated State Water Bottom if it determines that such lease is in the public interest.

[New lease]: On [DATE] the State awarded the lease for State Water Bottom No. M-000-00 to Tenant.

[Renewal]: On [DATE(s)] the State authorized renewal of the Lease for State Water Bottom No. M-000-00 to Tenant.

[Other]: On [DATE] [Note here any other significant events concerning the lease, e.g. amendment, assignment or designation of successor-in-interest.]

TERMS AND CONDITIONS

1. **LEASE.** The State hereby grants to Tenant the exclusive privilege to conduct aquaculture upon State Water Bottom No. M-000-00, subject to the terms and conditions of this Lease.

2. DESCRIPTION. This Lease covers that area comprising approximately 000.00 acres designated as State Water Bottom No. M-000-00 and shown on the Map and Description attached as **Exhibit A**, which is made a part of this Lease by this reference.

3. TERM. This Lease is for a period of 0.00 years commencing on [START DATE] and ending on [END DATE], unless renewed or sooner terminated in accordance with its terms.

4. ANNUAL RENT. The base rent for the Lease area is $000.00 per acre, calculated to recover Tenant's share of the State's operational costs of the aquaculture bottom leasing program attributable to shellfish cultivation. The base rent shall be annually adjusted in the following manner:

> The Department of Fish and Game shall determine the change in the "Implicit Price Deflator for State and Local government Purchases of Goods and Services," as published by the U.S. Department of Commerce, for the quarter ending March 31 of the current year compared to the quarter ending March 31 of the previous year. The relative amount of the change shall be multiplied by the amount of the annual rent.

No more frequently than at five-year intervals, the State, in its sole discretion, may recalculate the productivity classification by which the annual rent is calculated for Tenant to reflect changes in the State's operational costs of the aquaculture bottom leasing program attributable to shellfish cultivation. The 10-year average oyster production values fall into three productivity classifications:

- High productivity = >100,000 oysters/acre = $150.00 per acre/year
- Moderate productivity = >20,000-99,000 oysters/acre = $100.00 per acre/year
- Low productivity = >2,000-19,999 oysters/acre = $50.00 per acre/year

Whenever such formula is updated, the annual rent first charged Tenant thereafter shall become the new base rent, subject to the foregoing adjustments for inflation thereafter.

Notice of the annual adjusted rent for the upcoming calendar year shall be given to Tenant by December 1. Until the notice of the annual adjustment is provided, Tenant remains obligated to pay rent at the previous rate. Pursuant to Fish and Game Code section 15407, the annual rent shall be paid within 30 days of the commencement date in Section 3, and within 30 days of each anniversary. Tenant shall remit such rent to: Department of Fish and Game, Fiscal and Administrative Services Branch, 1416 Ninth Street, 12th Floor, Sacramento, California 95814 RE: State Water Bottom Lease No. M-000-00.

Payment shall be made to the State in lawful money of the United States, provided that, if any payment made by a check, draft or money order is returned to The State due to insufficient funds or otherwise, the State shall have the right, upon written notice to Tenant, to require Tenant to make all subsequent payments in cash, or by cashier's or certified check.

5. LATE PAYMENT. Annual payment of rent is due and payable on the commencement date of this Lease or any anniversary thereafter, and is timely if received by the State within thirty (30) days of such commencement date or anniversary. Any annual payment not received by the State within thirty (30) days of the Lease commencement date or anniversary thereof, regardless of whether the 30th day falls on a Saturday, Sunday or holiday, will be subject to a late penalty consisting

of an administrative charge on the late amount, calculated at the rate of five percent (5%) of the amount of the late payment. The parties agree that the late charge represents a fair and reasonable estimate of the costs the State will incur because of late payment. Acceptance of the late charge by the State shall not constitute a waiver of Tenant's default for the overdue amount, nor prevent the State from exercising other rights and remedies granted under this Lease. Tenant shall pay the late charge as additional rent within 30 days of the due date of the original payment.
Any annual payment not received by the State within ninety (90) days of the commencement date of the Lease or within ninety (90) days of any anniversary thereof shall constitute a breach of Lease, giving rise to the State's remedies as set forth herein.

Annual rent due to the State, if not received by the State within ninety (90) days following the due date, will bear interest from the due date until paid at the rate of ten percent (10%) per year or, if a higher rate is legally permissible, at the highest rate legally permitted. Interest shall not be payable on late charges incurred by Tenant nor on any amounts on which late charges are paid by Tenant to the extent this interest would cause the total interest to be in excess of that legally permitted. Payment of interest shall not excuse nor cure any default by Tenant.

Upon written request by Tenant to the State, demonstrating unusual or extenuating circumstances causing the late payment, the State, in its sole discretion, may waive the late charge.

6. INSURANCE. Tenant shall furnish to the State certificate(s) of insurance stating that Public Liability Insurance is presently in effect for the Tenant and will be in effect throughout the period of this Lease with a combined single liability limit of not less than One Million Dollars ($1,000,000.00) per occurrence, and shall insure against all liability of Tenant and its employees and agents arising out of or in connection with Tenant’s use and occupancy of the leased Lease area. The certificate(s) of insurance shall:

(a) Be furnished to the State by the insurance companies, and no such policy shall be cancelable or subject to reduction of coverage or other modification except after 30 days prior written notice to the State.

(b) Include the State of California, its officers, agents, employees and servants are included as additional insured but only insofar as the operations under the Lease are concerned.

(c) Provide that the State shall not be responsible for any premiums or assessments on any policy of insurance hereunder.

(d) Comply with those standards as determined by the State of California, Department of General Services, Office of Risk and Insurance Management.

Tenant agrees that the insurance required herein shall be in effect at all times during the term of this Lease, at the cost of Tenant. In the event said insurance, or any of it, expires or lapses at any time during the term of this Lease, the Tenant agrees to provide, no later than fifteen (15) days after said expiration or lapse, written evidence of required insurance coverage from the date of loss of the earlier insurance and continuing for not less than the remainder of the term of the Lease. Tenant's failure to

keep in effect at all times all insurance required by this Lease shall be grounds for termination of the Lease, in addition to any other remedies available to the State.

Where Tenant has any employees, a program of workers' compensation insurance, in an amount and form to meet all applicable requirements of the Labor Code of California, shall be in place throughout the term of this Lease. Such insurance shall include employer's liability coverage of One Million Dollars ($1,000,000.00) and shall specifically cover all persons providing services by or on behalf of Tenant and shall cover all risks to such persons under this Lease.

7. INDEMNITY AND WAIVER. (For purposes of this Section 7, the term, "State", shall include the Department of Fish and Game as well as the Fish and Game Commission.) Tenant hereby waives all claims and recourse against the State, including the right to contribution for loss or damage to persons or property arising from, or in any way connected with or incident to this Lease, except claims arising from, and only to the extent of the gross negligence or willful misconduct of the State, its officers, agents or employees. Tenant shall notify the Department of Fish and Game Aquaculture Coordinator immediately in case of any serious accident, injury, or casualty on, or potentially related to, the Lease area.

Tenant shall protect, indemnify, hold harmless, and defend the State, its officers, agents or employees, against any and all claims, demands, damages, costs, expenses or liability costs arising out of the use by Tenant, including its employees and agents, of the Lease area, except for liability arising out of, and to the extent of, the gross negligence or willful misconduct of the State, its officers, agents or employees for which the State is found liable by a court of competent jurisdiction.

Should the State be named as a defendant in any claim or legal action arising out of the use by Tenant, including its employees and agents, of the Lease area, upon tender of the claim or action by the State to Tenant, the Tenant shall assume the State's defense and represent the State in such legal action at Tenant's expense, subject to the provisions herein.

In lieu of tender to Tenant of the claim or action against the State, the State may elect to represent itself, in which event, the State shall bear its own litigation costs, expenses and attorney fees. Notwithstanding the foregoing, in the event the State is required to represent itself because of a conflict of interest by counsel representing Tenant, then Tenant, upon demand by the State, shall reimburse the State for the State's litigation costs, expenses and attorney fees. Costs shall include, without limitation, all attorney fees and costs, court costs, if any, costs of mediators or arbitrators, experts and consultants, and any other costs reasonably incurred in response to any claim.

In the event the State is found to be concurrently liable with Tenant by a court of competent jurisdiction for loss or damage to persons or property arising out of the use by Tenant, its employees and agents, of the Lease area, the State and Tenant shall cooperate and use their best efforts to seek and obtain an apportionment of liability from the court and neither party shall request a jury apportionment.

In the event the State is found to be liable for any other wrongful act, for which liability to another is determined by a court of competent jurisdiction for loss or damage to persons or property arising out of the use by Tenant, its employees and agents, of the

Lease area, the State shall bear its own litigation costs, expenses and attorney fees. If Tenant has paid for any such costs which are the responsibility of the the State under this provision, the State shall reimburse Tenant at Tenant's request. The State, in its sole discretion, may provide any reimbursement required in the form of a credit against any other money due the State under this Lease.

8. RENEWAL. Tenant may provide written notice to the Department of Fish and Game Aquaculture Coordinator that it is exercising its right to seek renewal of this lease at least 120 days and not more than 364 days (one year) prior to the expiration date in Section 3 pursuant to Fish and Game Code section 15406. So long as Tenant, during the period specified herein, is still actively engaged in aquaculture, as determined by the State, Tenant shall have a prior right to renew for a period of 0.00 years on terms to be agreed upon between the State, in consultation with the Department of Fish and Game Aquaculture Coordinator, and Tenant. If Tenant fails to give such notice of its right to seek renewal during the period specified herein, the Lease, including any remaining right to seek renewal, shall terminate upon expiration of the then-current term. Moreover, if Tenant is in default on the date of giving such notice, the notice shall be ineffective; if Tenant cures the default and provides a new notice thereafter all within the period specified herein for giving notice, that new notice shall be sufficient to exercise Tenant's prior right to renew. Provided, further, that if on the date a renewal term is to commence Tenant is in default, the renewal term shall not commence and this Lease shall expire at the end of the current term. However, if the State continues negotiating renewal terms after the prior term expires, then the holdover provisions of Section 9 may apply. In no event shall the term of this Lease, or the term of any renewal thereof, extend beyond 25 years each.

9. HOLDOVER. If the Term in Section 3 expires and the Lease has not been renewed pursuant to Section 8, and Tenant remains in possession of the Lease area with State's express or implied permission, Tenant shall become a tenant from month to month only, subject to all the provisions of this Lease except Sections 3, 4 and 5. During this holdover tenancy, a monthly rent representing one-twelfth of the current adjusted annual rent shall be payable on or before the first day of each month. It is expressly understood that a holdover tenancy does not create any right of renewal beyond that provided by Fish and Game Code section 15406 as set forth in Section 8, and that the only purpose of a holdover tenancy is to allow continuity of use of the property while the State continues to negotiate renewal terms or undertakes to issue a new lease to the highest responsible bidder pursuant to Fish and Game Code section 15406, or to allow the holdover tenant time to terminate and remove the aquaculture operation consistent with Fish and Game Code section 15409(a). If either party desires to terminate such holdover tenancy, it shall give the other party not less than thirty days advance written notice of the date of termination.

10. POSSESSORY INTEREST. Tenant understands and acknowledges that, pursuant to Revenue and Taxation Code section 107.6(a), any possessory interest created by this Lease may be subject to the payment of property taxes levied on that possessory interest.

Tenant agrees to pay, before delinquency, all lawful taxes, assessments, license fees and any other charges of any type whatsoever which at any time may be levied by the State, County, City or any tax or assessment-levying body upon any interest in or

created by this Lease, or any possessory right which Tenant may have in or to the Lease area covered hereby.

11. USE. Tenant shall use the Lease area only for the purpose stated in this Lease, and such use shall be continuous from commencement of the Lease term until its expiration or termination. Pursuant to Fish and Game Code section 15414, the State may require the Tenant to submit any periodic reports it deems necessary for the proper administration of State Water Bottom M-000-00.

The Lease area shall be continuously used by Tenant to conduct aquaculture operations, as aquaculture is defined in Fish and Game Code section 17. Tenant shall not use or permit the Lease area to be used in whole or in part during the term of this Lease for any purpose, other than as set forth herein, without the prior written consent of the State.

The possessory interest herein given to the Tenant does not exclude the general public from the Lease area, and Tenant may not unreasonably impede public access to state waters for purpose of fishing, navigation, commerce or recreation or other public trust values. However, Tenant may limit public access to the extent necessary to avoid damage to the Lease area and the aquatic life culture therein. This Lease is not intended to confer third party beneficiary status to anyone benefiting from the terms of this Lease. The possessory interest is further subject to all valid and existing contracts, leases, licenses, encumbrances, and claims of title which may affect the Lease area.

This Lease provides a tenancy of a temporary nature. The parties to this Lease agree that no Relocation Payment or Relocation Advisory Assistance will be sought or provided in any form as a consequence of this tenancy.

This Lease is of no force or effect until signed by both parties and all approvals are secured. Tenant may not commence performance until such approval has been obtained. Any commencement of performance prior to Lease approval shall be done at the Tenant's own risk. Nothing in this Lease may be waived, modified, amended or discharged except by a writing signed by the State and Tenant and approved by the State in a public meeting.

12. SHELLFISH PRODUCTION IMPROVEMENTS.

[Oyster Cultivation.

[(A) Bottom culture: leases must be improved at an average rate of at least two cases of seed-bearing shell (160 pounds of seed-bearing shell) or 30 bushels of shellfish one or more years of age per acre over the allotted acreage per year. Improvements by unattached, single seed (less than one year old) shall consist of planting an average rate of 10,000 single seed per acre per year over the allotted acreage. Term of improvement shall be four years for seed-bearing shell and three years for oysters one or more years of age.

[(B) Off-bottom culture: leases must be improved at an average rate of at least one case of seed-bearing shell (80 pounds of seed-bearing shell), or 15 bushels of oysters one or more years of age per acre over the allotted acreage per year. Improvement by unattached single seed (less than one year old) shall consist of planting an average

rate of 5,000 single seed per acre per year over the allotted acreage. Term of improvement shall be four years for seed-bearing shell and three years for oysters one or more years of age.

[(C) Production requirements: the annual harvest rate shall be an average of 2,000 oysters per acre (over one year of age) over the allotted acreage effective three years after the effective date of the lease. Harvest reports shall be recorded in the form of a receipt in quadruplicate furnished by the Department of Fish and Game. The triplicate copy shall be delivered to the Department of Fish and Game on or before the first and sixteenth day of each month.

[(2) Miscellaneous Aquatic Species.

[(A) A lease for the cultivation of species other than oysters will include minimum planting and harvesting requirements for the species to be cultivated to insure that water bottoms so encumbered will be used for the purpose intended.

[(B) Harvest amounts shall be recorded in the form of a receipt in quadruplicate furnished by the Department of Fish and Game. The triplicate copy shall be delivered to the Department of Fish and Game on or before the first and sixteenth day of each month.]

13. NO WARRANTY. This Lease is made without warranty of title, condition or fitness of State Water Bottom M-000-00 for the Tenant's intended purpose or use.

Tenant agrees to accept the Lease area in its presently existing condition, "As Is", and that the State shall not be obligated to make any alterations, additions or betterments thereto except as otherwise provided in the Lease.

14. COMPLIANCE. As a necessary condition for this Lease, Tenant must obtain and maintain all necessary registrations, permits and any other entitlements. Tenant shall comply with all applicable federal, state and local laws, including laws relating to public health and safety, zoning, resource conservation and environmental protection including, but not limited to, the Coastal Zone Act, the Porter-Cologne Water Quality Act, and the California Environmental Quality Act.

Tenant shall comply with all applicable resource management and preservation mandates in the conduct of all activities that impact cultural, natural, or scenic resources. These mandates include, but are not limited to, those found in Public Resources Code sections 5024 and 5097 and the United States Secretary of the Interior's Guidelines for Historic Preservation. Tenant's operations under this Lease shall ensure that the State's goals of ensuring historical preservation and proper cultural, scenic and natural resource management are continually achieved in a manner consistent with applicable law.

15. RECORD KEEPING. The State may require periodic reports from Tenant as the State deems necessary for the proper administration of the State's water bottoms.

Tenant agrees that the Fish and Game Commission, Department of Fish and Game, and the Bureau of State Audits, or their designated representative, shall have the right to review and copy any records and supporting documentation pertaining to the

performance of this Lease. Tenant agrees to maintain such records for possible audit for a minimum of three years after final payment. Tenant agrees to allow the auditor(s) prompt access to such records during normal business hours and similarly to allow interviews of any employees who might reasonably have information related to such records. Tenant agrees to include a similar right of the State to audit records and to interview staff in any sublease or contract related to performance of this Lease.

16. WAIVER AND CONSENT. Unless expressly acknowledged by the State in writing, no term, covenant, or condition of this Lease and no default or breach is waived by the acceptance of a late or nonconforming performance. The State's consent for one transaction or event under this Lease is not consent to any subsequent occurrence of the same or any other transaction or event.

17. BREACH. The occurrence of any one of the following shall constitute a breach of this Lease by Tenant: (1) Failure of Tenant to make any annual Lease payment within ninety (90) days of the commencement date of the Lease or within ninety (90) days of any anniversary thereof; (2) Failure of Tenant to make any other payment more than thirty (30) days after such payment is due; (3) abandonment of the Lease area determined after the State has followed the procedures set forth in Civil Code section 1951.3; or (4) any failure by Tenant to comply with laws applicable to the conduct of aquaculture.

Should a threat to public health or safety or to the environment be created or exist on the Lease area, the State may declare an emergency event and, unless an alternative arrangement is preferable in the State's discretion, may enter upon and take possession of the Lease area to remedy the emergency without prior notice and/or demand an assignment of the right to operate the Lease area. Upon entering the Lease area under this Section, the State shall provide immediate notice of such action by hand delivery or fax of its declaration to Tenant. The State may retain possession of the Lease area until the emergency event has been completely and adequately addressed to the State's satisfaction. Where a breach of this Lease has caused or exacerbated the emergency event, or where the Tenant is non-cooperative in allowing or addressing any remedial action necessary because of the emergency event, the State may terminate the Lease. The State shall not be liable in any manner for any inconvenience, disturbance, loss of business, nuisance or other damage arising out of the State's entry in the Lease area as provided herein, except damage resulting from the active negligence or willful misconduct of the State or its authorized representatives.

Any failure by Tenant to observe or perform another provision of this Lease where such failure continues for twenty (20) days after written notice thereof by the State to Tenant; any such notice shall be deemed to be the notice required under Code of Civil Procedure section 1161. However, if the nature of Tenant's breach is such that it cannot reasonably be cured within the twenty (20) day period, Tenant shall not be deemed to be in breach if Tenant shall commence such cure within the twenty (20) day period and thereafter diligently prosecutes such cure to completion.

Neither this Lease nor any interest of Tenant hereunder in the Lease area shall be subject to involuntary assignment or transfer by operation of law in any manner whatsoever, including, without limitation, the following: (a) transfer by testacy or intestacy; (b) assignments or arrangements for the benefit of creditors; (c) levy of a writ

of attachment or execution on this Lease; (d) the appointment of a receiver with the authority to take possession of the Lease area in any proceeding or action in which the Tenant is a party; or (e) the filing by or against Tenant of a petition to have Tenant adjudged a bankrupt, or of a petition for reorganization or arrangement under any law relating to bankruptcy. Any such involuntary assignment or transfer by operation of law shall constitute a breach by Tenant and the State shall have the right to elect to take immediate possession of the Lease area, to terminate this Lease and/or invoke other appropriate remedies, in which case this Lease shall not be treated as an asset of Tenant.

Notices of breach shall specify the alleged breach and the applicable Lease provision and shall demand that Tenant perform the provisions of this Lease within the applicable time period or quit the Lease area. No such notice shall be deemed a forfeiture or a termination of this Lease unless the State specifically so states in the notice.

18. REMEDIES. In the event of breach by Tenant, the State shall have the following remedies. These remedies are not exclusive; they are cumulative and are in addition to any other right or remedy of the State at law or in equity.

Collection of Rent: In any case where the State has a cause of action for damages, the State shall have the privilege of splitting the cause to permit the institution of a separate suit for rent due hereunder, and neither institution of any suit, nor the subsequent entry of judgment shall bar the State from bringing another suit for rent; it being the purpose of this provision to provide that the forbearance on the part of the State in any suit or entry of judgment for any part of the rent reserved under this Lease, to sue for, or to include in, any suit and judgment the rent then due, shall not serve as defense against, nor prejudice a subsequent action for, rent or other obligations due under the Lease. The claims for rent may be regarded by the State, if it so elects, as separate claims capable of being assigned separately.

Continued Performance: At the State's option, Tenant shall continue with its responsibilities under this Lease during any dispute.

Termination of Tenant's Right to Possession: Upon an event of breach of this Lease by Tenant, in addition to any other rights or remedies it may have, the State may give Tenant a three-day notice to cure the breach or quit the Lease area. If Tenant fails to do either, the State may bring a statutory proceeding in unlawful detainer to regain possession of the Lease area. Any notice give by the State pursuant to this Section does not constitute a termination of this Lease unless expressly so declared by the State in the notice. In the absence of written notice from the State, no act by the State, including, but not limited to, acts of maintenance, efforts to re-let and/or assign rights to possession of the Lease area, or the appointment of a receiver on the State's initiative to protect the State's interest under this Lease shall constitute an acceptance of Tenant's surrender of the Lease area, or constitute a termination of this Lease or of Tenant's right to possession of the Lease area. Upon such termination, the State has the right to recover from Tenant: (a) the worth, at the time of the award, of the unpaid rent that had been earned at the time of termination of this Lease; (b) the worth, at the time of the award, of the amount by which the unpaid rent that would have been earned after the date of termination of this Lease until the time of the award exceeds the amount of loss of rent that Tenant proves could have reasonably been avoided; (c) the worth, at the time of the award, of the amount by which the unpaid rent for the balance

of the term after the time of the award exceeds the amount of the loss of rent that Tenant proves could have been reasonably avoided; and (d) any other amount necessary to compensate the State for all the detriment proximately caused by Tenant's failure to perform its obligations under this Lease, and costs of clearing the State's title of any interest of Tenant, commissions, attorneys' fees, and any other costs necessary or appropriate to make the Lease area operational by a new Tenant.

“The worth, at the time of the award," as used herein above shall be computed by allowing interest at the lesser of a rate of ten percent (10%) per annum or the maximum legal rate.

Receiver: If Tenant is in breach of this Lease, the State shall have the right to have a receiver appointed to collect rent and conduct Tenant's business or to avail itself of any other pre-judgment remedy. Neither the filing of a petition for the appointment of a receiver nor the appointment itself shall constitute an election by the State to terminate this Lease.

Right to Cure Tenant's Breach: At any time after Tenant commits a breach, the State can cure the breach at Tenant's cost. If the State, at any time by reason of Tenant's breach, pays any sum or does any act that requires the payment of any sum, the sum paid by the State shall be due immediately from Tenant to the State, and if paid at a later date shall bear interest at the rate of ten percent (10%) per annum from the date the sum is paid by the State until the State is reimbursed by Tenant.

Personal Property of Tenant: In the event any personal property or trade fixtures of Tenant remain at the Lease area after the State has regained possession, that property or those fixtures shall be dealt with in accordance with the provisions for Surrender of the Lease area provided below.

State's Obligations After Breach: The State shall be under no obligation to observe or perform any covenant of this Lease on its part to be observed or performed that accrues after the date of any breach by Tenant. Such nonperformance by the State shall not constitute a termination of Tenant's right to possession nor a constructive eviction.

No Right of Redemption: Tenant hereby waives its rights under California Code of Civil Procedure sections 1174 and 1179 or any present or future law that allows Tenant any right of redemption or relief from forfeiture in the event the State takes possession of the Lease area by reason of any breach by Tenant.

Other Relief: The State shall have such rights and remedies for failure to pay any and all monetary obligations under this Lease as the State would have if Tenant failed to pay rent due. The remedies provided in this Lease are in addition to any other remedies available to the State at law, in equity, by statute, or otherwise.

Attorney’s Fees and Costs: Tenant shall reimburse the State on demand for all reasonable attorney fees and expenses incurred by the State as a result of a breach under this Lease, provided that, in any litigation between the parties to this Lease concerning it, the prevailing party shall be entitled to recover court costs, reasonable attorney fees, and other costs reasonably incurred to secure the remedy obtained in the action.

The State shall not be in breach of the performance of any obligation required of it under this Lease unless and until it has failed to perform such obligation for more than thirty (30) days after written notice by Tenant to the State specifying the alleged breach and the applicable Lease provision giving rise to the obligation. However, if the nature of the State's obligation is such that more than thirty (30) days is required for its performance, then the State shall not be deemed in breach if it shall commence performance within such 30-day period and thereafter diligently prosecute the same to completion.

19. ASSIGNMENT AND SUBLEASES. Pursuant to Fish and Game Code section 15412, this Lease may not be assigned, in whole or in part, by Tenant, either voluntarily or by operation of law, and no subleases or other rights may be granted under it by Tenant without the prior written approval of the State, subject to the conditions that it prescribes. At the election of the State, any attempted assignment or subletting without such prior approval of the State shall terminate this Lease.

20. TERMINATION. In the event the Lease area becomes unsuitable for the practical cultivation or harvest of shellfish, or in the event the Tenant becomes unable to continue operating the Lease for aquaculture for reasons beyond Tenant's ability to control, Tenant may terminate the Lease after thirty (30) days written notice to the State. Tenant may terminate the Lease for any other reason through a written request presented to and approved by the State at a public hearing held for purposes of consideration of Tenant's termination request. Such termination shall be effective thirty (30) days after State approval.

On expiration of or within thirty (30) days after earlier termination of the Lease, Tenant shall surrender the Lease area to the State. Tenant shall remove all of its personal property as well as all man-made material deposited during Tenant's occupancy within the above stated time unless otherwise agreed to in writing.

If Tenant fails to surrender the Lease area to the State on the expiration, or within thirty (30) days after earlier termination of the term as provided by this Section, Tenant shall hold the State harmless for all damages resulting from Tenant's failure to surrender the Lease area.

21. QUITCLAIM. Tenant shall, within ninety (90) days of the expiration or sooner termination of this Lease, execute, acknowledge and deliver to the State in a recordable form provided by the State a release of all rights under this Lease. Should Tenant fail or refuse to deliver such a release, a written notice by the State reciting such failure or refusal shall, from the date of its recordation, be conclusive evidence against Tenant of the expiration or termination of this Lease.

22. TIME OF THE ESSENCE. Time is of the essence of this Lease and any term, covenant or condition in which performance is a factor.

23. CHANGES. Nothing in this Lease may be waived, modified, amended, or discharged except by an instrument in writing signed by Tenant and the State, in consultation with the Department of Fish and Game Aquaculture Coordinator. At its discretion, the Department of Fish and Game may charge Tenant for any and all costs it incurs in any lease amendment requested by Tenant.

24. SEVERABILITY. If a court of competent jurisdiction determines that a Lease provision is legally invalid, illegal or unenforceable, and such decision becomes final, the provision shall be severed and deleted from the Lease and the remainder reasonably interpreted to achieve its intent. Tenant and the State agree to replace such void or unenforceable provision with a valid and enforceable provision that will achieve, to the extent possible, the purpose of the original provision.

25. SITE CLEANUP. Tenant shall provide to the State financial assurance sufficient to ensure that, upon termination or abandonment of this Lease, the Lease area is surrendered in a condition that is in accordance with Section 20, to the satisfaction of the State.

The financial assurance amount shall be calculated based on an analysis of the physical activities and materials necessary to surrender the site in the required condition; the unit costs or costs for third party contracting, for each of the identified activities as applicable; the number of units of these activities; and a contingency amount not to exceed ten percent (10%) of the costs of the activities.

Financial assurances may take the form of surety bonds executed by an admitted surety insurer, as defined in subdivision (a) of section 995.120 of the Code of Civil Procedure, irrevocable letters of credit, trust funds, or other forms of financial assurances specified by the State which it reasonably determines to be adequate to perform restoration of the site. Personal surety bonds cannot provide financial assurance under this requirement. The financial assurance shall be payable to the State and shall remain in effect throughout the duration of the tenancy under the Lease, and until the State accepts surrender of the Lease area or until replaced by an equivalent financial assurance.

The financial assurance shall be applied by the State to place the Lease area in the condition required for surrender under Section 20, whenever the Tenant fails or refuses to accomplish such activities, and to reimburse the State for all its costs of achieving that condition of the Lease area. Any assets remaining from the financial assurance after all costs to the State, including administrative costs to secure the funds, have been reimbursed therefrom, shall be returned to the Tenant.

26. NON-DISCRIMINATION. In its use of the Lease area, Tenant shall not discriminate against, harass, or allow harassment against any person or class of persons on the basis of race, color, creed, religion, national origin, ancestry, sex, sexual orientation, age, marital status, medical condition or disability. Tenant shall ensure that the evaluation and treatment of its employees and applicants for employment are free from such discrimination and harassment.

Tenant shall comply with the provisions of the Fair Employment and Housing Act (Government Code section12900 et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, section 7285.0 et seq.). Tenant shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement. Tenant shall include the non-discrimination and compliance provisions of this clause in all contracts to perform work under and/or in connection with this Lease.

Tenant shall be solely responsible for complying with the requirements of the Americans With Disabilities Act of 1990 (P.L. 101-336, commencing at section 12101 of Title 42, United States Code and including Titles I, II and III), the Rehabilitation Act of 1973, and all related regulations, guidelines and amendments to both laws.

27. DRUG-FREE WORKPLACE. Tenant will comply with the requirements of the Drug-Free Workplace Act of 1990, as amended, and will provide a drug-free workplace by taking the following actions:

(a) Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited and specifying actions to be taken against employees for violations.

(b) Establish a Drug-Free Awareness Program to inform employees about: (1) the dangers of drug abuse in the workplace; (2) the Tenant's policy of maintaining a drug-free workplace; (3) any available counseling, rehabilitation and employee assistance programs; and, (4) penalties that may be imposed upon employees for drug abuse violations.

(c) Provide that every employee who works on the Lease area will: (1) receive a copy of the Tenant's drug-free policy statement; and, (2) agree to abide by the terms of the Tenant's statement as a condition of employment on the Lease area.

Failure to comply with these requirements may result in suspension or termination of this Lease, and Tenant may be ineligible for award of any future State Water Bottom Leases if the State determines that any of the following has occurred: (1) the Tenant has made false certification, or (2) violated the certification by failing to carry out the requirements as noted above.

28. ENTIRE AGREEMENT. This Lease contains the entire agreement between the parties, and an agreement hereafter shall be ineffective to change, modify or discharge it in whole or in part, unless such agreement is in writing and contains the authorized signature of the party against whom enforcement of the change, modification or discharge is sought.

29. CONSTRUCTION. This Lease shall be governed by and construed in accordance with the laws of the State of California. The Section titles in this Lease are inserted only as a matter of convenience and for reference, and in no way define, limit, or describe the scope or intent of this Lease or in any way affect this Lease.

Tenant shall maintain annual registration of its aquaculture facility in accordance with Fish and Game Code sections 15101 and 15103 and shall keep current with all fees and surcharges, including any penalties for late payment of same, required by those statutes.

30. INCORPORATION BY REFERENCE. The provisions of Chapters 1 through 8 of Division 12 of the Fish and Game Code (commencing with section 15000) and the provisions of Chapter 9 of Division 1 of Title 14, California Code of Regulations (commencing with section 235), as may be amended from time to time, are made part of this Lease by this reference. If there is a conflict between any term or condition of

this Lease and any of the provisions incorporated by reference in it, the incorporated provisions shall control.

31. CONFLICTS OF INTEREST. Tenant warrants that no official, employee in the state civil service or other appointed state official, or any person associated with same by blood, adoption, marriage, cohabitation, and/or business relationship: (a) has been employed or retained to solicit or aid in the procuring of this Lease; or (b) will be employed in the performance of this Lease without the immediate divulgence of such fact to the State. In the event the State determines that the employment of any such official, employee, associated person, or business entity is not compatible, Tenant shall terminate such employment immediately. For breaches or violations of this Section, the State shall have the right to annul this Lease without liability.

32. EXPATRIATE CORPORATION. Tenant hereby declares that it is not an expatriate corporation or subsidiary of an expatriate corporation, within the meaning of Public Contract Code sections 10286 and 10286.1 and is eligible to contract with the State.

33. NO AGENCY. The Tenant, and the agents and employees of the Tenant in the performance of the Lease, shall act in an independent capacity and not as officers or agents of the State of California.

34. CLOSURE. Neither the State nor the Department of Fish and Game shall have any liability arising from a closure of waters by the Department of Fish and Game Director pursuant to Fish and Game Code section 5654, where aquaculture operations are taking place.

35. NOTICES. Notices to the parties to this Lease shall be made in writing and may be given by delivery in person, by U.S. Mail with postage prepaid, or by receipt-confirmed facsimile to:

FISH AND GAME COMMISSION Executive Director 1416 Ninth Street, 13TH Floor Sacramento, CA 95814 Telephone: (916) 653-4899 Facsimile: (916) 653-5040	[BUSINESS NAME] [PERSON/TITLE] [ADDRESS] [CITY/STATE/ZIP] Telephone: (000) 000-0000 Facsimile: (000) 000-0000

Notices shall be deemed given upon delivery to the addressee. Any notice given by facsimile shall also be given to the addressee by U.S. Mail, with postage prepaid. If a notice given by facsimile is delivered to the addressee after 5:00 p.m. Pacific time, or on a Saturday, Sunday or State of California or national holiday, the notice shall be deemed given on the next business day. Either party may change its address for notice purposes by giving written notice to the other party in the manner provided in this Section.

36. SPECIAL CONDITIONS. [THIS SPACE RESERVED FOR ANY SITE-SPECIFIC PROVISIONS OR EXCEPTIONS/MODIFICATIONS TO THE PRECEDING SECTIONS.]

SIGNATURE PAGE

This Lease and any amendment(s) may be executed in counterparts, each of which, when executed and delivered by the State and Tenant, shall be an original and together shall constitute one instrument, with the same force and effect as though all signatures appeared on a single document.

Each signatory attests he or she is duly authorized to execute this Lease on behalf of the principal he or she represents.

Where Tenant is a corporation, the signature of the Tenant on this Lease will be verifying that Tenant is currently qualified to do business in the State of California, as defined in Revenue and Taxation Code section 23101, in order to ensure that all obligations to the State are fulfilled. Both domestic and foreign corporations (those incorporated outside the State of California) must be in good standing in order to be qualified to do business in California.

STATE,

California Fish and Game Commission

By: _____
[NAME], Executive Director

Date: _____

TENANT,

[BUSINESS NAME]

By: _____
[NAME], [TITLE]

Date: _____

EXHIBIT A

Official Map and Description of State Water Bottom M-000-00

LEASE OF STATE WATER BOTTOMS FOR AQUACULTURE, LEASE NO. M-430-15

This aquaculture lease made and entered into as of this 1st day of March, 1990, by and between the State of California, acting by and through its Department of Fish and Game, hereinafter referred to as "Lessor", and Shellfresh International, hereinafter referred to as "Lessee".

WITNESSETH:

WHEREAS, Lessee is presently the holder of a valid license to cultivate marine life for profit in the waters of the State of California as provided in Fish and Game Code Section 15101, and

WHEREAS, Lessee has heretofore filed with Lessor a bid application for the exclusive privilege of cultivating oysters, mussels and clams in the hereinafter described waters of the State of California, and has accompanied said application with the required filing fee of one hundred dollars ($100.00), and

WHEREAS, Lessor has heretofore published notice of the hearing of said application, has been advised by the State Lands Commission of the State of California that the area applied for is available for leasing, and it has been determined by the Fish and Game Commission that it is in the best interest of the State of California that such lease be made, and

NOW, THEREFORE, THIS INDENTURE WITNESSETH:

That, in consideration of the payment of the monies hereinafter stated in accordance with the bid made by Lessee and accepted at a duly called and noticed hearing of the Fish and Game Commission of the State of California, pursuant to law and in consideration of the covenants contained herein on the part of the Lessee, the Lessor does hereby lease the California state water bottom hereinafter described and does hereby grant to Lessee the exclusive privilege to cultivate oysters, mussels and clams thereon, and in those certain waters of the State of California described as follows, to wit:

> All that certain real property situated in the County of Marin, State of California as described as follows:
>
> In Tomales Bay, Marin County, State of California, starting from Bench Mark 8, located at approximately 38°12'38.7" North latitude, and 122°55'22" West longitude, on the Tomales Bay Quadrangle, Marin County, California, U.S. Dept. of the Interior, Geological Survey 7.5 minute series topographic map; thence North 83°31' West for a distance of 2,749.3 feet to the top of Preston Point Rock lying off the northwest tip of Preston Point; thence North 59°41'20" West, 655.05 feet; thence North 6°56'04" West, 648.54 feet; thence North 36°26'51" West, 454.15 feet; thence North 35°32'16" West, 449.04 feet; thence North 51°34'55" West, 322.02 feet; thence North 44°01'44" West, 363.01 feet to the true point of beginning; thence North 45° West 221.47 feet; thence North

28°48'39" West, 397.16 feet; thence South 54°42'25" West, 127.91 feet; thence North 36°35'53" West, 189.70 feet; thence North 68°37'46" West, 214.87 feet; thence North 53°50'31" West, 280.16 feet; thence North 81°20'51" West, 404.81 feet; thence South 79°06'52" West, 230.34 feet; thence South 62°43'24" West, 626.46 feet; thence South 39°09'48" West, 1391.37 feet; thence South 33°41'24" East, 62.74 feet; thence South 59°22'34" West, 1127.21 feet; thence South 30°49'40" East, 628.15 feet; thence South 36°20'51" East, 572.48 feet; thence North 84°16'04" East, 131.16 feet; thence North 58°07'41", 3764.82 feet to the true point of beginning.

This area of water bottom, containing an area of 128.2± acres more or less, comprises Aquaculture Lease No. M-430-15 (Appendix 1).

This lease, in accordance with provisions of Fish and Game Code Section 15400, as may from time to time be amended or changed by the State Legislature, is for the sole purpose of cultivating Pacific oyster (Crassostrea gigas), Manila clam (Tapes japonica), and bay mussel (Mytilus edulis) in the previously designated area.

The cultivation of additional species of aquatic plants and animals requires the approval of the Fish and Game Commission. Seed stocks must be certified before planting in compliance with Fish and Game Code Section 15201, and must be planted by Lessee in a manner and at a size approved by Lessor to assure that harvested animals are a product of the lease. A request for certification of planting stock will be submitted by Lessee to the Lessor at least ten (10) days prior to the proposed date of inspection.

All shellfish cultivation methods on the lease shall be confined to racks and bags and bottom trays within the area approved by the Commission. No other mode of operation or culture method is authorized, unless Lessee shall first obtain approval from the Fish and Game Commission.

Notice of intent to plant shellfish on the lease shall be given to the Department of Fish and Game, Marine Resources Division, 411 Burgess Drive, Menlo Park, CA 94025. In addition to the required ten (10) day notice, at least a 24-hour notice shall be given to the Marine Unit Manager, Mr. Paul Reilly, telephone (415) 688-6362, giving details on where the shellfish seed can be inspected.

This lease is for a term of twenty-five (25) years commencing on the 1st day of March, 1990, and ending on February 28, 2015, for a total rental of four thousand nine hundred and ninety-nine dollars and eighty cents ($4,999.80) per year, and a privilege tax on all products harvested as provided by Fish and Game Code Section 8045. Said annual rental will be payable to Lessor on a fiscal year basis, July 1 - June 30, and within thirty (30) days of the commencement of the lease, or after receipt of the consummated lease agreement. If said annual rental

is not paid within sixty (60) days after the close of the month in which it is due an additional 10 percent penalty shall be paid. Lessor, at its option, may declare the lease abandoned for failure to pay such rental fees within 90 days from the beginning of the rental period; although such abandonment shall not relieve Lessee of his obligation to pay such rental and penalty which are due and owing. Lessee agrees to pay Lessor reasonable attorney fees and costs incurred in collecting any amounts and/or penalties due and owing from Lessee under the provisions of this lease. Lessee agrees to pay said rent to Lessor at its office in the City of Sacramento, State of California, or at such other place as Lessor may, from time to time, designate.

Lessee expressly recognizes and acknowledges that any payments by Lessee as provided for herein, are subject to the provisions of Fish and Game Code Section 15410, which provides that all leases shall be subject to the power of the Legislature to increase or decrease the rents, fees, taxes, and other charges relating to the lease, but no increase in rent shall be applicable to an existing lease until it is renewed.

This lease is made upon the following terms, conditions and covenants, to wit:

A. This lease may, at the option of the Lessee, be renewed for additional periods not to exceed 25 years each. If Lessee desires to enter into a new lease for a period commencing after expiration of the initial 25-year term, Lessee shall give notice to Lessor one (1) year prior to termination of the lease. The lease may be renewed if, during the notification period, terms for a new lease are agreed upon by Lessee and the Commission.

B. Lessee shall keep records as required in accordance with Fish and Game Code Section 15414, on forms to be supplied by Lessor, and shall maintain adequate accounting records sufficient to determine monies due to Lessor by the 10th day of each month, for all shellfish harvested during the preceding calendar month. Lessor reserves the right to inspect Lessee's premises, equipment, and all books at any time and records of Lessee pertaining to Lessee's cultivation on the leased premises.

C. In order to provide assurance to lessor that this aquaculture lease is utilized for the purpose stated in the lease application, the lease shall be improved at no less than the minimum rate established by Commission regulations (Appendix 2). This annual rate of planting for shellfish shall be:

Off-bottom culture: 641,000 single seed less than 1 year old (@ 5,000/acre) or 128 cases (@ 80 lbs shellstock/case) of seed-bearing shell.

The term of improvement for this lease shall be three years, with the minimum rate of planting for the entire acreage being reached by July 1, 1992. The minimum annual rate of planting for the entire acreage will be maintained thereafter until the end of the lease.

The minimum annual harvest requirement for the lease will be an average of 2,000 oysters, clams or other shellfish per acre, effective July 1, 1992.

A minimum rate of planting shall be negotiated for option periods. Lessor may declare this lease terminated if Lessee fails to meet these cultivation and harvesting requirements and if Lessee, at any time, is proven to be failing in good faith, to pursue the purpose of this lease.

D. If, at any time subsequent to the beginning date of this lease, the use of cultural devices authorized herein shall fall into a state of disrepair or otherwise become an environmental or aesthetic degradation, as determined by Lessor, then upon written notice by Lessor, Lessee shall have sixty (60) days to repair and correct conditions cited by Lessor. Failure to comply with written notice shall be grounds for termination of this lease and Lessee shall, at the option of Lessor, remove all improvements located on lands covered by this lease.

As a financial guarantee of growing structure removal and/or clean-up expense in the event a lease is abandoned or otherwise terminated, Lessee shall place on deposit, pursuant to the "Escrow Agreement For Cleanup of Aquaculture Leases, Tomales Bay, California", a sum in a proportion that the Lessee's individual acreage bears to the total acreage of specified leased parcels of State water bottoms in Tomales Bay, Marin County, California, until the sum of five thousand dollars ($5,000.00) is reached. This escrow deposit is established in compliance with Section 7 of the Fish and Game Commission Policy, Awarding of Tomales Bay Aquaculture Leases, adopted January 7, 1989 (Appendix 3). Such money shall be deposited over a two-year period payable one-half upon entering upon the lease and one-half upon the first anniversary of such inception date. The escrow deposit shall be increased if the Fish and Game Commission determines that, if abandoned, any particular culture operation is likely to be more expensive to remove. The escrow deposit may be reduced by the Commission upon demonstration that the probable cost of removal of all improvements would be less than the deposit previously required. In its annual proof of use report, the Lessor shall advise the Commission of its best estimate of the probable cost of removal of each lease operation. The escrow agreement, escrow holder, and escrow depository shall be agreed upon by the Executive Secretary of the Fish and Game Commission, the Lessor and Tomales Bay Shellfish Growers Association.

It shall be the responsibility of the Lessee to maintain the specified security balance at the level established by the Commission, regardless of the number of lessees who continue in aquaculture operations within the bay.

If Lessee abandons this lease without removing growing structures therefrom, the escrow deposit shall be expended to remove growing structures, or otherwise clean up the lease, or in the alternative, the remaining lessees in Tomales Bay and the Tomales Bay Shellfish Growers Association may undertake the clean-up leaving the secured amount whole.

In order to assure compliance with the escrow provisions of this lease, Lessee shall place in the agreed upon escrow account specified in the "Escrow Agreement For Cleanup of Aquaculture Leases, Tomales Bay, California (Addendum 1)", hereby attached to and made part of this agreement, a total of nine hundred thirty dollars ($930.00), a sum (rounded to the nearest dollar amount) proportional to Lessee's total lease acreage of one hundred twenty-eight and two-tenths (128.2) acres, which bears to the total acreage of 688.9 acres of State water bottoms leased in Tomales Bay for aquaculture purposes. Certification that the first half of the specified deposit has been made, a total of four hundred sixty-five dollars ($465.00), must be received by Lessor prior to final approval of this lease agreement. Proof that the second half of the required security deposit ($465.00) has been made must be furnished to Lessor on or before February 28, 1991, or this lease shall be subject to termination.

E. Lessee shall observe and comply with all rules and regulations now or hereinafter promulgated by any governmental agency having authority by law, including but not limited to, State Water Resources Control Board, State Coastal Commission, State Lands Commission, U.S. Coast Guard, and U.S. Army Corps of Engineers. Any other permits or licenses required by such agencies will be obtained by Lessee at his own sole cost and expense.

F. Lessee recognizes and understands in accepting this lease, that his interest therein may be subject to a possible possessory interest tax that the county may impose on such interest, and that such tax payment shall not reduce any rent or royalty due to the Lessor hereunder, and any such tax shall be the liability of, and be paid by, Lessee.

G. Any modification of natural or existing features of the real property described in this lease, which is not consistent with the authorized uses under this lease, is expressly prohibited without prior written consent of the Lessor.

H. As evidence of progress in aquaculture, Lessee shall submit each year to the State at the Marine Resources Division office, 411 Burgess Drive, Menlo Park, CA 94025, a written declaration under penalty of perjury, showing the date and amount of each type of aquaculture development and date and amount of designated species comprising each planting, including a diagram showing area, amounts, and dates planted. Such declaration shall be submitted on or before July 15, of each year for the previous year, July 1 - June 30, inclusive.

I. This lease shall be canceled at any time Lessee fails to possess a valid aquaculture registration issued pursuant to Fish and Game Code Section 15101. Lessee agrees not to commit, suffer or permit any waste on said premises, or any act to be done thereon in violation of any laws or ordinances. This lease shall be subject to termination by Lessee at any time during the term thereof, by giving Lessor notice in writing at least ninety (90) days prior to the date when such termination shall become effective. In the event of such termination by Lessee, any unearned rental shall be forfeited to the Lessor.

J. This lease of state water bottom only grants Lessee the exclusive right to cultivate and harvest the specified species of oysters, mussels and clams as described in Lessee's lease bid.

K. The lease shall be clearly marked with buoys or stakes to prevent interference with boating or fishing activities that may take place in the area. Minimum marking of the lease shall include: One (1) buoy or stake on each of the four corners of the lease. All buoys or stakes used to define the boundaries of the lease shall be marked in conformance with the International Association of Lighthouse Authorities Maritime Buoyage System regulations (33 CFR Section 62.33 and 66.01-10). Lessee shall make application to the U.S. Coast Guard, Aids to Navigation Branch, 400 Ocean Gate, Long Beach, CA 90822, for approval of the buoys and stakes to be established on this lease. Each buoy or stake shall be set and maintained to extend at least three (3) feet above the surface of the water at mean higher high water. All buoys or stakes shall bear the Aquaculture Lease No. M-430-15.

If buoys or stakes used to mark this lease are lost, displaced or otherwise removed from the lease area, they must be replaced within a two-week period, weather conditions permitting, or the lease may be subject to abandonment proceedings.

L. In compliance with Sections 1, 2, and 3 of the Policy, Awarding of Tomales Bay Aquaculture Leases, adopted by the Fish and Game Commission at its meeting on January 12, 1989 (Appendix 3), Lessee agrees to cooperate with the Lessor in the monitoring of the health of eel grass beds located on the lease and in conducting a study to gather baseline sedimentation data on eel grass beds lying within the lease boundary. Lessee further agrees to participate with the Lessor in the design, implementation, and operation of a study to collect baseline information on sedimentation occurring within the leasehold during the period March 1, 1990 and June 30, 1994, and the monitoring of wintering shorebirds during the period November 1 to February 28 each year, adequate to measure any population or use changes due to lease operations.

If any of the environmental monitoring programs discussed above indicate, or any other reliable information leads the Lessor to conclude that Lessee's aquaculture operation is directly associated with a significant adverse change in the Tomales Bay ecosystem, Lessor shall notify the Executive Secretary of the Fish and Game Commission and the Lessee of such findings. Upon receipt of notice, Lessee shall take all necessary steps to modify, relocate or discontinue the operation in accordance with the Lessor's advice, unless Lessee demonstrates that its aquaculture operations are not a substantial factor, directly or cumulatively, causing the adverse environmental change. Failure to promptly respond shall be grounds for termination of the lease.

M. In addition to the conditions and restrictions herein provided for in this lease, and any right or privilege granted, conveyed or leased hereunder shall be subject to, and Lessee agrees to comply with all applicable provisions of the California Fish and Game Code, and regulations of the Fish and Game Commission, in particular Fish and Game Code Sections 15400-15415, inclusive, and expressly recognizes the right of the Legislature and the Fish and Game Commission to enact new laws and regulations. In the event of any conflict between the provisions of this lease and any law or regulation enacted in the future, the latter will control.

N. This lease is personal to the Lessee and shall not be transferred, assigned, hypothecated, or subleased, either voluntarily or by operation of law, without prior approval of the Fish and Game Commission.

O. In the event of any breach by Lessee of any of the provisions hereof, other than the payment of any sum due from Lessee to Lessor hereunder, which breac is not remedied, abated and cured by Lessee within 60 days after notice in writing shall cause this lease to thereupon cease and terminate.

P. The attached Nondiscrimination Clause (OCP-1) is hereby made a part of this agreement.

Q. All notices herein provided to be given or which may be given by either party to the other, shall be deemed to have been fully given when made in writing and deposited in the United State Mail, certified and postage prepaid and addresse as follows:

To the Lessor	DEPARTMENT OF FISH AND GAME 1416 Ninth Street Sacramento, CA 95814
To the Lessee	Jim K. Wilson Shellfresh International 5850 Fredricks Road Sebastopol, CA 95472

Nothing herein contained shall preclude the giving of any such written notice by personal service. The address to which notices shall be mailed as aforesaid to either party may be changed by written notice given by such party to the other, as hereinbefore provided.

R. Lessee hereby indemnifies and holds harmless the Lessor, its officers, agents, and employees against any and all claims and demands of every kind and nature whatsoever, arising out of, or in anyway connected with the use by Lessee of said lease, or the exercise of the privilege herein granted.

IN WITNESS WHEREOF, the parties have caused this amendment to said aquacultur lease to be executed as of the day and year first above written.

APPROVED:

FISH AND GAME COMMISSION

By: Robert R Treanor

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

By: Karyn A. Meyeles
Lessor

SHELLFRESH INTERNATIONAL

By: Jim K. Wilson
Lessee

By Shellfresh International, Inc.

ADDENDUM TO
AQUACULTURE LEASE
BETWEEN
DEPARTMENT OF FISH AND GAME, LESSOR
AND

SHELLFRESH INTERNATIONAL

NONDISCRIMINATION CLAUSE

(OCP - 1)*

1. During the performance of this contract, contractor* and its subcontractors shall not unlawfully discriminate against any employee or applicant for employment because of race, religion, color, national origin, ancestry, physical handicap, medical condition, marital status, age (over 40) or sex. Contractors and subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free of such discrimination. Contractors and subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code, Section 12900 et seq.) and the applicable regulations promulgated thereunder (California Administrative Code, Title 2, Section 7285.0 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code, Section 12990, set forth in Chapter 5 of Division 4 of Title 2 of the California Administrative Code are incorporated into this contract by reference and made a part hereof as if set forth in full. Contractor and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

2. This contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under the contract.

* All references to "contractor" shall be deemed to be Lessee.

AMENDMENT NO. 2
TO LEASE OF STATE WATER BOTTOMS
FOR AQUACULTURE LEASE NO. M-430-15

This amendment to aquaculture lease made and entered into as of the first day of September, 1992, by and between the State of California, acting by and through its Department of Fish and Game, hereinafter referred to as "Lessor", and Shellfresh International Inc., and Hog Island Oyster Co., Inc., hereinafter jointly referred to as "Lessee".

W I T N E S S E T H:

WHEREAS, Shellfresh International, Inc., and Lessor did on March 1, 1991, enter into amended Lease Agreement No. M-430-15, for the purpose of cultivating oysters, mussels and clams, and

WHEREAS, Shellfresh International, Inc., has applied to Lessor to amend said lease to authorize the operation of the leasehold as a joint venture, known as "Tom's Point Shellfish", with Hog Island Oyster Co., Inc., and

WHEREAS, the Fish and Game Commission has considered the request of Shellfresh International Inc., to amend said lease and has found that such an amendment is in the best interest of the State of California.

NOW, THEREFORE, it is mutually agreed by and between the parties hereto that this lease is hereby amended to provide that the Lessee shall henceforth be known as Shellfresh International, Inc., and Hog Island Oyster Co., Inc., joint tenants as to an undivided one-half interest.

This lease is for a term of twenty-five (25) years commencing on the 1st day of March 1991, and ending on February 28, 2016.

All notices provided to be given in said lease or which may be given by either party to the other, shall be deemed to have been fully given when made in writing and deposited in the United States Mail, certified and postage-prepaid and addressed as follows:

To the Lessor	Department of Fish and Game 1416 Ninth Street Sacramento, CA 95814
To the Lessee	John Finger, President Hog Island Oyster Co., Inc. P.O. Box 829 Marshall, CA 94940

Except as herein amended, all other terms of said aquaculture lease remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the parties have caused this Amendment to Indenture of Lease to be executed as of the day and year first written above.

APPROVED:

STATE OF CALIFORNIA
FISH AND GAME COMMISSION

By: Robert R Treanor

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

By: _____
Asst. Deputy Director, Admin.

SHELLFRESH INTERNATIONAL, INC.

By: Jim K. Wilson
Lessee

Pres.
Title

HOG ISLAND OYSTER CO., INC.

By: _____
Lessee

By: PRESIDENT
Title

AMENDMENT NO. 3
TO
INDENTURE OF LEASE

This amendment of Aquaculture Lease made and entered into as of the 1st day of April 1996, by and between the State of California, acting by and through its Department of Fish and Game, hereinafter referred to as "Lessor", and Hog Island Oyster Company, Inc., hereinafter referred to as "Lessee."

WITNESSETH:

WHEREAS, on March 1, 1989, Lessor did enter into Lease Agreement No. M-430-15 with Shellfresh International for the purpose of cultivating oysters, mussels and clams, and

WHEREAS, on March 1, 1991 said lease was amended to change the beginning date from March 1, 1989 to March 1, 1991, and the ending date was extended to February 28, 2016, and

WHEREAS, on September 1, 1992 said lease was amended to provide that the lessee shall henceforth be known as Shellfresh International, Inc. and Hog Island Oyster Company, Inc., joint tenants as to an undivided one-half interest, and

WHEREAS, the Fish and Game Commission at its meeting on October 7, 1994 adopted new administrative procedures to standardize annual proof-of-use reporting and the rental period for aquaculture leaseholds, and approved revision of the Escrow Agreement for Cleanup of Aquaculture Leases in Tomales Bay (Addendum 1), and

WHEREAS, on June 26, 1995 the Fish and Game Commission was notified that Hog Island Oyster Company had assumed the full rights and responsibilities of the lease, as per stipulations in the joint venture agreement between Shellfresh International, Inc. and Hog Island Oyster Company, Inc., and determined that the amendment of this aquaculture agreement would be in the best interest of the State.

NOW THEREFORE, THIS AMENDMENT WITNESSETH:

That, in accordance with actions taken by the Fish and Game Commission of the State of California, pursuant to Fish and Game Code Section 15400, Lessor does hereby amend said lease for such consideration, specific purposes and subject to covenants, terms, conditions, reservations, restrictions and limitations as are set forth herein.

This amended lease falls within the authorized term of the initial lease, twenty-five (25) years, which commenced on the 1st day of March 1989, and ends on February 29, 2016, for a total rental of four thousand nine hundred and ninety-nine dollars and eighty cents ($4,999.80) per year, and a privilege tax on all products harvested as provided by Fish and Game Code sections 8051, 18406.5, and 15406.7. Beginning January 1, 1997, said annual rental fee will be payable to Lessor on a calendar year basis, January 1 -- December 31. The next annual rental

fee will be due July 1, 1996, and will cover the period July 1, 1996 to December 31, 1996 in the amount of two thousand four hundred ninety-nine dollars and ninety cents ($2,499.90). If said annual rental fee is not paid within sixty (60) days after the close of the month in which it is due, an additional 10 percent penalty shall be paid. Lessor, at its option, may declare the lease abandoned for failure to pay such rental fees within 90 days from the beginning of the rental period; although such abandonment shall not relieve Lessee of its obligation to pay such rental and penalty which are due and owing. Lessee agrees to pay Lessor reasonable attorney fees and costs incurred in collecting any amounts and/or penalties due and owing from Lessee under the provisions of this lease. Lessee agrees to pay said fee(s) to Lessor at its office in the City of Sacramento, State of California, or at such other place as Lessor may, from time to time, designate.

This lease is made upon the following additional terms, conditions, and covenants, to wit:

H. As evidence of progress in aquaculture, Lessee shall submit each year to the State at the Marine Resources Division office, P. O. Box 1560, Bodega Bay, California 94923, a written declaration under penalty of perjury, showing the date and amount of each type of aquaculture development and date and amount of designated species comprising each planting, including a diagram (map) showing area, amounts, and dates planted. Such annual proof-of-use shall be submitted on or before February 1 of each year for the previous year, January 1 -- December 31, inclusive.

Q. All notices herein provided to be given or which may be given by either party to the other, shall be deemed to have been fully given when made in writing and deposited in the United States Mail, certified and postage prepaid and addressed as follows:

To the Lessor

DEPARTMENT OF FISH AND GAME
1416 Ninth Street
Sacramento, CA 95814

To the Lessee

MR. JOHN FINGER
HOG ISLAND OYSTER CO., INC.
P. O. Box 829
Marshall, CA 93940

Nothing herein contained shall preclude the giving of any such written notice by personal service. The address to which notices shall be mailed as aforesaid to either party may be changed by written notice given by such party to the other, as hereinbefore provided.

Except as herein amended, all other terms of said lease agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the parties have caused this amendment to said aquaculture lease to be executed as of the day and year first above written.

APPROVED:

FISH AND GAME COMMISSION

By:_____

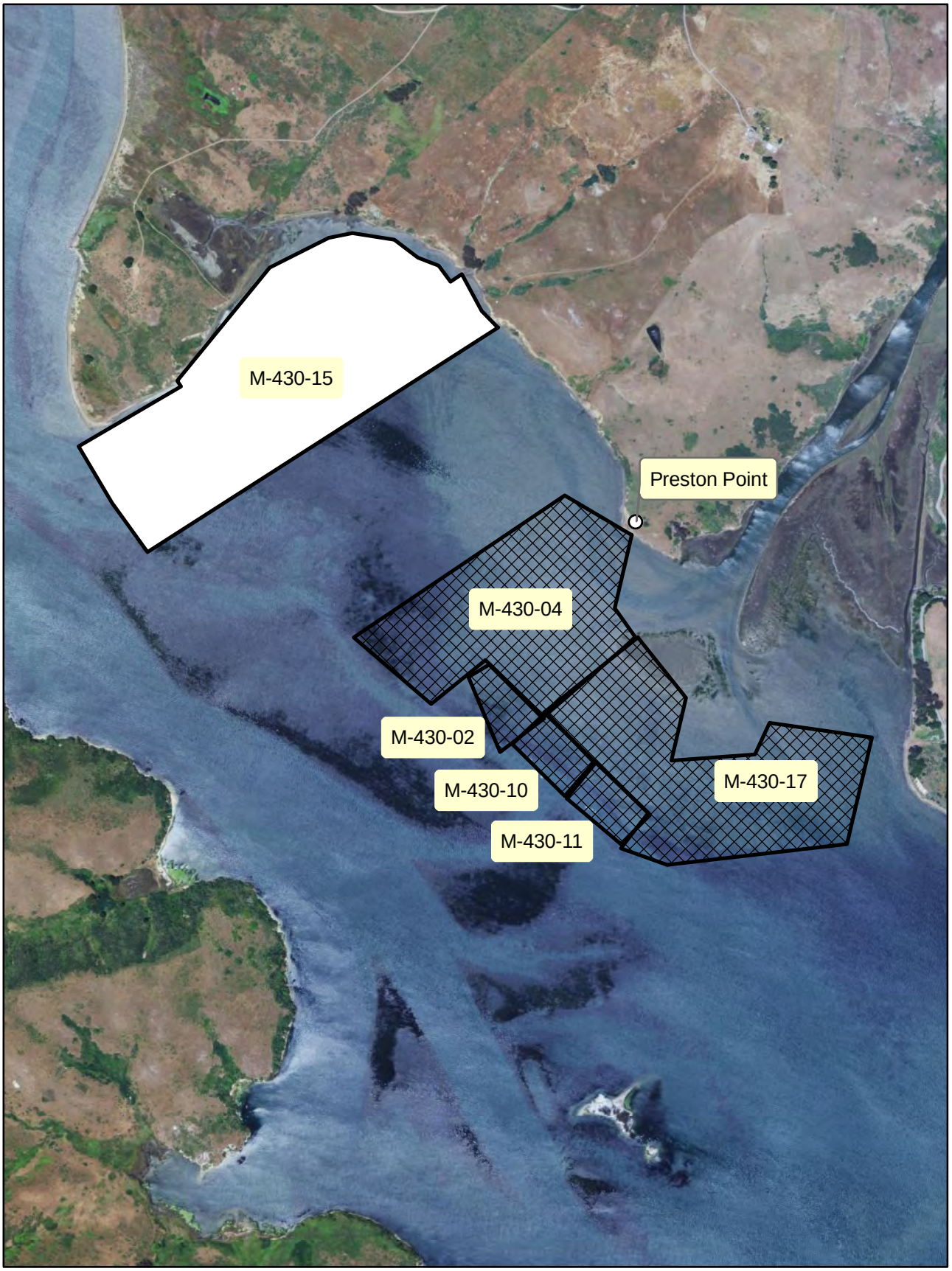
STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

By:_____

HOG ISLAND OYSTER COMPANY, INC.

By:_____

State Water Bottom Lease M-430-15
Tomales Bay, Marin County, CA



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Map prepared by
CA Dept. Fish and Game
30 January 2012

ADDENDUM TO
AQUACULTURE LEASE
BETWEEN
DEPARTMENT OF FISH AND GAME, LESSOR
AND
HOG ISLAND OYSTER COMPANY, INC.
ESCROW AGREEMENT FOR
CLEANUP OF AQUACULTURE LEASES
TOMALES BAY, CALIFORNIA

(Addendum 1)

This Escrow Agreement is being entered into as of the 1st day of December 1994, between the State of California, acting by and through its Department of Fish and Game, hereinafter referred to as "Lessor", and Hog Island Oyster Company, Inc. hereinafter referred to as "Lessee", and California Aquaculture Association a California Nonprofit Corporation, hereinafter referred to as the "Association."

Lessee has entered into an agreement for the lease of State water bottoms for aquaculture situated in Tomales Bay, Marin County, State of California, more particularly described as Lease No. M-430-15.

This Escrow Agreement is subject to Lease No. M-430-15 and in accordance with Paragraph D thereof.

As a financial guarantee of growing structure or other lease improvement removal and/or cleanup expense in the event that the aforementioned aquaculture lease is abandoned or otherwise terminated, the parties agree as follows:

1. Lessee will deposit or cause to be deposited in escrow in cash or by certified check, funds totaling $929.00, which funds will consist of the following:

(a) $464.50 deposited upon entering upon the lease;
(b) $464.50 deposited upon the first anniversary of such inception date.

In the event that Lessee fails to deposit funds as required by Subparagraphs (a) or (b) herein, Lessor may terminate Lessee's aquaculture lease by giving sixty days notice to Lessee by registered or certified mail.

2. The Treasurer of the California Aquaculture Association shall act as Escrow Agent for Lessees who are association members in good standing and shall place the escrow deposits in an interest-bearing account in the Union Bank Branch, at Brawley, California, subject to disposition as hereinafter provided. Such deposits shall be retained in a separate account designated "Tomales Bay Cleanup Fund" by Escrow Agent as trustee for Lessor, and shall designate the Association as the beneficial owners.

3. The Tomales Bay Lessees contributing to the "Tomales Bay Cleanup Fund" shall be responsible for paying all fees and expenses incurred by Escrow Agent in administering the escrow account. These expenses and payment terms shall be determined by the Tomales Bay Lessees and Escrow Agent.

4. The interest earned on the trust account held in escrow and all interest earned on that interest shall be for the sole account of the Tomales Bay Lessees and may be withdrawn by the Escrow Agent at any time for distribution to Association members, who are Tomales Bay Lessees, without notice to Lessor.

5. Lessees shall make payments to the Escrow Agent on account of the Tomales Bay Cleanup Fund in the manner prescribed in paragraph 1(a) and (b) until the sum of five thousand dollars ($5,000.00) is reached. Thereafter, the Tomales Bay Cleanup Fund shall be maintained by the Lessees at Five Thousand Dollars ($5,000.00) as hereinafter provided, regardless of the number of lessees who continue in aquaculture operations in Tomales Bay.

6. When Lessees deposit funds into escrow, Escrow Agent shall notify Lessor in writing within ten days of receipt thereof.

7. Escrow Agent shall notify Lessor and Association in writing when two thousand five hundred dollars ($2,500.00) has been deposited to the escrow account and provide written verification from the bank of such deposit. Thereafter, on the anniversary date of such initial notification, Escrow Agent shall report and certify the balance of funds on deposit accompanied by the accounting records provided by the banking institution of deposit.

8. The Lessor may increase or decrease the security amount held in escrow upon cause shown therefor and sixty days notice to the Tomales Bay Lessees. Lessee's annual Proof of Use Report shall contain a reasonable estimate of the cost of removal of growing structures from each operation. Any increase required by the Lessor shall be deposited by the Lessees in the same proportion as provided in Paragraph 1; and any decrease shall be returned to the Lessees by the Escrow Agent in the same proportion provided in Paragraph 1.

9. Should Lessee transfer his interest under the lease with the approval of the California Fish and Game Commission, Escrow Agent shall transfer such escrow deposit to the successor in interest, and thereafter notify all parties hereto of such transfer. The successor in interest shall have all of the rights and obligations of Lessee with respect to such escrow deposit.

10. If, on termination of an aquaculture lease, Lessee removes all growing structures and improvements within sixty days, Lessee's escrow deposit shall be returned to Lessee by Escrow Agent no later than two weeks after receipt of written notice by Escrow Agent from Lessor authorizing such return.

11. If at any time during the lease term, any Lessee abandons a lease without removing growing structures and improvements, Lessor and/or Association shall do one of the following acts:

(a) The Association may undertake the cleanup, within sixty days of written notification from Lessor that said lease is abandoned, and Lessor shall not resort to the escrow security account.

(b) Lessor, after sixty days have elapsed, as defined in paragraph 11(a), may appropriate and apply any portion of the escrow security account as may be reasonably necessary to fund the cleanup;

(c) Lessor may elect to have growing structures and improvements remain in place and return Lessee's escrow deposit as provided in Paragraph 10.

12. Lessor shall have a right to draw upon the escrow account in the event of default by the Lessees. Upon seven days written notice to the Escrow Agent from the Lessor of the default, Escrow Agent must immediately distribute funds as instructed by Lessor.

13. Should Lessor actually resort to any monies contained within the escrow account under any of the above applicable provisions, Lessees agree to deposit to the escrow account, in the same proportion as provided in Paragraph 1, the amount for which resort to the escrow security was had and necessary to restore

the escrow security to the original sum required hereunder in thirty days after written demand by Lessor, except upon disbursement on account of return of escrow security to any Lessee as provided in Paragraph 10.

Restoration of escrow security shall be postponed during any period that Lessor re-advertises for bid and subsequently re-awards any Tomales Bay aquaculture lease. Upon Lessor granting a lease to a successful bidder, the Lessee thereunder shall assume the obligations and rights of his predecessor Lessee, including, but not limited to, the deposit of funds as prescribed in Paragraph 1(a) and (b).

Lessor shall not award or re-award a lease until the notice of deposit required by Paragraph 6 is received.

14. Escrow Agent shall rely on the written notifications from the Lessor and the Association, and the Lessor and the Tomales Bay Lessees shall hold Escrow Agent and Association harmless when Escrow Agent releases and disburses funds and interest pursuant to such a written notification.

15. In the event that any legal action is pursued in relation to this Escrow Agreement, the parties hereby agree to pay their own attorney's fees and legal costs regardless of who prevails.

16. Any notice required to be given under this Escrow Agreement may be given by personal delivery in writing or by registered or certified mail, postage prepaid, return receipt requested. Notice shall be deemed communicated as of mailing. Mailed notices shall be addressed as set forth below, but each party may change its address by written notice in accordance with this paragraph.

To the Lessor:	DEPARTMENT OF FISH AND GAME 1416 Ninth Street Sacramento, California 95814
To the Association:	CALIFORNIA AQUACULTURE ASSOCIATION P. O. Box 1004 Niland, California 92257
To the Escrow Agent:	THE TREASURER CALIFORNIA AQUACULTURE ASSOCIATION P. O. Box 1004 Niland, California 92257
To the Lessee:	John Finger Hog Island Oyster Company P. O. Box 829 Marshall, California 94940

17. At the time this Escrow Agreement is executed by all parties, the Lessor shall deliver to the Escrow Agent a fully executed counterpart of this agreement.

In witness whereof, the parties have executed this Agreement by their proper officers on the date first set forth above.

LESSOR: _____

_____

ASSOCIATION: _____

_____

LESSEE: _____

_____

HOG ISLAND OYSTER CO.
NAPA
MARSHALL
SAN FRANCISCO

December 3, 2014

Fish and Game Commission
Mr. Sonke Mastrup, Executive Director
P.O. Box 944209
Sacramento, CA 94244-2090

Re: Hog Island Oyster Co. Tomales Bay Lease M-430-15

Dear Mr. Mastrup:

This letter is to notify you of Hog Island Oyster Company's intent to renew lease M-430-15 located in Tomales Bay expiring February 28, 2016.

We look forward to hearing from you regarding our renewal request.

Respectfully,

Terry Sawyer
Vice President
Hog Island Oyster Company

cc: Kirsten Ramey

20215 SHORELINE HWY PO BOX 829 MARSHALL, CA 94940 PHONE 415 663 9218 FAX 415 663 9246

State of California
Department of Fish and Wildlife

Memorandum

Date: November 23, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for the December 9-10, 2015, Fish and Game Commission Meeting Regarding Proposed Renewal of State Water Bottom Lease, M-430-10, Hog Island Oyster Company, Tomales Bay, Marin**

The Department of Fish and Wildlife (Department) is providing the following comments in regard to a request by Mr. John Finger, Hog Island Oyster Company, for Fish and Game Commission (Commission) approval to renew state water bottom lease M-430-15 for a period of 15 years. The existing lease encompasses 128 acres of state water bottom tidelands in Tomales Bay and is set to expire on February 28, 2016.

The original 1990 lease was created with the expressed intent to cultivate Pacific oysters (*Crassostrea gigas*), Manila clams (*Venerupis philippinarum*), and bay mussels (*Mytilus edulis*) and has been used for this purpose by Hog Island Oyster Company since 1992. There are no proposed changes in the culture methods or species currently approved by the Commission for the lease. However, if the lease renewal is approved, the lease will require the Lessee to establish financial assurances of growing structure removal and/or cleanup in the event the lease is abandoned or otherwise terminated.

Upon staff review, it was determined that the proposed project is subject to the "Class 1" or "Existing Facilities" categorical exemption pursuant to CEQA Guidelines section 15301 (Cal. Code Regs., tit. 14, § 15301). In general, the Class 1 exemption consists of the leasing of existing facilities, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. All provisions of the lease are identical to the original lease, with the only exception being the 15 year renewal of the lease term. This lease does not increase, decrease, or change existing operations in any way or allow for any new activities by the lessee.

The Department recommends approval of the request to renew state water bottom lease, M-430-15, Hog Island Oyster Company, to Mr. John Finger for a period of 15 years.

If you have any questions regarding this item, please contact Dr. Craig Shuman, Regional Manager of the Department's Marine Region, at (805) 568-1246.

Attachments

ec: Department of Fish and Wildlife

Dan Yparraguirre, Deputy Director
Wildlife and Fisheries Division
Dan.Yparraguirre@wildlife.ca.gov

Craig Shuman, D.Env., Regional Manager
Marine Region (7)
Craig.Shuman@wildlife.ca.gov

Kirsten Ramey, Senior Environmental
Scientist Supervisor
Marine Region (7)
Kirsten.Ramey@wildlife.ca.gov

Randy Lovell, State Aquaculture
Coordinator
Randy.Lovell@wildlife.ca.gov

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814
(916) 653-4899
www.fgc.ca.gov

Wildlife Heritage and Conservation
Since 1870

MARINE RESOURCES COMMITTEE

Committee Co-Chairs: Commissioner Sklar and Commissioner Williams

Meeting Summary

November 4, 2015, 9:30 a.m.
Four Points by Sheraton Ventura Harbor Resort
1050 Schooner Dr., Ventura

Following is a summary of the meeting as prepared by staff.

1. Call to order / roll call to establish quorum

The meeting was called to order at 9:30 a.m. by Commissioner Sklar, who established a quorum. Commissioner Sklar introduced Fish and Game Commission (FGC) staff and California Department of Fish and Wildlife (DFW) staff.

Committee Chairs

Eric Sklar	Present
Anthony Williams	Absent

Commission Staff

Sonke Mastrup	Executive Director
Susan Ashcraft	Marine Advisor
Mary Brittain	Administrative Assistant

DFW Staff

Steve Riske	Assistant Chief, Law Enforcement Division
Bob Puccinelli	Captain, Law Enforcement Division
Craig Shuman	Regional Manager, Marine Region
Tom Barnes	Program Manager, State Managed Fisheries, Marine Region
Ian Taniguchi	Senior Environmental Scientist Specialist, Marine Region
Steve Wertz	Senior Environmental Scientist Supervisor, Marine Region
Alisan Amrhein	Sea Grant Fellow, Marine Region

Susan Ashcraft outlined meeting procedures and guidelines for participating in Committee discussions, noting that the Committee is a non-decision making body that provides

recommendations to FGC on marine items. She reminded participants that the meeting was being audio-recorded for posting to the website with a meeting summary prepared by staff.

2. Approve agenda

Commissioner Sklar approved the agenda without changes.

3. Public forum for items not on agenda

Public comments were received.

A comment was received from Everard Ashworth, Ventura Port District Commissioner, to introduce a new project called the Ventura Shellfish Enterprise. The enterprise was formed to establish several shellfish aquaculture leases in state waters within the Santa Barbara Channel. The group has received a grant from NOAA Sea Grant to explore development of the project, including required state and federal permitting, and invited FGC/DFW partnering.

Several commenters expressed concern over reports that the commercial and recreational Dungeness crab season openers may be delayed, and commercial rock crab season closed, due to elevated levels of domoic acid (see agency update for DFW below).

4. Agency updates

California Ocean Protection Council (OPC)

Valerie Termini, OPC Project Manager, provided an update on recent and upcoming activities of OPC; this included a list of recently-approved OPC/DFW projects related to revision of the Marine Life Management Act (MLMA) Master Plan, and adoption of the Marine Protected Areas Statewide Leadership Team Work Plan. OPC is soliciting applicants for Proposition 1 funding; the deadline to submit letters of intent is December 1, 2015.

DFW

Marine Region: Dr. Craig Shuman provided an overview of recent public and working group meetings held to discuss ways to reduce the risk of whale entanglements in the California Dungeness crab fishery, resulting in best management practices. Dr. Shuman also provided more information related to interagency coordination of crab sampling and testing for domoic acid. He emphasized that any possible commercial fishery closures under DFW director authority would only be considered if the California Department of Public Health (CDPH) determines that crab pose a significant risk to the public if consumed, and if the Office of Environmental Health Hazard Assessment (OEHHA), in consultation with CDPH, recommends the fisheries be closed. FGC staff clarified that the same would be necessary for FGC to consider similar action for the recreational crab fishery under FGC authority.

Law Enforcement Division: Bob Puccinelli detailed multiple enforcement actions, most notably several related to illegal commercialization of recreationally-harvested abalone.

5. Update on Red Abalone Fishery Management Plan

Ian Taniguchi and Alisan Amrhein gave a joint presentation on the background of abalone management, and progress to develop a red abalone fishery management plan (FMP). The presentation included a summary of key public input received through a month-long online angler survey held in spring of 2015, management principles and goals for the FMP based on input, an overview of the FMP management framework under development, and a review of the timeline and next steps.

Public discussion: Meeting attendees expressed enthusiasm and support for the management principles and goals stated, and for DFW openness to building in new data streams from volunteer/public efforts. The Nature Conservancy will be hosting a workshop with DFW to explore how externally-collected data may be integrated into abalone management.

MRC expects to receive an update and overview of specific proposals in a draft FMP at its next meeting.

6. Update on master plan for marine protected areas review and revision process

Steve Wertz presented an overview of the background, focus of the draft master plan adopted by FGC in 2008, and purpose and approach to revising the master plan to focus on management. He highlighted key components of the draft updated master plan, notably how it operationalizes the Marine Life Protection Program, clarifies governance and partnerships, provides statewide network guidance and emphasizes adaptive management. The draft updated master plan was released to tribes upon request in late summer, and will be submitted to FGC for consideration in December. While the Fish and Game Code only requires two hearings before adoption, DFW recommends scheduling a three-meeting public process, with discussion in February 2016 and possible adoption in April 2016.

Public discussion: Attendees indicated their interest in reviewing the draft updated master plan, particularly sections discussing adaptive management and co-management. MRC emphasized that if the master plan recognizes the possibility of these management concepts at a high level, it would provide opportunities for further development over time.

Committee Recommendation: MRC supports providing additional opportunity for public review and input through a 3-meeting process. Thus, MRC recommends that FGC support DFW's proposed meeting schedule.

7. Overview of Marine Life Management Act master plan review and revision process

Tom Barnes presented an overview of the goals and objectives for amending the Master Plan for Fisheries under the Marine Life Management Act (MLMA), the opportunity to address several issues not included in the current master plan that will benefit fisheries management, and the approach being employed. The approach relies on collaboration with outside partners and funders to utilize new tools and expertise. Mr. Barnes highlighted over a dozen external project areas that would server as "stakeholder building blocks." These provide opportunities for stakeholder input along the way. This is the beginning of a long journey and it is still very early in the process; the timeline will cover over two years.

Public discussion: A broad discussion of needs, opportunities, and ideas for the master plan was held. Fishermen highlighted that there are long-standing requests to update existing FMPs and expressed strong views about what is "fair and equitable." That said, commenters supported development of other approaches to fishery management within the master plan, including new approaches to managing data-poor stocks, and giving "credit" for MPAs, such as through reducing level of precaution in harvest control rules. The master plan may offer the possibility to discuss/expand options for experimental permits, fishing community considerations, emerging fisheries, unmanaged forage species, and to contemplate alternative management approaches (e.g., fishing co-ops) in a manner that would hold the space open to develop them without needing to amend the master plan. Commenters expressed their willingness and interest in contributing input into the various project areas. While guidance and input was offered, no clear suggestions emerged to change the proposed direction of the effort.

MRC encouraged DFW to explore a broad range of opportunities within the master plan that would open the door to future development, and noted that there will be many opportunities at future MRC meetings to receive an update on progress and provide input.

8. California's fishing communities: Initial scoping

Susan Ashcraft presented an overview of California's fishing communities in the context of changes in fishing opportunity and management and their effects over the past 15 years, legislative guidance under the MLMA as well as federal law, and provided examples of current efforts, opportunities, and resources that may inform MRC discussion. She opened the exploratory discussion by asking for input on fishing community interests and goals, and potential opportunities to support them.

Public discussion: Fishing representatives discussed the importance of diversification across many fisheries for port vitality and keeping adequate product to support infrastructure. There was a recognition that sometimes diversification across the port may not necessarily translate into opportunity for individual fishermen. Representatives from northern California ports discussed limitations on their ability as local fishermen to diversify based on restricted access programs in place, using market squid as a key example of a fishery resource becoming locally-available but inaccessible to local fishermen. Others commented that there are different vantage points to the equation of vitality and that supporting port economic vitality as a whole might not support individual fishermen. Many examples of opportunities and needs emphasized local effort, forming local business/fishing cooperatives, and the commitment and involvement of local community and governmental representatives (e.g., city council, harbor district, elected officials). Some needs may be legislative in nature. The MRC co-chair recognized that local involvement at the community level may be necessary to further develop and carry out some of the ideas shared. It would be useful for community members to develop the ideas to bring to FGC, to see if or where FGC may play a role.

Committee recommendation: MRC recommends that FGC consider hosting an exploratory discussion on fishing communities at or in conjunction with a future FGC meeting.

9. Update on approach to amending kelp and algae harvest regulations

Steve Wertz presented an overview of the three-phase approach approved by FGC in 2011 to improve kelp and algae harvest management: (1) Clarify the regulations; (2) ensure funding;

and (3) improve management. Phase 1 was completed and implemented in 2014. Research on Phase 2 (fees) is underway. However, based on a review of phases 2 and 3, and the potential for management changes to influence appropriate funding levels, DFW recommended that phases 2 and 3 be reversed.

Public discussion: A kelp harvester noted that the current kelp harvesters directly use the product for aquaculture farms as feed for abalone, as opposed to large-volume harvesters whose product is intended for secondary applications such as converting to agar or biofuel. Current kelp harvesters harvest substantially smaller amounts, and he questioned the need for DFW to invest this much time and effort into reviewing management and fees given the current users. DFW clarified that larger-volume harvesters are not precluded from returning in the future, and that the intent is to proactively plan for future industry needs, not just current needs. The harvester recommended that, at a minimum, management measures and fees should be structure separately for these different types.

Committee recommendation: MRC recommends that FGC support DFW's proposal to reverse the order of Phase 2 and Phase 3, and undertake management review before reevaluating appropriate fees to cover management.

10. Update on topics previously before the Committee

(A) Fisheries Bycatch Workgroup

Susan Ashcraft provided an update on progress toward establishing a fisheries bycatch workgroup to review existing guidance, evaluate available data, and provide input on possible changes to bycatch guidance for the master plan for fisheries amendment. Staff is working with partners to develop a draft work plan, and participation in the workgroup will be solicited via FGC electronic mailing lists later this year. The workgroup will have the opportunity to contribute to the draft work plan for MRC/FGC consideration. The committee encouraged staff to initiate a workgroup planning meeting by end of year to clarify the group charge and review the draft work plan to propose to MRC, and possibly solicit some external funding support for its efforts.

(B) Pier and Jetty Fishing Review

Susan Ashcraft provided a brief update on collaborative efforts to review pier and jetty fishing concerns and interests in Southern California, as endorsed by FGC in December 2014. A "Santa Monica Bay Pier Stakeholders Summit" was held on May 7, 2015 by Heal the Bay in coordination with FGC staff. While progress on this project has been hampered by staff capacity limitations, staff has now been assigned to support this project, and will be sending a letter to all municipalities with public piers in Southern California.

(C) Other

The committee and meeting participants discussed a series of previous topics of interest and options to include related topics on future MRC agendas. Based on the input and discussion, MRC expressed interest in possible follow-up on several of the topics (see below).

Committee Recommendation: MRC recommends that FGC consider the following potential future agenda topics:

MRC meetings

- OPC update on ocean acidification
- Informational item on plastic pollution and marine debris (by Plastic Pollution Coalition, and possibly OPC)
- DFW update on sea cucumber fishery

FGC meeting

- Marine Region update on federal process to protect unmanaged forage species

11. Adjournment

The Marine Resources Committee meeting adjourned at 3:45 p.m.

Marine Resources Committee (MRC) 2015-16 Work Plan: Scheduled topics and timeline for items referred to MRC
(Updated for Dec 9-10, 2015 FGC meeting)

Topic	Type of Topic	2015			2016		
		MAR (Marina)	JUL *Canceled*	NOV (Ventura)	**MAR (Los Alamitos)**	JUL (Napa)	NOV (Irvine)
Current Topics Previously Referred to MRC:							
Lobster FMP	DFW project	X / R					
Special Closures in Central Coast (stakeholder proposal review)	Referral for review	X / R					
Experimental Squid Permits (review of regulations)	Referral for review	X / R					
Abalone FMP / ARMP update	DFW project	X	X	X	**X**	X / R	
Fisheries Bycatch Workgroup	MRC workgroup		X	X	**X**	X	
Pier and Jetty Fishing Review	Special FGC project		X	X	**X**		
Herring FMP Development Updates	DFW project	X					
California's Fishing Communities	Potential special FGC project	X	X	X	**X**		
Update to MLMA Master Plan- Fisheries	DFW project		X	X	**X**	X	
Update to MLPA Master Plan- MPAs	DFW project		X	X / R			
Annual Sportfish Regulations	Annual cycle	X			**X**		
Kelp and Algae Harvest Management and Regulations - Phase 2 (Fees)	DFW project			X / R			

KEY **X** Discussion scheduled
R Recommendation developed and moved to FGC

-----Original Message-----
From: Ken Bates]
Sent: Tuesday, November 24, 2015 4:40 PM
To: Ashcraft, Susan@FGC
Subject: Proposal for Community Based Squid Fishing

Commissioners,

We wish to submit our draft proposal for community based squid fishing for the area north of Point Arena. This proposal is a result of dialogue with commission staff and recent MRC meetings. We would ask staff to consider this draft proposal via a meeting with staff and various interested parties, to see if there is a consensus for going forward with this draft plan.

Sincerely,
Ken Bates, Linda Hildebrand

Community based Squid Fishing Proposal for Coastal Communities North of Point Arena

Dan Yoakum, Bob Juntz, Mary Fairbanks, Linda Hildebrand, Ken Bates

October 24, 2015

The following proposal is an attempt to address the health and viability of North Coast fishing communities by providing limited, local opportunity to local small boat fishermen, development of shore side processing jobs and assisting California Fish and Wildlife Department in their efforts to comply with certain requirements of the Federal Magnuson/Stevenson Fisheries Act. The authors hope that this will be the beginning of a policy to foster community based sustainable fishing opportunity on the North Coast of California.

Background

The California Market squid management (limited entry) plan, which was heavily influenced by a handful of major squid fishermen and three major processors has effectively concentrated squid fishing opportunity in to the hands of a small minority of fishermen and corporations which now control a majority of the squid fishing permits and in turn, the squid resource itself. The existing squid management plan has allowed fleet capacity to expand by half again via an influx of larger Canadian built purse seiners and lengthened / sponsoned domestic vessels. Some of these "enlarged" boats have increased hold capacity by a factor of three. Further modifications to the squid management plan have now made it illegal for any non-permitted fishermen to have even one California Market Squid in his possession.

Squid has been present in harvestable concentrations north of Point Arena for millennia. During the Fall of 2015 nearly five million pounds of market squid was landed in the Port of Eureka – all by boats from southern or central California. No local boats had any opportunity to participate at any level in this fishery off the Eureka Coast. As of this month (October 2015) squid are again present off Eureka. Last week, two central California seiners arrived off of Noyo Harbor to catch 160,000 pounds of market squid overnight, then left . Local Noyo fishermen had been monitoring this squid for over a month with no chance to access this fishing opportunity literally right in front of their harbor.

Goals

1. To develop opportunity for local sustainable community based squid fishing for the major ports of:

- Crescent City
- Eureka
- Noyo/ Fort Bragg
- with inclusion of the minor ports of Trinidad, shelter Cove, Albion, Point Arena

2. To provide a separate squid fisheries plan to:

- Allow fishing opportunity for small local boats north of Point Arena
- Remove financial burdens of Limited Entry permit purchases by young fishermen starting their fishing careers
- Restrict the possibility of increased effort shift and fishing capacity by limiting individual landing per 24 hour period.
- Promote the creation of local squid processing employment in the Ports of Crescent City, Eureka and Noyo.
- Provided for an equitable distribution and turnover of fishing opportunity through the management of non-transferable vessel permits by a Community Fisheries Trust Organization

How We Might Get There

The Federal Magnuson / Stevens Fisheries Act expressly addresses sustainable Community based fisheries requirements as part of any Federal Fisheries Management Plan. That being said, the chance of any of this proposal being seriously considered is based on the evaluation by both the California fish and Game Commission and staff and the long term vision by the Department of Fish and Wildlife as that vision relates to the Health and preservation of Coastal fishing Communities in California.

Here are the Basics

A local community fishing trust is formed to administer the following:

- Who qualifies for "local" status and fishing opportunity
- How long each "fishing opportunity" lasts (duration)
- Daily landing limits for each fishing gear type to allow maximum participation and an orderly fishery over the season
- re-issuance of "fishing opportunity" both in-season and seasonally
- Co-operative in-season management with other community fishery trusts to deal with geographic shift
- Determination of landing fee rate (to local municipality) and "opportunity" fee rate to fund "Community Fishing Trust Management expense

Some Details

A. **Community Fishery Trust**

-- Port based (Crescent City, Eureka, Noyo)

- Made up of three fishermen, two buyers, one representative of local city government, and one department biologist
- Organizational model probably based on present efforts in Morro Bay and Monterey with some modifications.

B. **Fishery Details**

-- Major port based squid quota, for example: ! 10,000 short ton quota per port

managed by community fishing trust, quota to be seperate from the limmited entry quota
-- Maximum of three purse seine vessel permits per port with a 24 hour landing cap of 25 to 50 short tons determined in-season
– fluctuating number of small vessel non-transferable brail permits based on resource availability, weather and port processing capacity with a 24 hour landing cap of 3 to 10 short tons determined in-season.
–
non-transferable in this case meaning not sellable from the trust but transferable to vessels of different owners/operators with no size restiction so as to serve the harbors fleet equaly.The landing cap well serve to limmit capacity .
–

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Northern California Agency
1900 Churn Creek Road, Suite 300
Redding, California 96002-0292

TAKE PRIDE IN AMERICA

MLS

IN REPLY REFER TO:

Executive Direction

AUG 15 2012

Sonke Mastrup, Executive Director
California Fish and Game Commission
PO Box 944209
Sacramento, CA 94244-2090

Dear Mr. Mastrup:

At the request of the Resighini Rancheria, this correspondence is in support of the Tribe's position that the Resighini Rancheria should be identified as eligible for "tribal take" as defined in the California Marine Life Protection Act, Marine Protected Areas.

Resighini Rancheria is a Federally Recognized Tribe comprised of Yurok people, and is aboriginal to the area within the North Coast Study Area. Further, the Resighini Rancheria has been listed on the Department of Interior, Bureau of Indian Affairs, list of Indian Entities Recognized to Receive Services From the Bureau of Indian Affairs, published annually in the Federal Register, since its inception. The original list, Federal Register, Vol. 44, No. 26 – Tuesday, February 6, 1979, Indian Tribal Entities that Have a Government-to-Government Relationship with the United States, lists the Resighini Rancheria as Resighini Rancheria, Coast Indian Community of Yurok Indians, California.

The Northern California Agency is unaware of any Federal Law that grants any state agency the authority to exclude the Resighini Rancheria under the current circumstances.

If there is a question, please contact me, at (530) 246-5141, Ext. 31, or you may write to the above address.

Sincerely,

Dr. Virgil Akins
Superintendent

RESIGHINI RANCHERIA

P.O. Box 529 • Klamath, CA 95548
Tel (707) 482-2431 • Fax (707) 482-3425

August 13, 2012

Sonke Mastrup, Executive Director
California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Dear Mr. Mastrup:

The Resighini Rancheria would like to respectfully request to be included on the October 3-4, 2012 agenda of the California Fish and Game Commission (Commission) to reconsider the exclusion of our Tribe on Marine Protected Areas within our ancestral waters within the North Coast Study Region.

Problem Statement: On June 6th, 2012, the Commission adopted regulations that designated a network of marine protected areas (MPAs) within the North Coast Study Region under the California Marine Life Protection Act (MLPA). Those adopted regulations included the identification of certain federally-recognized Tribes that could continue to harvest for traditional, non-commercial purposes under the newly adopted definition of "tribal take" within specific MPAs. For a Tribe to be identified as eligible for "tribal take" within specific MPAs, a Factual Record had to be submitted that demonstrated a current or historic use within that geography and that the Tribe was federally-recognized.

MLS
CC: S. Funbuena
C. Shuman
A. Biedelman
B. Ota
S. Mastrup

A. Shea

Resighini Rancheria submitted a brief factual record affirming that we are a federally-recognized Indian Tribe of Yurok Indians, eligible to receive services from the United States Bureau of Indian Affairs (Federal Register Vol. 75, No. 190) and that our citizens have current or historic uses within specific MPAs and Special Closures proposed in the North Coast Study Region. Subsequently, we were included in the Initial Statement of Reasons for Regulatory Action in the following MPAs: Pyramid Point SMCA, Point St. George Reef SMCA, and the Redding Rock SMCA/SMR Complex.

Although we do maintain current or historic uses within those MPAs and reserve all rights to continue to rely on the ocean and marine resources in all usual and customary fishing places, due to the implied/perceived jurisdictional concerns that the State associated with this process,

we signed on to a joint multi--tribal letter that was sent to the Commission, requesting to be removed from the Pyramid Point SMCA and Point St. George Reef SMCA, out of respect for the Smith River Rancheria and Elk Valley Rancheria. However, Resighini Rancheria should have remained on the Redding Rock SMCA/SMR complex for the Commission's consideration at your June 6th meeting in Eureka.

In the interim, Chairman McCovey contacted Mr. Mastrup to confirm that no other information was required by the Commission to ensure our inclusion at Redding Rock and that the Tribe was included in the draft regulations as required for adoption consideration. Mr. Mastrup confirmed that no other information was required and the item would proceed accordingly. Then at the June 6th meeting Mr. Mastrup made the erroneous statement for the Motion of only including the Yurok Tribe as a Tribe eligible of "tribal take" within the Redding Rock MPAs, which the Commission ultimately adopted. We understand this may have been a misunderstanding and thus, we request this to be amended appropriately.

On July 26, 2012, in a meeting with Resighini Rancheria, Mr. Mastrup suggested a request be made of the Commission to reconsider our Tribe as eligible for "tribal take" at the Redding Rock SMCA/SMR complex to resolve this misunderstanding. This request for reconsideration should include substantiating from a federal entity that we are a federally-recognized Tribe of Yurok people. The following is a factual basis demonstrating that the United States federal government recognizes us as a federally-recognized Tribe of Yurok people.

Factual Basis: The Yurok people are aboriginal to Northern California and are dispersed among several distinct federally recognized Tribes located within their ancestral territory, including the Resighini Rancheria. The Resighini Rancheria is a federally recognized Indian Tribe that is formally organized under the authority of the Indian Reorganization Act of 1934.

By deed dated January 7, 1938, Gus Resighini deeded to the United States in trust approximately 228 acres[1] of land that constitutes the Resighini Rancheria, under the authority of the Indian Reorganization Act. By Proclamation dated October 21, 1939, the Secretary of the Interior declared the land purchased to be an Indian reservation. All of the lands that comprise the Reservation are located within the exterior boundaries of the original Klamath River Reservation and are located at the intersection of Highway 101 and the Klamath River.

After the establishment of the Reservation, two disastrous floods occurred, one in 1955 and another in 1964. The tragic flood of 1964 swept away all but two homes, forcing thirteen families to evacuate and move. Despite this, the people of the Resighini Rancheria stood together and remained a structured Indian organization with a strong desire to return to the

[1] The 1973 survey map of the Reservation recorded by Richard B. Davis shows the original lands purchased from Gus Resighini that because the Resighini Rancheria as containing 238.78 acres.

reservation. On April 4, 1975, the people of the Resighini Rancheria formed a Tribal government and adopted a Constitution.

Since 1975, when members adopted a Constitution, the Tribe has been actively involved in developing a tribal government and in protecting its land base and advocating for our traditional rights as Yurok Indians. In 1988, Congress enacted the Hoopa-Yurok Settlement Act, which partitioned the extended Hoopa Valley Reservation into the present Hoopa Valley Reservation, consisting of the original twelve-mile square bisected by the Trinity River and established under Executive Order in 1864, and the Yurok Reservation, consisting of the area along the Klamath River within the old Klamath River Reservation, including the 1892 Extension,[2] and excluding the Resighini Rancheria. The Resighini Rancheria is the only Indian Reservation in California situated within the exterior boundaries of lands granted to a separate federally recognized Indian Tribe.

The fact that members of the Resighini Rancheria are Yurok is indisputable. The first federally-published list in the Federal Register of Indian Tribes that maintain a government-to-government relationship with the United States and are eligible to receive related services was on January 31, 1979. It includes the "*Resighini Rancheria, Coast Indian Community of Yurok Indians, California*" (see Exhibit A). As Exhibit B demonstrates, all subsequent lists from 1979 to 2003 also recognize that the Resighini Rancheria are Yurok. After 2003, the Tribe changed our name to simply the *Resighini Rancheria* for solely simplification purposes (see Exhibit C). This is reflected in the Federal Register from 2005 to the most recent list published in 2010.

Under Article of the Tribe's Secretarially-approved Constitution, the jurisdiction of the Tribe, acting through its Tribal Council, extends to: (a) all land encompassing the ancestral territory of the Klamath River Tribe; (b) all lands, water, and other resources within the exterior boundaries of those lands constituting what is commonly known as the Resighini Rancheria purchased by the Secretary of the Interior on January 7, 1938, under the authority of the Wheeler Howard Act,[3] June 18, 1934; (c) all of the lands, water, and resources as may hereinafter be acquired by the Tribe, whether within or without said boundary lines, under any grant, transfer, purchase, adjudication, treaty, Executive Order, Act of Congress, or other acquisitions; (d) all persons within any territory under the jurisdiction of the tribe; and (e) all tribal members, wherever located.

The Yurok people of the Resighini Rancheria historically and currently have exercised our rights to hunt, fish, and gather foods and materials for subsistence, ceremonial, and customary uses throughout our ancestral lands. We also maintain that we have unceded rights that have never

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[2] The "Extension" included a stretch, one-mile on each side of the Klamath River, connecting the old Klamath River Reservation to the Hoopa Square.

[3] Also referred to as the Indian Reorganization Act.

been extinguished, to continue to fish in all usual and customary traditional fishing places as identified by our members. We reserve all rights to continue these practices that are inherent to use as Yurok. Like our ancestors, we have continued to practice traditional Yurok customs, traditions, and religious practices. We are committed to our culture and language. Tribal members are recognized as skilled basket weavers and makers of ceremonial regalia and many participate in local Yurok ceremonies and dances.

Request: To agendize this request at your October 3-4, 2012 meeting in Sacramento in order to resolve this issue of extreme importance to our members and include the Resighini Rancheria within the Redding Rock SMCA/SMR complex at this time.

Please contact us to confirm whether we will be included on the October 3-4, 2012 agenda. We wish to deal with this issue expeditiously before the regulatory review process concludes for the North Coast Study Region.

Sincerely,

Donald McCovey

Donald McCovey
Chairman

cc: Dr. Virgil Atkins
Superintendent
Northern California Agency
Bureau of Indian Affairs

Amy Dutschke
Regional Director
Pacific Region
Bureau of Indian Affairs

[4310-02-M]

DEPARTMENT OF THE INTERIOR

Bureau of Indian Affairs

INDIAN TRIBAL ENTITIES [1] THAT HAVE A GOVERNMENT-TO-GOVERNMENT RELATIONSHIP WITH THE UNITED STATES

Delegation of Authority

JANUARY 31, 1979.

This notice is published in exercise of authority delegated by the Assistant Secretary—Indian Affairs under 5 U.S.C. 2 and 9; and 230 DM 1 and 2.

Notice is hereby given in accordance with 25 CFR 54.6(b) by the Bureau of Indian Affairs of the tribal entities that have a government-to-government relationship with the United States. The United States recognizes its trust responsibility to these Indian entities and, therefore, acknowledges their eligibility for programs administered by the Bureau of Indian Affairs. The listed entities are not necessarily eligible for programs administered by other Federal Agencies. The list of eligible Alaskan entities will be published at a later date.

INDIAN TRIBAL ENTITIES [1] THAT HAVE A GOVERNMENT-TO-GOVERNMENT RELATIONSHIP WITH THE UNITED STATES

Absentee-Shawnee Tribe of Oklahoma, Acoma Pueblo of New Mexico
Aqua-Caliente Band of Cahuilla Indians (Palm Springs), Aqua-Caliente Indian Reservation, California
Ak Chin Indian Community, Maricopa, Ak Chin Reservation, Arizona
Alabama-Quassarte Creek Tribal Town, Oklahoma
Alturas Rancheria of Pit River Indians, California
Apache Tribe of Oklahoma
Arapahoe Tribe of Wind River Reservation, Wyoming
Assiniboine and Sioux Tribes of the Fort Peck Reservation, Montana
Augustine Band of Cahuilla Mission Indians, Augustine Reservation, California
Bad River Band of Lake Superior Chippewa Indians, Bad River Reservation, Wisconsin
Barona Capitan Grande Band of Diegueno Mission Indians, Barona Reservation, California
Bay Mills Indian Community, Bay Mills Reservation, Michigan
Berry Creek Rancheria of Maidu Indians, California
Big Bend Rancheria of Pit River Indians, California
Big Lagoon Rancheria of Smith River Indians, California
Big Pine Band of Owens Valley Paiute Shoshone Indians, Big Pine Reservation, California
Blackfeet Tribe, Blackfeet Indian Reservation, Montana
Bridgeport Paiute Indian Colony, California
Burns Paiute Indian Colony, Oregon
Cabazon Band of Cahuilla Mission Indians, Cabazon Reservation, California
Cachil Delle Band of Wintun Indians of Colusa Rancheria, California
Caddo Tribe of Oklahoma
Cahuilla Band of Mission Indians, Cahuilla Reservation, California
Cahto Indian Tribe of the Laytonville Rancheria, California
Campo Band of Diegueno Mission Indians, Campo Reservation, California
Capitan Grande Band of Diegueno Mission Indians, Capitan Grande Reservation, California
Cayuga Nation of New York
Cedarville Rancheria of Northern Paiute Indians, California
Chemehuevi Tribe, Chemehuevi Reservation, Arizona
Cher-Ae Heights Indian Community of the Trinidad Rancheria, California
Cherokee Nation of Oklahoma
Cheyenne-Arapaho Tribes of Oklahoma
Cheyenne River Sioux Tribe, Cheyenne River Reservation, South Dakota
Chickasaw Nation of Oklahoma
Chippewa-Cree Tribe of the Rocky Boy Reservation, Montana
Chitimacha Tribe of Louisiana
Choctaw Nation of Oklahoma
Citizen Band of Potawatomi Indians of Oklahoma
Cochiti Pueblo of New Mexico
Cocopah Tribe of Arizona
Coeur D'Alene Tribe, Coeur D'Alene Reservation, Idaho
Cold Springs Rancheria of Mono Indians, California
Colorado River Tribes of the Colorado River Indian Reservation, Arizona
Comanche Tribe of Oklahoma
Confederated Tribes of the Chehalis Reservation, Washington
Confederated Tribes of the Colville Reservation, Washington
Confederated Tribes of the Goshute Reservation, Nevada & Utah
Confederated Salish & Kootenai Tribes of the Flathead Reservation, Montana
Confederated Tribes of the Siletz Reservation, Oregon
Confederated Tribes of the Umatilla Reservation, Oregon
Confederated Tribes of the Warm Springs Reservation, Oregon
Cortina Rancheria of Wintun Indians, California
Coushatta Tribe of Louisiana
Covelo Indian Community of the Round Valley Reservation, California
Coyote Valley Band of Pomo Indians, California
Creek Nation of Oklahoma
Crow Tribe of Montana
Crow Creek Sioux Tribe of the Crow Creek Reservation, South Dakota
Cuyapaipe Band of Diegueno Mission Indians, Cuyapaipe Reservation, California
Delaware Tribe of Western Oklahoma
Devils Lake Sioux Tribe, Devils Lake Sioux Reservation, North Dakota
Dry Creek Rancheria of Pomo Indians, California
Duckwater Shoshone Tribe, Duckwater Reservation, Nevada
Eastern Band of Cherokee Indians of North Carolina
Eastern Shawnee Tribe of Oklahoma
Elem Indian Colony of Pomo Indians of California
Ely Indian Colony, Nevada
Enterprise Rancheria of Maidu Indians, California
Flandreau Santee Sioux Tribe, South Dakota
Forest County Potawatomi Indian Community of Wisconsin
Fort Belknap Indian Community, Fort Belknap Reservation, Montana
Fort Bidwell Indian Community, Paiute Indians of the Fort Bidwell Reservation, California
Fort Independence Indian Community, Paiute Indians of the Fort Independence Reservation, California
Fort McDermitt Paiute-Shoshone Tribes, Fort McDermitt Reservation, Nevada
Fort McDowell, Mohave-Apache Indian Community, Fort McDowell Indian Reservation, Arizona
Fort Mojave Tribe of Arizona
Fort Still Apache Tribe of Oklahoma
Gila River Indian Community, Gila River Reservation, Arizona
Grindstone Indian Rancheria of Wintun-Wailaki Indians, California
Hannahville Potawatomi Indian Community of Michigan
Havasupai Tribe, Havasupai Reservation, Arizona
Hoh Tribe, Hoh Indian Reservation, Washington
Hoopa Valley Tribe of the Hoopa Valley Reservation, California
Hopi Tribe of Arizona
Hopland Band of Pomo Indians, Hopland Rancheria, California
Hualapai Tribe, Hualapai Reservation, Arizona
Inaja & Cosmit Reservation (Diegueno Indians), California
Iowa Tribe of Kansas & Nebraska
Iowa Tribe of Oklahoma
Isleta Pueblo of New Mexico
Jackson Rancheria of Me-Wuk Indians, California
Jemez Pueblo of New Mexico
Jicarilla Apache Tribe, Jicarilla Apache Indian Reservation, Arizona
Kaibab Band of Paiute Indians, Kaibab Indian Reservation, Arizona
Kalispel Indian Community, Kalispel Reservation, Washington
Karok Tribe of California
Kashia Band of Pomo Indians of Stewards Point Rancheria, California
Kaw Tribe of Oklahoma
Keweenaw Bay Chippewa Indian Community, L'Anse Reservation, Michigan
Kialegee Tribal Town of Creek Indians, Oklahoma
Kickapoo Tribe of Kansas
Kickapoo Tribe of Oklahoma
Kiowa Tribe of Oklahoma
Kootenai Tribe of Idaho
La Jolla Band of Luiseno Mission Indians, LaJolla Reservation, California
La Posta Band of Diegueno Mission Indians, La Posta Reservation, California
Lac Courte Oreilles Band of Lake Superior Chippewa Indians, Lac Courte Oreilles Reservation, Wisconsin
Lac du Flambeau Band of Lake Superior Chippewa Indians, Lac du Flambeau Reservation, Wisconsin
Laguna Pueblo of New Mexico
Las Vegas Tribe of Paiute Indians, Las Vegas Colony, Nevada
Lookout Rancheria of Pit River Indians, California
Los Coyotes Band of Cahuilla Mission Indians, Los Coyotes Reservation, California
Lovelock Paiute Tribe, Lovelock Indian Colony, Nevada

[1] Includes within its meaning Indian tribes, bands, villages, groups and pueblos as well as Eskimos and Aleuts.

ower Brule Sioux Tribe, Lower Brule Reservation, South Dakota
ower Elwha Tribal Community, Lower Elwha Reservation, Washington
ower Sioux Indian Community, Lower Sioux, Reservation, Minnesota
ummi Tribe, Lummi Reservation, Washington
lakah Tribe, Makah Reservation, Washington
lanchester Band of Pomo Indians, Manchester-Pt. Arena Rancheria, California
lanzanita Band of Diegueno Mission Indians, Manzanita Reservation, California
lenominee Tribe, Menominee Reservation, Wisconsin
lesa Grande Band of Diegueno Mission Indians, Mesa Grande Reservation, California
lescalero Apache Tribe, Mescalero Reservation, New Mexico
liami Tribe of Oklahoma
liccosukee Tribe of Florida
liddletown Rancheria of Pomo Indians, California
linnesota Chippewa Tribe, Minnesota (Six component reservations: Boise Fort Band (Nett Lake), Fond du Lac Band, Grand Portage Band, Leech Lake Band, Mille Lac Band, White Earth Band)
lississippi Band of Choctaw Indians, Mississippi
loapa Band of Paiute Indians, Moapa River Reservation, Nevada
lodoc Tribe of Oklahoma
lontgomery Creek Rancheria of Pit River Indians, California
lorongo Band of Cahuilla Mission Indians, Morongo Reservation, California
luckleshoot Tribe, Muckleshoot Reservation, Washington
lambe Pueblo of New Mexico
lavajo Tribe of Arizona, New Mexico and Utah
lez Perce Tribe of Idaho, Nez Perce Reservation, Idaho
lisqually Indian Community, Nisqually Reservation, Washington
looksack Indian Tribe of Washington
lorthern Cheyenne Tribe, Northern Cheyenne Reservation, Montana
lorthwestern Band of Shoshone Indians of Utah (Washakie)
)glala Sioux Tribe of the Pine Ridge Reservation, South Dakota
)maha Tribe of Nebraska
)neida Nation of New York
)neida Tribe of Wisconsin, Oneida Reservation, Wisconsin
)nondaga Nation of New York
)sage Tribe of Oklahoma
)ttawa Tribe of Oklahoma
)toe-Missouria Tribe, Oklahoma
'aiute-Shoshone Indians of the Bishop Community, Bishop Colony, California
'aiute-Shoshone Indians of the Fallon Reservation, Nevada
'aiute-Shoshone Indians of the Lone Pine Community, Lone Pine Reservation, California
'ala Band of Luiseno Mission Indians, Pala Reservation, California
'apago Tribe of Arizona
'ascua Yaqui Tribe of Arizona
'assamaquoddy Tribe of Maine
'auma Band of Luiseno Mission Indians, Pauma & Yuima Reservation, California
'awnee Tribe of Oklahoma
'ayson Tonto Apache Tribe of Arizona
'echanga Band of Luiseno Mission Indians, Pechanga Reservation, California
'enobscot Tribe of Maine
Peoria Tribe of Oklahoma
Picuris Pueblo of New Mexico
Pit River Tribe, X-L Ranch Reservation, California
Pojoaque Pueblo of New Mexico
Ponca Tribe of Oklahoma
Port Gamble Indian Community, Port Gamble Reservation, Washington
Prairie Band of Potawatomi Indians of Kansas
Prairie Island Sioux Indian Community, Prairie Island Reservation, Minnesota
Puyallup Tribe, Puyallup Reservation, Washington
Pyramid Lake Paiute Tribe, Pyramid Lake Reservation, Nevada
Quapaw Tribe of Oklahoma
Quechan Tribe of the Fort Yuma Indian Reservation, California
Quileute Tribe, Quileute Reservation, Washington
Quinault Tribe, Quinault Reservation, Washington
Ramona Reservation, California
Red Cliff Band of Lake Superior Chippewa Indians, Red Cliff Reservation, Wisconsin
Red Lake Band of Chippewa Indians, Red Lake Reservation, Minnesota
Reno-Sparks Indian Colony, Nevada
Resighini Rancheria, Coast Indian Community of Yurok Indians, California
Rincon Band of Luiseno Mission Indians, Rincon Reservation, California
Roaring Creek Rancheria of Pit River Indians, California
Robinson Rancheria of Pomo Indians, California
Rosebud Sioux Tribe, Rosebud Indian Reservation, South Dakota
Rumsey Rancheria of Wintun Indians, California
Sac & Fox Tribe of the Mississippi in Iowa
Sac & Fox Tribe of the Missouri in Kansas
Sac & Fox Tribe of Oklahoma
Saginaw Chippewa Tribe of the Isabella Reservation, Michigan
Salt River Pima-Maricopa Indian Community, Salt River Reservation, Arizona
San Carlos Apache Tribe, San Carlos Reservation, Arizona
San Felipe Pueblo of New Mexico
San Ildefonso Pueblo of New Mexico
San Juan Pueblo of New Mexico
San Manual Band of Serrano Mission Indians, San Manual Reservation, California
San Pasqual Band of Diegueno Indians, San Pasqual Reservation, California
Sandia Pueblo of New Mexico
Santa Ana Pueblo of New Mexico
Santa Clara Pueblo of New Mexico
Santa Rosa Indian Community, Santa Rosa Rancheria of California
Santa Rosa Band of Cahuilla Mission Indians, Santa Rosa Reservation, California
Santa Ynez Band of Chumash Mission Indians; Santa Ynez Reservation, California
Santa Ysabel Band of Diegueno Mission Indians, Santa Ysabel Reservation, California
Santee Sioux Tribe, Santee Reservation, Nebraska
Santo Domingo Pueblo of New Mexico
Sauk-Suiattle Indian Tribe of Washington
Sault Ste. Marie Chippewa Tribe of Michigan
Seminole Nation of Oklahoma
Seminole Tribe of Florida
Seneca Nation of New York
Seneca-Cayuga Tribe of Oklahoma
Shakopee Mdewakanton Sioux Community of Minnesota (Prior Lake)
Sheep Ranch Rancheria of Me-Wuk Indians, California
Sherwood Valley Rancheria of Pomo Indians, California
Shingle Springs Rancheria (Verona Tract) of Miwok Indians, California
Shoalwater Bay Tribe, Shoalwater Bay Reservation, Washington
Shoshone Tribe of the Wind River Reservation, Wyoming
Shoshone-Bannock Tribes of the Fort Hall Reservation, Idaho
Shoshone-Paiute Tribe of the Duck Valley Reservaton, Nevada
Sisseton-Wahpeton Sioux Tribe, Lake Traverse Reservation, South Dakota
Skokomish Tribe, Skokomish Reservation, Washington
Skull Valley Band of Goshute Indians, Utah
Soboba Band of Luiseno Mission Indians, Soboba Reservation, California
Sokoagon Chippewa Community, Mole Lake Band, Wisconsin
Southern Ute Tribe, Southern Ute Reservation, Colorado
Spokane Tribe of the Spokane Reservation, Washington
Squaxin Island Tribe, Squaxin Island Reservation, Washington
St. Croix Chippewa Indians of Wisconsin, St. Croix Reservation, Wisconsin
St. Regis Band of Mohawk Indians of New York
Standing Rock Sioux Tribe, Standing Rock Reservation, North & South Dakota
Stockbridge-Munsee Mohican Indian Community, Wisconsin
Stillaguamish Tribe of Washington
Summit Lake Paiute Tribe, Summit Lake Reservation, Nevada
Suguamish Tribe, Port Madison Reservation, Washington
Susanville Rancheria of Paiute, Maidu, Pit River & Washoe Indians of California
Swinomish Indian Tribal Community, Swinomish Reservation, Washington
Sycuan Band of Diegueno Mission Indians, Sycuan Reservation, California
Table Bluff Rancheria of California
Table Mountain Rancheria of Yokut Indians of California
Taos Pueblo of New Mexico
Te-Moak Bands of Western Shoshone Indians, Nevada (Battle Mountain, Elko & South Fork)
Tesuque Pueblo of New Mexico
Thlopthlocco Creek Tribal Town of Oklahoma
Three Affiliated Tribes of the Fort Berthold Reservation, North Dakota
Tonawanda Band of Seneca Indians of New York
Tonkawa Tribe of Oklahoma
Torres-Martinez Band of Cahuilla Mission Indians, Torres-Martinez Reservation, California
Tule River Tribe, Tule River Reservation, California
Tulalip Tribes of the Tulalip Reservation, Washington
Tuolumne Band of Me-Wuk Indians, Tuolumne Rancheria, California
Turtle Mountain Band of Chippewa Indians, Turtle Mountain Reservation, North Dakota
Tuscarora Nation of New York
Twenty-Nine Palms Band of Luiseno Mission Indians, 29 Palms Reservation, California
United Keetoowah Band of Cherokee Indians, Oklahoma

Exhibit B. All References of the Resighini Rancheria as a Federally Recognized Tribe in the Federal Register

1979	Federal Register Vol. 44 No. 26 7236	Resighini Rancheria, Coast Indian Community of Yurok Indians, California
1980	Federal Register Vol. 45 No. 81 27828	Coast Indian Community of Yurok Indians of the Resighini Rancheria, California
1988	Federal Register Vol. 53 52829	Coast Indian Community of Yurok Indians of the Resighini Rancheria, California
1995	Federal Register Vol. 60 No. 32 9250	Coast Indian Community of Yurok Indians of the Resighini Rancheria, California
1996	Federal Register Vol. 61 No. 220 58211	Coast Indian Community of Yurok Indians of the Resighini Rancheria, California
1997	Federal Register Vol. 62 No. 205 55270	Coast Indian Community of Yurok Indians of the Resighini Rancheria, California
1998	Federal Register Vol. 63, No. 250 71941	Resighini Rancheria, California (formerly known as the Coast Indian Community of Yurok Indians of the Resighini Rancheria)
1999	Federal Register Vol. 62 No. 250 55270	Coast Indian Community of Yurok Indians of the Resighini Rancheria, California
2000	Federal Register Vol. 65 No. 49 13298	Resighini Rancheria, California (formerly known as the Coast Indian Community of Yurok Indians of the Resighini Rancheria)
2002	Federal Register Vol. 67 No. 134 46328	Resighini Rancheria, California (formerly the Coast Indian Community of Yurok Indians of the Resighini Rancheria)
2003	Federal Register Vol. 68 No. 234 68180	Resighini Rancheria, California (formerly the Coast Indian Community of Yurok Indians of the Resighini Rancheria)
2005	Federal Register Vol. 70 No. 226 71194	Resighini Rancheria, California
2007	Federal Register Vol. 72 No. 055 13648	Resighini Rancheria, California
2008	Federal Register Vol. 73 No. 066 18553	Resighini Rancheria, California
2009	Federal Register Vol. 74 No. 153 40218	Resighini Rancheria, California
2010	Federal Register Vol. 75 No. 190 60810	Resighini Rancheria, California

DEPARTMENT OF THE INTERIOR

Bureau of Indian Affairs

Indian Entities Recognized and Eligible To Receive Services From the United States Bureau of Indian Affairs

AGENCY: Bureau of Indian Affairs, Interior.

ACTION: Notice.

SUMMARY: This notice publishes the current list of 561 tribal entities recognized and eligible for funding and services from the Bureau of Indian Affairs by virtue of their status as Indian tribes. The list is updated from the notice published on December 5, 2003 (68 FR 68180).

FOR FURTHER INFORMATION CONTACT: Daisy West, Bureau of Indian Affairs, Division of Tribal Government Services, Mail Stop 320–SIB, 1951 Constitution Avenue, NW., Washington, DC 20240. Telephone number: (202) 513–7641.

SUPPLEMENTARY INFORMATION: This notice is published pursuant to Section 104 of the Act of November 2, 1994 (Pub. L. 103–454; 108 Stat. 4791, 4792), and in exercise of authority delegated to the Assistant Secretary—Indian Affairs under 25 U.S.C. 2 and 9 and 209 DM 8.

Published below is a list of federally acknowledged tribes in the contiguous 48 states and in Alaska.

The Delaware Tribe of Indians, Oklahoma, was removed from the list in response to a final judgment and order sought by the Cherokee Nation of Oklahoma in the United States District Court for the Northern District of Oklahoma in *Cherokee Nation of Oklahoma* v. *Norton, et al.*, Case No. 98–CV–903–TCK–FHM on remand from the Tenth Circuit Court of Appeals in *Cherokee Nation of Oklahoma* v. *Norton*, 389 F.3d 1074 (10th Cir. 2004), as amended, 2005 U.S. App. LEXIS 2773 (10th Cir. Feb. 16, 2005).

The list does not include any additional new tribes. The updates are limited to several tribal name changes. To aid in identifying tribal name changes, the tribe's former name is included with the new tribal name. We will continue to list the tribe's former name for several years before dropping the former name from the list. We have also made several corrections. To aid in identifying corrections, the tribe's previously listed name is included with the tribal name.

The listed entities are acknowledged to have the immunities and privileges available to other federally acknowledged Indian tribes by virtue of their government-to-government relationship with the United States as well as the responsibilities, powers, limitations and obligations of such tribes. We have continued the practice of listing the Alaska Native entities separately solely for the purpose of facilitating identification of them and reference to them given the large number of complex Native names.

Dated: November 14, 2005.

Michael D. Olsen,

Acting Principal Deputy Assistant Secretary—Indian Affairs.

Indian Tribal Entities Within the Contiguous 48 States Recognized and Eligible To Receive Services From the United States Bureau of Indian Affairs

Absentee-Shawnee Tribe of Indians of Oklahoma
Agua Caliente Band of Cahuilla Indians of the Agua Caliente Indian Reservation, California
Ak Chin Indian Community of the Maricopa (Ak Chin) Indian Reservation, Arizona
Alabama-Coushatta Tribes of Texas
Alabama-Quassarte Tribal Town, Oklahoma
Alturas Indian Rancheria, California
Apache Tribe of Oklahoma
Arapahoe Tribe of the Wind River Reservation, Wyoming
Aroostook Band of Micmac Indians of Maine
Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, Montana
Augustine Band of Cahuilla Mission Indians of the Augustine Reservation, California
Bad River Band of the Lake Superior Tribe of Chippewa Indians of the Bad River Reservation, Wisconsin
Bay Mills Indian Community, Michigan
Bear River Band of the Rohnerville Rancheria, California
Berry Creek Rancheria of Maidu Indians of California
Big Lagoon Rancheria, California
Big Pine Band of Owens Valley Paiute Shoshone Indians of the Big Pine Reservation, California
Big Sandy Rancheria of Mono Indians of California
Big Valley Band of Pomo Indians of the Big Valley Rancheria, California
Blackfeet Tribe of the Blackfeet Indian Reservation of Montana
Blue Lake Rancheria, California
Bridgeport Paiute Indian Colony of California
Buena Vista Rancheria of Me-Wuk Indians of California
Burns Paiute Tribe of the Burns Paiute Indian Colony of Oregon
Cabazon Band of Mission Indians, California (previously listed as the Cabazon Band of Cahuilla Mission Indians of the Cabazon Reservation)
Cachil DeHe Band of Wintun Indians of the Colusa Indian Community of the Colusa Rancheria, California
Caddo Nation of Oklahoma (formerly the Caddo Indian Tribe of Oklahoma)
Cahuilla Band of Mission Indians of the Cahuilla Reservation, California
Cahto Indian Tribe of the Laytonville Rancheria, California
California Valley Miwok Tribe, California (formerly the Sheep Ranch Rancheria of Me-Wuk Indians of California)
Campo Band of Diegueno Mission Indians of the Campo Indian Reservation, California
Capitan Grande Band of Diegueno Mission Indians of California:
  Barona Group of Capitan Grande Band of Mission Indians of the Barona Reservation, California
  Viejas (Baron Long) Group of Capitan Grande Band of Mission Indians of the Viejas Reservation, California
Catawba Indian Nation (aka Catawba Tribe of South Carolina)
Cayuga Nation of New York
Cedarville Rancheria, California
Chemehuevi Indian Tribe of the Chemehuevi Reservation, California
Cher-Ae Heights Indian Community of the Trinidad Rancheria, California
Cherokee Nation, Oklahoma
Cheyenne-Arapaho Tribes of Oklahoma
Cheyenne River Sioux Tribe of the Cheyenne River Reservation, South Dakota
Chickasaw Nation, Oklahoma
Chicken Ranch Rancheria of Me-Wuk Indians of California
Chippewa-Cree Indians of the Rocky Boy's Reservation, Montana
Chitimacha Tribe of Louisiana
Choctaw Nation of Oklahoma
Citizen Potawatomi Nation, Oklahoma
Cloverdale Rancheria of Pomo Indians of California
Cocopah Tribe of Arizona
Coeur D'Alene Tribe of the Coeur D'Alene Reservation, Idaho
Cold Springs Rancheria of Mono Indians of California
Colorado River Indian Tribes of the Colorado River Indian Reservation, Arizona and California
Comanche Nation, Oklahoma
Confederated Salish & Kootenai Tribes of the Flathead Reservation, Montana
Confederated Tribes of the Chehalis Reservation, Washington
Confederated Tribes of the Colville Reservation, Washington
Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians of Oregon
Confederated Tribes of the Goshute Reservation, Nevada and Utah
Confederated Tribes of the Grand Ronde Community of Oregon

Confederated Tribes of the Siletz Reservation, Oregon
Confederated Tribes of the Umatilla Reservation, Oregon
Confederated Tribes of the Warm Springs Reservation of Oregon
Confederated Tribes and Bands of the Yakama Nation, Washington
Coquille Tribe of Oregon
Cortina Indian Rancheria of Wintun Indians of California
Coushatta Tribe of Louisiana
Cow Creek Band of Umpqua Indians of Oregon
Cowlitz Indian Tribe, Washington
Coyote Valley Band of Pomo Indians of California
Crow Tribe of Montana
Crow Creek Sioux Tribe of the Crow Creek Reservation, South Dakota
Death Valley Timbi-Sha Shoshone Band of California
Delaware Nation, Oklahoma
Dry Creek Rancheria of Pomo Indians of California
Duckwater Shoshone Tribe of the Duckwater Reservation, Nevada
Eastern Band of Cherokee Indians of North Carolina
Eastern Shawnee Tribe of Oklahoma
Elem Indian Colony of Pomo Indians of the Sulphur Bank Rancheria, California
Elk Valley Rancheria, California
Ely Shoshone Tribe of Nevada
Enterprise Rancheria of Maidu Indians of California
Ewiiaapaayp Band of Kumeyaay Indians, California (formerly the Cuyapaipe Community of Diegueno Mission Indians of the Cuyapaipe Reservation)
Federated Indians of Graton Rancheria, California (formerly the Graton Rancheria)
Flandreau Santee Sioux Tribe of South Dakota
Forest County Potawatomi Community, Wisconsin
Fort Belknap Indian Community of the Fort Belknap Reservation of Montana
Fort Bidwell Indian Community of the Fort Bidwell Reservation of California
Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation, California
Fort McDermitt Paiute and Shoshone Tribes of the Fort McDermitt Indian Reservation, Nevada and Oregon
Fort McDowell Yavapai Nation, Arizona
Fort Mojave Indian Tribe of Arizona, California & Nevada
Fort Sill Apache Tribe of Oklahoma
Gila River Indian Community of the Gila River Indian Reservation, Arizona
Grand Traverse Band of Ottawa and Chippewa Indians, Michigan
Greenville Rancheria of Maidu Indians of California
Grindstone Indian Rancheria of Wintun-Wailaki Indians of California
Guidiville Rancheria of California
Habematolel Pomo of Upper Lake, California (formerly the Upper Lake Band of Pomo Indians of Upper Lake Rancheria of California)
Hannahville Indian Community, Michigan
Havasupai Tribe of the Havasupai Reservation, Arizona
Ho-Chunk Nation of Wisconsin
Hoh Indian Tribe of the Hoh Indian Reservation, Washington
Hoopa Valley Tribe, California
Hopi Tribe of Arizona
Hopland Band of Pomo Indians of the Hopland Rancheria, California
Houlton Band of Maliseet Indians of Maine
Hualapai Indian Tribe of the Hualapai Indian Reservation, Arizona
Huron Potawatomi, Inc., Michigan
Inaja Band of Diegueno Mission Indians of the Inaja and Cosmit Reservation, California
Ione Band of Miwok Indians of California
Iowa Tribe of Kansas and Nebraska
Iowa Tribe of Oklahoma
Jackson Rancheria of Me-Wuk Indians of California
Jamestown S'Klallam Tribe of Washington
Jamul Indian Village of California
Jena Band of Choctaw Indians, Louisiana
Jicarilla Apache Nation, New Mexico
Kaibab Band of Paiute Indians of the Kaibab Indian Reservation, Arizona
Kalispel Indian Community of the Kalispel Reservation, Washington
Karuk Tribe of California
Kashia Band of Pomo Indians of the Stewarts Point Rancheria, California
Kaw Nation, Oklahoma
Keweenaw Bay Indian Community, Michigan
Kialegee Tribal Town, Oklahoma
Kickapoo Tribe of Indians of the Kickapoo Reservation in Kansas
Kickapoo Tribe of Oklahoma
Kickapoo Traditional Tribe of Texas
Kiowa Indian Tribe of Oklahoma
Klamath Tribes, Oregon (formerly the Klamath Indian Tribe of Oregon)
Kootenai Tribe of Idaho
La Jolla Band of Luiseno Mission Indians of the La Jolla Reservation, California
La Posta Band of Diegueno Mission Indians of the La Posta Indian Reservation, California
Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin
Lac du Flambeau Band of Lake Superior Chippewa Indians of the Lac du Flambeau Reservation of Wisconsin
Lac Vieux Desert Band of Lake Superior Chippewa Indians, Michigan
Las Vegas Tribe of Paiute Indians of the Las Vegas Indian Colony, Nevada
Little River Band of Ottawa Indians, Michigan
Little Traverse Bay Bands of Odawa Indians, Michigan
Lower Lake Rancheria, California
Los Coyotes Band of Cahuilla & Cupeno Indians of the Los Coyotes Reservation, California (formerly the Los Coyotes Band of Cahuilla Mission Indians of the Los Coyotes Reservation)
Lovelock Paiute Tribe of the Lovelock Indian Colony, Nevada
Lower Brule Sioux Tribe of the Lower Brule Reservation, South Dakota
Lower Elwha Tribal Community of the Lower Elwha Reservation, Washington
Lower Sioux Indian Community in the State of Minnesota
Lummi Tribe of the Lummi Reservation, Washington
Lytton Rancheria of California
Makah Indian Tribe of the Makah Indian Reservation, Washington
Manchester Band of Pomo Indians of the Manchester-Point Arena Rancheria, California
Manzanita Band of Diegueno Mission Indians of the Manzanita Reservation, California
Mashantucket Pequot Tribe of Connecticut
Match-e-be-nash-she-wish Band of Pottawatomi Indians of Michigan
Mechoopda Indian Tribe of Chico Rancheria, California
Menominee Indian Tribe of Wisconsin
Mesa Grande Band of Diegueno Mission Indians of the Mesa Grande Reservation, California
Mescalero Apache Tribe of the Mescalero Reservation, New Mexico
Miami Tribe of Oklahoma
Miccosukee Tribe of Indians of Florida
Middletown Rancheria of Pomo Indians of California
Minnesota Chippewa Tribe, Minnesota (Six component reservations:
Bois Forte Band (Nett Lake); Fond du Lac Band; Grand Portage Band; Leech Lake Band; Mille Lacs Band; White Earth Band)
Mississippi Band of Choctaw Indians, Mississippi
Moapa Band of Paiute Indians of the Moapa River Indian Reservation, Nevada
Modoc Tribe of Oklahoma
Mohegan Indian Tribe of Connecticut
Mooretown Rancheria of Maidu Indians of California
Morongo Band of Cahuilla Mission Indians of the Morongo Reservation, California

Muckleshoot Indian Tribe of the Muckleshoot Reservation, Washington
Muscogee (Creek) Nation, Oklahoma
Narragansett Indian Tribe of Rhode Island
Navajo Nation, Arizona, New Mexico & Utah
Nez Perce Tribe of Idaho
Nisqually Indian Tribe of the Nisqually Reservation, Washington
Nooksack Indian Tribe of Washington
Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana
Northfork Rancheria of Mono Indians of California
Northwestern Band of Shoshoni Nation of Utah (Washakie)
Oglala Sioux Tribe of the Pine Ridge Reservation, South Dakota
Omaha Tribe of Nebraska
Oneida Nation of New York
Oneida Tribe of Indians of Wisconsin
Onondaga Nation of New York
Osage Tribe, Oklahoma
Ottawa Tribe of Oklahoma
Otoe-Missouria Tribe of Indians, Oklahoma
Paiute Indian Tribe of Utah (Cedar City Band of Paiutes, Kanosh Band of Paiutes, Koosharem Band of Paiutes, Indian Peaks Band of Paiutes, and Shivwits Band of Paiutes)
Paiute-Shoshone Indians of the Bishop Community of the Bishop Colony, California
Paiute-Shoshone Tribe of the Fallon Reservation and Colony, Nevada
Paiute-Shoshone Indians of the Lone Pine Community of the Lone Pine Reservation, California
Pala Band of Luiseno Mission Indians of the Pala Reservation, California
Pascua Yaqui Tribe of Arizona
Paskenta Band of Nomlaki Indians of California
Passamaquoddy Tribe of Maine
Pauma Band of Luiseno Mission Indians of the Pauma & Yuima Reservation, California
Pawnee Nation of Oklahoma
Pechanga Band of Luiseno Mission Indians of the Pechanga Reservation, California
Penobscot Tribe of Maine
Peoria Tribe of Indians of Oklahoma
Picayune Rancheria of Chukchansi Indians of California
Pinoleville Rancheria of Pomo Indians of California
Pit River Tribe, California (includes XL Ranch, Big Bend, Likely, Lookout, Montgomery Creek and Roaring Creek Rancherias)
Poarch Band of Creek Indians of Alabama
Pokagon Band of Potawatomi Indians, Michigan and Indiana
Ponca Tribe of Indians of Oklahoma
Ponca Tribe of Nebraska
Port Gamble Indian Community of the Port Gamble Reservation, Washington
Potter Valley Tribe, California (formerly the Potter Valley Rancheria of Pomo Indians of California)
Prairie Band of Potawatomi Nation, Kansas
Prairie Island Indian Community in the State of Minnesota
Pueblo of Acoma, New Mexico
Pueblo of Cochiti, New Mexico
Pueblo of Jemez, New Mexico
Pueblo of Isleta, New Mexico
Pueblo of Laguna, New Mexico
Pueblo of Nambe, New Mexico
Pueblo of Picuris, New Mexico
Pueblo of Pojoaque, New Mexico
Pueblo of San Felipe, New Mexico
Pueblo of San Juan, New Mexico
Pueblo of San Ildefonso, New Mexico
Pueblo of Sandia, New Mexico
Pueblo of Santa Ana, New Mexico
Pueblo of Santa Clara, New Mexico
Pueblo of Santo Domingo, New Mexico
Pueblo of Taos, New Mexico
Pueblo of Tesuque, New Mexico
Pueblo of Zia, New Mexico
Puyallup Tribe of the Puyallup Reservation, Washington
Pyramid Lake Paiute Tribe of the Pyramid Lake Reservation, Nevada
Quapaw Tribe of Indians, Oklahoma
Quartz Valley Indian Community of the Quartz Valley Reservation of California
Quechan Tribe of the Fort Yuma Indian Reservation, California & Arizona
Quileute Tribe of the Quileute Reservation, Washington
Quinault Tribe of the Quinault Reservation, Washington
Ramona Band or Village of Cahuilla Mission Indians of California
Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin
Red Lake Band of Chippewa Indians, Minnesota
Redding Rancheria, California
Redwood Valley Rancheria of Pomo Indians of California
Reno-Sparks Indian Colony, Nevada
Resighini Rancheria, California
Rincon Band of Luiseno Mission Indians of the Rincon Reservation, California
Robinson Rancheria of Pomo Indians of California
Rosebud Sioux Tribe of the Rosebud Indian Reservation, South Dakota
Round Valley Indian Tribes of the Round Valley Reservation, California
Rumsey Indian Rancheria of Wintun Indians of California
Sac & Fox Tribe of the Mississippi in Iowa
Sac & Fox Nation of Missouri in Kansas and Nebraska
Sac & Fox Nation, Oklahoma
Saginaw Chippewa Indian Tribe of Michigan
St. Croix Chippewa Indians of Wisconsin
St. Regis Band of Mohawk Indians of New York
Salt River Pima-Maricopa Indian Community of the Salt River Reservation, Arizona
Samish Indian Tribe, Washington
San Carlos Apache Tribe of the San Carlos Reservation, Arizona
San Juan Southern Paiute Tribe of Arizona
San Manual Band of Serrano Mission Indians of the San Manual Reservation, California
San Pasqual Band of Diegueno Mission Indians of California
Santa Rosa Indian Community of the Santa Rosa Rancheria, California
Santa Rosa Band of Cahuilla Mission Indians of the Santa Rosa Reservation, California
Santa Ynez Band of Chumash Mission Indians of the Santa Ynez Reservation, California
Santa Ysabel Band of Diegueno Mission Indians of the Santa Ysabel Reservation, California
Santee Sioux Nation, Nebraska (formerly the Santee Sioux Tribe of the Santee Reservation of Nebraska)
Sauk-Suiattle Indian Tribe of Washington
Sault Ste. Marie Tribe of Chippewa Indians of Michigan
Scotts Valley Band of Pomo Indians of California
Seminole Nation of Oklahoma
Seminole Tribe of Florida, Dania, Big Cypress, Brighton, Hollywood & Tampa Reservations
Seneca Nation of New York
Seneca-Cayuga Tribe of Oklahoma
Shakopee Mdewakanton Sioux Community of Minnesota
Shawnee Tribe, Oklahoma
Sherwood Valley Rancheria of Pomo Indians of California
Shingle Springs Band of Miwok Indians, Shingle Springs Rancheria (Verona Tract), California
Shoalwater Bay Tribe of the Shoalwater Bay Indian Reservation, Washington
Shoshone Tribe of the Wind River Reservation, Wyoming
Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho
Shoshone-Paiute Tribes of the Duck Valley Reservation, Nevada
Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, South Dakota (formerly the Sisseton-Wahpeton Sioux Tribe of the Lake Traverse Reservation)
Skokomish Indian Tribe of the Skokomish Reservation, Washington
Skull Valley Band of Goshute Indians of Utah

Cher-Ae Heights Indian Community of the Trinidad Rancheria

August 14, 2013

Sonke Mastrup
Executive Director
CA Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Director Mastrup:

On behalf of the Cher-Ae Heights Indian Community of the Trinidad Rancheria, please accept this letter to clarify an error made in the August 9, 2013 Trinidad Rancheria letter to you requesting formal Government to Government Consultation with the CA Fish and Game Commission. I inadvertently noted Trinidad Rancheria CEO Jacque Hostler-Carmesin as the point of contact for the Trinidad Rancheria in regards to this consultation request. As Mrs. Hostler-Carmesin was recently appointed to serve on the CA Fish and Game Commission, she has requested recusal from any interactions between the Tribe and the Commission in order to avoid any potential conflict of interest due to her due positions.

Please contact Trinidad Rancheria Executive Manager Amy Atkins at (707) 677-0211 ext. 2702 or Tribal Historic Preservation Officer Rachel Sundberg at (707) 677-0211 ext. 2726 to plan and coordinate meeting dates and times for a Government to Government Consultation of Reading Rock as originally requested in the August 9, 2013 letter.

Sincerely,

Garth Sundberg
Tribal Chairman
Trinidad Rancheria

Santa Ynez Band of Chumash Indians
P.O. Box 517 • Santa Ynez, CA 93460
805-688-7997 • Fax 805-686-9578
www.santaynezchumash.org

November 1, 2011

Mr. Jim Kellogg, President
California Fish and Game Commission (F&GC)
P.O. Box 944209
Sacramento, CA 94244-2090

RE: **Santa Ynez Band of Chumash Indians Request for Exemption for Cultural and Ceremonial Fishing In Marine Protected Areas (MPAs) pursuant to the Marine Life Protection Act (MLPA)**

Dear Mr. Kellogg:

The Santa Ynez Band of Chumash Indians (Chumash) makes this request for an exemption from the Fish and Game Commission for cultural and ceremonial fishing and gathering within State Marine Conservation Areas and Marine Parks in Santa Barbara County under the MLPA.

In support of such exemption, the Chumash provide the attached: "*Factual Record of Current and Historical Uses by the Santa Ynez Band of Chumash Indians within the proposed State Marine Conservation Areas and Marine Parks of Santa Barbara County.*" In addition, this request for exemption incorporates by reference the following documents which have been previously delivered to Mr. Sonke Mastrup, F&GC Executive Director:

1. Summary of our August 5, 2011 meeting regarding an exemption;
2. Santa Barbara County Marine Conservation Areas and Parks;
3. Chumash cultural and ceremonial gathering list;
4. Possible additional provisions to gathering list;
5. Chumash fishing and gathering text from the Santa Barbara Museum of Natural History website;
6. Chumash towns at the time of European settlement;
7. "The Origins of a Pacific Coast Chiefdom, The Chumash of the Channel Islands";
8. "Ethnohistoric and Archaeological Evidence for Chumash Use of Marine Plants";
9. "A Review of the Analysis of Fish Remains in Chumash Sites";
10. "The Economics of Island Chumash Fishing Practices"; and
11. Summary of Chumash Coastal Sites—January 2011.

Sincerely,

Vincent P. Armenta, Tribal Chairman

CC: Mr. Richard B. Rogers, Vice President
Mr. Michael Sutton, Member
Mr. Daniel W. Richards, Member
Mr. Jack Baylis, Member

Factual Record of Current and Historical Uses by the Santa Ynez Band of Chumash Indians within the proposed State Marine Conservation Areas and Marine Parks of Santa Barbara County

The Santa Ynez Band of Chumash Indians have been actively engaged in the Marine Life Protection Act (MLPA) process since 2007. It started with Chumash attempts to get any Tribal consultation in the South Central Coast Marine Protected Area (MPA) from Pointe Conception north. Our letters from 2007 remain unresponded to even after we personally attended Fish and Game Commission meetings and requested a response.

After the South Central Coast MPA, the Chumash began demanding Tribal consultation in the South Coast MPA from Point Conception south to the border of Mexico. All Tribes in this long stretch of coast we given two representatives in the South Coast Regional Stakeholders Group, Louis Guassac and Roberta Cordero. Again we requested consultation with the federally recognized tribes in this region and were told to contact "our" stakeholders. Ultimately, the Tribal South Coast Regional Stakeholders Committee recommended an elaborate system of co-management and co-enforcement, which also included cultural and ceremonial MPA access, none of which were accepted by the Blue Ribbon Task Force (BRTF) nor included in the final regulations.

During 2009 we also learned of a Memorandum of Understanding (MOU) between the Department of Fish and Game and Vandenberg Air Force Base pursuant to the MLPA restricting Chumash historical fishing rights at the Base. After multiple California Public Records Act (CPRA) requests beginning in 2009 we are pleased to have just received a copy of the MOU in 2011.

Upon the completion of the South Central and South Coast MPAs without any recognition of Tribal rights, we then learned of the North Coast MPA process. We read with interest the motion made by Jacque Hostler in the North Coast Regional Stakeholders Group (NCRSG) and the emergency subsistence regulations proposed for the Kashia Band of Pomo Indians. We wrote letters to Ms. Hostler offering our assistance and to work together with the Northern Tribes in October of 2010. We also saw the response of the BRTF to Ms. Hostler and the NCRSG that the legal authority for tribal cultural and ceremonial MPA access needed to be clarified. To date, we are informed that federally recognized Tribes within the North Coast MPA have been invited to submit a factual record upon with an exception can be considered for Tribal cultural, ceremonial and subsistence fishing in State Marine Conservation Areas and Marine Parks but not Marine Reserves.

The Santa Ynez Band of Chumash Indians hereby introduce this factual record the South Coast and South Central Coast MPAs upon which an exception can be considered for Tribal cultural, ceremonial and subsistence fishing in State Marine Conservation Areas and Marine Parks but not Marine Reserves in Santa Barbara County.

Chumash Historical Summary

The Chumash occupied the region from San Luis Obispo County to Malibu Canyon on the coast, and inland as far as the western edge of the San Joaquin Valley, and the four northern Channel Islands (Grant 1978). The Chumash are subdivided into factions based on distinct dialects.

Chumash society developed over the course of some 9,000 years and achieved a level of social, political and economic complexity not ordinarily associated with hunting and gathering groups (Morrato, 1984). The prehistoric Chumash are believed to have maintained one of the most elaborate bead money systems in the world, as well as one of the most complex non-agricultural societies (King, 1990).

The archaeological record indicates that Chumash populations occupied the coastal regions of California more than 9,000 years ago (Greenwood 1972). Several chronological frameworks have been developed for the Chumash region. One of the most definitive works on Chumash chronology is that of King (1990). King postulates three major periods; Early, Middle and Late. Based on artifact typologies from a great number of sites, he was able to discern numerous style changes within each of the major periods.

The Early Period (8000 to 3350 Before Present [B.P.]) is characterized by a primarily seed processing subsistence economy. The Middle Period (3350 to 800 B.P.) is marked by a shift in the economic/subsistence focus from plant gathering and the use of hard seeds, to a more generalized hunting-maritime gathering adaptation, with an increased focus on acorns. The full development of the Chumash culture, one of the most socially and economically complex hunting and gathering groups in North America, occurred during the Late Period (800 to 150 B.P.).

The Chumash aboriginal way of life ended with Spanish colonization. As neophytes were brought into the mission system, they were transformed from fishermen, hunters and gatherers into agricultural laborers and exposed to diseases from which they had no resistance. By the end of the Mission Period in 1834, the Chumash population had been decimated by disease and declining birthrates. Population loss as a result of disease and economic deprivation continued into the next century.

The Mission Era

The Spanish built five Catholic missions among the Chumash people. Mission Santa Ines was established in 1804 as a halfway point between the Santa Barbara and La Purisma (Lompoc) missions. Each mission was granted about seven square leagues of land surrounding it for the use and support of the local Indian communities.

In practice, the missionaries and soldiers were brutal men who enslaved the local Chumash people and nearly decimated them through disease, starvation and harsh treatment. Despite this, the sentiment of the Spanish and Mexican governments and the Catholic Church was that the land of the missions essentially were what we know of today as reservations, for the use and upkeep of the Indians. The tribal members forced to live and work near the missions were considered to be neophytes or Christianized Indians.

The Church viewed the land to be held in trust for the Indians, who had a "natural" right of occupancy. The Church and Spain considered title to the land to be with the Indians as decreed from the "laws of nature and imminent occupation." The priests were just the administrators of the land on behalf of their Indian "wards."

The slave-like conditions at the mission led to the Chumash Revolt of 1824. It started when soldiers flogged an Indian from La Purisma mission who was at Santa Ines. The revolt spread to the Santa Barbara and La Purisma missions and led to the burning of the Santa Ines mission. Many Chumash feared the soldiers would kill them and fled to the San Joaquin Valley. The priests and military knew they couldn't keep the missions going without the Indian slave labor. Soldiers rounded up the Chumash and brought them back to the mission.

A decade after the revolt, the Mexican government secularized the missions and intended to disperse the lands to the Indians and settlers. The goal never was fully accomplished. The missionaries still were regarded as the guardians of the Indians and the tribal lands.

Many Chumash after the secularization efforts did flee the mission and ended up in the area around Zanja de Cota Creek in the Canada de la Cota. The area still was considered to be within the lands of the Catholic Church.

Significance of Refugio Bay

The marine environment of the Santa Barbara Channel supports a wide variety of habitats that include kelp beds, sandy beaches, rocky intertidal, bays, estuaries, and lagoons. Historically, the largest kelp beds on the California coast occurred between Point Conception and Rincon Point. Kelp beds support a large invertebrate community including abalone, crabs, clams, oysters, shrimp, lobster, and squid. Kelp beds also feed and provide shelter for numerous species of fish. Seals and sea lions feed in the kelp beds and haul out and breed on adjacent sandy beaches. The bays, estuaries, and lagoons are important habitats for resident bird species as well as migrating waterfowl. The Mediterranean climate of the project area is typified by long, hot summers, and wet, mild winters. Perennial and seasonal drainages run down the slopes of the Santa Ynez Mountains and foothills to the coast.

The rich plant and animal resources of the surrounding terrestrial and marine environments, availability of fresh water, and Mediterranean climate combined

to make the Santa Barbara Channel region a desirable location for prehistoric habitation and supported one of the highest prehistoric population densities among hunter-gatherers anywhere in the world. These same attributes would later encourage settlement of the Santa Barbara Channel region by the Spanish, Mexican, and American cultures.

In 1769, Gaspar de Portola and Father Junipero Serra departed the newly established San Diego settlement and marched northward toward Monterey, with the objective to secure that port and establish five missions along the route. The combined sea and land 1769-1770 Portola expedition, which passed through Santa Barbara County on its way to Monterey, was the prelude to systematic Spanish colonization of Alta California.

In 1795, Jose Francisco Ortega (the original founder of the Santa Barbara Presidio) was granted six leagues known as the *Rancho Nuestra Senora del Refugio* (Cowan, 1977). This was the only land grant licensed under Spanish Rule in what today is known as Santa Barbara County. The Ortegas built adobes at Refugio and later at Tajiguas Canyon, Arroyo Hondo, and Cañada del Corral. They grew wheat, maintained a vineyard, and ran large herds of cattle and horses on the rancho.

By the early 1800's Refugio Bay was a well-known port to ships visiting the California coast, as the captains could trade at the Ortega settlement free of the duties imposed by the Spanish colonial government (Bancroft 1886, Tomkins 1960). However, the pirate Bouchard effectively ended the bay's era as a trading/smuggling port when he sacked and burned the Refugio hacienda in 1818.

In 1822, Mexico gained its independence from Spain, and in 1834 the Missions were secularized and their lands granted as rewards for loyal service or in response to an individual's petition.

Significance of the Goleta Slough

According to Dr. John Johnson at the Santa Barbara Museum of Natural History, the Goleta Slough villages had the highest population density in the Santa Barbara region at the time of European settlement." Dr. John Johnson, personal communication, April 9, 2008.

This is due to the great diversity of habitat and wildlife within this setting providing for a wide variety of subsistence adaptations.

One example of such villages within the prehistoric time frame of the Goleta Slough was the village of heló or Mescalitan Island. It was occupied continuously for thousands of years by the early Chumash.

There has been study after study by over a dozen accredited, credentialed archaeological specialists/professors regarding the Goleta Slough. No matter what was their particular expertise, all agree that these villages are significant and tell much about the prehistory of the Chumash.

Professor Jon Erlandson, along with David Stone, described the entire Goleta Slough as the sociopolitical nexus of the Chumash world:

> Subsequent archaeological studies of Rogers' sites have contributed to our growing understanding of the past in the Santa Barbara Channel area. Radiocarbon dating of sites excavated by Rogers, when combined with the development of calibration programs for ^{14}C dates, has allowed us to place his cultural stages—Oak Grove, Hunting People, and Canaliño—in real time, and a probable cultural continuum that may span more than 9000 years. In the process, archaeologists working in the Chumash area have constructed one of the longest and best documented coastal sequences in the world. Unfortunately, the past 75 years have also seen phenomenal population growth and unprecedented development along the California Coast, destroying or damaging countless archaeological sites. These include many of the 100 or so sites Rogers (1929) described along the Santa Barbara Coast. Among the hardest hit was the remarkable complex of sites that formed a nearly continuous ring around the Goleta Slough, the sociopolitical nexus of the Chumash world. Fortunately, there are still intact remnants of many of these Goleta Slough sites, including some key sites once thought to have been completely destroyed. Many of these site remnants have also been investigated by archaeologists using methods more advanced than Rogers' relatively crude techniques.

Erlandson, et al., CA-SBA-56: An "Oak Grove" and "Canaliño" Site on Goleta Lagoon, California, p. 1 (emphasis added.)

Conclusion

There is a clear factual basis for an exception for Tribal cultural, ceremonial and subsistence fishing in State Marine Conservation Areas and Marine Parks in the South Coast and South Central Coast MPAs in Santa Barbara County for the Santa Ynez Band of Chumash Indians, a federally recognized Indian Tribe.

The historical record demonstrates that the Chumash have taken finfish, invertebrates, mammals, and marine plants within this region since time immemorial, and should be included as traditional uses protected under the proposed state regulations. This factual record is being submitted as an act of good faith by the Chumash, who wish to establish a collaborative relationship with the State of California, to work towards our mutual respective goal to protect the marine resources that are of such significance to all of us. Given the time constraints, if necessary, the Chumash reserve the right to supplement the record at a later date.

Historical Connections of the Santa Ynez Chumash
to Refugio Beach, Goleta Beach, and Santa Rosa Island

John R. Johnson, Ph.D.
Santa Barbara Museum of Natural History

October, 2011

Refugio Beach

The ethnohistoric ranchería of *Qasil* (spelled "Casil" in the mission registers) was located at Refugio Beach. Not long after Mission Santa Bárbara was established, the missionaries wrote that a number of native people from the Santa Ynez Valley had established themselves at *Qasil* and its nearest neighbor *Shish'uchi* at Arroyo Quemada. Indeed, the mission registers record a number of marriages and family relationships between the citizens of these two coastal towns and the principal ranchería of *Kalawashaq'* (spelled "Calahuasa" in the mission books). After Mission Santa Inés was founded in 1804, most of the people who came from *Qasil* and *Shish'uchi* became affiliated with that mission, including their chiefs, showing the close social and political relationships that existed between the peoples who had lived in these two coastal towns and those who inhabited the Santa Ynez rancherías.

Those rancherías in the central Santa Ynez Valley that have been investigated by archaeologists show that there had been abundant access to marine resources by their indigenous inhabitants. In particular, the skeletal elements of many species of marine fishes and shells of marine mollusks are quite common in archaeological assemblages from inland sites. These material remains demonstrate that the close social connections documented through mission records also extended to economic exchange and/or that periodic visits over Refugio Pass by inland peoples to fish and gather shellfish were permitted by the rancherías on the coast.

The social, political, and economic connections documented in mission records and archaeological excavations are not the only evidence that we have of the connections of the Santa Ynez Chumash to the Refugio area. There are also direct links revealed in the genealogies of most residents of the Santa Ynez Reservation today. One of the family lineages that has many descendants who are tribal members is the direct descendant of a woman from *Qasil* named Policarpa, who had been born at that ranchería about 1751. Policarpa's second husband was Bernabé Pilaljaut, who was listed as the capitán (chief) of *Qasil* in a 1796 census prepared by the *comandante* of the Santa Bárbara Presidio, Felipe de Goycoechea. Bernabé Pilaljaut originally had been born in *Kalawashaq'*. Another family connection pertains to the ancestry of María Solares, whose grandparents, Estevan and Eulalia, although originally from *Kalawashaq'*, had lived for a time at *Qasil*, where one of their children was born.

Goleta Beach

The Goleta lagoon, referred to as "Mescaltitán" by the Spanish, was perhaps the most densely settled region in all of the territory where Chumash languages were spoken. While most of the citizens of the Goleta Chumash towns were baptized at Mission Santa Bárbara, there exist nonetheless numerous connections to the Santa Ynez Chumash. Some of these links include marriages revealed in mission records between people from the four principal towns that existed in the Goleta Valley (*S'axpilil, Helo'*, *Heliy̶i̶k*, and *'Alkash*) and spouses who came from rancherías in the Santa Ynez Valley.

In 1798, Comandante Goycoechea conducted a reconnaissance of the valley in order to select a suitable site for the future mission of Santa Inés. When he visited two of the largest Santa Ynez Valley rancherías, *Kalawashaq'* and *Teqepsh*, he reported that many of the residents were absent because they were attending a fiesta at one of the Goleta Chumash towns.

One family with Goleta Chumash connections that was historically associated with the Santa Ynez tribe was that of Francisca Flores (aka Francisca Solares). Francisca had been born at the Santa Barbara Chumash community of La Cieneguita, but her mother married a man from Mission Santa Inés and the family moved to Zanja de Cota when she was a small girl. On her mother's side, Francisca was descended from Pedro Yanonali, the chief of *Syuxtun* on the Santa Barbara waterfront. On her father's side, both of her paternal grandparents were descended from citizens of *Helo'*, the famous Goleta Chumash town that once existed on what later became known as Mescalitan Island. After moving to Zanja de Cota, Francisca became a lifelong member of the Santa Ynez Indian community. She was a member of the Santa Ynez Reservation when it was established in 1901, and her children Frank Flores and Gus Flores, and granddaughter Juanita ("Jennie") Espinosa Wilson were all Santa Ynez tribal members listed on reservation rolls until their deaths.

Santa Rosa Island

The Santa Ynez Chumash tribal connections to Santa Rosa Island extend back to the days of the missions. A large number of people from rancherías on Santa Rosa Island were baptized at Mission Santa Inés in 1815-1816. These islanders continued to intermarry and reside among Santa Ynez Chumash families when the community became established at Zanja de Cota in 1855. María Solares's second husband was named Nicomedes, whose mother had come from *Qshiwqshiw*, the largest ranchería on Santa Rosa Island. The daughter Nicomedes and María Solares was Clara Miranda, who is the direct ancestor of many Santa Ynez tribal members today.

(6) Reading Rock State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:

41° 20.100’ N. lat. 124° 04.911’ W. long.;

41° 20.100’ N. lat. 124° 10.000’ W. long.;

41° 17.600’ N. lat. 124° 10.000’ W. long.; and

41° 17.600’ N. lat. 124° 05.497’ W. long.

(B) Take of all living marine resources is prohibited except:

1. The recreational take of salmon by trolling [subsection 27.80(a)(3)]; surf smelt [Section 28.45] by dip net or Hawaiian type throw net [Section 28.80]; and Dungeness crab by trap, hoop net or hand is allowed.

2. The commercial take of salmon with troll fishing gear [subsection 182.1(l)]; surf smelt by dip net; and Dungeness crab by trap is allowed.

3. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(6) of these regulations and shall comply with all other existing regulations and statutes:

Yurok Tribe of the Yurok Reservation

Cher-Ae Heights Indian Community of the Trinidad Rancheria
Resighini Rancheria

(97) Kashtayit State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:

34° 28.13’ N. lat. 120° 14.46’ W. long.;

34° 27.30’ N. lat. 120° 14.46’ W. long.;

34° 27.30’ N. lat. 120° 12.47’ W. long.; and

34° 28.23’ N. lat. 120° 12.47’ W. long.

(B) Take of all living marine resources is prohibited except:

1. Only the following species may be taken recreationally: finfish [subsection 632(a)(2)], invertebrates except rock scallops and mussels, and giant kelp (Macrocystis pyrifera) by hand harvest.

2. Take pursuant to activities authorized under subsection 632(b)(97)(C) is allowed.

3. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(16) of these regulations and shall comply with all other existing regulations and statutes:

Santa Ynez Band of Chumash Indian

(C) Maintenance of artificial structures and operation and maintenance of existing facilities is allowed inside the conservation area pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(98) Naples State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:

34° 26.51’ N. lat. 119° 58.00’ W. long.;

34° 25.00’ N. lat. 119° 58.00’ W. long.;

34° 25.00’ N. lat. 119° 56.00’ W. long.; and

34° 26.13’ N. lat. 119° 56.00’ W. long.

(B) Take of all living marine resources is prohibited except:

1. The recreational take by spearfishing [Section 1.76] of white seabass and pelagic finfish [subsection 632(a)(3)] is allowed.

2. The commercial take of giant kelp (Macrocystis pyrifera) by hand harvest or by mechanical harvest is allowed.

3. Take pursuant to activities authorized under subsection 632(b)(98)(C) is allowed.

4. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(16) of these regulations and shall comply with all other existing regulations and statutes:

Santa Ynez Band of Chumash Indian

(C) Operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(99) Campus Point State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:

34° 25.20’ N. lat. 119° 53.60’ W. long.;

34° 21.48’ N. lat. 119° 53.60’ W. long.; thence eastward along the three nautical mile offshore boundary to

34° 21.21’ N. lat. 119° 50.65’ W. long.; and

34° 24.30’ N. lat. 119° 50.65’ W. long.

(B) Take of all living marine resources is prohibited except: ~~for take pursuant to activities authorized under subsection 632(b)(99)(C).~~

1. Take pursuant to activities authorized under subsection 632(b)(99)(C).

2. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(16) of these regulations and shall comply with all other existing regulations and statutes:

Santa Ynez Band of Chumash Indian

(C) Operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(100) Goleta Slough State Marine Conservation Area.

(A) This area includes the waters below the mean high tide line within Goleta Slough northward of latitude 34° 25.02’ N.

(B) Take of all living marine resources is prohibited except for: ~~take pursuant to activities authorized under subsection 632(b)(100)(D).~~

1. Take pursuant to activities authorized under subsection 632(b)(100)(D).

2. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(16) of these regulations and shall comply with all other existing regulations and statutes:

Santa Ynez Band of Chumash Indian

(C) In waters below the mean high tide line inside the Goleta Slough Ecological Reserve as defined within Section 630, the following restrictions apply:

1. Boating, swimming, wading, and diving are prohibited.

2. No person shall enter this area and remain therein except on established trails, paths or other designated areas except department employees or designated employees of Santa Barbara Airport, City of Santa Barbara, Goleta Sanitary District and Goleta Valley Vector Control District for the purposes of carrying out official duties.

(D) Routine maintenance, dredging, habitat restoration, research and education, maintenance of artificial structures, and operation and maintenance of existing facilities in the conservation area is allowed pursuant to any required federal, state and local permits, or activities pursuant to Section 630, or as otherwise authorized by the department.

SANTA YNEZ BAND OF CHUMASH INDIANS
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BUSINESS COMMITTEE
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GARY PACE, SECRETARY-TREASURER
MAXINE LITTLEJOHN, COMMITTEE MEMBER
MIKE LOPEZ, COMMITTEE MEMBER

July 3, 2012 & October 14, 2015

Mr. Sonke Mastrup,
Executive Director
Fish and Game Commission
1416 Ninth Street, Box 944209
Sacramento, CA 944209-2090

RE: Santa Ynez Band of Chumash Indians;
Marine Life Protection Act (MLPA) and Marine Protected Areas (MPAs);
Request for MPA exemption for Cultural and Ceremonial fishing and gathering;
Request for Tribal Consultation

Dear Mr. Mastrup:

The Santa Ynez Band of Chumash Indians ("Chumash" or "Tribe") re-states its request for an MPA exemption for cultural and ceremonial fishing and gathering and formally requests Tribal consultation.

BACKGROUND FROM 2007 TO COMPLETION OF NORTH COAST MPA

The Chumash have been actively engaged in the Marine Life Protection Act (MLPA) process since 2007. It started with attempts by the Chumash to request tribal consultation in the South Central Coast Marine Protected Area (MPA) from Pointe Conception north. Our letters from 2007 remain unresponded to even after we personally attended Fish and Game Commission meetings and requested a response.

After the South Central Coast MPA, the Chumash requested tribal consultation in the South Coast MPA from Point Conception south to the border of Mexico. All Tribes in this long stretch of coast we given two representatives in the South Coast Regional Stakeholders Group, Louis Guassac and Roberta Cordero. Again we requested consultation with the federally recognized tribes in this region and were told to contact "our" stakeholders. Ultimately, the Tribal South Coast Regional Stakeholders Committee recommended an elaborate system of co-management and co-enforcement, which also included cultural and ceremonial MPA access, all of which were neither accepted by the Blue Ribbon Task Force (BRTF) nor included in the final regulations.

During 2009 we also learned of a Memorandum of Understanding (MOU) between the Department of Fish and Game and Vandenberg Air Force Base pursuant to the MLPA restricting Chumash historical

fishing rights at the Base. After multiple California Public Records Act (CPRA) requests beginning in 2009 we are pleased to have just received a copy of the MOU in 2011.

The MLPA process having completed the South Central and South Coast MPAs without much recognition of Tribal concerns, we then learned of the North Coast MPA process. We read with interest the motion made by Jacque Hostler in the North Coast Regional Stakeholders Group (NCRSG) and the emergency subsistence regulations proposed for the Kashia Band of Pomo Indians. We wrote letters to Ms. Hostler offering our assistance and to work together with the Northern Tribes in October of 2010. We are pleased to see that final regulations for the North Coast MPA with tribal provisions have been recently adopted this June of 2012.

CHUMASH MPA EXCEPTION AFTER COMPLETION OF NORTH COAST MPA

The Chumash provided its historical record and request for exemption for cultural and ceremonial fishing to the FGC on November 1, 2011. The Chumash then made a presentation before the FGC at its Santa Barbara meeting on November 17, 2011. By letter dated November 23, 2011, FGC Executive Director Sonke Mastrup informed the Chumash that its presentation "meets the standard set for by the Commission for requests related to tribal specific gathering in specified MPAs."

The staff summary of the November 17, 2011 FGC meeting noted that a so-called Chumash exemption might be considered after the North Coast MPA regulations were completed:

17. RECEIPT AND DISCUSSION OF REQUEST OF THE SANTA YNEZ BAND OF CHUMASH INDIANS FOR EXEMPTIONS TO REGULATIONS FOR SOUTHERN CALIFORNIA MARINE PROTECTED AREAS FOR CULTURAL AND CEREMONIAL PURPOSES.
Received presentations from Sam Cohen, Kathy Conti, Reggie Pagaling, and Willie Wyatt. Received public testimony. Commission directed staff/Department to reach out to other tribes and indicated it would consider a rulemaking package after completion of the North Coast MPA rulemaking.
http://www.fgc.ca.gov/meetings/2011/111711summary.pdf

Chumash representatives would like to restart and complete this process with the FGC as to a Chumash MPA exemption.

Please contact our Government and Legal Specialist Sam Cohen (cell: 805-245-9083) so that we can further coordinate our efforts.

Sincerely,

Vincent Armenta
Tribal Chairman

State of California
Department of Fish and Wildlife

Memorandum

Date: July 16, 2015

To: Sonke Mastrup
Executive Director
Fish and Wildlife Commission

From: Charlton H. Bonham
Director

Subject: Agenda Item for the August 4-5, 2015, Fish and Game Commission Meeting Regarding Proposed Amendments to Section 632, Title 14, California Code of Regulations, Marine Protected Areas, Marine Managed Areas, and Special Closures

The Department of Fish and Wildlife (Department) is proposing to clarify and correct errors and inconsistencies within Section 632, as follows:

- Clarify the origin of Marine Protected Area and Marine Managed Area (MMA) definitions.
- Clarify the allowed and prohibited take for marine resources in state marine reserves (SMRs), state marine conservation areas (SMCAs), state marine parks (SMPs), and state marine recreational management areas (SMRMAs).
- Remove the allowance for aquaculture within Drakes Estero SMCA.
- Clarify aquaculture use in Morro Bay SMRMA.
- Update obsolete commercial troll gear references.
- Change Año Nuevo's designation from an SMCA to an SMR.
- Simplify the names of twenty-one MMAs.
- Adjust the shared boundary between Laguna Beach SMR and Laguna Beach no-take SMCA to address municipality concerns.
- Replace the coordinate boundary at Goleta Slough SMCA with the mean high tide line.
- Delete unnecessary text pertaining to the mean high tide line for three offshore MMAs.
- Refine boundaries to improve geographic accuracy for 106 MMAs and special closures by: adding a third decimal place to increase precision for all current coordinates ending at 1/100th of a minute; moving coordinates closer to an intended point of reference; adding additional coordinates to existing boundaries; and anchoring offshore boundaries on the 3 nautical mile state line.
- Correct a printing error in subsection 632(b)(120) and make other nonsubstantive changes for clarity and consistency.

If you have any questions regarding this item, please contact Dr. Craig Shuman, Regional Manager in the Department's Marine Region at (805) 568-1246. The public notice for this rulemaking should identify Environmental Scientist, Ms. Amanda Van

Diggelen as the Department's point of contact. Ms. Van Diggelen can be reached at (562) 342-7176 or Amanda.VanDiggelen@wildlife.ca.gov.

Attachments

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STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR PROPOSED REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Section 632
Title 14, California Code of Regulations
Re: Marine Protected Areas

I. Date of Initial Statement of Reasons: June 4, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: August 4, 2015
Location: Fortuna, CA

(b) Discussion Hearing: Date: October 7, 2015
Location: Los Angeles, CA

(c) Adoption Hearing: Date: December 9, 2015
Location: San Diego, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Background Information

The Marine Life Protection Act (MLPA) (Fish and Game Code Sections 2850-2863) established a programmatic framework for designating Marine Protected Areas (MPAs) in the form of a statewide network. The Marine Managed Areas Improvement Act (Public Resources Code [PRC] Sections 36600-36900) standardized the designation of marine managed areas (MMAs), which include MPAs. The overriding goal of these acts is to protect, conserve, and help sustain California's valuable marine resources including maintaining natural biodiversity through adaptive management.

Since implementation of MPA regulations Section 632, Title 14, California Code of Regulations, the Fish and Game Commission (Commission), Department of Fish and Wildlife (Department), and the public, have identified opportunities to clarify the regulations in subsequent administrative regulatory packages. This regulatory package proposes: an MMA designation change, renaming MMAs, correcting aquaculture allowances, refining MMA boundaries to improve compliance and enforceability, and correcting errors and inconsistencies in regulations. For a complete listing of proposed changes to specific MMAs and special closures refer to Attachment 1: Table 1- Summary of proposed language amendments to Title 14, Section 632, California Code of Regulations, and Attachment 2: Table 2- Summary of proposed boundary refinement

amendments to Title 14, Section 632, California Code of Regulations. To view proposed boundary refinement images refer to Attachment 3: California State Marine Protected Areas Proposed Boundary Refinements.

Proposed Amendment to Subsection 632(a):

The proposed regulation identifies the origin of the MMA definitions by adding the following text to subsection 632(a)(1): "in MPAs and MMAs, as defined in Public Resources Code Section 36710:"

Necessity and Rationale: The current definitions within subsection 632(a)(1) were placed there verbatim from PRC, Section 36710, for each type of MMA, so users of MMAs could quickly reference what type of protection is afforded to a given marine area. For the accessibility of users, it is necessary to add the citation to help clarify the origin of the definitions.

Proposed Amendment to Subsection 632(b), Generally:

The MMAs indicated on Attachment 1, within the "Allowable Activities" column, are proposed for the following amendment.

The existing regulations of subsection 632(b) specify that the take of any living marine resource is prohibited in state marine reserves (SMRs), and that the take of any living marine resource is prohibited, except species explicitly listed, for the remaining MMA designations.

In an effort to clarify the intent of the MMA designations and avoid confusion regarding allowable uses, the proposed regulation amendment replaces the existing text with new text, as follows:

Area	Existing text	New text
State Marine Reserve	"Take of all living marine resources is prohibited"	"Area restrictions defined in subsection 632(a)(1)(A) apply"
State Marine Park (SMP)	"Take of all living marine resources is prohibited except…"	"Area restrictions defined in subsection 632(a)(1)(B) apply with the following specified exceptions…"
State Marine Conservation Area (SMCA)		"Area restrictions defined in subsection 632(a)(1)(C) apply with the following specified exceptions…"

State Marine Recreational Management Area (SMRMA)	"Take of all living marine resources is prohibited" OR "Take of all living marine resources is prohibited except…"	"Area Restrictions defined in subsection 632(a)(1)(D) apply" OR "Area restrictions defined in subsection 632(a)(1)(D) apply with the following specified exceptions…"

Necessity and Rationale: According to PRC, Section 36710, SMRs and SMCAs prohibit the take of any living, geological, or cultural marine resource; SMPs prohibit the take of any living or nonliving marine resource; and in SMRMAs it is unlawful to perform any activity that would compromise the recreational values for which the area may be designated. To better reflect the intent of PRC 36710 for protecting both living and non-living marine resources there is a need to clarify allowed and prohibited uses under subsection 632(b), as proposed above.

Proposed Amendments to Subsection 632(b), Specifically:

The following subsections of subsection 632(b) are proposed for amendments to clarify the restrictions and allowable activities in these MMAs or special closures; provide greater clarity and enforcement; or correct boundary descriptions.

The MMAs indicated on Attachment 1, within the "Clarify Take" column, are proposed for the following amendments.

1. In an effort to streamline language and reduce redundancies within the regulatory text, the following MMAs are proposed to have their current regulations rewritten:

   MacKerricher SMCA, subsection 632(b)(22)(B), Russian Gulch SMCA, subsection 632(b)(24)(B), and VanDamme SMCA, subsection 632(b)(26)(B) are proposed to have the existing text "All other commercial and recreational take is allowed in accordance with current regulations" deleted. These MMAs are also proposed to have two subsections added identifying allowable recreational and commercial take as follows: "1. All recreational take is allowed in accordance with current regulations. 2. All commercial take is allowed in accordance with current regulations, except the commercial take of bull kelp (*Nereocystis luetkeana*) and giant kelp (*Macrocystis pyrifera*) is prohibited".

   Arrow Point to Lion Head Point (Catalina Island) SMCA, 632(b)(123)(B) is proposed to have the existing text "Take of other living marine resources is allowed" deleted. This MMA is also proposed to have two subsections added to the regulations identifying allowable recreational and commercial

take as follows: "1. All recreational take is allowed in accordance with current regulations, except the recreational take of invertebrates is prohibited. 2. All commercial take is allowed in accordance with current regulations."

Necessity and Rationale: The regulatory text for these four MMAs, regarding allowable activities within their respective areas, was written with a different approach than the other 132 MMAs in subsection 632(b). Specifically, these areas indicate the prohibited activities rather than the allowable activities. Therefore, the Department is proposing to rewrite the language for these MMAs to increase consistency, while retaining the original allowable activities for these respective areas.

2. Excluding the four aforementioned MMAs. The Department is proposing to add the text "is allowed" to the regulations of the remaining 41 MMAs identified on Attachment 1, within the "Clarify Take" column.

   Necessity and Rationale: When rewriting the regulatory text as outlined in the previous "Allowable Activities" category, the 41 abovementioned MMAs allowable activities would lose their original intent if the text "is allowed" is not added to the same subsection. Therefore, in order to maintain the original regulatory intent, it is necessary to add "is allowed" to the allowable activities text.

3. The Department is proposing to clarify text for Point Lobos SMCA, subsection 632(b)(82), and Big Creek SMCA, subsection 632(b)(86), to clarify that albacore may be taken both recreationally and commercially.

   Necessity and Rationale: The regulatory text is unclear whether albacore may be taken commercially, recreationally or both commercially and recreationally in these MMAs. Therefore, to maintain the original regulatory intent, the regulations have been simplified, and now stipulate which species are permitted for either recreational or commercial harvest.

The MMAs indicated on Attachment 1, within the "Aquaculture" column, are proposed for the following amendment.

1. The Department is proposing to remove the allowance for aquaculture activities within Drakes Estero SMCA, subsection 632(b)(47)(B). To do so, the existing subsection 632(b)(47)(B)2. with the text "2. Aquaculture of shellfish, pursuant to a valid State water bottom lease and stocking permit." would be deleted. The text "the recreational take of clams" would then be integrated into subsection 632(b)(47)(B), dissolving subsection 632(b)(47)(B)1. along with the remaining text. Finally, the text "is allowed" would be added to finish the newly structured regulation.

   Necessity and Rationale: In 1972, the Johnson Oyster Company (JOC) sold its property to the U.S. Government subject to a 40 year reservation of use and occupancy. In 1976, Congress designated Drakes Estero as potential

wilderness under the 1976 Point Reyes Wilderness Act (Public Law 94-544). In 2005, the JOC sold the aquaculture operation to the Drakes Bay Oyster Company (DBOC). On January 1, 2015 DBOC closed its business permanently, and the National Park Service proceeded with the conversion to wilderness area. Since commercial activities are prohibited in the wilderness area, the reference to aquaculture operations is outdated and needs to be deleted.

2. The Department is proposing to make the aquaculture activities language for Morro Bay SMRMA, subsection 632(b)(91)(C)2., dependent upon lease conditions rather than a set list of species by deleting the text "of oysters" from subsection 632(b)(91)(C)2.

   Necessity and Rationale: Currently, there are two companies in Morro Bay operating under three state water bottom leases which were in place at the time of MMA designation. The SMRMA regulations were designed to accommodate these pre-existing lease agreements, but only specified the aquaculture of Pacific oyster, the only actively-grown species at the time, as permitted in the SMRMA. However, these lease agreements are approved for the production of Pacific oysters, quahog and Manila clams, mussels, ghost shrimp, and innkeeper worms. To legally allow the lease to continue as intended, subsection 632(b)(91)(C)2. needs be amended to include the aquaculture of the additional species allowed identified in the current leases. Therefore, the Department is proposing to generalize the language for aquaculture to be dependent upon the lease conditions, rather than a set list of species.

The MMAs indicated on Attachment 1, within the "Troll Gear" column, are proposed for the following amendment.

1. The Department is proposing to delete the outdated troll gear reference, subsection 182.1(l) from the existing regulations for Bodega Head SMCA, subsection 632(b)(40)(B).

   Necessity and Rationale: The current regulation referenced in the regulatory text, subsection 182.1(l), was repealed as of April 30, 1989. An updated reference for commercial troll fishing gear for pelagic finfish has not been drafted. Therefore, the Department is proposing to delete the obsolete reference.

2. Excluding the previously mentioned Bodega Head SMCA, the Department is proposing to update the regulation reference pertaining to the commercial take of salmon by troll fishing gear for the remaining nine MMAs indicated on Attachment 1, within the "Troll Gear" column. This update will occur by replacing the outdated regulation reference, subsection 182.1(l), with the correct regulation reference, subsection 182(c)(4).

   Necessity and Rationale: The current regulatory text pertaining to the commercial take of salmon with troll fishing gear was repealed as of

April 30, 1989. This obsolete reference, subsection 182.1(l), needs to be replaced with the current salmon troll gear reference, subsection 182(c)(4), to maintain consistency and enforceability of the regulations.

The one MMA indicated on Attachment 1, within the "Designation" column, is proposed for the following amendment.

The Department is proposing to remove the commercial harvest of kelp as an allowable activity from Año Nuevo SMCA, subsection 632(b)(67). The Department is also proposing to change the designation of the Año Nuevo SMCA to a SMR.

Necessity and Rationale: During the central coast planning process, the regional stakeholders intended to establish a SMR around Año Nuevo. However, before the MMAs were implemented, it was learned that a kelp bed was being leased within the boundaries of the proposed Año Nuevo SMR permitting commercial take of giant kelp (*Macrocystis pyrifera*) by hand harvest. During MMA adoption, the Commission voted to change Año Nuevo from the proposed SMR to a SMCA to allow for the commercial take of kelp by hand harvest. However, the commercial harvest was only for the existing leaseholder in the area until the lease expired. With the expiration of the commercial kelp lease in 2010, the Department is proposing to change the MMA designation from an SMCA to the originally planned SMR.

The MMAs indicated on Attachment 1, within the "Name Change" column, are proposed for the following amendment.

In order to simplify the names of the 21 MMAs indicated on Attachment 1 within the "Name Change" column, the Department is proposing to strike the parenthesized text within the MMA's name.

Necessity and Rationale: The naming format for 21 MMAs includes the geographic location of the MMA within parentheses. The geographic location does not make the MMA name any more or less unique, and is not consistent with the naming format for the rest of the statewide network. To make the regulations consistent, and simplify the names of the 22 MMAs, the Department is proposing to strike the geographic location from each MMA name.

The MMAs and special closures indicated on Attachment 2, within the "1/100th to 1/1000th" column, are proposed for the following amendment.

In an effort to improve consistency and accuracy, the 76 MMAs and 8 special closures with coordinates currently ending at 1/100th of a minute are proposed to be refined by adding a third decimal place to the current coordinates so they then end at 1/1000th of a minute.

Necessity and Rationale: During the MLPA planning process MMA boundaries were selected remotely using satellite imagery in a Geographical Information System and/or similar mapping programs. The MMAs and special closures

identified on Attachment 2 within the "1/100th to 1/1000th" column have coordinates which end at two decimal places (1/100th of a minute), equating to an accuracy of plus/minus 60 feet for Global Positioning System (GPS) users in the field. By amending the current boundary coordinates to end at three decimal places (1/1000th of a minute), boundary accuracy increases to plus/minus 6 feet for GPS users in the field; thereby improving the clarity, compliance and enforceability of regulations.

The MMAs and special closures indicated on Attachment 2, within the "Point of Reference" column, are proposed for the following amendment.

In an effort to improve accuracy and enforceability, 61 MMAs and 3 special closures within subsection 632(b) are proposed to have one or more of the coordinates moved towards an intended point of reference established during the planning process. The proposed movements are depicted in Attachment 3.

Necessity and Rationale: Department staff visited all MMAs and special closures in the statewide network to confirm the location of boundary coordinates. Going out to each location with a handheld GPS, Department staff assessed where a boundary coordinate landed, and compared that coordinate to where the boundary was proposed to land during the planning process. Upon groundtruthing each MMA, it was found that not all coordinates were set as accurately as possible to their intended point of reference. These proposed amendments will move the boundary coordinates of the 61 MMAs and 3 special closures closer to their intended point of reference, such as a headland, bridge, or mean high tide line, and make it easier for a user to identify whether they are within an MMA.

Most MMAs proposed to undergo this boundary refinement will have a net change in area of 0.00 square miles (Attachment 2). Any point of reference boundary amendment that yields a percent area change greater than plus/minus 0.00 percent to 0.01 percent, or a change in area larger than 0.00 square miles is explained below.

1. Big River Estuary SMCA, subsection 632(b)(25), is proposed to have a minor shape change at its southwest coordinate (Attachment 3). The coordinate currently lands on the river bank next to the bridge. However, in order to capture fluctuations in the river, this coordinate has been moved upslope, onto more stable ground, and ensures that the MMA captures the mean high tide line during flood events. This proposed change would increase the MMA by 0.07 percent, but yield a change in area of 0.00 square miles.

2. Navarro River Estuary SMCA, subsection 632(b)(27), is proposed to have a small shape change at its southwestern boundary to anchor the coordinates on more prominent features and encompass the mouth of the estuary (Attachment 3). This proposed change would decrease the MMA by 0.10 percent, but yield a change in area of 0.00 square miles. Of the MMA's two

southern coordinates, the more northwestern coordinate is proposed to move to a prominent rock nearer the ocean, while the southeastern coordinate is proposed to move up shore near the parking lot as an easier reference location for constituents. Changes to the two northern coordinates yielding an area change less than 0.01 percent are also proposed for this SMCA.

3. Estero de Limantour SMR, subsection 632(b)(46), will increase in size by 0.03percent, but have a 0.00 square mile change in area, if the proposed amendments are adopted. This increase is caused by the relocation of current boundaries, which land subtidally near shore (Attachment 3). These coordinates are proposed to be relocated closer to the mean high tide line to capture the extent of the MMA originally proposed by stakeholders during the planning process.

4. Natural Bridges SMR, subsection 632(b)(69), will decrease in size by 0.07percent, with a 0.00 change in square miles, if the proposed amendments are adopted. This decrease occurs due to the movement of the eastern boundary of Natural Bridges SMR to a more distinguishable shore location (Attachment 3). The current boundary lands due east of a prominent sand stone bluff. The Department is proposing to move the current coordinate onto the sand stone bluff to provide users with an identifiable reference point, so they know if they are within or outside of the SMR. This proposed move will shift the boundary slightly west and slightly decrease the overall SMR size. A change to the western coordinate yielding an area change less than 0.01 percent is also proposed for this SMR.

5. Edward F. Ricketts SMCA, subsection 632(b)(75), will decrease in size by 0.74percent, with a 0.00 square mile change in area, if the proposed amendments are adopted. The eastern most coordinate currently lands beyond the coast guard jetty. However, when this SMCA was designed this eastern coordinate was supposed to land at the end of the coast guard jetty. Therefore, the Department is proposing to relocate said coordinate from beyond the jetty, and anchor it to the end of the jetty as originally designed (Attachment 3). A change to the western most coordinate yielding an area change less than 0.01 percent is also proposed for this SMCA.

6. Carmel Bay SMCA, subsection 632(b)(80), is proposed to have its northern coordinate anchored on the mainland, as this coordinate currently lands in the subtidal zone (Attachment 3). In order to meet the original design criteria provided by the regional stakeholders during the planning process, this coordinate needs to be moved northwest, and anchored on shore to capture the mean high tide line. The proposed amendment to move this coordinate out of the subtidal zone, would anchor the coordinate just north of noticeable wash rocks, and would increase the size of Carmel Bay SMCA by 0.54 percent, or add 0.01 square miles to the SMCA due to the angle of the boundary.

7. Bolsa Bay SMCA, subsection 632(b)(121), is proposed to have all four of its current coordinates relocated in order to capture the mean high tide within the bay (Attachment 3). This proposed change would increase the size of the MMA by 0.20 percent, with a change in area of 0.00 square miles. The two northern most boundaries of Bolsa Bay SMCA are anchored under an overpass for a road way. These two boundaries are proposed to move up on the bank of the bay beneath this overpass in order to capture the actual size of the MMA beneath this roadway. The two southern most boundaries are proposed to undergo similar changes to encompass the true extent of the bay, but the new coordinates will be anchored beneath the overlying pedestrian bridge which is the current point of reference.

8. If the proposed boundary refinement is adopted for Cat Harbor ~~(Catalina Island)~~ SMCA, subsection 632(b)(131), the MMA will increase by 0.86 percent, but yield a 0.00 change in square miles. When this boundary was reassessed, Department staff found that the northeastern coordinate landed more inland than the stakeholders intended when designing the MMA (Attachment 3). In order to set this boundary as accurately as possible, the Department is proposing to relocate the coordinate to the southern end of a bluff, and closer to the water to both encompass the mean high tide line, and provide a discernable point of reference.

9. Four of the current coordinates defining Upper Newport Bay SMCA, subsection 632(b)(132), are proposed to be amended to improve the accuracy of the SMCA's boundaries (Attachment 3). The two southern most coordinates were proposed to land just before Pacific Coast Highway. However, when groundtruthed the current coordinates landed north of the intended location. The Department is proposing to move these two coordinates closer to Pacific Coast Highway, on the bank of the bay, in order to maintain the original shape designed by the stakeholders. Similarly, the northeast boundary was designed to land just before Jamboree Road, but the current boundary lands due east, beneath the road. Therefore the Department is proposing to move both of the coordinates which define the northeastern boundary slightly west, so the boundary lines up along the bay before meeting the roadway. These proposed changes would increase the size of the MMA by 0.04 percent, with a 0.00 square mile change in area.

The MMAs indicated on Attachment 2, within the "Mean High Tide Line" column, are proposed for the following amendment.

1. The existing regulations of subsections 632(b)(79)(A), 632(b)(84)(A), and 632(b)(88)(A) define the boundaries for Carmel Pinnacles SMR, Point Sur SMCA, and Piedras Blancas SMCA, respectively. The proposed regulation change will delete unnecessary text pertaining to the "mean high tide line" currently used to describe the boundaries for these three MMAs.

   Necessity and Rationale: Each of these three MMAs occurs offshore, and their boundaries are not influenced by the tide. However, the current

regulatory text defining the boundaries for these MMAs states: “This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed”. Given the offshore location of Carmel Pinnacles SMR, Point Sur SMCA, and Piedras Blancas SMCA, the Department is proposing to delete the text “the mean high tide line and” due to its irrelevance.

2. The existing regulations of subsection 632(b)(100)(A) define the boundaries for Goleta Slough SMCA. The existing Goleta Slough State Marine Conservation Area boundary is proposed to be removed and replaced by the mean high tide line.

   Necessity and Rationale: This is the only remaining MMA slough in the statewide network to not have its tidally influenced boundary defined by the mean high tide line. Due to the transient nature of water and tidal cycles, it is more effective to have slough boundaries set by the mean high tide line than a distinct set of coordinates. Additionally, this particular slough is an embayment with only one entrance and exit point for water transfer. By using the mean high tide as a boundary any future fluctuations in the Slough’s water level will be protected, while set coordinates cannot successfully encompass the Slough’s waters consistently. For these reasons the Department is proposing to replace the sole coordinate boundary of this MMA with the mean high tide line.

The MMAs indicated on Attachment 2, within the “Shift” column, are proposed for the following amendment.

The existing regulations of subsections 632(b)(134)(A) and 632(b)(135)(b) define the boundaries for the Laguna Beach SMR and Laguna Beach no-take SMCA, respectively. The proposed regulations adjust the boundary between Laguna Beach SMR and Laguna Beach no-take SMCA south to the city beach/county beach line near Aliso Creek to address municipality concerns. The proposed movements are depicted in Attachment 3.

Necessity and Rationale: During the south coast planning process, it became apparent that the proposed Laguna Beach SMR had an outfall pipe running through the MMA which would require maintenance. A regulatory package was created to address this issue (and others) in 2010. The Department presented the Commission with five distinct amendment options to account for the outfall pipe. Four of the amendment options were intended to have the southern boundary of the Laguna Beach SMR at the city beach/county beach line near Aliso Creek just north of an outfall pipe. However, when presented to the Commission, the agreed upon southern Laguna Beach SMR boundary was erroneously only addressed in three of the five proposal options. When adopted, the option selected by the Commission did not have the southern Laguna Beach SMR boundary at the city beach/county beach line. Instead the boundary coordinates were placed north of the city beach/county beach boundary. This placement split a prominent location, Treasure Island, in half

creating city and county jurisdictional concerns for Laguna Beach. Pursuant to requests from representatives of local agencies, the Department is now proposing to shift the shared boundary between the Laguna Beach SMR and the Laguna Beach no-take SMCA south to align with the city beach/county beach line.

This proposed amendment would move 0.38 square miles from the Laguna Beach no-take SMCA into the Laguna Beach SMR, however the overall size of the protected areas together would remain the same (see Attachment 2). As indicated in Attachment 2, this shift of area would result in a change in the individual size of each area relative to their original sizes, with a 6.08 percent increase in size of the Laguna Beach SMR, and an 11.07 percent decrease in size of the Laguna Beach no-take SMCA. These size changes will not impact fishermen, enforcement, or science guidelines as the shift is between two no-take MMAs.

The MMAs indicated on Attachment 2, within the "NOAA State Line" column, are proposed for the following amendment.

To improve offshore boundary accuracy, 25 MMA boundaries within subsection 632(b) are proposed to have one or more of their coordinates moved to the National Oceanic and Atmospheric Administration's (NOAA) revised 3 nautical mile (nm) state line to improve clarity, compliance, and enforceability of regulations. The proposed movements are depicted in Attachment 3.

Necessity and Rationale: When Department staff reassessed all MMA coordinates for accuracy, a subset of MMAs which reach offshore revealed discrepancies between reported MMA coordinates and NOAA's 3 nm state line. For many of the central coast MMAs this misplacement of the coordinate to NOAA's 3 nm state line occurred during the central coast planning process. When the central coast MMAs were designed, regional stakeholders used the then-current 3 nm state line generated by NOAA to establish MMAs' western most boundaries. However, just as the central coast MMAs were implemented, NOAA released updated navigational charts, which relocated the state's 3 nm line in some areas. Due to the timing overlap, the western boundaries of the central coast MMAs were anchored to the previous reporting of the state's 3 nm line. To ensure accuracy, the Department is now proposing to anchor these coordinates to NOAA's current 3 nm state line as originally intended during the central coast planning process. If implemented, the area for a given MMA will not change because the Department has always used NOAA's 3 nm state line as the western boundary. While it may appear that a large area is now made unavailable for fishing within the central coast MMAs, the Department has always used the 3 nm state line as the western boundary when describing these locations, and is proposing to anchor these coordinates to the new 3 nm state line location to maintain accuracy and consistency.

The remaining statewide MMA adjustments to the 3nm state line will undergo minimal movement in order to anchor the coordinates more accurately on

NOAA's 3 nm state line thereby increasing accuracy and enforceability of these MMAs throughout the state.

With the exception of Judith Rock ~~(San Miguel Island)~~ SMR, subsection 632(b)(104), all MMAs within the "NOAA State Line" column of Attachment 2 have a net area change of 0.00 square miles which means there is no significant change in the size of the given MMA. However, if the proposed amendments are adopted, Judith Rock SMR will decrease in size by , 0.39 percent of its original size, or 0.02 square miles, because the current extent of the MMA lies beyond NOAAs 3 nm state line (Attachment 3). If the new coordinates are adopted as proposed, the coordinates will be moved onto the 3 nm state line, closer to San Miguel Island, which will cause a slight decrease in the reported area of the MMA. However, the MMA was designed to have the 3 nm state line be the furthest offshore boundary so this size decrease will not impact the condition of the SMR in any way.

The MMAs indicated on Attachment 2, within the "Added Position" column, are proposed for the following amendments.

1. The Department is proposing to add two additional coordinates to the existing regulations of Stewarts Point SMR, subsection 632(b)(34)(A) to improve clarity, compliance, and enforceability of regulations. One added coordinate will be placed at the same coordinate location of Stewarts Point SMCA's southern mainland location, and the other additional proposed coordinate will be placed at the same location as Stewart's Point SMCA's southern offshore coordinate. These added coordinates will make Stewarts Point SMR independent of Stewarts Point SMCA, as the boundaries of these two MMAs currently overlap. The new proposed coordinates are depicted in Attachment 3, as positions 34_1 and 34_2.

   In addition to these proposed additional coordinates, to make Stewarts Point SMCA and Stewarts Point SMR independent of one another, the text: "except that Stewarts Point State Marine Conservation Area as described in subsection 632(b)(33)(A) is excluded" will be deleted from the current regulations of subsection 632(b)(34)(A).

   Necessity and Rationale: Currently, the boundaries of Stewarts Point SMCA and Stewarts Point SMR overlap one another. The Department is proposing to make these two MMAs independent of one another, mirroring the approach used for Big Creek SMR, subsection 632(b)(85)(A) and Big Creek SMCA, subsection 632(b)(86)(A). Separating the Stewarts Point SMR and Stewarts Point SMCA will simplify the regulations, and improve the overall consistency of designating boundaries throughout the statewide network. To make these two MMAs independent of one another, Stewarts Point SMR will gain two additional coordinate positions, both of which will be identical to Stewarts Point SMCA's two southern most coordinates. Thus, allowing these two MMAs to now share a boundary rather than overlapping one another.

2. The existing regulations of subsection 632(b)(66)(A) define the boundaries for Pillar Point SMCA. The Department is proposing to increase the current number of coordinates for Pillar Point SMCA by adding one position to the MMA's existing boundary regulations. The added coordinate will be placed southeast of the southernmost mainland coordinate to protect a rocky cove. The new proposed coordinate is depicted in Attachment 3, as position 66_6.5.

   Necessity and Rationale: When Department staff reassessed all MMA coordinates for accuracy, it was found that the original coordinate, proposed to land on this rocky headland, landed due west in a subtidal zone. In order to include the mean high tide line and the small alcove within this area of the MMA, an additional point should be added. This will allow the alcove to be within the protection of the MMA, while maintaining the current offshore boundary and line of sight through this rocky headland. This proposed additional position maintains the size and shape of the MMA originally designed by the regional stakeholders during the planning process.

3. The existing regulations of subsection 632(b)(67)(A) and subsection 632(b)(68)(A) define the boundaries for Año Nuevo ~~SMCA~~ SMR and Greyhound Rock SMCA, respectively. The Department is proposing to increase the current number of coordinates for Año Nuevo ~~SMCA~~ SMR and Greyhound Rock SMCA by adding one position to each MMA's boundary regulations. The added coordinate will be anchored on Greyhound Rock which lies on the shared boundary of the two MMAs. The new proposed coordinate is depicted in Attachment 3, as position 67_4.5 and position 68_1.5.

   Necessity and Rationale: When Department staff reassessed all MMA coordinates for accuracy, it was found that the original coordinate, proposed to land on Greyhound Rock, landed due west of the intended location. To maintain the shape originally proposed by the regional stakeholders during the central coast planning process, the current coordinate is being relocated from the water to the mainland shore, and an additional coordinate will be added to Greyhound Rock. Both MMAs which share this boundary will not change in size or shape, but will instead have more accurate and enforceable boundaries to aid users.

4. The existing regulations of subsection 632(b)(77)(A) and subsection 632(b)(78)(A) define the boundaries for Pacific Grove Marine Gardens SMCA and Asilomar SMR, respectively. The Department is proposing to increase the current number of coordinates for Asilomar SMR and Pacific Grove Marine Gardens SMCA by adding one position to each MMA's boundary regulations. The added coordinate will be placed on the rocky point, which currently resides in Asilomar SMR, causing a shift in the shared boundary of Pacific Grove Marine Gardens SMCA and Asilomar SMR. The new proposed coordinate is depicted in Attachment 3, as position 77_4.5 and position 78_1.5.

Necessity and Rationale: When Department staff reassessed all MMA coordinates for accuracy, this location stood out as an area that could be refined to aid users in determining their location within a given MMA. The proposed location for this added position is on a very prominent rocky outcropping which would be easy to spot from shore or when out in the water. Using this outcropping as a point of reference, individuals could quickly identify if they were in Asilomar SMR (to the south or west of the point), or if they were within Pacific Grove Marine Gardens SMCA (to the north or east of the point). By adding this position the shared boundary would change in shape of these MMAs. The size of Pacific Grove Marine Gardens SMCA would increase by 0.03 square miles (3.00 percent of its original size), while Asilomar SMR would decrease by 0.03 square miles (1.87 percent of its original size), as indicated on Attachment 2.

5. The existing regulations of subsection 632(b)(133)(A) and subsection 632(b)(134)(A) define the boundaries for Crystal Cove SMCA and Laguna Beach SMR, respectively. The Department is proposing to add an additional boundary coordinate at the shared boundary between Crystal Cove SMCA and Laguna Beach SMR. The added coordinate will be located on a headland, northeast of the nearest existing coordinate and is depicted in Attachment 3, as position133_4.5 and position 134_0.5.

   Necessity and Rationale: When Department staff reassessed all MMA coordinates for accuracy, it was found that the original coordinate, proposed to land on the rocky mainland point, landed due west of the intended location in the intertidal zone, rather than on the mainland. The Department's intent is to minimize boundary changes made to the MMAs as much as possible. Therefore, this additional boundary position allows the offshore longitude to remain on 2/10ths of a minute (a simple coordinate for fishermen use), while maintaining the line of sight through the prominent rocky outcropping, and anchors the boundary to shore. This proposed additional position yields a net area change of 0.00 square miles (0.0 percent) (Attachment 2) for both MMAs while providing more accurate and enforceable boundaries to aid users.

The proposed regulations correct a printing error in subsection 632(b)(120)(B)1., Abalone Cove SMCA.

Necessity and Rationale: The regulatory text as approved by the Office of Administrative Law (OAL) in rulemaking file 2014-0703-03s is not accurately reflected in the printed version of Title 14, causing ambiguity as to what recreational fishing activities are allowed in this SMCA. The proposed change reflects the language adopted by the Commission and approved by OAL.

Various nonsubstantive changes are also proposed for clarity and consistency.

<u>Goals and Benefits of the Proposed Regulations</u>

The proposed regulations will provide clarity and consistency within the regulations and will provide consistency with current fishing practices.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 205(c), 220, 240, 1590, 1591, 2860, 2861, and 6750, Fish and Game Code; and Sections 36725(a) and 36725(e), Public Resources Code.

Reference: Sections 200, 202, 205(c), 220, 240, 2861, 5521, 6653, 8420(e), and 8500, Fish and Game Code; and Sections 36700(e), 36710(e), 36725(a) and 36725(e), Public Resources Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None

(d) Identification of Reports or Documents Supporting Regulation Change:

Attachment 1: Table 1- Summary of proposed language amendments to Title 14, Section 632, California Code of Regulations

Attachment 2: Table 2- Summary of proposed boundary refinement amendments to Tile 14, Section 632, California Code of Regulations

Attachment 3: California State Marine Protected Areas Proposed Boundary Refinements

Attachment 4: Comparison of NOAA Nautical Charts

Attachment 5: North Coast Planning Process Intent

Attachment 6: North Central Coast Planning Process Intent

Attachment 7: Central Coast Planning Process Intent

Attachment 8: South Coast Planning Process Intent

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

No public meetings were held prior to the notice publication. The 45-day comment period provides adequate time for public review of the proposed amendments.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified by or brought to the attention of Commission staff that would have the same desired regulatory effect.

(b) No Change Alternative:

The no-change alternative would leave existing MMA regulations with decreased boundary accuracy and inconsistencies, and would not provide for better public understanding and enforcement of MMA regulations.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states because the proposed amendments make clarification and consistency changes to the current regulations; make minor boundary adjustments; re-designate and rename existing MMAs; and add specified methods of take consistent with existing commercial fishing regulations.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State’s Environment:

The Commission does not anticipate any impacts on creation or elimination of jobs, the creation of new businesses, the elimination of existing businesses or

the expansion of businesses in California because these changes will neither increase nor decrease recreational or commercial fishing opportunities within MMAs.

The Commission does not anticipate any benefits to the health and welfare of California residents or to worker safety.

The proposed amendments may benefit the environment by clarifying the administration of the protection of habitat and biodiversity in MMAs.

(c) Cost Impacts on a Representative Private Person or Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VII. Economic Impact Assessment

(a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State:

The proposed amendments will not create or eliminate jobs within the state because the proposed amendments make clarification and consistency changes to the current regulations; make minor boundary adjustments; re-designate and rename existing MMAs; and add specified methods of take consistent with commercial fishing practices. These changes will neither

increase nor decrease recreational or commercial fishing opportunities within MMAs.

(b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State:

The proposed amendments will not create any new businesses or eliminate existing businesses because the proposed regulations will neither increase nor decrease recreational or commercial fishing opportunities within MMAs.

(c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State:

The proposed amendments are not expected to result in the expansion of businesses currently doing business within the state because the proposed regulations will neither increase nor decrease recreational or commercial fishing opportunities within MMAs.

(d) Benefits of the Regulation to the Health and Welfare of California Residents:

The proposed amendments will not result in benefits to the health and welfare of State residents.

(e) Benefits of the Regulation to Worker Safety:

The proposed amendments do not have foreseeable benefits to worker safety because the regulations do not affect working conditions.

(f) Benefits of the Regulation to the State's Environment:

The proposed amendments may benefit the state’s environment by clarifying and improving the understanding and enforcement of recreational and commercial fishing regulations in California MMAs.

Informative Digest/Policy Statement Overview

The Marine Life Protection Act (Fish and Game Code Sections 2850-2863) established a programmatic framework for designating Marine Protected Areas (MPAs) in the form of a statewide network. The Marine Managed Areas Improvement Act (Public Resources Code [PRC] Sections 36600-36900) standardized the designation of marine managed areas (MMAs), which include MPAs. The overriding goal of these acts is to protect, conserve, and help sustain California's valuable marine resources. Unlike previous laws, which focused on individual species, these acts focus on maintaining the health of marine ecosystems and natural biodiversity in order to sustain resources.

Existing regulations in Section 632, Title 14, California Code of Regulations (CCR), provide general provisions, definitions, and site-specific area classifications, boundary descriptions, commercial and recreational take restrictions, and other restricted/allowed uses for MPAs, MMAs and special closures.

The proposed regulatory changes will clarify the allowed and prohibited uses for all MMA designations; amend aquaculture activities for two MMAs; and amend troll gear references for ten MMAs. In addition, the proposed regulations change the designation of one MMA; change the names of 21 MMAs; and refine boundary coordinates for 106 MMAs.

The following is a summary of the proposed changes to Section 632, Title 14, CCR.

<u>Amendment to Subsection 632(a):</u>

1. The proposed regulations add a citation to the statute (Public Resources Code Section 36710) which established the MMA definitions in subsection 632(a)(1).

<u>Amendments to Subsection 632(b):</u>

1. The proposed regulations clarify regulatory language, correct existing errors, and update allowable activities within MMAs.

    a. The proposed regulation replaces the existing text with new text, as follows:

<table>
<tr><th>Area</th><th>Existing text</th><th>New text</th></tr>
<tr><td>State Marine Reserve (SMR)</td><td>“Take of all living marine resources is prohibited”</td><td>“Area restrictions defined in subsection 632(a)(1)(A) apply”</td></tr>
<tr><td>State Marine Park</td><td rowspan="2">“Take of all living marine resources is prohibited except…”</td><td>“Area restrictions defined in subsection 632(a)(1)(B) apply with the following specified exceptions…”</td></tr>
<tr><td>State Marine Conservation Area (SMCA)</td><td>“Area restrictions defined in subsection 632(a)(1)(C) apply with the following specified exceptions…”</td></tr>
</table>

State Marine Recreational Management Area (SMRMA)	"Take of all living marine resources is prohibited" OR "Take of all living marine resources is prohibited except…"	"Area Restrictions defined in subsection 632(a)(1)(D) apply" OR "Area restrictions defined in subsection 632(a)(1)(D) apply with the following specified exceptions…"

b. The proposed regulations restructure the regulatory text for MacKerricher SMCA, subsection 632(b)(22)(B), Russian Gulch SMCA, subsection 632(b)(24)(B), Van Damme SMCA, subsection 632(b)(26)(B), and Arrow Point to Lion Head Point (Catalina Island) SMCA, subsection 632(b)(123)(B), in order for their activities language to resemble the remaining MMA descriptions, listing allowable activities instead of prohibited activities.

c. The proposed regulations add the text "is allowed" to the current regulatory text for 41 MMAs.

d. The proposed regulations delete the allowance for aquaculture in Drakes Estero SMCA, subsection 632(b)(47)(B).

e. The proposed regulations amend the current species list for aquaculture within Morro Bay SMRMA, subsection 632(b)(91)(C), to be dependent upon lease conditions rather than a designated list of species.

f. The proposed regulations replace obsolete salmon troll gear reference with the current salmon troll gear reference for nine MMAs.

g. The proposed regulations delete the obsolete pelagic finfish troll gear reference from Bodega Head SMCA, subsection 632(b)(40)(B).

h. The proposed regulations remove commercial harvest of kelp as an allowed activity in Año Nuevo SMCA, subsection 632(b)(67), and redesignate this SMCA as a SMR.

i. The proposed regulations simplify the names of 21 MMAs by striking the parenthesized text which identifies the geographic location of a given MMA.

j. The proposed regulations amend text for Point Lobos SMCA, subsection 632(b)(82), and Big Creek SMCA, subsection 632(b)(86), to clarify that albacore may be taken both recreationally and commercially.

2. The proposed regulations improve boundary accuracy and ease of enforcement for numerous MMAs.

a. The proposed regulations add a third decimal place to the current coordinates for 76 MMAs and eight special closures.

b. The proposed regulations move one or more of the existing coordinates toward an intended point of reference, such as a headland, bridge or mean high tide line, for 61 MMAs and three special closures.

c. The proposed regulations delete text pertaining to the mean high tide line for Carmel Pinnacles SMR, subsection 632(b)(79)(A), Point Sur SMCA, subsection 632(b)(84)(A), and Piedras Blancas, SMCA 632(b)(88)(A).

d. The proposed regulations replace the sole coordinate boundary at Goleta Slough SMCA, subsection 632(b)(100)(A), with the mean high tide line.

e. The proposed regulations move the shared boundary between the Laguna Beach SMR, subsection 632(b)(134)(A), and Laguna Beach no-take SMCA, subsection 632(b)(135)(A), south to the city beach/county beach line near Aliso Creek.

f. The proposed regulations anchor coordinates for 25 MMAs to the current National Oceanic and Atmospheric Administration's three nautical mile state line.

g. The proposed regulations add one or two positions to the list of coordinates for eight MMAs.

3. The proposed regulations correct a printing error in subsection 632(b)(120)(B)1., Abalone Cove SMCA, and make other nonsubstantive changes for clarity and consistency.

The proposed amendments to section 632 will clarify the restrictions and allowable activities in these MMA's; provide greater ease of public understanding and enforceability; and correct boundary descriptions.

The proposed regulations are consistent with regulations concerning sport and commercial fishing and kelp harvest found in Title 14, CCR. The State Water Resources Control Board may designate State Water Quality Protection Areas and the State Park and Recreation Commission may designate State Marine Reserves, State Marine Conservation Areas, State Marine Recreational Management Areas, State Marine Parks and State Marine Cultural Preservation Areas; however, only the Fish and Game Commission has authority to regulate commercial and recreational fishing and any other taking of marine species in Marine Managed Areas. Department staff has searched the California Code of Regulations and has found no other regulations pertaining to authorized activities in marine protected areas and therefore has determined that the proposed amendments are neither inconsistent, nor incompatible, with existing state regulations.

Regulatory Language

Section 632, Title 14, CCR, is amended to read:

632. Marine Protected Areas (MPAs), Marine Managed Areas (MMAs), and Special Closures.

(a) General Rules and Regulations:

The areas specified in this section have been declared by the commission to be marine protected areas, marine managed areas, or special closures. Public use of marine protected areas, marine managed areas, or special closures shall be compatible with the primary purposes of such areas. MPAs, MMAs, and special closures are subject to the following general rules and regulations in addition to existing Fish and Game Code statutes and regulations of the commission, except as otherwise provided for in subsection 632(b), areas and special regulations for use. Nothing in this section expressly or implicitly precludes, restricts or requires modification of current or future uses of the waters identified as marine protected areas, special closures, or the lands or waters adjacent to these designated areas by the Department of Defense, its allies or agents.

(1) Protection of ~~Resources.~~Resources in MPAs and MMAs, as defined in Public Resources Code Section 36710:

(A) State Marine Reserves: In a state marine reserve, it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource, except under a scientific collecting permit issued by the department pursuant to Section 650 or specific authorization from the commission for research, restoration, or monitoring purposes.

(B) State Marine Parks: In a state marine park, it is unlawful to injure, damage, take, or possess any living or nonliving marine resource for commercial purposes. Any human use that would compromise protection of the species of interest, natural community or habitat, or geological, cultural, or recreational features, may be restricted by the commission as specified in subsection 632(b), areas and special regulations for use. The department may issue scientific collecting permits pursuant to Section 650. The commission may authorize research, monitoring, and educational activities and certain recreational harvest in a manner consistent with protecting resource values.

(C) State Marine Conservation Areas: In a state marine conservation area, it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource for commercial or recreational purposes, or a combination of commercial and recreational purposes except as specified in subsection 632(b), areas and special regulations for use. The department may issue scientific collecting permits pursuant to Section 650. The commission may authorize research, education, and recreational activities, and certain commercial and recreational harvest of marine resources, provided that these uses do not compromise protection of the species of interest, natural community, habitat, or geological features.

(D) State Marine Recreational Management Areas: In a state marine recreational management area, it is unlawful to perform any activity that would compromise the recreational values for which the area may be designated. Recreational opportunities may be protected, enhanced, or restricted, while preserving basic resource values of the area. No other use is restricted unless specified in subsection 632(b), areas and special regulations for use.

[No changes to current regulatory text in subsections 632(a)(2) through (a)(12)]

(b) Areas and Special Regulations for Use. Pursuant to the commission's authority in Fish and Game Code Section 2860 to regulate commercial and recreational fishing and any other taking of marine species in MPAs, Fish and Game Code Sections 10500(f), 10500(g), 10502.5, 10502.6, 10502.7, 10502.8, 10655, 10655.5, 10656, 10657, 10657.5, 10658, 10660, 10661, 10664, 10666, 10667, 10711, 10801, 10900, 10901, 10902, 10903, 10904, 10905, 10906, 10907, 10908, 10909, 10910, 10911, 10912, 10913, and 10932 are superseded as they apply to designations in Subsection 632(b). All geographic coordinates listed use the North American Datum 1983 (NAD83) reference datum:

(1) Pyramid Point State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
42° 00.000' N. lat. 124° 12.735' W. long.;
42° 00.000' N. lat. 124° 19.814' W. long.; thence southward along the three nautical mile offshore boundary to
41° 57.500' N. lat. 124° 17.101' W. long.; and
41° 57.500' N. lat. 124° 12.423' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of surf smelt [Section 28.45] by dip net or Hawaiian type throw net [Section 28.80] is allowed.
2. The following federally recognized tribes (listed alphabetically) are exempt from the area and take regulations found in subsection 632(b)(1) of these regulations and shall comply with all other existing regulations and statutes:
Smith River Rancheria.

(2) Point St. George Reef Offshore State Marine Conservation Area.
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
41° 52.000' N. lat. 124° 23.189' W. long.;
41° 52.000' N. lat. 124° 25.805' W. long.; thence southward along the three nautical mile offshore boundary to
41° 49.000' N. lat. 124° 26.252' W. long.;
41° 49.000' N. lat. 124° 23.189' W. long.; and
41° 52.000' N. lat. 124° 23.189' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of salmon by trolling [subsection 27.80(a)(3)]; and Dungeness crab by trap is allowed.
2. The commercial take of salmon with troll fishing gear [subsection ~~182.1(*l*)~~;182(c)(4)] Dungeness crab by trap is allowed.
3. The following federally recognized tribes (listed alphabetically) are exempt from the area and take regulations found in subsection 632(b)(2) of these regulations and shall comply with all other existing regulations and statutes:
Elk Valley Rancheria, and
Smith River Rancheria.

[No changes to current regulatory text in subsections (b)(3) through (b)(5)]

(6) Reading Rock State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
41° 20.100' N. lat. 124° 04.911' W. long.;
41° 20.100' N. lat. 124° 10.000' W. long.;
41° 17.600' N. lat. 124° 10.000' W. long.; and
~~41° 17.600' N. lat. 124° 05.497' W. long.~~
41° 17.600' N. lat. 124° 05.399' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of salmon by trolling [subsection 27.80(a)(3)]; surf smelt [Section 28.45] by dip net or Hawaiian type throw net [Section 28.80]; and Dungeness crab by trap, hoop net or hand is allowed.
2. The commercial take of salmon with troll fishing gear [subsection ~~182.1(f)~~182(c)(4)]; surf smelt by dip net; and Dungeness crab by trap is allowed.
3. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(6) of these regulations and shall comply with all other existing regulations and statutes:
Yurok Tribe of the Yurok Reservation.

(7) Reading Rock State Marine Reserve.
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
41° 20.100' N. lat. 124° 10.000' W. long.;
41° 20.100' N. lat. 124° 14.655' W. long.; thence southward along the three nautical mile offshore boundary to
41° 17.600' N. lat. 124° 11.963' W. long.;
41° 17.600' N. lat. 124° 10.000' W. long.; and
41° 20.100' N. lat. 124° 10.000' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(8) Samoa State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
40° 55.000' N. lat. 124° 08.432' W. long.;
40° 55.000' N. lat. 124° 12.677' W. long.; thence southward along the three nautical mile offshore boundary to
40° 52.000' N. lat. 124° 14.225' W. long.; and
40° 52.000' N. lat. 124° 09.803' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of salmon by trolling [subsection 27.80(a)(3)]; surf smelt [Section 28.45] by dip net or Hawaiian type throw net [Section 28.80]; and Dungeness crab by trap, hoop net or hand is allowed.
2. The commercial take of salmon with troll fishing gear [subsection ~~182.1(f)~~182(c)(4)]; surf smelt by dip net; and Dungeness crab by trap is allowed.

3. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(8) of these regulations and shall comply with all other existing regulations and statutes:
Wiyot Tribe.

(9) South Humboldt Bay State Marine Recreational Management Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
40° 43.000' N. lat. 124° 15.527' W. long.;
40° 43.000' N. lat. 124° 15.000' W. long.;
40° 42.000' N. lat. 124° 15.000' W. long.; and
40° 42.000' N. lat. 124° 16.141' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(D) apply, with the following specified exceptions:
1. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(9) of these regulations and shall comply with all other existing regulations and statutes:
Wiyot Tribe.
(C) Waterfowl may be taken in accordance with the general waterfowl regulations (Sections 502, 550, 551, and 552).

[No changes to current regulatory text in subsection (b)(10)]

(11) South Cape Mendocino State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~40° 26.100' N. lat. 124° 24.353' W. long.;~~
40° 26.100' N. lat. 124° 24.340' W. long.;
40° 26.100' N. lat. 124° 31.958' W. long.; thence southward along the three nautical mile offshore boundary to
40° 24.900' N. lat. 124° 31.084' W. long.; and
~~40° 24.900' N. lat. 124° 23.813' W. long.~~
40° 24.900' N. lat. 124° 23.800' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

[No changes to current regulatory text in subsection (b)(12)]

(13) Mattole Canyon State Marine Reserve.
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
40° 20.000' N. lat. 124° 22.500' W. long.;
40° 20.000' N. lat. 124° 25.902' W. long.; thence southward along the three nautical mile offshore boundary to
40° 17.000' N. lat. 124° 25.869' W. long.;
40° 17.000' N. lat. 124° 22.500' W. long.; and
40° 20.000' N. lat. 124° 22.500' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(14) Sea Lion Gulch State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
40° 14.400' N. lat. 124° 19.983' W. long.;
40° 14.400' N. lat. 124° 25.943' W. long.; thence southward along the three nautical mile offshore boundary to
40° 12.800' N. lat. 124° 24.809' W. long.; and
40° 12.800' N. lat. 124° 18.155' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(15) Big Flat State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
40° 09.400' N. lat. 124° 12.671' W. long.;
40° 09.400' N. lat. 124° 19.366' W. long.; thence southward along the three nautical mile offshore boundary to
40° 07.500' N. lat. 124° 16.203' W. long.; and
40° 07.500' N. lat. 124° 10.313' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of salmon by trolling [subsection 27.80(a)(3)]; and Dungeness crab by trap, hoop net or hand is allowed.
2. The commercial take of salmon with troll fishing gear [subsection ~~182.1(*l*)';~~182(c)(4)] Dungeness crab by trap is allowed.
3. The following federally recognized tribes (listed alphabetically) are exempt from the area and take regulations found in subsection 632(b)(15) of these regulations and shall comply with all other existing regulations and statutes:
Bear River Band of the Rohnerville Rancheria,
Big Valley Band of Pomo Indians of the Big Valley Rancheria,
Cahto Indian Tribe of the Laytonville Rancheria,
Coyote Valley Band of Pomo Indians,
Elem Indian Colony of Pomo Indians of the Sulphur Bank Rancheria,
Guidiville Rancheria,
Habematolel Pomo of Upper Lake,
Hopland Band of Pomo Indians of the Hopland Rancheria,
Lower Lake Rancheria,
Manchester Band of Pomo Indians of the Manchester-Point Arena Rancheria,
Middletown Rancheria of Pomo Indians,
Pinoleville Pomo Nation,
Potter Valley Tribe,
Redwood Valley Rancheria of Pomo Indians,
Robinson Rancheria of Pomo Indians,
Round Valley Indian Tribes of the Round Valley Reservation,
Scotts Valley Band of Pomo Indians, and
Sherwood Valley Rancheria of Pomo Indians.

(16) Double Cone Rock State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
39° 48.500' N. lat. 123° 50.713' W. long.;
39° 48.500' N. lat. 123° 55.875' W. long.; thence southward along the three nautical mile offshore boundary to
39° 44.300' N. lat. 123° 54.178' W. long.; and
39° 44.300' N. lat. 123° 50.055' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of salmon by trolling [subsection 27.80(a)(3)]; and Dungeness crab by trap, hoop net or hand is allowed.
2. The commercial take of salmon with troll fishing gear [subsection ~~182.1(*l*)';~~182(c)(4)] and Dungeness crab by trap is allowed.
3. The following federally recognized tribes (listed alphabetically) are exempt from the area and take regulations found in subsection 632(b)(16) of these regulations and shall comply with all other existing regulations and statutes:
Big Valley Band of Pomo Indians of the Big Valley Rancheria,
Cahto Indian Tribe of the Laytonville Rancheria,
Coyote Valley Band of Pomo Indians,
Elem Indian Colony of Pomo Indians of the Sulphur Bank Rancheria,
Guidiville Rancheria,
Habematolel Pomo of Upper Lake,
Hopland Band of Pomo Indians of the Hopland Rancheria,
Lower Lake Rancheria,
Manchester Band of Pomo Indians of the Manchester-Point Arena Rancheria,
Middletown Rancheria of Pomo Indians,
Pinoleville Pomo Nation,
Potter Valley Tribe,
Redwood Valley Rancheria of Pomo Indians,
Robinson Rancheria of Pomo Indians,
Round Valley Indian Tribes of the Round Valley Reservation,
Scotts Valley Band of Pomo Indians, and
Sherwood Valley Rancheria of Pomo Indians.

[No changes to current regulatory text in subsection (b)(17) through (b)(18)]

(19) Ten Mile State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
39° 35.900' N. lat. 123° 47.243' W. long.;
39° 35.900' N. lat. 123° 51.479' W. long.; thence southward along the three nautical mile offshore boundary to
39° 33.300' N. lat. 123° 50.559' W. long.; and
39° 33.300' N. lat. 123° 46.015' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(20) Ten Mile Beach State Marine Conservation Area.

(A) This area is bounded by the mean high tide and straight lines connecting the following points in the order listed except where noted:
39° 33.300' N. lat. 123° 46.015' W. long.;
39° 33.300' N. lat. 123° 50.559' W. long.; thence southward along the three nautical mile offshore boundary to
39° 32.500' N. lat. 123° 50.418' W. long.;
~~39° 32.500' N. lat. 123° 46.227' W. long.;~~
39° 32.500' N. lat. 123° 46.242' W. long.; thence northward along the mean high tide line onshore boundary to
39° 33.098' N. lat. 123° 46.003' W. long.;
39° 33.199' N. lat. 123° 45.966' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of Dungeness crab by trap, hoop net or hand is allowed.
2. The commercial take of Dungeness crab by trap is allowed.
3. The following federally recognized tribes (listed alphabetically) are exempt from the area and take regulations found in subsection 632(b)(20) of these regulations and shall comply with all other existing regulations and statutes:
Big Valley Band of Pomo Indians of the Big Valley Rancheria,
Cahto Indian Tribe of the Laytonville Rancheria,
Coyote Valley Band of Pomo Indians,
Elem Indian Colony of Pomo Indians of the Sulphur Bank Rancheria,
Guidiville Rancheria,
Habematolel Pomo of Upper Lake,
Hopland Band of Pomo Indians of the Hopland Rancheria,
Lower Lake Rancheria,
Manchester Band of Pomo Indians of the Manchester-Point Arena Rancheria,
Middletown Rancheria of Pomo Indians,
Pinoleville Pomo Nation,
Potter Valley Tribe,
Redwood Valley Rancheria of Pomo Indians,
Robinson Rancheria of Pomo Indians,
Round Valley Indian Tribes of the Round Valley Reservation,
Scotts Valley Band of Pomo Indians, and
Sherwood Valley Rancheria of Pomo Indians.

(21) Ten Mile Estuary State Marine Conservation Area.
(A) This area consists of waters below the mean high tide line within the Ten Mile Estuary, eastward of a line connecting the following two points:
39° 33.199' N. lat. 123° 45.966' W. long.; and
39° 33.098' N. lat. 123° 46.003' W. long.
~~And~~and westward of a line connecting the following two points:
39° 32.400' N. lat. 123° 44.785' W. long.; and
39° 32.382' N. lat. 123° 44.769' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The following federally recognized tribes (listed alphabetically) are exempt from the area and take regulations found in subsection 632(b)(21) of these regulations and shall comply with all other existing regulations and statutes:

Big Valley Band of Pomo Indians of the Big Valley Rancheria,
Cahto Indian Tribe of the Laytonville Rancheria,
Coyote Valley Band of Pomo Indians,
Elem Indian Colony of Pomo Indians of the Sulphur Bank Rancheria,
Guidiville Rancheria,
Habematolel Pomo of Upper Lake,
Hopland Band of Pomo Indians of the Hopland Rancheria,
Lower Lake Rancheria,
Manchester Band of Pomo Indians of the Manchester-Point Arena Rancheria,
Middletown Rancheria of Pomo Indians,
Pinoleville Pomo Nation,
Potter Valley Tribe,
Redwood Valley Rancheria of Pomo Indians,
Robinson Rancheria of Pomo Indians,
Round Valley Indian Tribes of the Round Valley Reservation,
Scotts Valley Band of Pomo Indians, and
Sherwood Valley Rancheria of Pomo Indians.
2. Take pursuant to activities authorized in subsection 632(b)(21)(D) is allowed.
(C) Waterfowl may be taken in accordance with the general waterfowl regulations (Sections 502, 550, 551, and 552).
(D) Operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(22) MacKerricher State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~39° 30.100' N. lat. 123° 47.390' W. long.;~~
39° 30.100' N. lat. 123° 47.327' W. long.;
39° 30.100' N. lat. 123° 49.000' W. long.;
39° 27.120' N. lat. 123° 49.000' W. long.; and
39° 27.120' N. lat. 123° 48.830' W. long.
(B) Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. All recreational take is allowed in accordance with current regulations.
2. All commercial take is allowed in accordance with current regulations, except the ~~Commercial~~commercial take of bull kelp (*Nereocystis luetkeana*) and giant kelp (*Macrocystis pyrifera*) is prohibited. ~~All other commercial and recreational take is allowed in accordance with current regulations.~~

(23) Point Cabrillo State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
39° 21.400' N. lat. 123° 49.418' W. long.;
39° 21.400' N. lat. 123° 50.000' W. long.;
39° 20.600' N. lat. 123° 50.000' W. long.; and
39° 20.600' N. lat. 123° 49.266' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(24) Russian Gulch State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
39° 19.860' N. lat. 123° 48.840' W. long.;
39° 19.860' N. lat. 123° 49.000' W. long.;
39° 19.470' N. lat. 123° 49.000' W. long.; and
39° 19.470' N. lat. 123° 48.500' W. long.
(B) Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. All recreational take is allowed in accordance with current regulations.
2. All commercial take is allowed in accordance with current regulations, except the ~~Commercial~~commercial take of bull kelp (*Nereocystis luetkeana*) and giant kelp (*Macrocystis pyrifera*) is prohibited. ~~All other commercial and recreational take is allowed in accordance with current regulations.~~

(25) Big River Estuary State Marine Conservation Area.
(A) This area consists of waters below the mean high tide line within the Big River Estuary, eastward of a line connecting the following two points:
39° 18.134' N. lat. 123° 47.517' W. long.; and
~~39° 18.079' N. lat. 123° 47.540' W. long.~~
39° 18.070' N. lat. 123° 47.543' W. long.
~~And~~and westward of a line connecting the following two points:
39° 18.222' N. lat. 123° 46.242' W. long.; and
39° 18.150' N. lat. 123° 46.240' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of surfperch (family Embiotocidae) by hook and line from shore only; and Dungeness crab by hoop net or hand is allowed.
2. The following federally recognized tribes (listed alphabetically) are exempt from the area and take regulations found in subsection 632(b)(25) of these regulations and shall comply with all other existing regulations and statutes:
Big Valley Band of Pomo Indians of the Big Valley Rancheria,
Cahto Indian Tribe of the Laytonville Rancheria,
Coyote Valley Band of Pomo Indians,
Elem Indian Colony of Pomo Indians of the Sulphur Bank Rancheria,
Guidiville Rancheria,
Habematolel Pomo of Upper Lake,
Hopland Band of Pomo Indians of the Hopland Rancheria,
Lower Lake Rancheria,
Manchester Band of Pomo Indians of the Manchester-Point Arena Rancheria,
Middletown Rancheria of Pomo Indians,
Pinoleville Pomo Nation,
Potter Valley Tribe,
Redwood Valley Rancheria of Pomo Indians,
Robinson Rancheria of Pomo Indians,
Round Valley Indian Tribes of the Round Valley Reservation,
Scotts Valley Band of Pomo Indians, and
Sherwood Valley Rancheria of Pomo Indians.

3. Take pursuant to activities authorized in subsection 632(b)(25)(D) is allowed.
(C) Waterfowl may be taken in accordance with the general waterfowl regulations (Sections 502, 550, 551, and 552).
(D) Operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(26) Van Damme State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and a straight line connecting the following points:
39° 16.335' N. lat. 123° 47.712' W. long.; and
39° 16.147' N. lat. 123° 47.429' W. long.
(B) Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. All recreational take is allowed in accordance with current regulations.
2. All commercial take is allowed in accordance with current regulations, except the ~~Commercial~~commercial take of bull kelp (*Nereocystis luetkeana*) and giant kelp (*Macrocystis pyrifera*) is prohibited. ~~All other commercial and recreational take is allowed in accordance with current regulations.~~

(27) Navarro River Estuary State Marine Conservation Area.
(A) This area consists of waters below the mean high tide line within the Navarro River Estuary, eastward of a line connecting the following two points:
~~39° 11.575' N. lat. 123° 45.653' W. long.; and~~
~~39° 11.415' N. lat. 123° 45.487' W. long.~~
39° 11.536' N. lat. 123° 45.685' W. long.; and
39° 11.489' N. lat. 123° 45.516' W. long.
~~And~~and westward of a line connecting the following two points
~~39° 11.849' N. lat. 123° 44.808' W. long.; and~~
~~39° 11.807' N. lat. 123° 44.842' W. long.~~
39° 11.846' N. lat. 123° 44.809' W. long.; and
39° 11.803' N. lat. 123° 44.843' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of salmonids by hook and line is allowed consistent with salmonid regulations in Section 7.50.
2. The following federally recognized tribes (listed alphabetically) are exempt from the area and take regulations found in subsection 632(b)(27) of these regulations and shall comply with all other existing regulations and statutes:
Big Valley Band of Pomo Indians of the Big Valley Rancheria,
Cahto Indian Tribe of the Laytonville Rancheria,
Coyote Valley Band of Pomo Indians,
Elem Indian Colony of Pomo Indians of the Sulphur Bank Rancheria,
Guidiville Rancheria,
Habematolel Pomo of Upper Lake,
Hopland Band of Pomo Indians of the Hopland Rancheria,
Lower Lake Rancheria,
Manchester Band of Pomo Indians of the Manchester-Point Arena Rancheria,
Middletown Rancheria of Pomo Indians,

Pinoleville Pomo Nation,
Potter Valley Tribe,
Redwood Valley Rancheria of Pomo Indians,
Robinson Rancheria of Pomo Indians,
Round Valley Indian Tribes of the Round Valley Reservation,
Scotts Valley Band of Pomo Indians, and
Sherwood Valley Rancheria of Pomo Indians.
(C) Waterfowl may be taken in accordance with the general waterfowl regulations (Sections 502, 550, 551, and 552).

(28) Point Arena State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~38° 57.35' N. lat. 123° 44.50' W. long;~~
~~38° 59.00' N. lat. 123° 44.50' W. long;~~
~~38° 59.00' N. lat. 123° 46.00' W. long;~~
~~38° 56.40' N. lat. 123° 46.00' W. long; and~~
~~38° 56.40' N. lat. 123° 43.82' W. long.~~
38° 57.350' N. lat. 123° 44.500' W. long;
38° 59.000' N. lat. 123° 44.500' W. long;
38° 59.000' N. lat. 123° 46.000' W. long;
38° 56.400' N. lat. 123° 46.000' W. long; and
38° 56.400' N. lat. 123° 43.820' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(29) Point Arena State Marine Conservation Area.
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
~~38° 59.00' N. lat. 123° 46.00' W. long.;~~
~~38° 59.00' N. lat. 123° 48.16' W. long.;~~
38° 59.000' N. lat. 123° 46.000' W. long.;
38° 59.000' N. lat. 123° 48.162' W. long.; thence southward along the three nautical mile offshore boundary to
~~38° 56.40' N. lat. 123° 48.35' W. long.;~~
~~38° 56.40' N. lat. 123° 46.00' W. long.; and~~
~~38° 59.00' N. lat. 123° 46.00' W. long.~~
38° 56.400' N. lat. 123° 48.350' W. long.;
38° 56.400' N. lat. 123° 46.000' W. long.; and
38° 59.000' N. lat. 123° 46.000' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of salmon by trolling [subsection 27.80(a)(3)] is allowed.
2. The commercial take of salmon with troll fishing gear [subsection ~~182.1(*l*)';~~182(c)(4)] is allowed.

(30) Sea Lion Cove State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:

~~38° 56.40' N. lat. 123° 43.82' W. long.;~~
~~38° 56.40' N. lat. 123° 44.00' W. long.;~~
~~38° 55.79' N. lat. 123° 44.00' W. long.; and~~
~~38° 55.79' N. lat. 123° 43.74' W. long.~~
38° 56.400' N. lat. 123° 43.820' W. long.;
38° 56.400' N. lat. 123° 44.000' W. long.;
38° 55.790' N. lat. 123° 44.000' W. long.; and
38° 55.790' N. lat. 123° 43.740' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the recreational and commercial take of finfish [subsection 632(a)(2)] is allowed.

(31) Saunders Reef State Marine Conservation Area
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~38° 51.80' N. lat. 123° 39.23' W. long.;~~
~~38° 51.80' N. lat. 123° 44.78' W. long.;~~
38° 51.800' N. lat. 123° 39.230' W. long.;
38° 51.800' N. lat. 123° 44.780' W. long.; thence southward along the three nautical mile offshore boundary to
~~38° 50.00' N. lat. 123° 42.58' W. long.; and~~
~~38° 50.00' N. lat. 123° 37.60' W. long.~~
38° 50.000' N. lat. 123° 42.580' W. long.; and
38° 50.000' N. lat. 123° 37.600' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of salmon by trolling [subsection 27.80(a)(3)] is allowed.
2. The commercial take of salmon with troll fishing gear [subsection ~~182.1(*l*)';~~182(c)(4)] and urchin is allowed.

(32) Del Mar Landing State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~38° 44.70' N. lat. 123° 31.00' W. long.;~~
~~38° 44.20' N. lat. 123° 31.00' W. long.;~~
~~38° 44.20' N. lat. 123° 30.30' W. long.; and~~
~~38° 44.43' N. lat. 123° 30.30' W. long.~~
38° 44.706' N. lat. 123° 31.000' W. long.;
38° 44.200' N. lat. 123° 31.000' W. long.;
38° 44.200' N. lat. 123° 30.300' W. long.; and
38° 44.430' N. lat. 123° 30.300' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(33) Stewarts Point State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~38° 40.500' N. lat. 123° 25.370' W. long.;~~
38° 40.500' N. lat. 123° 25.345' W. long.;

38° 40.500' N. lat. 123° 25.500' W. long.;
38° 37.500' N. lat. 123° 23.500' W. long.;
~~38° 37.535' N. lat. 123° 23.027' W. long.~~
38° 37.543' N. lat. 123° 22.924’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the following may be taken recreationally from shore only: marine aquatic plants other than sea palm, marine invertebrates, finfish [subsection 632(a)(2)] by hook and line, surf smelt by beach net, and species authorized in Section 28.80 of these regulations by hand-held dip net.

(34) Stewarts Point State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
38° 37.543' N. lat. 123° 22.924’ W. long.
38° 37.500' N. lat. 123° 23.500' W. long.;
~~38° 40.50' N. lat. 123° 25.37' W. long.;~~
~~38° 40.50' N. lat. 123° 30.24' W. long.;~~
38° 40.500’ N. lat. 123° 25.500’ W. long.;
38° 40.500’ N. lat. 123° 30.243’ W. long.; thence southward along the three nautical mile offshore boundary to
~~38° 35.60' N. lat. 123° 26.01' W. long.; and~~
~~38° 35.60' N. lat. 123° 20.80' W. long.,~~
38° 35.600’ N. lat. 123° 26.018’ W. long.; and
38° 35.600’ N. lat. 123° 20.800’ W. long. ~~except that Stewarts Point State Marine Conservation Area as described in subsection 632(b)(33)(A) is excluded.~~
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(35) Salt Point State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~38° 35.60' N. lat. 123° 20.80' W. long.;~~
~~38° 35.60' N. lat. 123° 21.00' W. long.;~~
~~38° 33.50' N. lat. 123° 21.00' W. long.; and~~
~~38° 33.50' N. lat. 123° 18.91' W. long.,~~
38° 35.600’ N. lat. 123° 20.800’ W. long.;
38° 35.600’ N. lat. 123° 21.000’ W. long.;
38° 33.500’ N. lat. 123° 21.000’ W. long.; and
38° 33.500’ N. lat. 123° 18.910’ W. long., except that Gerstle Cove as described in subsection 632(b)(36)(A) is excluded.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the recreational take of abalone and finfish [subsection 632(a)(2)] is allowed.

(36) Gerstle Cove State Marine Reserve.
(A) This area lies within the Salt Point State Marine Conservation Area and is bounded by the mean high tide line and a straight line connecting the following points:
~~38° 33.95' N. lat. 123° 19.92' W. long.; and~~

~~38° 33.95' N. lat. 123° 19.76' W. long.~~
38° 33.950’ N. lat. 123° 19.920’ W. long.; and
38° 33.950’ N. lat. 123° 19.760’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(37) Russian River State Marine Recreational Management Area.
(A) This area includes the waters below the mean high tide line eastward of the mouth of the Russian River estuary defined as a line connecting the following two points:
~~38° 27.16' N. lat. 123° 07.91' W. long.;~~
~~38° 27.01' N. lat. 123° 07.74' W. long.~~
38° 27.160’ N. lat. 123° 07.910’ W. long.;
38° 27.010’ N. lat. 123° 07.740’ W. long.
~~And~~and westward of the Highway 1 Bridge.
(B) Waterfowl may be taken in accordance with the general waterfowl regulations (Sections 502, 550, 551, and 552).
(C) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(D) apply.

(38) Russian River State Marine Conservation Area.
(A) This area is bounded by the mean high tide line, the mouth of the Russian River estuary as defined in subsection 632(b)(37)(A), and straight lines connecting the following points in the order listed:
~~38° 27.38' N. lat. 123° 08.58' W. long.;~~
~~38° 26.38' N. lat. 123° 08.58' W. long.;~~
~~38° 26.38' N. lat. 123° 07.70' W. long.~~
38° 27.380’ N. lat. 123° 08.580’ W. long.;
38° 26.380’ N. lat. 123° 08.580’ W. long.;
38° 26.380’ N. lat. 123° 07.700’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. ~~Only the following species may be taken recreationally:~~The recreational take of Dungeness crab by trap, and surf smelt using hand-held dip net or beach net is allowed.
2. ~~Only the following species may be taken commercially:~~The commercial take of Dungeness crab by trap is allowed.

(39) Bodega Head State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~38° 20.10' N. lat. 123° 04.04' W. long.;~~
~~38° 20.10' N. lat. 123° 08.38' W. long.;~~
38° 20.100’ N. lat. 123° 04.123’ W. long.;
38° 20.100’ N. lat. 123° 08.448’ W. long.; thence southward along the three nautical mile offshore boundary to
~~38° 18.00' N. lat. 123° 08.08' W. long.; and~~
~~38° 18.00' N. lat. 123° 03.64' W. long.~~
38° 18.000’ N. lat. 123° 08.140’ W. long.; and
38° 18.000’ N. lat. 123° 03.680’ W. long.

(B) ~~Take of all living marine resources is prohibited except for~~Area restrictions defined in subsection 632(a)(1)(A) apply, with the following specified exceptions: take pursuant to Fish and Game Code Section 10661 is allowed, and the director of the Bodega Marine Life Refuge may authorize certain activities in the formerly designated Bodega Marine Life Refuge (Section 10903, Fish and Game Code) pursuant to subsections (b) and (c) of Section 10502.7 and Section 10656 of the Fish and Game Code.

(40) Bodega Head State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~38° 18.00' N. lat. 123° 03.64' W. long.;~~
~~38° 18.00' N. lat. 123° 08.08' W. long.;~~
38° 18.000’ N. lat. 123° 03.680’ W. long.;
38° 18.000’ N. lat. 123° 08.140’ W. long.; thence southward along the three nautical mile offshore boundary to
~~38° 13.34' N. lat. 123° 03.51' W. long.; and~~
~~38° 17.93' N. lat. 123° 03.51' W. long.~~
38° 13.340’ N. lat. 123° 03.510’ W. long.; and
38° 17.930’ N. lat. 123° 03.510’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of pelagic finfish [subsection 632(a)(3)] by trolling [subsection 27.80(a)(3)], Dungeness crab by trap, and market squid by hand-held dip net, is allowed.
2. The commercial take of pelagic finfish [subsection 632(a)(3)] by troll fishing gear ~~[subsection 182.1(l)]~~ or round haul net [Section 8750, Fish and Game Code], Dungeness crab by trap, and market squid by round haul net [Section 8750, Fish and Game Code], is allowed. Not more than five percent by weight of any commercial pelagic finfish or market squid catch landed or possessed shall be other incidentally taken species.

(41) Estero Americano State Marine Recreational Management Area.
(A) This area includes the waters below the mean high tide line within Estero Americano westward of longitude ~~122° 59.25' W~~ 122 ° 59.250’ W.
(B) Waterfowl may be taken in accordance with the general waterfowl regulations (Sections 502, 550, 551, and 552).
(C) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(D) apply.

(42) Estero de San Antonio State Marine Recreational Management Area.
(A) This area includes the waters below the mean high tide line within Estero de San Antonio westward of longitude ~~122° 57.40' W~~ 122 ° 57.400’ W.
(B) Waterfowl may be taken in accordance with the general waterfowl regulations (Sections 502, 550, 551, and 552).
(C) ~~Take of all living marine resources is prohibited~~ Area restrictions defined in subsection 632(a)(1)(D) apply.

(43) Point Reyes State Marine Reserve.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~37° 59.90' N. lat. 123° 01.29' W. long.;~~
~~37° 59.90' N. lat. 123° 02.00' W. long.;~~
~~37° 59.00' N. lat. 123° 02.00' W. long.;~~
~~37° 59.00' N. lat. 122° 57.34' W. long.; and~~
~~38° 01.75' N. lat. 122° 55.00' W. long.;~~
37° 59.900’ N. lat. 123° 01.278’ W. long.;
37° 59.900’ N. lat. 123° 02.000’ W. long.;
37° 59.000’ N. lat. 123° 02.000’ W. long.;
37° 59.000’ N. lat. 122° 57.340’ W. long.; and
38° 01.750’ N. lat. 122° 55.000’ W. long.; thence westward along the mean high tide line onshore boundary to
38° 01.783' N. lat. 122° 55.286' W. long.; and
~~38° 01.954' N. lat. 122° 56.451' W. long.~~
38° 01.941’ N. lat. 122° 56.364’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(44) Point Reyes State Marine Conservation Area.
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
~~37° 59.00' N. lat. 123° 02.00' W. long.;~~
~~37° 56.71' N. lat. 123° 02.00' W. long.;~~
37° 59.000’ N. lat. 123° 02.000’ W. long.;
37° 56.712’ N. lat. 123° 02.000’ W. long.; thence eastward along the three nautical mile offshore boundary to
~~37° 56.36' N. lat. 122° 57.34' W. long.;~~
~~37° 59.00' N. lat. 122° 57.34' W. long.; and~~
~~37° 59.00' N. lat. 123° 02.00' W. long.~~
37° 56.370’ N. lat. 122° 57.340’ W. long.;
37° 59.000’ N. lat. 122° 57.340’ W. long.; and
37° 59.000’ N. lat. 123° 02.000’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of salmon by trolling [subsection 27.80(a)(3)] and Dungeness crab by trap is allowed.
2. The commercial take of salmon with troll fishing gear [subsection ~~182.1(l);~~182(c)(4)] and Dungeness crab by trap is allowed.

(45) Point Reyes Headlands Special Closure. Special restrictions on boating and access apply to the Point Reyes headlands as follows.
(A) A special closure is designated on the south side of the Point Reyes Headlands from the mean high tide line to a distance of 1000 feet seaward of the mean lower low tide line of any shoreline between lines extending due south from each of the following two points:
~~37° 59.65' N. lat. 123° 01.00' W. long; and~~
~~37° 59.39' N. lat. 122° 57.80' W. long.~~
37° 59.650’ N. lat. 123° 01.000’ W. long; and

37° 59.390’ N. lat. 122° 57.800’ W. long.
(B) No person except department employees or employees of the United States Fish and Wildlife Service, National Park Service, or United States Coast Guard, in performing their official duties, or unless permission is granted by the department, shall enter this area at any time.

(46) Estero de Limantour State Marine Reserve.
(A) This area consists of waters below the mean high tide line within Estero de Limantour and within Drakes Estero, southward of a line connecting the following two points:
~~38° 02.66' N. lat. 122° 56.89' W. long.; and~~
~~38° 02.66' N. lat. 122° 56.15' W. long.~~
38° 02.660’ N. lat. 122° 56.900’ W. long.; and
38° 02.660’ N. lat. 122° 56.150’ W. long.
~~And~~and northward of a line connecting the following two points:
38° 01.783' N. lat. 122° 55.286' W. long.; and
~~38° 01.954' N. lat. 122° 56.451' W. long.~~
38° 01.941’ N. lat. 122° 56.364’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(47) Drakes Estero State Marine Conservation Area.
(A) This area includes the waters below the mean high tide line within Drakes Estero northward of a line connecting the following two points:
~~38° 02.66' N. lat. 122° 56.89' W. long.; and~~
~~38° 02.66' N. lat. 122° 56.15' W. long.~~
38° 02.660’ N. lat. 122° 56.900’ W. long.; and
38° 02.660’ N. lat. 122° 56.150’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exception:
~~1. The~~the recreational take of clams is allowed.~~; and~~
~~2. Aquaculture of shellfish, pursuant to a valid State water bottom lease and stocking permit.~~

(48) Point Resistance Rock Special Closure. Special restrictions on boating and access apply to Point Resistance Rock as follows:
(A) A special closure is designated from the mean high tide line to a distance of 300 feet seaward of the mean lower low tide line of any shoreline of Point Resistance Rock, located in the vicinity of ~~37° 59.92' N. lat. 122° 49.75' W. long.~~37° 59.916’ N. lat. 122° 49.759’ W. long.
(B) No person except department employees or employees of the United States Fish and Wildlife Service, National Park Service, or United States Coast Guard, in performing their official duties, or unless permission is granted by the department, shall enter this area at any time.

(49) Double Point/Stormy Stack Rock Special Closure. Special restrictions on boating and access apply to Stormy Stack Rock as follows.
(A) A special closure is designated from the mean high tide line to a distance of 300 feet seaward of the mean lower low tide line of any shoreline of Stormy Stack Rock, located

in the vicinity of ~~37° 56.83' N. lat. 122° 47.14' W. long.~~37° 56.830’ N. lat. 122° 47.140’ W. long.
(B) No person except department employees or employees of the United States Fish and Wildlife Service, National Park Service, or United States Coast Guard, in performing their official duties, or unless permission is granted by the department, shall enter this area at any time.

(50) Duxbury Reef State Marine Conservation Area.
(A) This area is bounded by the mean high tide line, a distance of 1000 feet seaward of mean lower low water, and the following points:
~~37° 55.52' N. lat. 122° 44.17' W. long.;~~
~~37° 55.42' N. lat. 122° 44.31' W. long.;~~
~~37° 53.65' N. lat. 122° 41.91' W. long.; and~~
~~37° 53.77' N. lat. 122° 42.02' W. long.~~
37° 55.514’ N. lat. 122° 44.179’ W. long.;
37° 55.420’ N. lat. 122° 44.310’ W. long.;
37° 53.650’ N. lat. 122° 41.910’ W. long.; and
37° 53.770’ N. lat. 122° 42.020’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the recreational take of finfish [subsection 632(a)(2)] from shore and abalone is allowed.

(51) North Farallon Islands State Marine Reserve
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
~~37° 45.70' N. lat. 122° 59.08' W. long.;~~
37° 45.700' N. lat. 122° 59.085' W. long.; thence northwestward along the three nautical mile offshore boundary to
~~37° 49.34' N. lat. 123° 7.00' W. long.;~~
~~37° 45.70' N. lat. 123° 7.00' W. long.; and~~
~~37° 45.70' N. lat. 122° 59.08' W. long.~~
37° 49.344’ N. lat. 123° 7.000’ W. long.;
37° 45.700’ N. lat. 123° 7.000’ W. long.; and
37° 45.700’ N. lat. 122° 59.085’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(52) North Farallon Islands Special Closure. Special regulations on boating and access apply to the North Farallon Islands as follows.
(A) A special closure is established at the islets comprising the North Farallon Islands.
(B) Except as permitted by federal law or emergency caused by hazardous weather, or as authorized by subsection 632(b)(52)(C), no vessel shall be operated or anchored at any time from the mean high tide line to a distance of 1000 feet seaward of the mean lower low tide line of any shoreline of North Farallon Island, or to a distance of 300 feet seaward of the mean lower low tide line of any shoreline of the remaining three southern islets, including the Island of St. James, in the vicinity of ~~37° 46.00' N. lat. 123° 06.00' W. long.~~37° 46.025’ N. lat. 123° 06.018’ W. long.
(C) No person except department employees or employees of the United States Fish and Wildlife Service, National Oceanic and Atmospheric Administration, or United

States Coast Guard, in performing their official duties, or unless permission is granted by the department, shall enter the area defined in subsection 632(b)(52)(B).
(D) All vessels shall observe a five (5) nautical mile per hour speed limit within 1,000 feet seaward of the mean lower low tide line of any shoreline of the islets defined in subsection 632(b)(52)(B).
(E) In an area bounded by the mean high tide line and a distance of one nautical mile seaward of the mean lower low tide line of any of the four islets comprising the North Farallon Islands, the following restrictions apply:
1. All commercial diving vessels operating in the defined area shall have their vessel engine exhaust system terminate either through a muffler for dry exhaust systems, or below the vessel waterline for wet exhaust systems.
2. All commercial diving vessels equipped with an open, deck-mounted air compressor system, while operating in the defined area, shall have their air compressor's engine exhaust system terminate below the vessel waterline.

(53) Southeast Farallon Island State Marine Reserve.
(A) This area is bounded by straight lines connecting the following points in the order listed:
~~37° 42.60' N. lat. 122° 59.50' W. long.;~~
~~37° 42.60' N. lat. 123° 02.00' W. long.;~~
~~37° 40.50' N. lat. 123° 02.00' W. long.;~~
~~37° 40.50' N. lat. 122° 59.50' W. long.; and~~
~~37° 42.60' N. lat. 122° 59.50' W. long.~~
37° 42.600’ N. lat. 122° 59.500’ W. long.;
37° 42.600’ N. lat. 123° 02.000’ W. long.;
37° 40.500’ N. lat. 123° 02.000’ W. long.;
37° 40.500’ N. lat. 122° 59.500’ W. long.; and
37° 42.600’ N. lat. 122° 59.500’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(54) Southeast Farallon Island State Marine Conservation Area.
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
~~37° 42.60' N. lat. 123° 02.00' W. long.;~~
~~37° 42.60' N. lat. 123° 05.46' W. long.;~~
37° 42.600’ N. lat. 123° 02.000’ W. long.;
37° 42.600’ N. lat. 123° 05.461’ W. long.; thence southeastward along the three nautical mile offshore boundary to
~~37° 38.66' N. lat. 122° 59.50' W. long;~~
~~37° 40.50' N. lat. 122° 59.50' W. long;~~
~~37° 40.50' N. lat. 123° 02.00' W. long.; and~~
~~37° 42.60' N. lat. 123° 02.00' W. long.~~
37° 38.654’ N. lat. 122° 59.500’ W. long;
37° 40.500’ N. lat. 122° 59.500’ W. long;
37° 40.500’ N. lat. 123° 02.000’ W. long.; and
37° 42.600’ N. lat. 123° 02.000’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:

1. The recreational take of salmon by trolling [subsection 27.80(a)(3)] is allowed.
2. The commercial take of salmon with troll fishing gear [subsection ~~182.1(l)~~182(c)(4)] is allowed.

(55) Southeast Farallon Island Special Closure. Special regulations on boating and access apply to the island and islets comprising the Southeast Farallon Island as follows.
(A) A special closure is established at the Southeast Farallon Island.
(B) Except as permitted by federal law or emergency caused by hazardous weather, or as authorized by subsection 632(b)(55)(D), no vessel shall be operated or anchored at any time from the mean high tide line to a distance of 300 feet seaward of the mean lower low tide line of any shoreline of the Southeast Farallon Island year-round, EXCEPT:
1. The area north of Fisherman's Bay, from a line extending due west from ~~37° 42.26' N. lat. 123° 00.16' W. long.~~37° 42.260’ N. lat. 123° 00.160’ W. long., following clockwise around the island (including Fisherman's Bay), to a line extending due east from ~~37° 42.05' N. lat. 123° 00.07' W. long.~~37° 42.050’ N. lat. 123° 00.070’ W. long.
2. At East Landing, from a line extending due east from ~~37° 41.83' N. lat. 122° 59.98' W. long.~~37° 41.830’ N. lat. 122° 59.980’ W. long., following clockwise around the island, to a straight line connecting the following two points:
~~37° 41.72' N. lat. 123° 00.05' W. long.; and~~
~~37° 41.68' N. lat. 123° 00.07' W. long.~~
37° 41.720’ N. lat. 123° 00.050’ W. long.; and
37° 41.680’ N. lat. 123° 00.070’ W. long.
(C) This closure as defined in subsection 632(b)(55)(B) exists year round, except for the following areas, which are closed only from December 1 through September 14 of each year:
1. From Fisherman's Bay to East Landing, from a line extending due east from ~~37° 42.05' N. lat. 123° 00.07' W. long.~~37° 42.050’ N. lat. 123° 00.070’ W. long., following clockwise around the island to a line extending due east from ~~37° 41.83' N. lat. 122° 59.98' W. long.~~37° 41.830’ N. lat. 122° 59.980’ W. long.
2. The area southwest of East Landing, from a straight line connecting the following two points:
~~37° 41.72' N. lat. 123° 00.05' W. long.; and~~
~~37° 41.68' N. lat. 123° 00.07' W. long.~~
37° 41.720’ N. lat. 123° 00.050’ W. long.; and
37° 41.680’ N. lat. 123° 00.070’ W. long.
Following clockwise around the main island to a straight line extending due south from ~~37° 41.76' N. lat. 123° 00.16' W. long. to 37° 41.64' N. lat. 123° 00.16' W. long.~~37° 41.760’ N. lat. 123° 00.160’ W. long. to 37° 41.640’ N. lat. 123° 00.160’ W. long., and on the southeast side of Saddle (Seal) Rock, from a straight line extending due south from ~~37° 41.76' N. lat. 123° 00.16' W. long.~~37° 41.760’ N. lat. 123° 00.160’ W. long., following clockwise around Saddle (Seal) Rock, to a line extending due west from ~~37° 41.60' N. lat. 123° 00.26' W. long.~~37° 41.600’ N. lat. 123° 00.260’ W. long.
(D) No person except department employees or employees of the United States Fish and Wildlife Service, National Oceanic and Atmospheric Administration, or United States Coast Guard, in performing their official duties, or unless permission is granted by the department, shall enter the area defined in subsection 632(b)(55)(B) or 632(b)(55)(C) during the closure period.

(E) All vessels shall observe a five (5) nautical mile per hour speed limit 1,000 feet seaward of the mean lower low tide line of any shoreline of the Southeast Farallon Island.
(F) In an area bounded by the mean high tide line and a distance of one nautical mile seaward of the mean lower low tide line of any of the islands and islets comprising the Southeast Farallon Island, the following restrictions apply:
1. All commercial diving vessels operating in the defined area shall have their vessel engine exhaust system terminate either through a muffler for dry exhaust systems, or below the vessel waterline for wet exhaust systems.
2. All commercial diving vessels equipped with an open, deck-mounted air compressor system, while operating in the defined area, shall have their air compressor's engine exhaust system terminate below the vessel waterline.

(56) Fagan Marsh State Marine Park.
(A) This area consists of waters below the mean high tide line within the Fagan Marsh Ecological Reserve.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(B) apply, with the following specified exceptions: the recreational hook and line take of species other than marine aquatic plants is allowed.
(C) Only lightweight, hand-carried boats may be launched or operated within the park.

(57) Peytonia Slough State Marine Park.
(A) This area consists of waters below the mean high tide line within the Peytonia Slough Ecological Reserve.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(B) apply, with the following specified exceptions: the recreational hook and line take of species other than marine aquatic plants is allowed.
(C) Only lightweight, hand-carried boats may be launched or operated within the park.

(58) Corte Madera Marsh State Marine Park.
(A) This area consists of waters below the mean high tide line within the Corte Madera Marsh Ecological Reserve.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(B) apply, with the following specified exceptions: the recreational hook and line take of species other than marine aquatic plants from shore only is allowed.
(C) Only lightweight, hand-carried boats may be launched or operated within the park.
(D) Swimming, wading, and diving are prohibited within the park.

(59) Marin Islands State Marine Park.
(A) This area consists of waters below the mean high tide line within the Marin Islands Ecological Reserve.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(B) apply, with the following specified exceptions: the recreational hook and line take of species other than marine aquatic plants from shore only is allowed.
(C) Boating, swimming, wading, and diving are prohibited within the park.

(60) Albany Mudflats State Marine Park.

(A) This area consists of waters below the mean high tide line within the Albany Mudflats Ecological Reserve.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(B) apply, with the following specified exceptions: the recreational hook and line take of species other than marine aquatic plants from shore only is allowed.
(C) Boating, swimming, wading, and diving are prohibited within the park.

(61) Robert W. Crown State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and a distance of 150 feet seaward of mean lower low water, between the following points:
~~37° 45.97' N. lat. 122° 16.84' W. long.; and~~
~~37° 45.95' N. lat. 122° 16.52' W. long.~~
37° 45.970’ N. lat. 122° 16.840’ W. long.; and
37° 45.950’ N. lat. 122° 16.520’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. ~~Finfish may be taken recreationally~~The recreational take of finfish by hook and line only is allowed.
2. ~~Finfish~~The commercial take of finfish and kelp ~~may be taken commercially~~is allowed.

(62) Redwood Shores State Marine Park.
(A) This area consists of waters below the mean high tide line within the Redwood Shores Ecological Reserve.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(B) apply, with the following specified exceptions: the recreational hook and line take of species other than marine aquatic plants is allowed.
(C) Only lightweight, hand-carried boats may be launched or operated within the park.

(63) Bair Island State Marine Park.
(A) This area consists of waters below the mean high tide line within the Bair Island Ecological Reserve.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(B) apply, with the following specified exceptions: the recreational hook and line take of species other than kelp from shore only is allowed.
(C) Boating, swimming, wading, and diving are prohibited within the park.
(D) No person, except state and local law enforcement officers, fire suppression agencies and employees of the department in the performance of their official duties or persons possessing written permission from the department, shall enter this park during the period February 15 through May 20.
(E) Waterfowl may be taken in accordance with the general waterfowl regulations (Sections 502, 550, 551, and 552).

(64) Egg (Devil's Slide) Rock to Devil's Slide Special Closure. Special restrictions on boating and access apply as follows.
(A) A special closure is designated from the mean high tide line to a distance of 300 feet seaward of the mean lower low tide line of any shoreline of any of the three rocks comprising Egg (Devil's Slide) Rock, located in the vicinity of ~~37° 34.64' N. lat. 122° 31.29' W. long.; 37° 34.66' N. lat. 122° 31.32' W. long; and 37° 34.63' N. lat. 122° 31.29'~~

~~W. long.;~~37° 34.640’ N. lat. 122° 31.290’ W. long.; 37° 34.660’ N. lat. 122° 31.320’ W. long; and 37° 34.630’ N. lat. 122° 31.290’ W. long.; and the area bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~37° 34.74' N. lat. 122° 31.08' W. long.;~~
~~37° 34.72' N. lat. 122° 31.31' W. long.;~~
~~37° 34.60' N. lat. 122° 31.33' W. long.; and~~
~~37° 34.52' N. lat. 122° 31.21' W. long.~~
37° 34.740’ N. lat. 122° 31.080’ W. long.;
37° 34.720’ N. lat. 122° 31.310’ W. long.;
37° 34.600’ N. lat. 122° 31.330’ W. long.; and
37° 34.520’ N. lat. 122° 31.210’ W. long.
(B) Transit in between the rock and the mainland between these points is prohibited at any time.
(C) No person except department employees or employees of the United States Fish and Wildlife Service, U.S. Bureau of Land Management, National Oceanic and Atmospheric Administration, or United States Coast Guard, in performing their official duties, or unless permission is granted by the department, shall enter this area.

(65) Montara State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~37° 32.70' N. lat. 122° 31.00' W. long.;~~
~~37° 32.70' N. lat. 122° 34.91' W. long.;~~
37° 32.700’ N. lat. 122° 31.000’ W. long.;
37° 32.700’ N. lat. 122° 34.908’ W. long.; thence southward along the three nautical mile offshore boundary to
~~37° 30.00' N. lat. 122° 34.61' W. long.; and~~
~~37° 30.00' N. lat. 122° 29.93' W. long.~~
37° 30.000’ N. lat. 122° 34.608’ W. long.; and
37° 30.000’ N. lat. 122° 29.920’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(66) Pillar Point State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~37° 30.00' N. lat. 122° 29.93' W. long.;~~
~~37° 30.00' N. lat. 122° 34.61' W. long.;~~
37° 30.000’ N. lat. 122° 29.920’ W. long.;
37° 30.000’ N. lat. 122° 34.608’ W. long.; thence southward along the three nautical mile offshore boundary to
~~37° 28.33' N. lat. 122° 33.47' W. long.;~~
~~37° 28.33' N. lat. 122° 30.83' W. long.;~~
~~37° 29.18' N. lat. 122° 30.36' W. long.; and~~
~~37° 29.74' N. lat. 122° 29.97' W. long.~~
37° 28.330’ N. lat. 122° 33.489’ W. long.;
37° 28.330’ N. lat. 122° 30.830’ W. long.;
37° 29.180’ N. lat. 122° 30.360’ W. long.;
37° 29.740’ N. lat. 122° 29.970’ W. long.; and

37° 29.733’ N. lat. 122° 29.950’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of pelagic finfish [subsection 632(a)(3)] by trolling [subsection 27.80(a)(3)], Dungeness crab by trap, and market squid by hand-held dip net is allowed.
2. The commercial take of pelagic finfish [subsection 632(a)(3)] by troll or round haul net [Section 8750, Fish and Game Code], Dungeness crab by trap, and market squid by round haul net [Section 8750, Fish and Game Code], is allowed. Not more than five percent by weight of any commercial pelagic finfish or market squid catch landed or possessed shall be other incidentally taken species.

(67) Año Nuevo State Marine ~~Conservation Area~~Reserve.
(A) This area is bounded by the mean high tide line and a distance of 200 feet seaward of mean lower low water between the following two points:
~~37° 10.00' N. lat. 122° 21.80' W. long; and~~
~~37° 08.70' N. lat. 122° 21.00' W. long.~~
37° 10.000' N. lat. 122° 21.800' W. long; and
37° 08.725' N. lat. 122° 21.000' W. long.
The area then continues southward bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~37° 08.70' N. lat. 122° 21.00' W. long.;~~
~~37° 04.70' N. lat. 122° 21.00' W. long.; and~~
37° 08.725' N. lat. 122° 21.000' W. long.;
37° 04.700' N. lat. 122° 21.000' W. long.;
37° 04.700' N. lat. 122° 16.062' W. long.; and
~~37° 04.70' N. lat. 122° 16.20' W. long.~~
37° 04.742' N. lat. 122° 16.026' W. long.
(B) ~~Take of all living marine resources is prohibited except the commercial take of giant kelp (*Macrocystis pyrifera*) by hand harvest only~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(68) Greyhound Rock State Marine Conservation Area.
(A) This area is bounded by the mean high tide line, the three nautical mile offshore boundary and straight lines connecting the following points in the order listed except where noted:
~~37° 04.70' N. lat. 122° 16.20' W. long.;~~
37° 04.742’ N. lat. 122° 16.026’ W. long.;
37° 04.700’ N. lat. 122° 16.062’ W. long.;
~~37° 04.70' N. lat. 122° 21.00' W. long.;~~
~~37° 03.55' N. lat. 122° 21.00' W. long.;~~
37° 04.700’ N. lat. 122° 21.000’ W. long.;
37° 03.520’ N. lat. 122° 21.000’ W. long.; thence southward along the three nautical mile offshore boundary to
~~37° 02.57' N. lat. 122° 19.10' W. long.; and~~
~~37° 02.57' N. lat. 122° 14.00' W. long.~~
37° 02.570’ N. lat. 122° 18.963’ W. long.; and
37° 02.570’ N. lat. 122° 13.989’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:

1. ~~Only the following species may be taken recreationally:~~The recreational take of giant kelp (*Macrocystis pyrifera*) by hand harvest only, market squid, salmon, and, by hook-and-line from shore only, other finfish is allowed.
2. ~~Only the following species may be taken commercially:~~The commercial take of giant kelp (*Macrocystis pyrifera*) by hand harvest only, salmon, and market squid is allowed. Not more than five percent by weight of any commercial market squid catch landed or possessed shall be other incidentally taken species.

(69) Natural Bridges State Marine Reserve.
(A) This area is bounded by the mean high tide line and a distance of 200 feet seaward of mean lower low water between the following two points:
~~36° 57.90' N. lat. 122° 07.65' W. long.; and~~
~~36° 57.00' N. lat. 122° 03.50' W. long.~~
36° 57.912’ N. lat. 122° 07.650’ W. long.; and
36° 57.015’ N. lat. 122° 03.504’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(70) Elkhorn Slough State Marine Reserve.
(A) This area includes the waters below mean high tide within Elkhorn Slough lying east of longitude ~~121° 46.40' W.~~121° 46.400’ W. and south of latitude ~~36° 50.50' N.~~36° 50.500’ N.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(71) Elkhorn Slough State Marine Conservation Area.
(A) This area includes the waters below mean high tide within Elkhorn Slough east of the Highway 1 Bridge and west of longitude ~~121° 46.40' W.~~121° 46.400’ W.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. ~~Only the following species may be taken recreationally:~~The recreational take of finfish by hook-and-line only and clams is allowed. Clams may only be taken on the north shore of the slough in the area adjacent to the Moss Landing State Wildlife Area [subsection 550(a)].

(72) Moro Cojo Slough State Marine Reserve.
(A) This area includes the waters within Moro Cojo Slough below mean high tide and east of the Highway 1 Bridge and west of the crossing of the Southern Pacific Railroad tracks.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(73) Soquel Canyon State Marine Conservation Area.
(A) This area is bounded by straight lines connecting the following points in the order listed:
~~36° 51.00' N. lat. 121° 56.00' W. long.;~~
~~36° 51.00' N. lat. 122° 03.80' W. long.;~~
~~36° 48.00' N. lat. 122° 02.88' W. long.;~~
~~36° 48.00' N. lat. 121° 56.00' W. long.; and~~

~~36° 51.00' N. lat. 121° 56.00' W. long.~~
36° 51.000’ N. lat. 121° 56.000’ W. long.;
36° 51.000’ N. lat. 122° 03.652’ W. long.;
36° 48.000’ N. lat. 122° 02.767’ W. long.;
36° 48.000’ N. lat. 121° 56.000’ W. long.; and
36° 51.000’ N. lat. 121° 56.000’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the commercial and recreational take of pelagic finfish [subsection 632(a)(3)] is allowed. Not more than five percent by weight of any commercial pelagic finfish catch landed or possessed shall be other incidentally taken species.

(74) Portuguese Ledge State Marine Conservation Area.
(A) This area is bounded by straight lines connecting the following points in the order listed:
~~36° 43.00' N. lat. 121° 56.00' W. long.;~~
~~36° 43.00' N. lat. 122° 01.30' W. long.;~~
~~36° 41.00' N. lat. 122° 00.80' W. long.;~~
~~36° 41.00' N. lat. 121° 56.00' W. long.; and~~
~~36° 43.00' N. lat. 121° 56.00' W. long.~~
36° 43.000’ N. lat. 121° 56.000’ W. long.;
36° 43.000’ N. lat. 122° 01.294’ W. long.;
36° 41.000’ N. lat. 122° 00.706’ W. long.;
36° 41.000’ N. lat. 121° 56.000’ W. long.; and
36° 43.000’ N. lat. 121° 56.000’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the commercial and recreational take of pelagic finfish [subsection 632(a)(3)] is allowed. Not more than five percent by weight of any commercial pelagic finfish catch landed or possessed shall be other incidentally taken species.

(75) Edward F. Ricketts State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~36° 36.50' N. lat. 121° 53.37' W. long.;~~
~~36° 37.25' N. lat. 121° 53.78' W. long.; and~~
~~36° 37.10' N. lat. 121° 54.09' W. long.~~
36° 36.508’ N. lat. 121° 53.379’ W. long.;
36° 37.250’ N. lat. 121° 53.780’ W. long.; and
36° 37.100’ N. lat. 121° 54.093’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of finfish by hook-and-line is allowed.
2. The commercial take of giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis spp*.) is allowed by hand in the area defined by subsection 165(c)(4)(D) under the following conditions:
a. A kelp harvester with a valid license issued pursuant to Section 165 may take no more than 12 tons of kelp from the portion of Administrative Kelp Bed 220 within the Edward F. Ricketts State Marine Conservation Area in any calendar month.

b. Duplicate landing records must be kept on board the harvest vessel in accordance with the requirements of Section 165.

(76) Lovers Point - Julia Platt State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~36° 37.10' N. lat. 121° 54.09' W. long.;~~
~~36° 37.25' N. lat. 121° 53.78' W. long.;~~
~~36° 37.38' N. lat. 121° 53.85' W. long.;~~
~~36° 37.60' N. lat. 121° 54.75' W. long.; and~~
~~36° 37.60' N. lat. 121° 54.91' W. long.~~
36° 37.100’ N. lat. 121° 54.093’ W. long.;
36° 37.250’ N. lat. 121° 53.780’ W. long.;
36° 37.380’ N. lat. 121 ° 53.850’ W. long.;
36° 37.600’ N. lat. 121° 54.750’ W. long.; and
36° 37.600’ N. lat. 121° 54.919’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(77) Pacific Grove Marine Gardens State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~36° 37.60' N. lat. 121° 54.91' W. long.;~~
~~36° 37.60' N. lat. 121° 54.75' W. long.;~~
~~36° 38.70' N. lat. 121° 55.40' W. long.;~~
~~36° 38.90' N. lat. 121° 56.60' W. long.; and~~
36° 37.600’ N. lat. 121° 54.919’ W. long.;
36° 37.600’ N. lat. 121° 54.750’ W. long.;
36° 38.700’ N. lat. 121° 55.400’ W. long.;
36° 38.900’ N. lat. 121° 56.600’ W. long.;
36° 38.314’ N. lat. 121° 56.292’ W. long.; and
~~36° 38.22' N. lat. 121° 56.15' W. long.~~
36° 38.226’ N. lat. 121° 56.159’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of finfish is allowed.
2. The commercial take of giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis spp*.) by hand is allowed under the following conditions:
a. A kelp harvester with a valid license issued pursuant to Section 165 may take no more than 44 tons of kelp from the portion of Administrative Kelp Bed 220 within the Pacific Grove Marine Gardens State Marine Conservation Area in any calendar month.
b. Duplicate landing records must be kept on board the harvest vessel in accordance with the requirements of Section 165.

(78) Asilomar State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~36° 38.22' N. lat. 121° 56.15' W. long.;~~
36° 38.226’ N. lat. 121° 56.159’ W. long.;

36° 38.314’ N. lat. 121° 56.292’ W. long.;
~~36° 38.90' N. lat. 121° 56.60' W. long.; and~~
~~36° 36.60' N. lat. 121° 57.50' W. long.~~
36° 38.900’ N. lat. 121° 56.600’ W. long.; and
36° 36.554’ N. lat. 121° 57.518’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(79) Carmel Pinnacles State Marine Reserve.
(A) This area is bounded by ~~the mean high tide line and~~ straight lines connecting the following points in the order listed:
~~36° 33.65' N. lat. 121° 57.60' W. long.;~~
~~36° 33.65' N. lat. 121° 58.50' W. long.;~~
~~36° 33.10' N. lat. 121° 58.50' W. long.;~~
~~36° 33.10' N. lat. 121° 57.60' W. long.; and~~
~~36° 33.65' N. lat. 121° 57.60' W. long.~~
36° 33.650’ N. lat. 121° 57.600’ W. long.;
36° 33.650’ N. lat. 121° 58.500’ W. long.;
36° 33.100’ N. lat. 121° 58.500’ W. long.;
36° 33.100’ N. lat. 121° 57.600’ W. long.; and
36° 33.650’ N. lat. 121° 57.600’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(80) Carmel Bay State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~36° 33.65' N. lat. 121° 57.10' W. long.;~~
~~36° 31.70' N. lat. 121° 56.30' W. long.; and~~
~~36° 31.70' N. lat. 121° 55.55' W. long.~~
36° 33.663’ N. lat. 121° 57.117’ W. long.;
36° 31.700’ N. lat. 121° 56.300’ W. long.; and
36° 31.700’ N. lat. 121° 55.550’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of finfish is allowed.
2. The commercial take of giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis spp*.) by hand is allowed under the following conditions:
a. A kelp harvester with a valid license issued pursuant to Section 165 may take no more than 44 tons of kelp from the portion of Administrative Kelp Bed 219 within the Carmel Bay State Marine Conservation Area in any calendar month.
b. Duplicate landing records must be kept on board the harvest vessel in accordance with the requirements of Section 165.

(81) Point Lobos State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~36° 31.70' N. lat. 121° 55.55' W. long.;~~
~~36° 31.70' N. lat. 121° 58.25' W. long.;~~

~~36° 28.88' N. lat. 121° 58.25' W. long.; and~~
~~36° 28.88' N. lat. 121° 56.30' W. long.~~
36° 31.700’ N. lat. 121° 55.550’ W. long.;
36° 31.700’ N. lat. 121° 58.250’ W. long.;
36° 28.880’ N. lat. 121° 58.250’ W. long.; and
36° 28.880’ N. lat. 121° 56.285’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.
(C) Within the portion of the Point Lobos State Marine Reserve which also falls within the boundary of the Point Lobos State Reserve (State Park Unit), restrictions on boating and diving activities exist. Contact the California Department of Parks and Recreation for current restrictions.

(82) Point Lobos State Marine Conservation Area.
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
~~36° 31.70' N. lat. 121° 58.25' W. long.;~~
~~36° 31.70' N. lat. 122° 01.30' W. long.;~~
36° 31.700’ N. lat. 121° 58.250’ W. long.;
36° 31.700’ N. lat. 122° 01.267’ W. long.; thence southward along the three nautical mile offshore boundary to
~~36° 28.88' N. lat. 122° 00.55' W. long.;~~
~~36° 28.88' N. lat. 121° 58.25' W. long.; and~~
~~36° 31.70' N. lat. 121° 58.25' W. long.~~
36° 28.880’ N. lat. 122° 00.490’ W. long.;
36° 28.880’ N. lat. 121° 58.250’ W. long.; and
36° 31.700’ N. lat. 121° 58.250’ W. long.
(B) ~~Take of all living marine resources is prohibited except the~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational ~~and commercial~~ take of ~~salmon, albacore, and the~~salmon and albacore is allowed.
2. The commercial take of salmon, albacore, and spot prawn is allowed.

(83) Point Sur State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~36° 18.40' N. lat. 121° 54.10' W. long.;~~
~~36° 18.40' N. lat. 121° 56.00' W. long.;~~
~~36° 15.00' N. lat. 121° 52.50' W. long.; and~~
~~36° 15.00' N. lat. 121° 50.25' W. long.~~
36° 18.400’ N. lat. 121° 54.150’ W. long.;
36° 18.400’ N. lat. 121° 56.000’ W. long.;
36° 15.000’ N. lat. 121° 52.500’ W. long.; and
36° 15.000’ N. lat. 121° 50.250’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(84) Point Sur State Marine Conservation Area.

(A) This area is bounded by ~~the mean high tide line and~~ straight lines connecting the following points in the order listed except where noted:
~~36° 18.40' N. lat. 121° 56.00' W. long.;~~
~~36° 18.40' N. lat. 121° 58.33' W. long.;~~
36° 18.400’ N. lat. 121° 56.000’ W. long.;
36° 18.400’ N. lat. 121° 57.932’ W. long.; thence southward along the three nautical mile offshore boundary to
~~36° 15.00' N. lat. 121° 55.10' W. long.;~~
~~36° 15.00' N. lat. 121° 52.50' W. long.; and~~
~~36° 18.40' N. lat. 121° 56.00' W. long.~~
36° 15.000’ N. lat. 121° 55.955’ W. long.;
36° 15.000’ N. lat. 121° 52.500’ W. long.; and
36° 18.400’ N. lat. 121° 56.000’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the commercial and recreational take of salmon and albacore is allowed.

(85) Big Creek State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~36° 07.20' N. lat. 121° 38.00' W. long.;~~
~~36° 07.20' N. lat. 121° 39.00' W. long.;~~
~~36° 05.20' N. lat. 121° 38.00' W. long.;~~
~~36° 05.20' N. lat. 121° 41.25' W. long.;~~
36° 07.200’ N. lat. 121° 37.968’ W. long.;
36° 07.200’ N. lat. 121° 39.000’ W. long.;
36° 05.200’ N. lat. 121° 38.000’ W. long.;
36° 05.200’ N. lat. 121° 41.222’ W. long.; thence southward along the three nautical mile offshore boundary to
~~36° 02.65' N. lat. 121° 39.70' W. long.; and~~
~~36° 02.65' N. lat. 121° 35.13' W. long.~~
36° 02.650’ N. lat. 121° 39.654’ W. long.; and
36° 02.650’ N. lat. 121° 35.130’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.
(C) Anchoring. Except as pursuant to Federal law or emergency caused by hazardous weather, it is unlawful to anchor or moor a vessel in waters shallower than 10 fathoms in the Big Creek State Marine Reserve.

(86) Big Creek State Marine Conservation Area.
(A) This area is bounded by the three nautical mile offshore boundary and straight lines connecting the following points in the order listed except where noted:
~~36° 07.20' N. lat. 121° 39.00' W. long.;~~
~~36° 07.20' N. lat. 121° 42.90' W. long.;~~
36° 07.200’ N. lat. 121° 39.000’ W. long.;
36° 07.200’ N. lat. 121° 42.869’ W. long.; thence southward along the three nautical mile offshore boundary to
~~36° 05.20' N. lat. 121° 41.25' W. long.;~~
~~36° 05.20' N. lat. 121° 38.00' W. long.; and~~

~~36° 07.20' N. lat. 121° 39.00' W. long.~~
36° 05.200’ N. lat. 121° 41.222’ W. long.;
36° 05.200’ N. lat. 121° 38.000’ W. long.; and
36° 07.200’ N. lat. 121° 39.000’ W. long.
(B) ~~Take of all living marine resources is prohibited except the commercial and~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of ~~salmon, albacore, and the~~salmon and albacore is allowed.
2. The commercial take of salmon, albacore, and spot prawn is allowed.

(87) Piedras Blancas State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~35° 42.85' N. lat. 121° 18.95' W. long.;~~
~~35° 42.85' N. lat. 121° 21.00' W. long.;~~
~~35° 39.15' N. lat. 121° 18.50' W. long.; and~~
~~35° 39.15' N. lat. 121° 14.45' W. long.~~
35° 42.850’ N. lat. 121° 18.950’ W. long.;
35° 42.850’ N. lat. 121° 21.000’ W. long.;
35° 39.150’ N. lat. 121° 18.500’ W. long.; and
35° 39.150’ N. lat. 121° 14.519’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(88) Piedras Blancas State Marine Conservation Area.
(A) This area is bounded by ~~the mean high tide line and~~ straight lines connecting the following points in the order listed except where noted:
~~35° 42.85' N. lat. 121° 21.00' W. long.;~~
~~35° 42.85' N. lat. 121° 22.85' W. long.;~~
35° 42.850’ N. lat. 121° 21.000’ W. long.;
35° 42.850’ N. lat. 121° 22.763’ W. long.; thence southward along the three nautical mile offshore boundary to
~~35° 39.15' N. lat. 121° 20.90' W. long.;~~
~~35° 39.15' N. lat. 121° 18.50' W. long.; and~~
~~35° 42.85' N. lat. 121° 21.00' W. long.~~
35° 39.150’ N. lat. 121° 20.913’ W. long.;
35° 39.150’ N. lat. 121° 18.500’ W. long.; and
35° 42.850’ N. lat. 121° 21.000’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the commercial and recreational take of salmon and albacore is allowed.

(89) Cambria State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~35° 37.10' N. lat. 121° 09.20' W. long.;~~
~~35° 37.10' N. lat. 121° 10.70' W. long.;~~
~~35° 32.85' N. lat. 121° 06.70' W. long.; and~~
~~35° 32.85' N. lat. 121° 05.85' W. long.~~

35° 37.100’ N. lat. 121° 09.225’ W. long.;
35° 37.100’ N. lat. 121° 10.700’ W. long.;
35° 32.850’ N. lat. 121° 06.700’ W. long.; and
35° 32.850’ N. lat. 121° 05.855’ W. long.
(B) ~~The commercial take of all living marine resources is prohibited.~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: ~~Recreational~~recreational take is allowed.

(90) White Rock ~~(Cambria)~~ State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~35° 32.85' N. lat. 121° 05.85' W. long.;~~
~~35° 32.85' N. lat. 121° 06.70' W. long.;~~
~~35° 30.50' N. lat. 121° 05.00' W. long.; and~~
~~35° 30.50' N. lat. 121° 03.40' W. long.~~
35° 32.850’ N. lat. 121° 05.855’ W. long.;
35° 32.850’ N. lat. 121° 06.700’ W. long.;
35° 30.500’ N. lat. 121° 05.000’ W. long.; and
35° 30.500’ N. lat. 121° 03.423’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the commercial take of giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis spp*.) is allowed under the following conditions:
1. A kelp harvester with a valid license issued pursuant to Section 165 and holding a valid lease to Administrative Kelp Bed 208 may take no more than 125 tons of kelp from the portion of Administrative Kelp Bed 208 within the White Rock ~~(Cambria)~~ State Marine Conservation Area in any calendar month.
2. Duplicate landing records must be kept on board the harvest vessel in accordance with the requirements of Section 165.

(91) Morro Bay State Marine Recreational Management Area.
(A) This area includes the area below mean high tide within Morro Bay east of the Morro Bay entrance breakwater and west of longitude ~~120° 50.34' W.~~120° 50.340’ W.
(B) Recreational hunting of waterfowl is allowed unless otherwise restricted by hunting regulations (sections 502, 550, 551, and 552).
(C) ~~Take of all living marine resources is prohibited except the following activities are~~ Area restrictions defined in subsection 632(a)(1)(D) apply, with the following specified exceptions allowed north of latitude ~~35° 19.70' N~~ 35° 19.700' N:
1. The recreational take of finfish.
2. Aquaculture ~~of oysters~~ pursuant to a valid ~~State~~state water bottom lease and permit.
3. Storing finfish taken outside the Morro Bay State Marine Recreational Management Area in a receiver for bait purposes.
4. Dredging for the purpose of harbor and channel operations and pursuant to required and valid permits and approvals.
5. Harbor operations and maintenance and cleaning of vessel hulls and other man-made structures, including removal of living marine resources for these purposes.

(92) Morro Bay State Marine Reserve.

(A) This area includes the area below mean high tide line within Morro Bay east of longitude ~~120° 50.34' W~~120° 50.340’ W.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(93) Point Buchon State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~35° 15.25' N. lat. 120° 54.00' W. long.;~~
~~35° 15.25' N. lat. 120° 56.00' W. long.;~~
~~35° 11.00' N. lat. 120° 52.40' W. long.; and~~
~~35° 13.30' N. lat. 120° 52.40' W. long.~~
35° 15.250’ N. lat. 120° 53.817’ W. long.;
35° 15.250’ N. lat. 120° 56.000’ W. long.;
35° 11.000’ N. lat. 120° 52.400’ W. long.; and
35° 13.348’ N. lat. 120° 52.400’ W. long.
(B) ~~Take of all living marine resources is prohibited~~ Area restrictions defined in subsection 632(a)(1)(A) apply.

(94) Point Buchon State Marine Conservation Area.
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
~~35° 15.25’ N. lat. 120° 56.00’ W. long.;~~
~~35° 15.25’ N. lat. 120° 57.80’ W. long.;~~
35° 15.250’ N. lat. 120° 56.000’ W. long.;
35° 15.250’ N. lat. 120° 57.878’ W. long.; thence southward along the three nautical mile offshore boundary to
~~35° 11.00’ N. lat. 120° 55.20’ W. long.;~~
~~35° 11.00’ N. lat. 120° 52.40’ W. long.; and~~
~~35° 15.25’ N. lat. 120° 56.00’ W. long.~~
35° 11.000’ N. lat. 120° 55.149’ W. long.;
35° 11.000’ N. lat. 120° 52.400’ W. long.; and
35° 15.250’ N. lat. 120° 56.000’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the commercial and recreational take of salmon and albacore is allowed.

(95) Vandenberg State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~34° 44.65' N. lat. 120° 37.75' W. long.;~~
~~34° 44.65' N. lat. 120° 40.00' W. long.;~~
~~34° 33.25' N. lat. 120° 40.00' W. long.; and~~
~~34° 33.25' N. lat. 120° 37.25' W. long.~~
34° 44.650’ N. lat. 120° 37.750’ W. long.;
34° 44.650’ N. lat. 120° 40.000’ W. long.;
34° 33.250’ N. lat. 120° 40.000’ W. long.; and
34° 33.250’ N. lat. 120° 37.407’ W. long.

(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(A) apply, with the following specified exceptions: take incidental to base operations and commercial space launch operations identified by the Vandenberg Air Force Base Commander as mission critical is allowed.
(C) Public Entry. Public entry into the Vandenberg State Marine Reserve may be restricted at the discretion of the department to protect wildlife, aquatic life, or habitat, or by the Commander of Vandenberg Air Force Base to protect and provide safety for base operations.
(D) The Department shall enter into a Memorandum of Understanding (MOU) with the Commander of Vandenberg Air Force Base for the mutually beneficial management and administration of the Vandenberg State Marine Reserve. The MOU shall include, but not be limited to, the identification of Vandenberg Air Force Base's national defense mission activities that are unrestricted by the subject regulations and details on management and administrative roles and responsibilities.

(96) Point Conception State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~34° 27.00' N. lat. 120° 28.28' W. long.;~~
~~34° 27.00' N. lat. 120° 32.15' W. long.;~~
34° 27.000’ N. lat. 120° 28.280’ W. long.;
34° 27.000’ N. lat. 120° 32.151’ W. long.; thence southeastward along the three nautical mile offshore boundary to
~~34° 23.96' N. lat. 120° 25.00' W. long.; and~~
~~34° 27.19' N. lat. 120° 25.00' W. long.~~
34° 23.961’ N. lat. 120° 25.000’ W. long.; and
34° 27.211’ N. lat. 120° 25.000’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(97) Kashtayit State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~34° 28.13' N. lat. 120° 14.46' W. long.;~~
~~34° 27.30' N. lat. 120° 14.46' W. long.;~~
~~34° 27.30' N. lat. 120° 12.47' W. long.; and~~
~~34° 28.23' N. lat. 120° 12.47' W. long.~~
34° 28.130’ N. lat. 120° 14.460’ W. long.;
34° 27.300’ N. lat. 120° 14.460’ W. long.;
34° 27.300’ N. lat. 120° 12.470’ W. long.; and
34° 28.230’ N. lat. 120° 12.470’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. ~~Only the following species may be taken recreationally:~~The recreational take of finfish [subsection 632(a)(2)], invertebrates except rock scallops and mussels, and giant kelp (*Macrocystis pyrifera*) by hand harvest is allowed.
2. Take pursuant to activities authorized under subsection 632(b)(97)(C) is allowed.

(C) Maintenance of artificial structures and operation and maintenance of existing facilities is allowed inside the conservation area pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(98) Naples State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~34° 26.51' N. lat. 119° 58.00' W. long.;~~
~~34° 25.00' N. lat. 119° 58.00' W. long.;~~
~~34° 25.00' N. lat. 119° 56.00' W. long.; and~~
~~34° 26.13' N. lat. 119° 56.00' W. long.~~
34° 26.517’ N. lat. 119° 58.000’ W. long.;
34° 25.000’ N. lat. 119° 58.000’ W. long.;
34° 25.000’ N. lat. 119° 56.000’ W. long.; and
34° 26.140’ N. lat. 119° 56.000’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take by spearfishing [Section 1.76] of white seabass and pelagic finfish [subsection 632(a)(3)] is allowed.
2. The commercial take of giant kelp (*Macrocystis pyrifera*) by hand harvest or by mechanical harvest is allowed.
3. Take pursuant to activities authorized under subsection 632(b)(98)(C) is allowed.
(C) Operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(99) Campus Point State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~34° 25.20' N. lat. 119° 53.60' W. long.;~~
~~34° 21.48' N. lat. 119° 53.60' W. long.;~~
34° 25.207’ N. lat. 119° 53.600’ W. long.;
34° 21.475’ N. lat. 119° 53.600’ W. long.; thence eastward along the three nautical mile offshore boundary to
~~34° 21.21' N. lat. 119° 50.65' W. long.; and~~
~~34° 24.30' N. lat. 119° 50.65' W. long.~~
34° 21.212’ N. lat. 119° 50.650’ W. long.; and
34° 24.300’ N. lat. 119° 50.650’ W. long.
(B) ~~Take of all living marine resources is prohibited except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: take pursuant to activities authorized under subsection 632(b)(99)(C) is allowed.
(C) Operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(100) Goleta Slough State Marine Conservation Area.
(A) This area includes the waters below the mean high tide line within Goleta Slough ~~northward of latitude 34° 25.02' N~~.

(B) ~~Take of all living marine resources is prohibited except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: take pursuant to activities authorized under subsection 632(b)(100)(D) is allowed.
(C) In waters below the mean high tide line inside the Goleta Slough Ecological Reserve as defined within Section 630, the following restrictions apply:
1. Boating, swimming, wading, and diving are prohibited.
2. No person shall enter this area and remain therein except on established trails, paths or other designated areas except department employees or designated employees of Santa Barbara Airport, City of Santa Barbara, Goleta Sanitary District and Goleta Valley Vector Control District for the purposes of carrying out official duties.
(D) Routine maintenance, dredging, habitat restoration, research and education, maintenance of artificial structures, and operation and maintenance of existing facilities in the conservation area is allowed pursuant to any required federal, state and local permits, or activities pursuant to Section 630, or as otherwise authorized by the department.

(101) Richardson Rock ~~(San Miguel Island)~~ State Marine Reserve.
(A) This area is bounded by the mean high tide line of Richardson Rock and straight lines connecting the following points in the order listed except where noted:
34° 07.905' N. lat. 120° 28.200' W. long.;
34° 02.211' N. lat. 120° 28.200' W. long.;
34° 02.211' N. lat. 120° 31.467' W. long.; thence northward along the three nautical mile offshore boundary to
34° 07.905' N. lat. 120° 28.200' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(102) San Miguel Island Special Closure. Special restrictions on boating and access apply to San Miguel Island as follows.
(A) Boating is allowed at San Miguel Island except west of a line drawn between Judith Rock (~~34° 01.50' N. lat. 120° 25.30' W. long.~~34° 01.500’ N. lat. 120° 25.300’ W. long.) and Castle Rock (~~34° 03.30' N. lat. 120° 26.30' W. long.~~34° 03.300’ N. lat. 120° 26.300’ W. long.) where boats are prohibited closer than 300 yards from shore.
1. Notwithstanding the 300-yard boating closure between Judith Rock and Castle Rock, the following shall apply:
a. Boats may approach San Miguel Island no nearer than 100 yards from shore during the period(s) from March 15 through April 30, and October 1 through December 15; and
b. Boats operated by commercial sea urchin divers may enter waters of the 300- yard area between the western boundary of the Judith Rock State Marine Reserve at 120° 26.60' W. long. and Castle Rock for the purpose of fishing sea urchins during the period(s) from March 15 through April 30, and October 1 through December 15.
2. The department may rescind permission for boats to enter waters within 300 yards between Judith Rock and Castle Rock upon finding that impairment to the island marine mammal resource is imminent. Immediately following such closure, the department will request the commission to hear, at its regularly scheduled meeting, presentation of documentation supporting the need for such closure.
(B) Other Requirements:
1. Boats traveling within 300 yards of the shoreline or anchorages shall operate with a minimum amount of noise and shall not exceed speeds of five miles per hour.

2. Except as permitted by federal law or emergency caused by hazardous weather, boats may be anchored overnight only at Tyler Bight and Cuyler Harbor.
3. Landing is allowed on San Miguel Island only at the designated landing beach in Cuyler Harbor.
4. No person shall have access to all other offshore rocks and islands at San Miguel Island.

(103) Harris Point ~~(San Miguel Island)~~ State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
34° 03.160' N. lat. 120° 23.300' W. long.;
34° 09.285' N. lat. 120° 23.300' W. long.; thence southeastward along the three nautical mile offshore boundary to
34° 06.322' N. lat. 120° 18.400' W. long.; and
34° 01.755' N. lat. 120° 18.400' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.
(C) An exemption to the reserve, where commercial and recreational take of living marine resources is allowed, exists between the mean high tide line in Cuyler Harbor and a straight line between the following points:
34° 03.554' N. lat. 120° 21.311' W. long.; and
34° 02.908' N. lat. 120° 20.161' W. long.

(104) Judith Rock ~~(San Miguel Island)~~ State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
34° 01.802' N. lat. 120° 26.600' W. long.;
~~33° 58.508' N. lat. 120° 26.600' W. long.;~~
33° 58.513' N. lat. 120° 26.600' W. long.; thence eastward along the three nautical mile offshore boundary to
~~33° 58.510' N. lat. 120° 25.300' W. long.; and~~
~~34° 01.618' N. lat. 120° 25.300' W. long.~~
33° 58.518' N. lat. 120° 25.300' W. long.; and
34° 01.689' N. lat. 120° 25.300' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(105) Carrington Point ~~(Santa Rosa Island)~~ State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~34° 01.296' N. lat. 120° 05.200' W. long.;~~
34° 01.280' N. lat. 120° 05.200' W. long.;
34° 04.000' N. lat. 120° 05.200' W. long.;
34° 04.000' N. lat. 120° 01.000' W. long.;
34° 00.500' N. lat. 120° 01.000' W. long.; and
34° 00.500' N. lat. 120° 02.930' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(106) Skunk Point ~~(Santa Rosa Island)~~ State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~33° 59.000' N. lat. 119° 58.808' W. long.;~~
33° 59.000' N. lat. 119° 58.985' W. long.;
33° 59.000' N. lat. 119° 58.000' W. long.;
33° 57.100' N. lat. 119° 58.000' W. long.; and
33° 57.100' N. lat. 119° 58.257' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(107) South Point ~~(Santa Rosa Island)~~ State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
33° 55.014' N. lat. 120° 10.000' W. long.
33° 51.506' N. lat. 120° 10.000' W. long.; thence eastward along the three nautical mile offshore boundary to
33° 50.657' N. lat. 120° 06.500' W. long.;
33° 53.800' N. lat. 120° 06.500' W. long.; and
33° 53.800' N. lat. 120° 06.544' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(108) Painted Cave ~~(Santa Cruz Island)~~ State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
34° 04.492' N. lat. 119° 53.000' W. long.;
34° 05.200' N. lat. 119° 53.000' W. long.; thence eastward along a line one nautical mile offshore to
34° 05.000' N. lat. 119° 51.000' W. long.; and
34° 04.034' N. lat. 119° 51.000' W. long.
(B) ~~Take of all living marine resources is prohibited except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the recreational take of spiny lobster and pelagic finfish [subsection 632(a)(3)] is allowed.

(109) Gull Island ~~(Santa Cruz Island)~~ State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
33° 58.065' N. lat. 119° 50.967' W. long.;
33° 58.000' N. lat. 119° 51.000' W. long.;
33° 58.000' N. lat. 119° 53.000' W. long.;
33° 55.449' N. lat. 119° 53.000' W. long.; thence eastward along the three nautical mile offshore boundary to
33° 54.257' N. lat. 119° 48.000' W. long.; and
~~33° 57.756' N. lat. 119° 48.000' W. long.~~
33° 57.769' N. lat. 119° 48.000' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(110) Scorpion ~~(Santa Cruz Island)~~ State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
34° 02.958' N. lat. 119° 35.500' W. long.;
34° 06.202' N. lat. 119° 35.500' W. long.; thence eastward along the three nautical mile offshore boundary to
34° 06.245' N. lat. 119° 32.800' W. long.; and
34° 02.700' N. lat. 119° 32.800' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(111) Anacapa Island Special Closure.
(A) No net or trap may be used in waters less than 20 feet deep off the Anacapa Islands commonly referred to as Anacapa Island.
(B) A brown pelican fledgling area is designated from the mean high tide mark seaward to a water depth of 20 fathoms (120 feet) on the north side of West Anacapa Island between a line extending 000° True off Portuguese Rock (~~34° 00.91' N. lat. 119° 25.26' W. long.~~34° 00.910’ N. lat. 119° 25.260’ W. long.) to a line extending 000° True off the western edge of Frenchy's Cove (~~34° 00.417' N. lat. 119° 24.600' W. long.~~34° 00.411’ N. lat. 119° 24.600’ W. long.), a distance of approximately 4,000 feet. No person except department employees or employees of the National Park Service in the performance of their official duties shall enter this area during the period January 1 to October 31.

(112) Anacapa Island State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
34° 00.828' N. lat. 119° 26.623' W. long.;
34° 00.800' N. lat. 119° 26.700' W. long.;
34° 03.940' N. lat. 119° 26.700' W. long.; thence eastward along the three nautical mile offshore boundary to
34° 04.002' N. lat. 119° 24.600' W. long.; and
~~34° 00.417' N. lat. 119° 24.600' W. long.~~
34° 00.411' N. lat. 119° 24.600' W. long.
(B) ~~Take of all living marine resources is prohibited except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the recreational take of spiny lobster and pelagic finfish [subsection 632(a)(3)] and the commercial take of spiny lobster is allowed.

(113) Anacapa Island State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~34° 00.417' N. lat. 119° 24.600' W. long.;~~
34° 00.411' N. lat. 119° 24.600' W. long.;
34° 04.002' N. lat. 119° 24.600' W. long.; thence eastward along the three nautical mile offshore boundary to
34° 04.033' N. lat. 119° 21.400' W. long.;
34° 01.000' N. lat. 119° 21.400' W. long.; and
~~34° 00.960' N. lat. 119° 21.449' W. long.~~

34° 00.960' N. lat. 119° 21.463' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(114) Footprint ~~(Anacapa Channel)~~ State Marine Reserve.
(A) This area is bounded by the straight lines connecting the following points in the order listed except where noted:
33° 59.300' N. lat. 119° 30.965' W. long.;
33° 57.510' N. lat. 119° 30.965' W. long.; thence eastward along the three nautical mile offshore boundary to
33° 57.264' N. lat. 119° 25.987' W. long.;
33° 59.300' N. lat. 119° 25.987' W. long.; and
33° 59.300' N. lat. 119° 30.965' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(115) Begg Rock ~~(San Nicolas Island Quad)~~ State Marine Reserve.
(A) This area includes all state waters below the mean high tide line surrounding Begg Rock, located in the vicinity of ~~33° 21.71' N. lat. 119° 41.76' W. long.~~33° 21.743’ N. lat. 119° 41.718’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(116) Santa Barbara Island State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~33° 28.500' N. lat. 119° 01.847' W. long.;~~
33° 28.500' N. lat. 119° 01.813' W. long.;
33° 28.500' N. lat. 118° 58.051' W. long.; thence along the three nautical mile offshore boundary to
33° 24.842' N. lat. 119° 02.200' W. long.; and
~~33° 27.973' N. lat. 119° 02.200' W. long.~~
33° 27.911' N. lat. 119° 02.200' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(117) Point Dume State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~34° 02.28' N. lat. 118° 53.00' W. long.;~~
~~33° 59.14' N. lat. 118° 53.00' W. long.;~~
34° 02.306’ N. lat. 118° 53.000’ W. long.;
33° 59.140’ N. lat. 118° 53.000’ W. long.; thence southeastward along the three nautical mile offshore boundary to
~~33° 56.96' N. lat. 118° 49.20' W. long.; and~~
~~34° 00.76' N. lat. 118° 49.20' W. long.~~
33° 56.960’ N. lat. 118° 49.200’ W. long.; and
34° 00.780’ N. lat. 118° 49.200’ W. long.

(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take by spearfishing [Section 1.76] of white seabass and pelagic finfish [subsection 632(a)(3)] is allowed.
2. The commercial take of swordfish by harpoon [subsection 107(f)(1)]; and coastal pelagic species [Section 1.39] by round haul net [Section 8750, Fish and Game Code], brail gear [Section 53.01(a)], and light boat [Section 53.01(k)] is allowed. Not more than five percent by weight of any commercial coastal pelagic species catch landed or possessed shall be other incidentally taken species.
3. Take pursuant to activities authorized under subsection 632(b)(117)(C) is allowed.
(C) Beach nourishment and other sediment management activities are allowed inside the conservation area pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(118) Point Dume State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~34° 00.76' N. lat. 118° 49.20' W. long.;~~
~~33° 56.96' N. lat. 118° 49.20' W. long.;~~
34° 00.780’ N. lat. 118° 49.200’ W. long.;
33° 56.960’ N. lat. 118° 49.200’ W. long.; thence eastward along the three nautical mile offshore boundary to
~~33° 57.06' N. lat. 118° 47.26' W. long.; and~~
~~34° 01.20' N. lat. 118° 47.26' W. long.~~
33° 57.061’ N. lat. 118° 47.260’ W. long.; and
34° 01.178’ N. lat. 118° 47.260’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(119) Point Vicente State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~33° 44.80' N. lat. 118° 24.82' W. long.;~~
~~33° 44.80' N. lat. 118° 28.93' W. long.;~~
33° 44.800’ N. lat. 118° 24.807’ W. long.;
33° 44.800’ N. lat. 118° 28.931’ W. long.; thence southeastward along the three nautical mile offshore boundary to
~~33° 41.16' N. lat. 118° 23.80' W. long.; and~~
~~33° 44.19' N. lat. 118° 23.80' W. long.~~
33° 41.155’ N. lat. 118° 23.800’ W. long.; and
33° 44.198’ N. lat. 118° 23.800’ W. long.
(B) ~~Take of all living marine resources is prohibited except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: take pursuant to activities authorized under subsection 632(b)(119)(C) is allowed.
(C) Remediation activities associated with the Palos Verdes Shelf Operable Unit of the Montrose Chemical Superfund Site are allowed inside the conservation area pursuant to the Interim Record of Decision issued by the United States Environmental Protection Agency and any subsequent Records of Decision.

(120) Abalone Cove State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~33° 44.19' N. lat. 118° 23.80' W. long.;~~
~~33° 41.16' N. lat. 118° 23.80' W. long.;~~
33° 44.198’ N. lat. 118° 23.800’ W. long.;
33° 41.155’ N. lat. 118° 23.800’ W. long.; thence southeastward along the three nautical mile offshore boundary to
~~33° 40.85' N. lat. 118° 22.50' W. long.; and~~
~~33° 44.24' N. lat. 118° 22.50' W. long.~~
33° 40.851’ N. lat. 118° 22.500’ W. long.; and
33° 44.240’ N. lat. 118° 22.500’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take by spearfishing~~; and market squid by hand-held dip net [Section 1.42]~~ [Section 1.76] of white seabass and pelagic finfish [subsection 632(a)(3)]; and market squid by hand-held dip net [Section 1.42] is allowed.
2. The commercial take of swordfish by harpoon [subsection 107(f)(1)]; and coastal pelagic species [Section 1.39] and Pacific bonito by round haul net [Section 8750, Fish and Game Code], brail gear [Section 53.01(a)], and light boat [Section 53.01(k)] is allowed. Not more than five percent by weight of any commercial coastal pelagic species or Pacific bonito catch landed or possessed shall be other incidentally taken species.
3. Take pursuant to activities authorized under subsection 632(b)(120)(C) is allowed.
(C) Remediation activities associated with the Palos Verdes Shelf Operable Unit of the Montrose Chemical Superfund Site are allowed inside the conservation area pursuant to the Interim Record of Decision issued by the United States Environmental Protection Agency and any subsequent Records of Decision.

(121) Bolsa Bay State Marine Conservation Area.
(A) This area includes the waters below the mean high tide line within Bolsa Bay estuary southward of a line that approximates the Warner Avenue bridge located between the following two points:
~~33° 42.70' N. lat. 118° 03.63' W. long.; and~~
~~33° 42.70' N. lat. 118° 03.61' W. long.;~~
33° 42.700’ N. lat. 118° 03.633’ W. long.; and
33° 42.700’ N. lat. 118° 03.604’ W. long.;
and northward of a line that approximates the pedestrian bridge located between the following two points:
~~33° 42.22' N. lat. 118° 03.17' W. long.; and~~
~~33° 42.19' N. lat. 118° 03.18' W. long.~~
33° 42.219’ N. lat. 118° 03.167’ W. long.; and
33° 42.177’ N. lat. 118° 03.186’ W. long.
(B) ~~Take of all living marine resources is prohibited except the~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of finfish [subsection 632(a)(2)] by hook and line from shore in designated areas ~~only,or take~~only is allowed.
2. Take pursuant to activities authorized under subsection 632(b)(121)(F) is allowed.
(C) Boating, swimming, wading, and diving are prohibited within the conservation area.

(D) No person, except state and local law enforcement officers, fire suppression agencies and employees of the department in the performance of their official duties or persons possessing written permission from the department or employees of Signal Corporation and its invitees for the purpose of carrying out oil and gas operations, shall enter this conservation area and remain therein except on established trails, paths, or other designated areas.
(E) No person shall enter this conservation area between the hours of 8:00 p.m. and 6:00 a.m.
(F) Routine operation and maintenance, habitat restoration, maintenance dredging, research and education, and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or activities pursuant to Section 630, or as otherwise authorized by the department.

(122) Bolsa Chica Basin State Marine Conservation Area.
(A) This area includes the waters below the mean high tide line within the Bolsa Chica Basin estuary northeastward of the Pacific Coast Highway Bridge, approximated by a straight line between the following two points:
~~33° 41.02' N. lat. 118° 02.15' W. long.; and~~
~~33° 40.98' N. lat. 118° 02.11' W. long.;~~
33° 41.028’ N. lat. 118° 02.153’ W. long.; and
33° 40.981’ N. lat. 118° 02.109’ W. long.;
and southeastward of a straight line between the following two points:
~~33° 42.22' N. lat. 118° 03.17' W. long.; and~~
~~33° 42.19' N. lat. 118° 03.18' W. long.~~
33° 42.219’ N. lat. 118° 03.167’ W. long.; and
33° 42.177’ N. lat. 118° 03.186’ W. long.
(B) ~~Take of all living marine resources is prohibited except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: take pursuant to activities authorized under subsection 632(b)(122)(F) is allowed.
(C) Boating, swimming, wading, and diving are prohibited within the conservation area.
(D) No person, except state and local law enforcement officers, fire suppression agencies and employees of the department in the performance of their official duties or persons possessing written permission from the department or employees of Signal Corporation and its invitees for the purpose of carrying out oil and gas operations, shall enter this conservation area and remain therein except on established trails, paths, or other designated areas.
(E) No person shall enter this conservation area between the hours of 8:00 p.m. and 6:00 a.m.
(F) Routine operation and maintenance, habitat restoration, maintenance dredging, research and education, and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or activities pursuant to Section 630, or as otherwise authorized by the department.

(123) Arrow Point to Lion Head Point ~~(Catalina Island)~~ State Marine Conservation Area.
(A) This area is bounded by the mean high tide line to a distance of 1000 feet seaward of the mean lower low tide line of any shoreline southeastward of a line connecting the following two points:
~~33° 28.660' N. lat. 118° 32.310' W. long.; and~~
33° 28.652' N. lat. 118° 32.310' W. long.; and

33° 28.820' N. lat. 118° 32.310' W. long.
~~And~~and northwestward of a line connecting the following two points:
33° 27.240' N. lat. 118° 29.900' W. long.; and
~~33° 27.170' N. lat. 118° 30.100' W. long.~~
33° 27.174' N. lat. 118° 30.089' W. long.
(B) Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. All recreational take is allowed in accordance with current regulations, except the ~~Recreational~~recreational take of invertebrates is prohibited. ~~Take of other living marine resources is allowed.~~
2. All commercial take is allowed in accordance with current regulations.

(124) Blue Cavern ~~(Catalina Island)~~ Onshore State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~33° 25.96' N. lat. 118° 27.00' W. long.; and~~
~~33° 27.50' N. lat. 118° 27.00' W. long;~~
~~33° 27.50' N. lat. 118° 29.30' W. long.; and~~
~~33° 26.64' N. lat. 118° 29.30' W. long.~~
33° 25.960’ N. lat. 118° 27.000’ W. long.; and
33° 27.500’ N. lat. 118° 27.000’ W. long;
33° 27.500’ N. lat. 118° 29.300’ W. long.; and
33° 26.640’ N. lat. 118° 29.300’ W. long.
(B) ~~Take of all living marine resources is prohibited except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: take pursuant to activities authorized under subsections 632(b)(124)(D) and 632(b)(124)(E) is allowed.
(C) Except as pursuant to Federal law, emergency caused by hazardous weather, or as provided in subsection 632(b)(124)(D), it is unlawful to anchor or moor a vessel in the formerly designated Catalina Marine Science Center Marine Life Refuge (Section 10932, Fish and Game Code).
(D) The director of the Catalina Marine Science Center Marine Life Refuge, or any person that the director of the refuge has authorized may anchor or moor a vessel or take, for scientific purposes, any fish or specimen of marine plant life in the formerly designated Catalina Marine Science Center Marine Life Refuge under the conditions prescribed in a scientific collecting permit issued by the department (Section 10655, Fish and Game Code).
(E) Maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(125) Blue Cavern ~~(Catalina Island)~~ Offshore State Marine Conservation Area.
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
~~33° 27.50' N. lat. 118° 27.00' W. long.;~~
~~33° 29.97' N. lat. 118° 27.00' W. long.;~~
33° 27.500’ N. lat. 118° 27.000’ W. long.;
33° 29.970’ N. lat. 118° 27.000’ W. long.; thence northwestward along the three nautical mile offshore boundary to
~~33° 30.81' N. lat. 118° 29.30' W. long.;~~

~~33° 27.50' N. lat. 118° 29.30' W. long.; and~~
~~33° 27.50' N. lat. 118° 27.00' W. long.~~
33° 30.810’ N. lat. 118° 29.300’ W. long.;
33° 27.500’ N. lat. 118° 29.300’ W. long.; and
33° 27.500’ N. lat. 118° 27.000’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of pelagic finfish [subsection 632(a)(3)], by hook and line or by spearfishing [Section 1.76], white seabass by spearfishing [Section 1.76] and market squid by hand-held dip net [Section 1.42] is allowed.
2. The commercial take of pelagic finfish [subsection 632(a)(3)] by hook and line and swordfish by harpoon [subsection 107(f)(1)] is allowed.

(126) Long Point ~~(Catalina Island)~~ State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~33° 24.38' N. lat. 118° 21.98' W. long.;~~
~~33° 25.50' N. lat. 118° 21.98' W. long.;~~
~~33° 25.50' N. lat. 118° 24.00' W. long.; and~~
~~33° 25.11' N. lat. 118° 24.00' W. long.~~
33° 24.380’ N. lat. 118° 21.980’ W. long.;
33° 25.500’ N. lat. 118° 21.980’ W. long.;
33° 25.500’ N. lat. 118° 24.000’ W. long.; and
33° 25.102’ N. lat. 118° 24.000’ W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(127) Casino Point ~~(Catalina Island)~~ State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~33° 20.90' N. lat. 118° 19.43' W. long.;~~
~~33° 20.90' N. lat. 118° 19.42' W. long.;~~
~~33° 20.92' N. lat. 118° 19.38' W. long.;~~
~~33° 20.95' N. lat. 118° 19.42' W. long.;~~
~~33° 20.97' N. lat. 118° 19.47' W. long.;~~
~~33° 21.00' N. lat. 118° 19.52' W. long.; and~~
~~33° 20.96' N. lat. 118° 19.56' W. long.~~
33° 20.900’ N. lat. 118° 19.430’ W. long.;
33° 20.900’ N. lat. 118° 19.420’ W. long.;
33° 20.920’ N. lat. 118° 19.380’ W. long.;
33° 20.950’ N. lat. 118° 19.420’ W. long.;
33° 20.970’ N. lat. 118° 19.470’ W. long.;
33° 21.000’ N. lat. 118° 19.520’ W. long.; and
33° 20.960’ N. lat. 118° 19.560’ W. long.
(B) ~~Take of all living marine resources is prohibited, except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: take pursuant to activities authorized under subsection 632(b)(127)(C) is allowed.

(C) Maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.
(D) Feeding of fish for marine life viewing is allowed.

(128) Lover's Cove ~~(Catalina Island)~~ State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
33° 20.460' N. lat. 118° 18.900' W. long.;
33° 20.711' N. lat. 118° 18.900' W. long.; and
33° 20.711' N. lat. 118° 19.321' W. long.
(B) ~~Take of all living marine resources is prohibited, except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take by hook and line from the Cabrillo Mole is allowed.~~or take~~
2. Take pursuant to activities authorized under subsection 632(b)(128)(C) is allowed.
(C) Maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.
(D) Feeding of fish for marine life viewing is allowed.

(129) Farnsworth ~~(Catalina Island)~~ Onshore State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~33° 21.00' N. lat. 118° 29.08' W. long.;~~
~~33° 21.00' N. lat. 118° 30.00' W. long.;~~
~~33° 19.00' N. lat. 118° 29.00' W. long.;~~
~~33° 19.00' N. lat. 118° 27.90' W. long.; and~~
~~33° 19.56' N. lat. 118° 27.90' W. long.~~
33° 21.000’ N. lat. 118° 29.080’ W. long.;
33° 21.000’ N. lat. 118° 30.000’ W. long.;
33° 19.000’ N. lat. 118° 29.000’ W. long.;
33° 19.000’ N. lat. 118° 27.900’ W. long.; and
33° 19.560’ N. lat. 118° 27.900’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take by spearfishing [Section 1.76] of white seabass and pelagic finfish [subsection 632(a)(3)]; marlin, tunas, and dorado (dolphinfish) (*Coryphaena hippurus*) by trolling [subsection 27.80(a)(3)]; and market squid by hand-held dip net [Section 1.42] is allowed.
2. The commercial take of swordfish by harpoon [subsection 107(f)(1)]; and coastal pelagic species [Section 1.39] by round haul net [Section 8750, Fish and Game Code], brail gear [Section 53.01(a)], and light boat [Section 53.01(k)] is allowed. Not more than five percent by weight of any commercial coastal pelagic species catch landed or possessed shall be other incidentally taken species.

(130) Farnsworth ~~(Catalina Island)~~ Offshore State Marine Conservation Area.
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
~~33° 21.00' N. lat. 118° 30.00' W. long.;~~

~~33° 21.00' N. lat. 118° 32.88' W. long.;~~
33° 21.000’ N. lat. 118° 30.000’ W. long.;
33° 21.000’ N. lat. 118° 32.878’ W. long.; thence southward along the three nautical mile offshore boundary to
~~33° 19.00' N. lat. 118° 31.98' W. long.;~~
~~33° 19.00' N. lat. 118° 29.00' W. long.; and~~
~~33° 21.00' N. lat. 118° 30.00' W. long.~~
33° 19.000’ N. lat. 118° 31.978’ W. long.;
33° 19.000’ N. lat. 118° 29.000’ W. long.; and
33° 21.000’ N. lat. 118° 30.000’ W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of pelagic finfish [subsection 632(a)(3)] by hook and line or by spearfishing [Section 1.76]; white seabass by spearfishing [Section 1.76]; marlin, tunas and dorado (dolphinfish) (*Coryphaena hippurus*) by trolling [subsection 27.80(a)(3)] and market squid by hand-held dip net [Section 1.42] is allowed.
2. The commercial take of swordfish by harpoon [subsection 107(f)(1)]; and coastal pelagic species [Section 1.39] by round haul net [Section 8750, Fish and Game Code], brail gear [Section 53.01(a)], and light boat [Section 53.01(k)] is allowed. Not more than five percent by weight of any commercial coastal pelagic species catch landed or possessed shall be other incidentally taken species.

(131) Cat Harbor ~~(Catalina Island)~~ State Marine Conservation Area.
(A) This area includes the waters below the mean high tide line on the west side of Catalina Island northward of a straight line connecting Pin Rock (~~33° 25.50' N. lat. 118° 30.28' W. long.~~33° 25.486’ N. lat. 118° 30.294’ W. long.) and Cat Head Point (~~33° 25.32' N. lat. 118° 30.76' W. long.~~33° 25.320’ N. lat. 118° 30.760’ W. long.).
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of finfish [subsection 632(a)(2)] by hook and line or by spearfishing [Section 1.76], market squid by hook and line, and spiny lobster and sea urchin is allowed.
2. The commercial take of sea cucumbers by diving only, and spiny lobster and sea urchin is allowed.
3. Aquaculture of finfish [subsection 632(a)(2)] pursuant to any required state permits is allowed.
4. Take pursuant to activities authorized under subsection 632(b)(131)(C) is allowed.
(C) Maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(132) Upper Newport Bay State Marine Conservation Area.
(A) This area includes the waters below the mean high tide line within Upper Newport Bay northeastward of Pacific Coast Highway approximated by a line between the following two points:
~~33° 37.02' N. lat. 117° 54.24' W. long.;~~
~~33° 37.02' N. lat. 117° 54.32' W. long.;~~
33° 37.014’ N. lat. 117° 54.237’ W. long.;

33° 37.014’ N. lat. 117° 54.336’ W. long.; and southwestward of Jamboree Road approximated by a line between the following two points:
~~33° 39.07' N. lat. 117° 52.02' W. long.; and~~
~~33° 39.03' N. lat. 117° 52.01' W. long.~~
33° 39.071’ N. lat. 117° 52.021’ W. long.; and
33° 39.027’ N. lat. 117° 52.014’ W. long.
(B) ~~Take of all living marine resources is prohibited except the~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of finfish [subsection 632(a)(2)] by hook and line from shore ~~only, or take~~only is allowed.
2. Take pursuant to activities authorized under subsection 632(b)(132)(D)~~, is~~is allowed.
(C) In waters below the mean high tide line inside the Upper Newport Bay Ecological Reserve, northeastward of a line connecting Shellmaker Island (~~33° 37.20' N. lat. 117° 53.51' W. long.~~33° 37.200’ N. lat. 117° 53.510’ W. long.) and North Star Beach (~~33° 37.38' N. lat. 117° 53.60' W. long.~~33° 37.380’ N. lat. 117° 53.600’ W. long.) the following restrictions apply:
(1) Swimming is allowed only in the area between North Star Beach and mid-channel.
(2) Boats are limited to speeds less than five miles per hour.
(3) Shoreline access is limited to established trails, paths, or other designated areas.
(D) Maintenance dredging, habitat restoration, research and education programs, maintenance of artificial structures, and operation and maintenance of existing facilities inside the conservation area is allowed pursuant to any required federal, state and local permits, or activities pursuant to Section 630, or as otherwise authorized by the department.

(133) Crystal Cove State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~33° 35.373' N. lat. 117° 52.648' W. long.;~~
33° 35.372' N. lat. 117° 52.645' W. long.;
33° 35.065' N. lat. 117° 52.692' W. long.;
33° 32.400' N. lat. 117° 49.200' W. long.;~~ and~~
~~33° 33.233' N. lat. 117° 49.200' W. long.~~
33° 33.211' N. lat. 117° 49.200' W. long.; and
33° 33.224' N. lat. 117° 49.184' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of finfish [subsection 632(a)(2)] by hook and line or by spearfishing [Section 1.76], and spiny lobster and sea urchin is allowed.
2. The commercial take of sea urchin; spiny lobster by trap; and costal pelagic species [Section 1.39] by round haul net [Section 8750, Fish and Game Code], brail gear [Section 53.01(a)], and light boat [Section 53.01(k)] is allowed. Not more than five percent by weight of any commercial coastal pelagic species catch landed or possessed shall be other incidentally taken species.
3. Take pursuant to activities authorized under subsection 632(b)(133)(C) is allowed.
(C) Beach nourishment and other sediment management activities, and operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(D) Take of all living marine resources from inside tidepools is prohibited. For purposes of this section, tidepools are defined as the area encompassing the rocky pools that are filled with seawater due to retracting tides between the mean higher high tide line and the mean lower low tide line.

(134) Laguna Beach State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
33° 33.224' N. lat. 117° 49.184' W. long.;
~~33° 33.233' N. lat. 117° 49.200' W. long.;~~
~~33° 30.800' N. lat. 117° 49.200' W. long.; and~~
~~33° 30.800' N. lat. 117° 45.631' W. long.~~
33° 33.211' N. lat. 117° 49.200' W. long.;
33° 30.713' N. lat. 117° 49.200' W. long.; and
33° 30.713' N. lat. 117° 45.264' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(135) Laguna Beach State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~33° 30.800' N. lat. 117° 45.631' W. long.;~~
~~33° 30.800' N. lat. 117° 49.200' W. long.;~~
33° 30.713' N. lat. 117° 45.264' W. long.;
33° 30.713' N. lat. 117° 49.200' W. long.;
33° 30.050' N. lat. 117° 49.200' W. long.; and
~~33° 30.050' N. lat. 117° 44.771' W. long.~~
33° 30.050' N. lat. 117° 44.762' W. long.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: take pursuant to activities authorized under subsection 632(b)(135)(C) is allowed.
(C) Operation and maintenance of artificial structures and facilities, beach grooming, maintenance dredging, and habitat restoration inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(136) Dana Point State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting and the following points in the order listed:
~~33° 30.050' N. lat. 117° 44.771' W. long.;~~
33° 30.050' N. lat. 117° 44.762' W. long.;
33° 30.050' N. lat. 117° 46.000' W. long.;
33° 30.000' N. lat. 117° 46.000' W. long.;
33° 27.300' N. lat. 117° 43.300' W. long.;
33° 27.478' N. lat. 117° 42.276' W. long.; and
33° 27.622' N. lat. 117° 42.425' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:

1. The recreational take of finfish [subsection 632(a)(2)] by hook and line or by spearfishing [Section 1.76], and spiny lobster and sea urchin is allowed.
2. The commercial take of sea urchin, spiny lobster by trap, and costal pelagic species [Section 1.39] by round haul net [Section 8750, Fish and Game Code], brail gear [Section 53.01(a)], and light boat [Section 53.01(k)] is allowed. Not more than five percent by weight of any commercial coastal pelagic species catch landed or possessed shall be other incidentally taken species.
3. Take pursuant to activities authorized under subsection 632(b)(136)(C) is allowed.
(C) Operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.
(D) Take of all living marine resources from inside tidepools is prohibited. For purposes of this section, tidepools are defined as the area encompassing the rocky pools that are filled with seawater due to retracting tides between the mean higher high tide line and the mean lower low tide line.

(137) Batiquitos Lagoon State Marine Conservation Area.
(A) This area includes the waters below the mean high tide line within Batiquitos Lagoon eastward of the Interstate Highway 5 Bridge, approximated by a line between the following two points:
~~33° 05.44' N. lat. 117° 18.12' W. long.; and~~
~~33° 05.46' N. lat. 117° 18.13' W. long.~~
33° 05.440’ N. lat. 117° 18.120’ W. long.; and
33° 05.460’ N. lat. 117° 18.130’ W. long.
(B) ~~Take of all living marine resources is prohibited except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: take pursuant to activities authorized under subsection 632(b)(137)(D) is allowed.
(C) Boating, swimming, wading, and diving are prohibited within the conservation area.
(D) Operation and maintenance, habitat restoration, research and education, maintenance dredging and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or activities pursuant to Section 630, or as otherwise authorized by the department.

(138) Swami's State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
33° 02.900' N. lat. 117° 17.927' W. long.;
33° 02.900' N. lat. 117° 21.743' W. long.; thence southward along the three nautical mile offshore boundary to
33° 00.000' N. lat. 117° 20.398' W. long.; and
33° 00.000' N. lat. 117° 16.698' W. long.; thence northward along the mean high tide line onshore boundary to
33° 00.962' N. lat. 117° 16.850' W. long.; and
33° 00.980' N. lat. 117° 16.857' W. long.
(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. Recreational take by hook and line from shore is allowed.

2. The recreational take by spearfishing [Section 1.76] of white seabass and pelagic finfish [subsection 632(a)(3)] is allowed.
3. Take pursuant to activities authorized under subsection 632(b)(138)(C) is allowed.
(C) Beach nourishment and other sediment management activities and operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(139) San Elijo Lagoon State Marine Conservation Area.
(A) This area includes the waters below the mean high tide line within San Elijo Lagoon southeastward of a straight line between the following two points:
33^{o} 00.980' N. lat. 117^{o} 16.857' W. long.; and
33^{o} 00.962' N. lat. 117^{o} 16.850' W. long.
(B) ~~Take of all living marine resources is prohibited except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: take pursuant to activities authorized under subsection 632(b)(139)(D) is allowed.
(C) Boating, swimming, wading, and diving are prohibited within the conservation area.
(D) Operation and maintenance, maintenance dredging, habitat restoration including sediment deposition, research and education, and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or activities pursuant to Section 630, or as otherwise authorized by the department.

(140) San Dieguito Lagoon State Marine Conservation Area.
(A) This area consists of waters below the mean high tide line within the San Dieguito Lagoon Ecological Reserve southeastward of a straight line between the following two points:
32^{o} 58.066' N. lat. 117^{o} 15.579' W. long.; and
32^{o} 58.072' N. lat. 117^{o} 15.548' W. long.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the recreational take of finfish by hook and line from shore is allowed.
(C) Boating, swimming, wading, and diving are prohibited within the conservation area.
(D) No person, except state and local law enforcement officers, fire suppression agencies and employees of the department in the performance of their official duties or persons possessing written permission from the department, shall be permitted on the California least tern nesting island.
(E) No person, except state and local law enforcement officers, fire suppression agencies and employees of the department in the performance of their official duties or persons possessing written permission from the department, shall enter this conservation area between 8:00 p.m. and 5:00 a.m.
(F) The County of San Diego, after consultation with the department, may carry out management activities for fish and wildlife, flood control and vector control. Authorized operation and maintenance activities shall include, but shall not be limited to, use of chemicals, vegetation control, water control and use of associated equipment.
(G) Collections of fish, wildlife, water and soil may be made by the department for the purposes of fish and wildlife management or by San Diego County for the purposes of water quality testing and vector control.

(141) San Diego-Scripps Coastal State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
32° 53.000' N. lat. 117° 15.166' W. long.;
32° 53.000' N. lat. 117° 16.400' W. long.;
32° 51.964' N. lat. 117° 16.400' W. long.; and
~~32° 51.964' N. lat. 117° 15.233' W. long.~~
32° 51.964' N. lat. 117° 15.252' W. long.
(B) ~~Take of all living marine resources is prohibited except the~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of coastal pelagic species [Section 1.39], except market squid, by hook and line only is allowed.~~and take~~
2. Take pursuant to activities authorized under subsection 632(b)(141)(D) is allowed.
(C) Licensees of the Regents of the University of California and all officers, employees, and students of such university may take, for scientific purposes, invertebrates, fish, or specimens of marine plant or algae under the conditions prescribed in a scientific collecting permit issued by the department.
(D) Operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(142) Matlahuayl State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~32° 51.964' N. lat. 117° 15.233' W. long.;~~
32° 51.964' N. lat. 117° 15.252' W. long.;
32° 51.964' N. lat. 117° 16.400' W. long.; and
32° 51.067' N. lat. 117° 16.400' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.
(C) Boats may be launched and retrieved only in designated areas and may be anchored within the reserve only during daylight hours.

(143) South La Jolla State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
32° 49.573' N. lat. 117° 16.781' W. long.;
32° 49.573' N. lat. 117° 19.000' W. long.;
32° 47.945' N. lat. 117° 19.000' W. long.; and
32° 47.945' N. lat. 117° 15.495' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(144) South La Jolla State Marine Conservation Area.
(A) This area is bounded by straight lines connecting the following points in the order listed except where noted:
32° 49.573' N. lat. 117° 19.000' W. long.;

32° 49.573' N. lat. 117° 20.528' W. long.; thence southward along the three nautical mile offshore boundary to
32° 47.945' N. lat. 117° 20.068' W. long.;
32° 47.945' N. lat. 117° 19.000' W. long.; and
32° 49.573' N. lat. 117° 19.000' W. long.
(B) ~~Take of all living marine resources is prohibited except~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the recreational take of pelagic finfish [subsection 632(a)(3)] by hook and line only is allowed.

(145) Famosa Slough State Marine Conservation Area.
(A) This area includes the waters below the mean high tide line within Famosa Slough estuary southward of the San Diego River channel, located at approximately ~~32° 45.43' N. lat. 117° 13.75' W. long.~~32° 45.430' N. lat. 117° 13.750' W. long.
(B) ~~Take of all living marine resources is prohibited except for~~ Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: take pursuant to activities authorized under subsection 632(b)(145)(C) is allowed.
(C) Habitat restoration, maintenance dredging and operation and maintenance of artificial structures is allowed inside the conservation area pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(146) Cabrillo State Marine Reserve.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:
~~32° 40.60' N. lat. 117° 14.82' W. long.;~~
~~32° 40.60' N. lat. 117° 15.00' W. long.;~~
~~32° 39.70' N. lat. 117° 15.00' W. long.;~~
~~32° 39.70' N. lat. 117° 14.30' W. long.; and~~
~~32° 40.00' N. lat. 117° 14.30' W. long.~~
32° 40.600' N. lat. 117° 14.820' W. long.;
32° 40.600' N. lat. 117° 15.000' W. long.;
32° 39.700' N. lat. 117° 15.000' W. long.;
32° 39.700' N. lat. 117° 14.300' W. long.; and
32° 40.000' N. lat. 117° 14.300' W. long.
(B) ~~Take of all living marine resources is prohibited~~Area restrictions defined in subsection 632(a)(1)(A) apply.

(147) Tijuana River Mouth State Marine Conservation Area.
(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
~~32° 34.00' N. lat. 117° 07.98' W. long.;~~
~~32° 34.00' N. lat. 117° 09.00' W. long.;~~
~~32° 31.97' N. lat. 117° 09.00' W. long.;~~
32° 34.000' N. lat. 117° 07.980' W. long.;
32° 34.000' N. lat. 117° 09.000' W. long.;
32° 31.970' N. lat. 117° 09.000' W. long.; thence eastward along the U.S./Mexico Border to
~~32° 32.06' N. lat. 117° 07.48' W. long.~~
32° 32.064' N. lat. 117° 07.428' W. long.

(B) ~~Take of all living marine resources is prohibited except~~Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:
1. The recreational take of coastal pelagic species [Section 1.39], except market squid, by hand-held dip net [Section 1.42] only is allowed.
2. The commercial take of coastal pelagic species [Section 1.39], except market squid, by round haul net [Section 8750, Fish and Game Code] is allowed. Not more than five percent by weight of any commercial coastal pelagic species catch landed or possessed shall be other incidentally taken species, including market squid.
3. Take pursuant to activities authorized under subsection 632(b)(147)(C) is allowed.
(C) Beach nourishment and other sediment management activities and operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

Note: Authority cited: Sections 200, 202, 205(c), 220, 240, 1590, 1591, 2860, 2861 and 6750, Fish and Game Code; and Sections 36725(a) and 36725(e), Public Resources Code. Reference: Sections 200, 202, 205(c), 220, 240, 2861, 5521, 6653, 8420(e) and 8500, Fish and Game Code; and Sections 36700(e), 36710(e), 36725(a) and 36725(e), Public Resources Code.

Attachment 1

Table 1. Summary of proposed language amendments to Title 14, Section 632, California Code of Regulations.

Table 1 is meant to complement the proposed language changes outlined in the Initial Statement of Reasons (ISOR). Each column identifies a specific type of regulatory amendment detailed in the ISOR, and an "X" denotes a proposed regulation amendment applies to the identified area: marine managed area or special closure. Areas are arranged geographically from north to south. Abbreviations: state marine reserve (SMR), state marine park (SMP), state marine conservation area (SMCA), state marine recreational management area (SMRMA), and special closure (SC).

Region	Area	No Language Change	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Designation	Name Change
North	(1) Pyramid Point SMCA		X					
North	(2) Point St. George Reef Offshore SMCA		X			X		
North	(3) Southwest Seal Rock SC	X						
North	(4) Castle Rock SC	X						
North	(5) False Klamath Rock SC	X						
North	(6) Reading Rock SMCA		X			X		
North	(7) Reading Rock SMR		X					
North	(8) Samoa SMCA		X			X		
North	(9) South Humboldt Bay SMRMA		X					
North	(10) Sugarloaf Island SC	X						
North	(11) South Cape Mendocino SMR		X					
North	(12) Steamboat Rock SC	X						
North	(13) Mattole Canyon SMR		X					
North	(14) Sea Lion Gulch SMR		X					
North	(15) Big Flat SMCA		X			X		
North	(16) Double Cone Rock SMCA		X			X		
North	(17) Rockport Rocks SC	X						
North	(18) Vizcaino Rock SC	X						
North	(19) Ten Mile SMR		X					
North	(20) Ten Mile Beach SMCA		X					
North	(21) Ten Mile Estuary SMCA		X					
North	(22) MacKerricher SMCA		X	X				
North	(23) Point Cabrillo SMR		X					

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Table 1. Summary of proposed language amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Language Change	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Designation	Name Change
North	(24) Russian Gulch SMCA		X	X				
North	(25) Big River Estuary SMCA		X					
North	(26) Van Damme SMCA		X	X				
North	(27) Navarro River Estuary SMCA		X					
North Central	(28) Point Arena SMR		X					
North Central	(29) Point Arena SMCA		X			X		
North Central	(30) Sea Lion Cove SMCA		X	X				
North Central	(31) Saunders Reef SMCA		X			X		
North Central	(32) Del Mar Landing SMR		X					
North Central	(33) Stewarts Point SMCA		X					
North Central	(34) Stewarts Point SMR		X					
North Central	(35) Salt Point SMCA		X	X				
North Central	(36) Gerstle Cove SMR		X					
North Central	(37) Russian River SMRMA		X					
North Central	(38) Russian River SMCA		X	X				
North Central	(39) Bodega Head SMR		X	X				
North Central	(40) Bodega Head SMCA		X			X		
North Central	(41) Estero Americano SMRMA		X					
North Central	(42) Estero de San Antonio SMRMA		X					
North Central	(43) Point Reyes SMR		X					
North Central	(44) Point Reyes SMCA		X			X		
North Central	(45) Point Reyes Headlands SC	X						
North Central	(46) Estero de Limantour SMR		X					
North Central	(47) Drakes Estero SMCA		X	X	X			
North Central	(48) Point Resistance Rock SC	X						
North Central	(49) Double Point/Stormy	X						

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Table 1. Summary of proposed language amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Language Change	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Designation	Name Change
	Stack Rock SC							
North Central	(50) Duxbury Reef SMCA		X	X				
North Central	(51) North Farallon Islands SMR		X					
North Central	(52) North Farallon Islands SC	X						
North Central	(53) Southeast Farallon Island SMR		X					
North Central	(54) Southeast Farallon Island SMCA		X			X		
North Central	(55) Southeast Farallon Island SC	X						
North Central	(56) Fagan Marsh SMP		X	X				
North Central	(57) Peytonia Slough SMP		X	X				
North Central	(58) Corte Madera Marsh SMP		X	X				
North Central	(59) Marin Islands SMP		X	X				
North Central	(60) Albany Mudflats SMP		X	X				
North Central	(61) Robert W. Crown SMCA		X	X				
North Central	(62) Redwood Shores SMP		X	X				
North Central	(63) Bair Island SMP		X	X				
North Central	(64) Egg (Devil's Slide) Rock to Devil's Slide SC	X						
North Central	(65) Montara SMR		X					
North Central	(66) Pillar Point SMCA		X					
Central	(67) Año Nuevo SMR~~-SMCA~~		X				X	
Central	(68) Greyhound Rock SMCA		X	X				
Central	(69) Natural Bridges SMR		X					
Central	(70) Elkhorn Slough SMR		X					
Central	(71) Elkhorn Slough SMCA		X	X				
Central	(72) Moro Cojo Slough SMR		X					
Central	(73) Soquel Canyon SMCA		X					

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Table 1. Summary of proposed language amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Language Change	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Designation	Name Change
Central	(74) Portuguese Ledge SMCA		X					
Central	(75) Edward F. Ricketts SMCA		X					
Central	(76) Lovers Point - Julia Platt SMR		X					
Central	(77) Pacific Grove Marine Gardens SMCA		X					
Central	(78) Asilomar SMR		X					
Central	(79) Carmel Pinnacles SMR		X					
Central	(80) Carmel Bay SMCA		X					
Central	(81) Point Lobos SMR		X					
Central	(82) Point Lobos SMCA		X	X				
Central	(83) Point Sur SMR		X					
Central	(84) Point Sur SMCA		X	X				
Central	(85) Big Creek SMR		X					
Central	(86) Big Creek SMCA		X	X				
Central	(87) Piedras Blancas SMR		X					
Central	(88) Piedras Blancas SMCA		X	X				
Central	(89) Cambria SMCA		X					
Central	(90) White Rock ~~(Cambria)~~ SMCA		X	X				X
Central	(91) Morro Bay SMRMA		X		X			
Central	(92) Morro Bay SMR		X					
Central	(93) Point Buchon SMR		X					
Central	(94) Point Buchon SMCA		X	X				
Central	(95) Vandenberg SMR		X	X				
South	(96) Point Conception SMR		X					
South	(97) Kashtayit SMCA		X	X				
South	(98) Naples SMCA		X					
South	(99) Campus Point SMCA		X	X				
South	(100) Goleta Slough SMCA		X	X				

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Table 1. Summary of proposed language amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Language Change	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Designation	Name Change
South	(101) Richardson Rock ~~(San Miguel Island)~~ SMR		X					X
South	(102) San Miguel Island SC	X						
South	(103) Harris Point ~~(San Miguel Island)~~ SMR		X					X
South	(104) Judith Rock ~~(San Miguel Island)~~ SMR		X					X
South	(105) Carrington Point ~~(Santa Rosa Island)~~ SMR		X					X
South	(106) Skunk Point ~~(Santa Rosa Island)~~ SMR		X					X
South	(107) South Point ~~(Santa Rosa Island)~~ SMR		X					X
South	(108) Painted Cave ~~(Santa Cruz Island)~~ SMCA		X	X				X
South	(109) Gull Island ~~(Santa Cruz Island)~~ SMR		X					X
South	(110) Scorpion ~~(Santa Cruz Island)~~ SMR		X					X
South	(111) Anacapa Island SC	X						
South	(112) Anacapa Island SMCA		X	X				
South	(113) Anacapa Island SMR		X					
South	(114) Footprint ~~(Anacapa Channel)~~ SMR		X					X
South	(115) Begg Rock ~~(San Nicolas Island Quad)~~ SMR		X					X
South	(116) Santa Barbara Island SMR		X					
South	(117) Point Dume SMCA		X					
South	(118) Point Dume SMR		X					
South	(119) Point Vicente SMCA		X	X				
South	(120) Abalone Cove SMCA		X					

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Table 1. Summary of proposed language amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Language Change	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Designation	Name Change
South	(121) Bolsa Bay SMCA		X	X				
South	(122) Bolsa Chica Basin SMCA		X	X				
South	(123) Arrow Point to Lion Head Point ~~(Catalina Island)~~ SMCA		X	X				X
South	(124) Blue Cavern ~~(Catalina Island)~~ Onshore SMCA		X	X				X
South	(125) Blue Cavern ~~(Catalina Island)~~ Offshore SMCA		X					X
South	(126) Long Point ~~(Catalina Island)~~ SMR		X					X
South	(127) Casino Point ~~(Catalina Island)~~ SMCA		X	X				X
South	(128) Lover's Cove ~~(Catalina Island)~~ SMCA		X	X				X
South	(129) Farnsworth ~~(Catalina Island)~~ Onshore SMCA		X					X
South	(130) Farnsworth ~~(Catalina Island)~~ Offshore SMCA		X					X
South	(131) Cat Harbor ~~(Catalina Island)~~ SMCA		X					X
South	(132) Upper Newport Bay SMCA		X	X				
South	(133) Crystal Cove SMCA		X					
South	(134) Laguna Beach SMR		X					
South	(135) Laguna Beach SMCA		X	X				
South	(136) Dana Point SMCA		X					
South	(137) Batiquitos Lagoon SMCA		X	X				
South	(138) Swami's SMCA		X					
South	(139) San Elijo Lagoon		X	X				

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Table 1. Summary of proposed language amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Language Change	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Designation	Name Change
	SMCA							
South	(140) San Dieguito Lagoon SMCA		X	X				
South	(141) San Diego-Scripps Coastal SMCA		X	X				
South	(142) Matlahuayl SMR		X					
South	(143) South La Jolla SMR		X					
South	(144) South La Jolla SMCA		X					
South	(145) Famosa Slough SMCA		X	X				
South	(146) Cabrillo SMR		X					
South	(147) Tijuana River Mouth SMCA		X					

Attachment 2

Table 2. Summary of proposed boundary refinement amendments to Title 14, Section 632, California Code of Regulations.

Table 2 is meant to complement the proposed boundary refinements outlined in the Initial Statement of Reasons (ISOR). Each column identifies a specific type of regulatory amendment detailed in the ISOR, and an "X" denotes a proposed regulation amendment applies to the identified area: marine managed area or special closure. Areas are arranged geographically from north to south. Abbreviations: state marine reserve (SMR), state marine park (SMP), state marine conservation area (SMCA), state marine recreational management area (SMRMA), special closure (SC), and National Oceanic and Atmospheric Administration (NOAA).

Region	Area	No Boundary Refinement	1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Shift	NOAA State Line	Added Boundary Coordinate	Percent Area Change	Change in Area (sq. miles)
North	(1) Pyramid Point SMCA	X							0.00%	0.00
North	(2) Point St. George Reef Offshore SMCA	X							0.00%	0.00
North	(3) Southwest Seal Rock SC	X							0.00%	0.00
North	(4) Castle Rock SC	X							0.00%	0.00
North	(5) False Klamath Rock SC	X							0.00%	0.00
North	(6) Reading Rock SMCA			X					0.00%	0.00
North	(7) Reading Rock SMR	X							0.00%	0.00
North	(8) Samoa SMCA	X							0.00%	0.00
North	(9) South Humboldt Bay SMRMA	X							0.00%	0.00
North	(10) Sugarloaf Island SC	X							0.00%	0.00
North	(11) South Cape Mendocino SMR			X					0.00%	0.00
North	(12) Steamboat Rock SC	X							0.00%	0.00

Attachment 2

Table 2. Summary of proposed boundary refinement amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Boundary Refinement	1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Shift	NOAA State Line	Added Boundary Coordinate	Percent Area Change	Change in Area (sq. miles)
North	(13) Mattole Canyon SMR	X							0.00%	0.00
North	(14) Sea Lion Gulch SMR	X							0.00%	0.00
North	(15) Big Flat SMCA	X							0.00%	0.00
North	(16) Double Cone Rock SMCA	X							0.00%	0.00
North	(17) Rockport Rocks SC	X							0.00%	0.00
North	(18) Vizcaino Rock SC	X							0.00%	0.00
North	(19) Ten Mile SMR	X							0.00%	0.00
North	(20) Ten Mile Beach SMCA			X					0.00%	0.00
North	(21) Ten Mile Estuary SMCA	X							0.00%	0.00
North	(22) MacKerricher SMCA			X					0.01%	0.00
North	(23) Point Cabrillo SMR	X							0.00%	0.00
North	(24) Russian Gulch SMCA	X							0.00%	0.00
North	(25) Big River Estuary SMCA			X					0.07%	0.00
North	(26) Van Damme SMCA	X							0.00%	0.00
North	(27) Navarro River Estuary SMCA			X					-0.10%	0.00
North	(28) Point Arena		X						0.00%	0.00

Attachment 2

Table 2. Summary of proposed boundary refinement amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Boundary Refinement	1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Shift	NOAA State Line	Added Boundary Coordinate	Percent Area Change	Change in Area (sq. miles)
Central	SMR									
North Central	(29) Point Arena SMCA		X				X		-0.01%	0.00
North Central	(30) Sea Lion Cove SMCA		X						0.00%	0.00
North Central	(31) Saunders Reef SMCA		X						0.00%	0.00
North Central	(32) Del Mar Landing SMR		X	X					0.01%	0.00
North Central	(33) Stewarts Point SMCA			X					0.00%	0.00
North Central	(34) Stewarts Point SMR		X	X			X	X	0.00%	0.00
North Central	(35) Salt Point SMCA		X						0.00%	0.00
North Central	(36) Gerstle Cove SMR		X						0.00%	0.00
North Central	(37) Russian River SMRMA		X						0.00%	0.00
North Central	(38) Russian River SMCA		X						0.00%	0.00
North Central	(39) Bodega Head SMR		X	X			X		-0.01%	0.00
North Central	(40) Bodega Head SMCA		X	X			X		-0.01%	0.00
North Central	(41) Estero Americano SMRMA		X						0.00%	0.00
North Central	(42) Estero de San Antonio SMRMA		X						0.00%	0.00

Attachment 2

Table 2. Summary of proposed boundary refinement amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Boundary Refinement	1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Shift	NOAA State Line	Added Boundary Coordinate	Percent Area Change	Change in Area (sq. miles)
North Central	(43) Point Reyes SMR		X	X					0.01%	0.00
North Central	(44) Point Reyes SMCA		X				X		-0.01%	0.00
North Central	(45) Point Reyes Headlands SC		X						0.00%	0.00
North Central	(46) Estero de Limantour SMR		X	X					0.03%	0.00
North Central	(47) Drakes Estero SMCA		X	X					0.00%	0.00
North Central	(48) Point Resistance Rock SC		X	X					0.00%	0.00
North Central	(49) Double Point/Stormy Stack Rock SC		X						0.00%	0.00
North Central	(50) Duxbury Reef SMCA		X	X					0.00%	0.00
North Central	(51) North Farallon Islands SMR		X				X		0.00%	0.00
North Central	(52) North Farallon Islands SC		X	X					0.00%	0.00
North Central	(53) Southeast Farallon Island SMR		X						0.00%	0.00
North Central	(54) Southeast Farallon Island SMCA		X				X		0.01%	0.00
North Central	(55) Southeast Farallon Island SC		X						0.00%	0.00

Attachment 2

Table 2. Summary of proposed boundary refinement amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Boundary Refinement	1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Shift	NOAA State Line	Added Boundary Coordinate	Percent Area Change	Change in Area (sq. miles)
North Central	(56) Fagan Marsh SMP	X							0.00%	0.00
North Central	(57) Peytonia Slough SMP	X							0.00%	0.00
North Central	(58) Corte Madera Marsh SMP	X							0.00%	0.00
North Central	(59) Marin Islands SMP	X							0.00%	0.00
North Central	(60) Albany Mudflats SMP	X							0.00%	0.00
North Central	(61) Robert W. Crown SMCA		X						0.00%	0.00
North Central	(62) Redwood Shores SMP	X							0.00%	0.00
North Central	(63) Bair Island SMP	X							0.00%	0.00
North Central	(64) Egg (Devil's Slide) Rock to Devil's Slide SC		X						0.00%	0.00
North Central	(65) Montara SMR		X	X			X		0.00%	0.00
North Central	(66) Pillar Point SMCA		X	X			X	X	0.00%	0.00
Central	(67) Año Nuevo SMR ~~SMCA~~		X	X				X	0.00%	0.00
Central	(68) Greyhound Rock SMCA		X	X			X	X	0.00%	0.00
Central	(69) Natural Bridges SMR		X	X					-0.07%	0.00
Central	(70) Elkhorn		X						0.00%	0.00

Attachment 2

Table 2. Summary of proposed boundary refinement amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Boundary Refinement	1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Shift	NOAA State Line	Added Boundary Coordinate	Percent Area Change	Change in Area (sq. miles)
	Slough SMR									
Central	(71) Elkhorn Slough SMCA		X						0.00%	0.00
Central	(72) Moro Cojo Slough SMR	X							0.00%	0.00
Central	(73) Soquel Canyon SMCA		X				X		0.00%	0.00
Central	(74) Portuguese Ledge SMCA		X				X		0.00%	0.00
Central	(75) Edward F. Ricketts SMCA		X	X					-0.74%	0.00
Central	(76) Lovers Point - Julia Platt SMR		X	X					0.00%	0.00
Central	(77) Pacific Grove Marine Gardens SMCA		X	X				X	3.00%	+0.03
Central	(78) Asilomar SMR		X	X				X	-1.87%	-0.03
Central	(79) Carmel Pinnacles SMR		X		X				0.00%	0.00
Central	(80) Carmel Bay SMCA		X	X					0.54%	+0.01
Central	(81) Point Lobos SMR		X	X					0.00%	0.00
Central	(82) Point Lobos SMCA		X				X		0.00%	0.00
Central	(83) Point Sur SMR		X	X					0.00%	0.00
Central	(84) Point Sur SMCA		X		X		X		0.00%	0.00

Attachment 2

Table 2. Summary of proposed boundary refinement amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Boundary Refinement	1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Shift	NOAA State Line	Added Boundary Coordinate	Percent Area Change	Change in Area (sq. miles)
Central	(85) Big Creek SMR		X	X			X		0.00%	0.00
Central	(86) Big Creek SMCA		X				X		0.01%	0.00
Central	(87) Piedras Blancas SMR		X	X					0.00%	0.00
Central	(88) Piedras Blancas SMCA		X		X		X		0.00%	0.00
Central	(89) Cambria SMCA		X	X					0.00%	0.00
Central	(90) White Rock (Cambria) SMCA		X	X					0.00%	0.00
Central	(91) Morro Bay SMRMA		X						0.00%	0.00
Central	(92) Morro Bay SMR		X						0.00%	0.00
Central	(93) Point Buchon SMR		X	X					0.00%	0.00
Central	(94) Point Buchon SMCA		X				X		0.00%	0.00
Central	(95) Vandenberg SMR		X	X					0.00%	0.00
South	(96) Point Conception SMR		X	X			X		0.00%	0.00
South	(97) Kashtayit SMCA		X						0.00%	0.00
South	(98) Naples SMCA		X	X					0.00%	0.00
South	(99) Campus Point SMCA		X	X			X		0.00%	0.00
South	(100) Goleta				X				0.00%	0.00

Attachment 2

Table 2. Summary of proposed boundary refinement amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Boundary Refinement	1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Shift	NOAA State Line	Added Boundary Coordinate	Percent Area Change	Change in Area (sq. miles)
	Slough SMCA									
South	(101) Richardson Rock ~~(San Miguel Island)~~ SMR	X							0.00%	0.00
South	(102) San Miguel Island SC		X						0.00%	0.00
South	(103) Harris Point ~~(San Miguel Island)~~ SMR	X							0.00%	0.00
South	(104) Judith Rock ~~(San Miguel Island)~~ SMR			X			X		-0.39%	-0.02
South	(105) Carrington Point ~~(Santa Rosa Island)~~ SMR			X					0.00%	0.00
South	(106) Skunk Point ~~(Santa Rosa Island)~~ SMR			X					0.00%	0.00
South	(107) South Point ~~(Santa Rosa Island)~~ SMR	X							0.00%	0.00
South	(108) Painted Cave ~~(Santa Cruz Island)~~ SMCA	X							0.00%	0.00
South	(109) Gull Island ~~(Santa Cruz Island)~~ SMR			X					0.00%	0.00
South	(110) Scorpion ~~(Santa Cruz Island)~~ SMR	X							0.00%	0.00

Attachment 2

Table 2. Summary of proposed boundary refinement amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Boundary Refinement	1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Shift	NOAA State Line	Added Boundary Coordinate	Percent Area Change	Change in Area (sq. miles)
South	(111) Anacapa Island SC		X	X					0.00%	0.00
South	(112) Anacapa Island SMCA			X					0.00%	0.00
South	(113) Anacapa Island SMR			X					0.00%	0.00
South	(114) Footprint ~~(Anacapa Channel)~~ SMR	X							0.00%	0.00
South	(115) Begg Rock ~~(San Nicolas Island Quad)~~ SMR		X	X					0.00%	0.00
South	(116) Santa Barbara Island SMR			X					0.00%	0.00
South	(117) Point Dume SMCA		X	X					0.00%	0.00
South	(118) Point Dume SMR		X	X			X		0.01%	0.00
South	(119) Point Vicente SMCA		X	X			X		0.00%	0.00
South	(120) Abalone Cove SMCA		X	X			X		0.00%	0.00
South	(121) Bolsa Bay SMCA		X	X					0.20%	0.00
South	(122) Bolsa Chica Basin SMCA		X	X					0.00%	0.00
South	(123) Arrow Point to Lion Head Point ~~(Catalina Island)~~ SMCA			X					0.00%	0.00

Attachment 2

Table 2. Summary of proposed boundary refinement amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Boundary Refinement	1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Shift	NOAA State Line	Added Boundary Coordinate	Percent Area Change	Change in Area (sq. miles)
South	(124) Blue Cavern ~~(Catalina Island)~~ Onshore SMCA		X						0.00%	0.00
South	(125) Blue Cavern ~~(Catalina Island)~~ Offshore SMCA		X						0.00%	0.00
South	(126) Long Point ~~(Catalina Island)~~ SMR		X	X					0.00%	0.00
South	(127) Casino Point ~~(Catalina Island)~~ SMCA		X						0.00%	0.00
South	(128) Lover's Cove ~~(Catalina Island)~~ SMCA	X							0.00%	0.00
South	(129) Farnsworth ~~(Catalina Island)~~ Onshore SMCA		X						0.00%	0.00
South	(130) Farnsworth ~~(Catalina Island)~~ Offshore SMCA		X				X		0.00%	0.00
South	(131) Cat Harbor ~~(Catalina Island)~~ SMCA		X	X					0.86%	0.00
South	(132) Upper Newport Bay SMCA		X	X					0.04%	0.00
South	(133) Crystal Cove SMCA			X				X	-0.01%	0.00
South	(134) Laguna Beach SMR			X		X		X	6.08%	+0.38

Attachment 2

Table 2. Summary of proposed boundary refinement amendments to Title 14, Section 632, California Code of Regulations.

Region	Area	No Boundary Refinement	1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Shift	NOAA State Line	Added Boundary Coordinate	Percent Area Change	Change in Area (sq. miles)
South	(135) Laguna Beach SMCA			X		X			-11.07%	-0.38
South	(136) Dana Point SMCA			X					0.00%	0.00
South	(137) Batiquitos Lagoon SMCA		X						0.00%	0.00
South	(138) Swami's SMCA	X							0.00%	0.00
South	(139) San Elijo Lagoon SMCA	X							0.00%	0.00
South	(140) San Dieguito Lagoon SMCA	X							0.00%	0.00
South	(141) San Diego-Scripps Coastal SMCA			X					0.00%	0.00
South	(142) Matlahuayl SMR			X					0.00%	0.00
South	(143) South La Jolla SMR	X							0.00%	0.00
South	(144) South La Jolla SMCA	X							0.00%	0.00
South	(145) Famosa Slough SMCA		X						0.00%	0.00
South	(146) Cabrillo SMR		X						0.00%	0.00
South	(147) Tijuana River Mouth SMCA		X	X					0.00%	0.00

Attachment 3

California State Marine Protected Areas
Proposed Boundary Refinements

June 4, 2015

Reading Rock SMCA

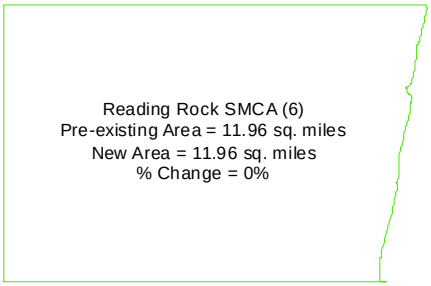
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

South Cape Mendocino SMR

Legend

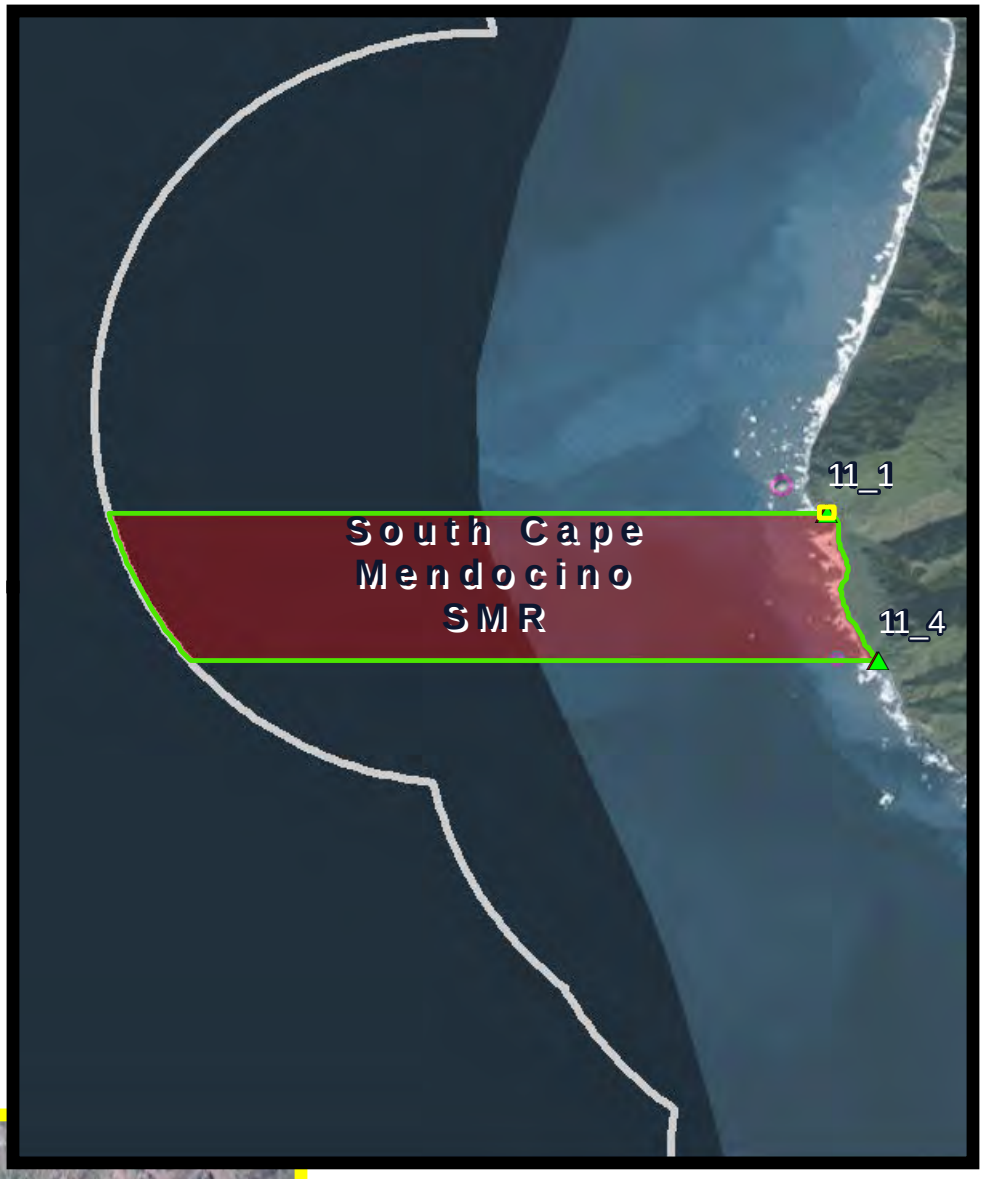
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- Special Closure

Summary of Proposed Refinements

South Cape Mendocino SMR (11)
Pre-existing Area = 9.08 sq. miles
New Area = 9.08 sq. miles
% Change = 0%



0 5,700 Meters

0 90 Meters

3

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

South Cape Mendocino SMR

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- Special Closure

Summary of Proposed Refinements

South Cape Mendocino SMR (11)
Pre-existing Area = 9.08 sq. miles
New Area = 9.08 sq. miles
% Change = 0%

0 5,700 Meters

11_4

0 90 Meters

4

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Ten Mile Beach SMCA

Legend

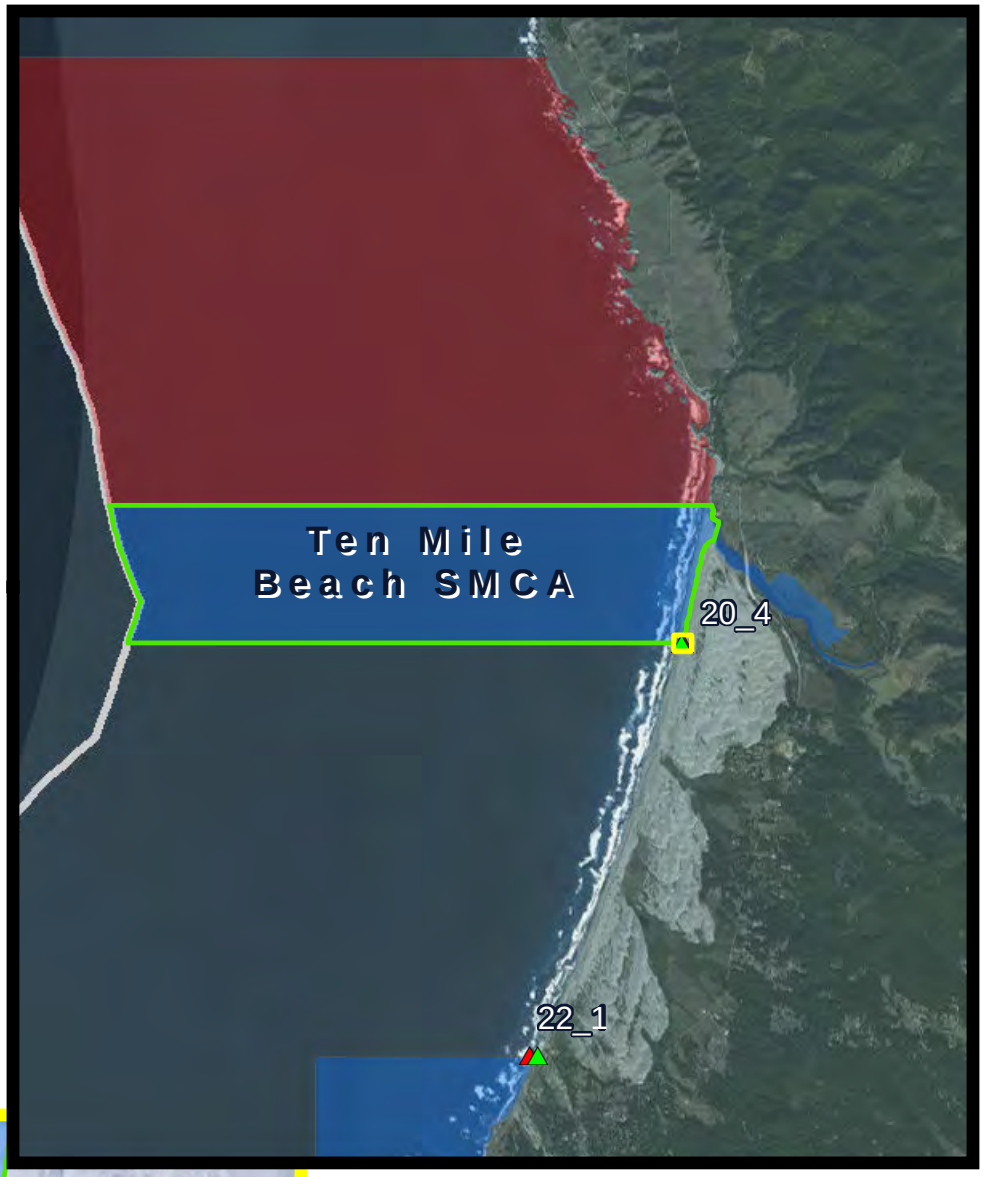
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Ten Mile Beach SMCA (20)
Pre-existing Area = 3.54 sq. miles
New Area = 3.54 sq. miles
% Change = 0%



0 4,000 Meters

0 90 Meters

5

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

MacKerricher SMCA

Legend

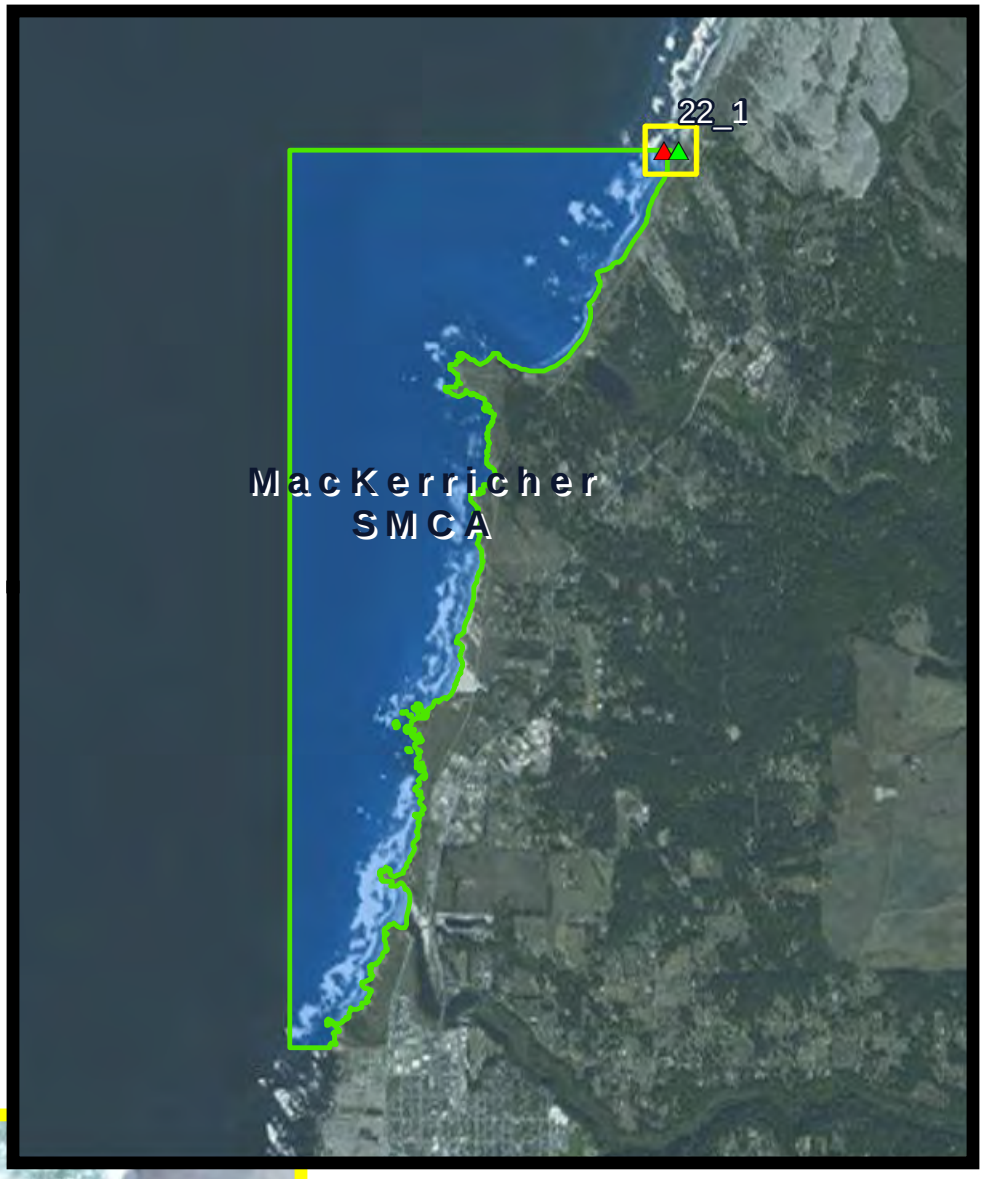
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

MacKerricher SMCA (22)
Pre-existing Area = 2.48 sq. miles
New Area = 2.48 sq. miles
% Change = 0.01%



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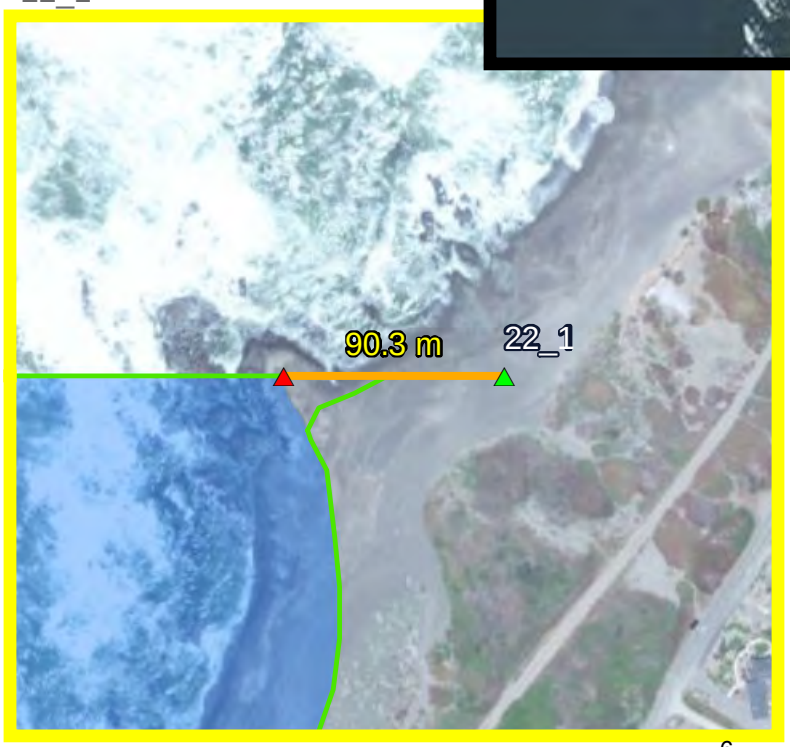

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6

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Big River Estuary SMCA

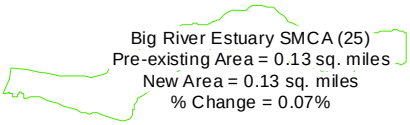
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



0 950 Meters

25_2

0 90 Meters

7

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Navarro River Estuary SMCA

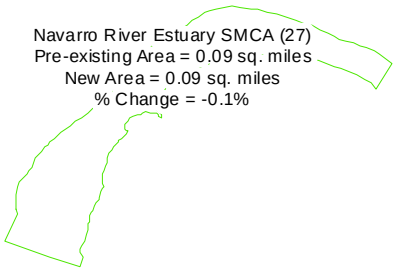
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

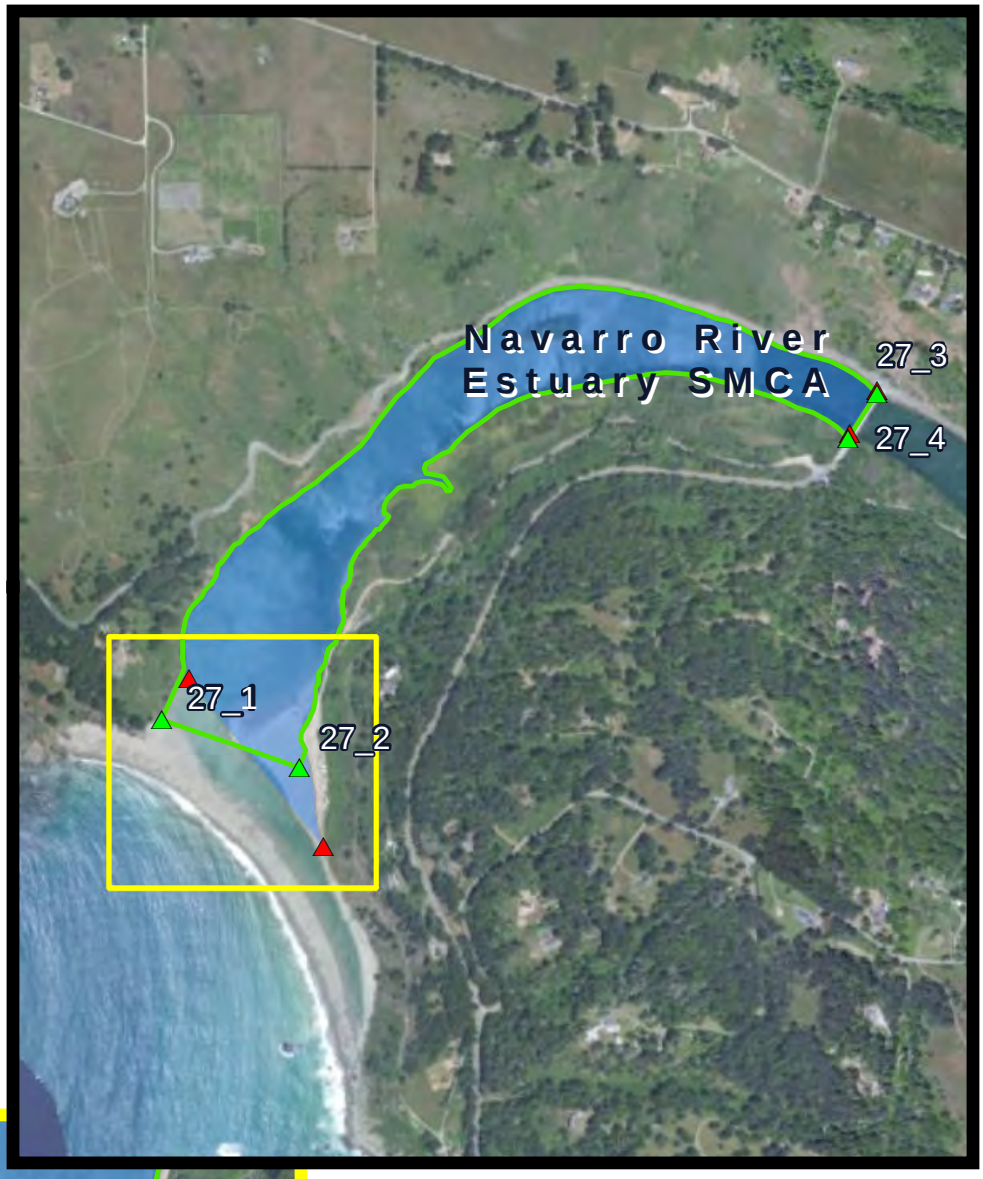
Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Navarro River Estuary SMCA (27)
Pre-existing Area = 0.09 sq. miles
New Area = 0.09 sq. miles
% Change = -0.1%



0 650 Meters

27_1 & 27_2

0 230 Meters

8

California Department of Fish and Wildlife
Marine Region GIS
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May 8, 2015

Navarro River Estuary SMCA

Legend

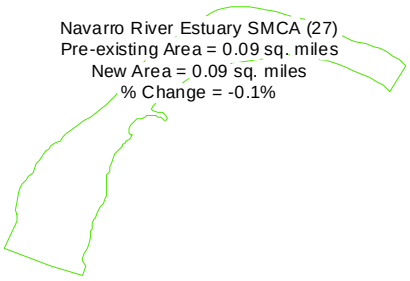
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Navarro River Estuary SMCA (27)
Pre-existing Area = 0.09 sq. miles
New Area = 0.09 sq. miles
% Change = -0.1%



0 630 Meters

27_3 & 27_4

0 90 Meters

California Department of Fish and Wildlife
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mr_gis@wildlife.ca.gov
May 8, 2015

Point Arena SMCA

Legend

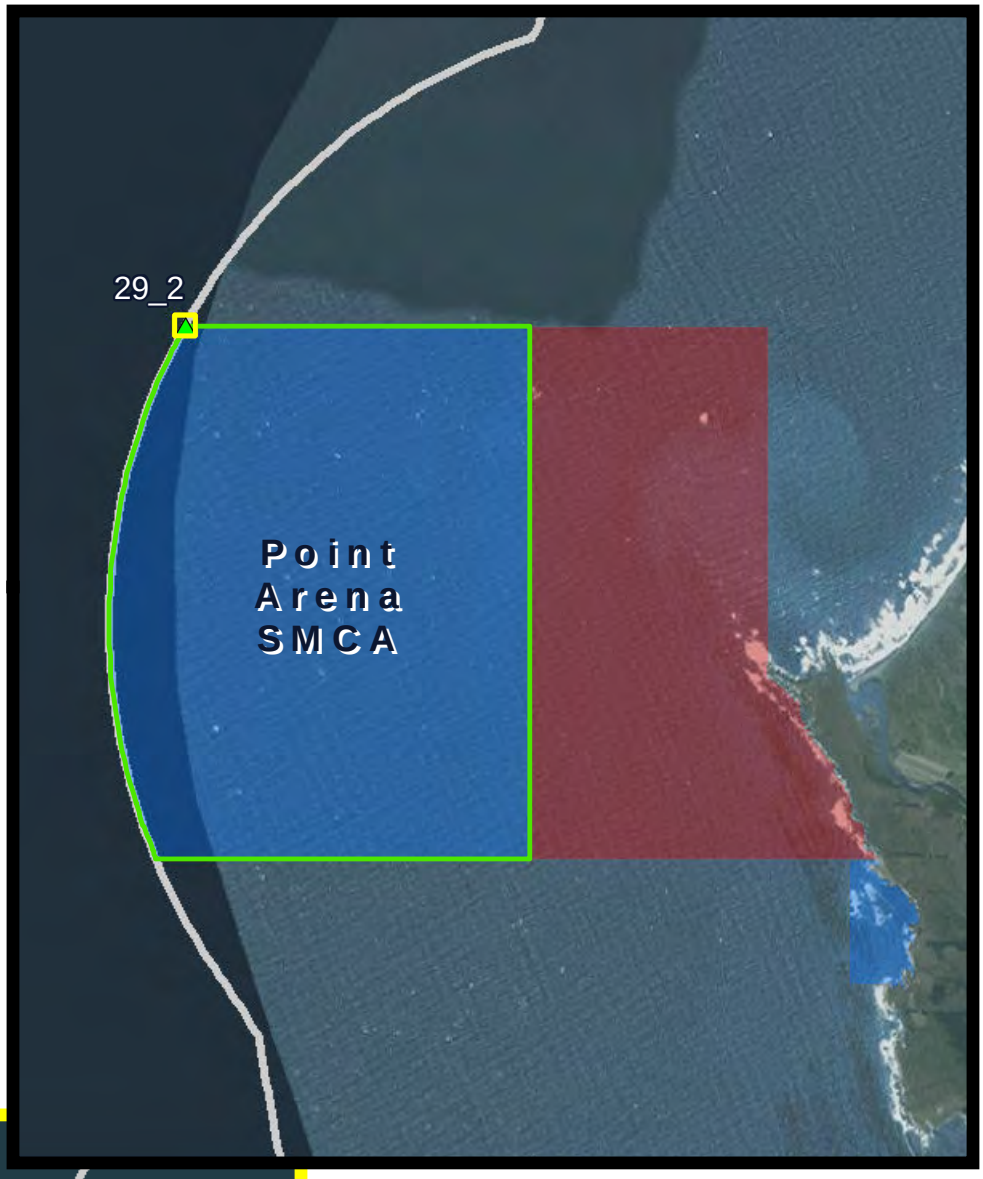
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Point Arena SMCA (29)
Pre-existing Area = 6.74 sq. miles
New Area = 6.74 sq. miles
% Change = -0.01%



0 3,300 Meters

0 90 Meters

10

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Del Mar Landing SMR

Legend

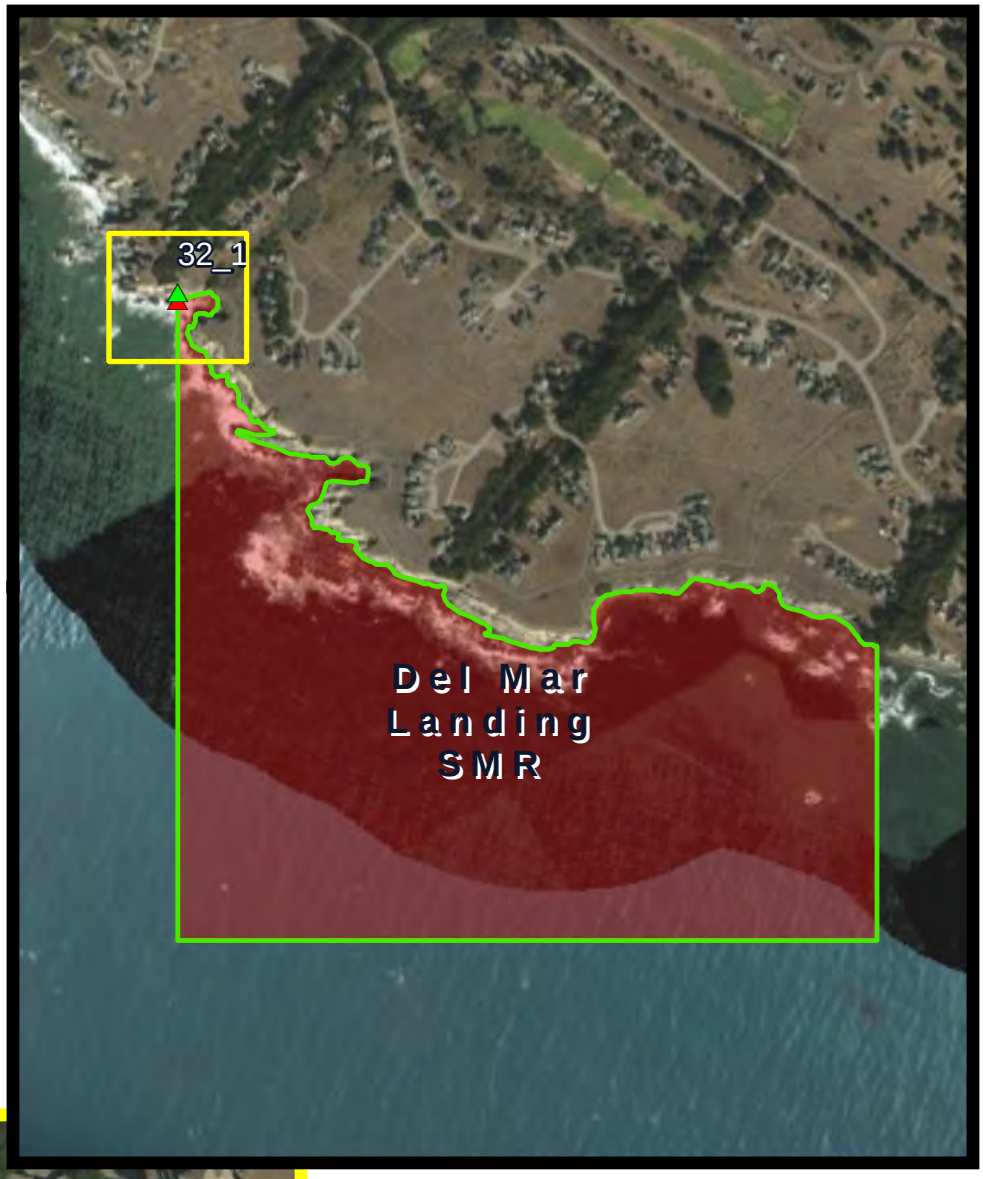
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Reserve (SMR)

Summary of Proposed Refinements

Del Mar Landing SMR (32)
Pre-existing Area = 0.22 sq. miles
New Area = 0.22 sq. miles
% Change = 0.01%



0 530 Meters

32_1

0 90 Meters

11

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Stewarts Point SMR and SMCA

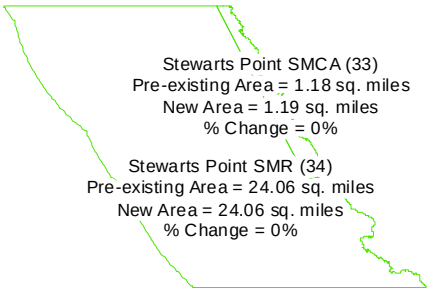
Legend

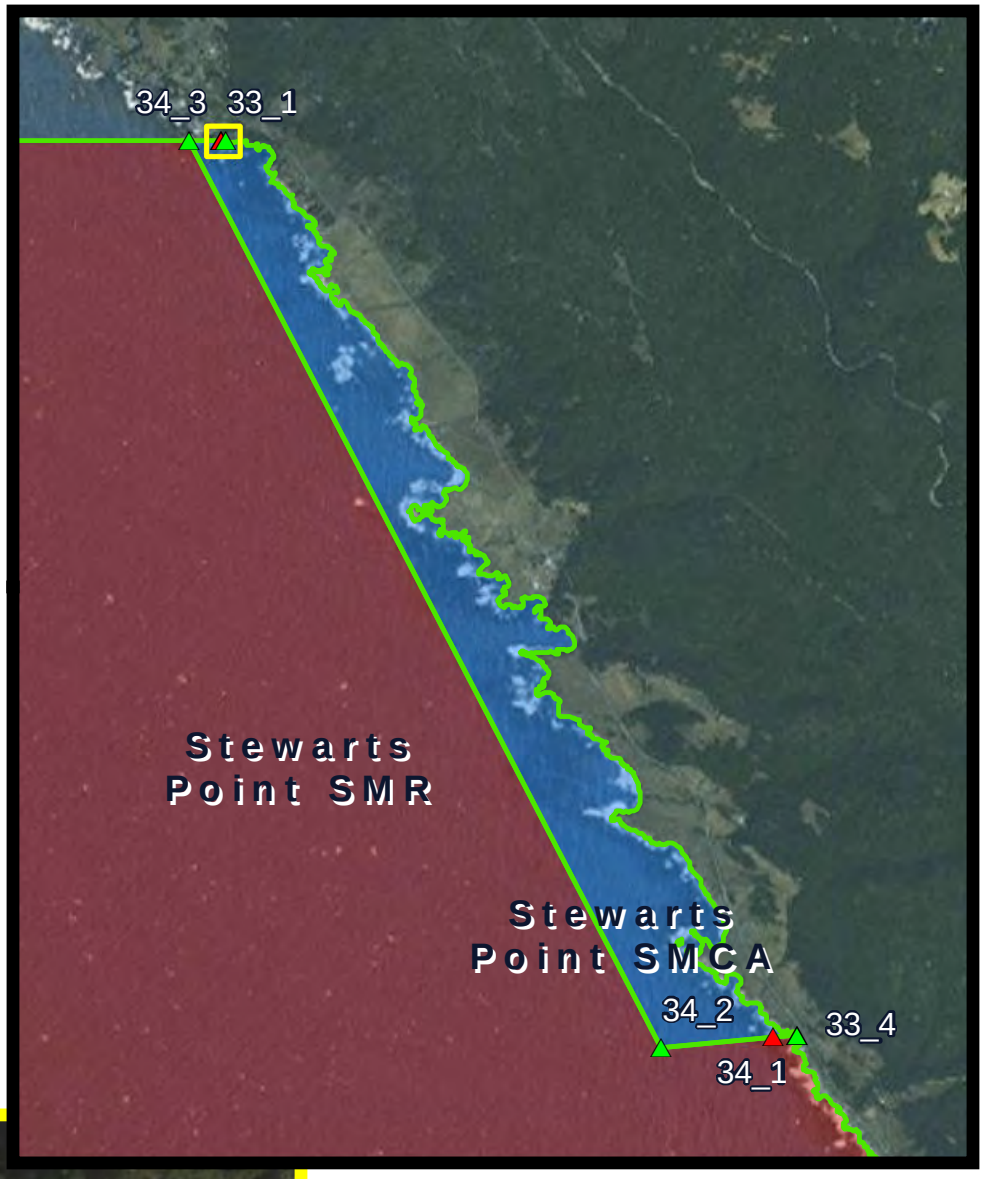
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements





0 2,250 Meters

33_1

0 90 Meters

12

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Stewarts Point SMR and SMCA

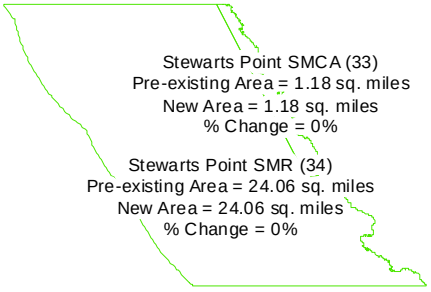
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

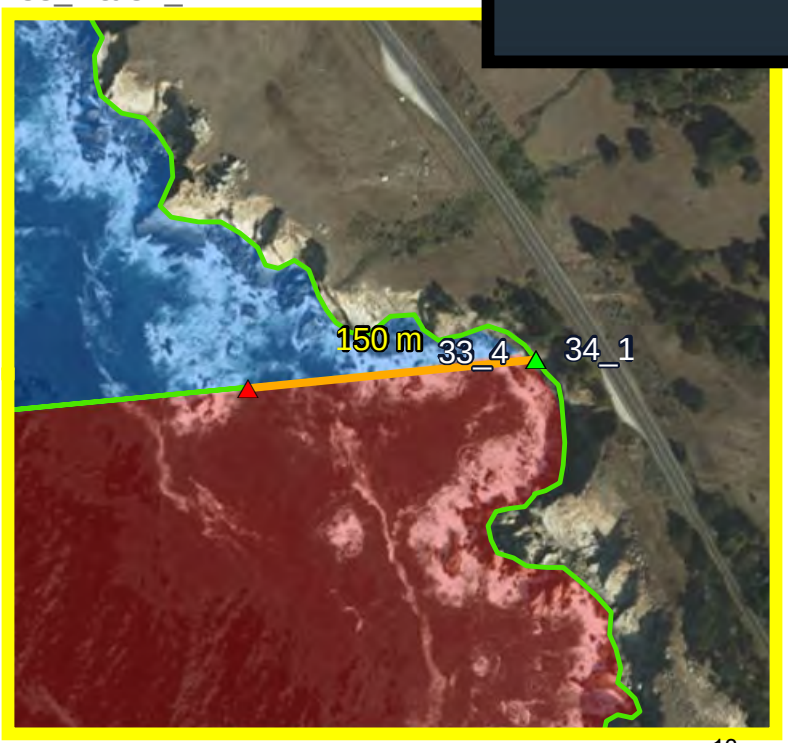


Stewarts Point SMCA (33)
Pre-existing Area = 1.18 sq. miles
New Area = 1.18 sq. miles
% Change = 0%

Stewarts Point SMR (34)
Pre-existing Area = 24.06 sq. miles
New Area = 24.06 sq. miles
% Change = 0%

0 7,900 Meters

33_4 & 34_1



0 190 Meters

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May 8, 2015

Stewarts Point SMR and SMCA

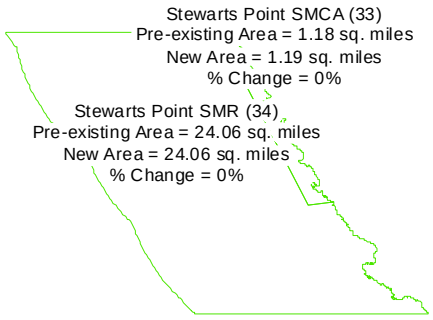
Legend

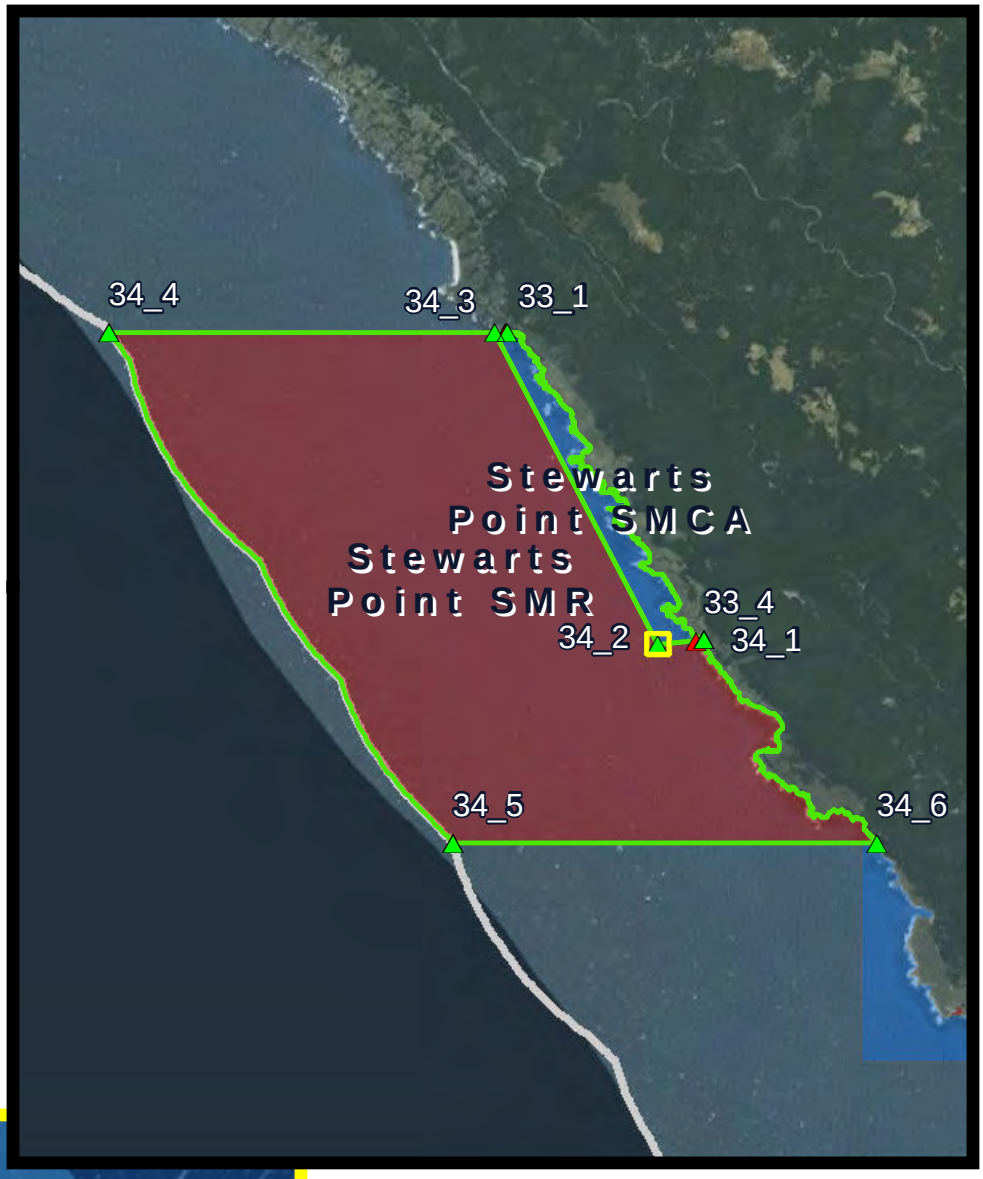
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

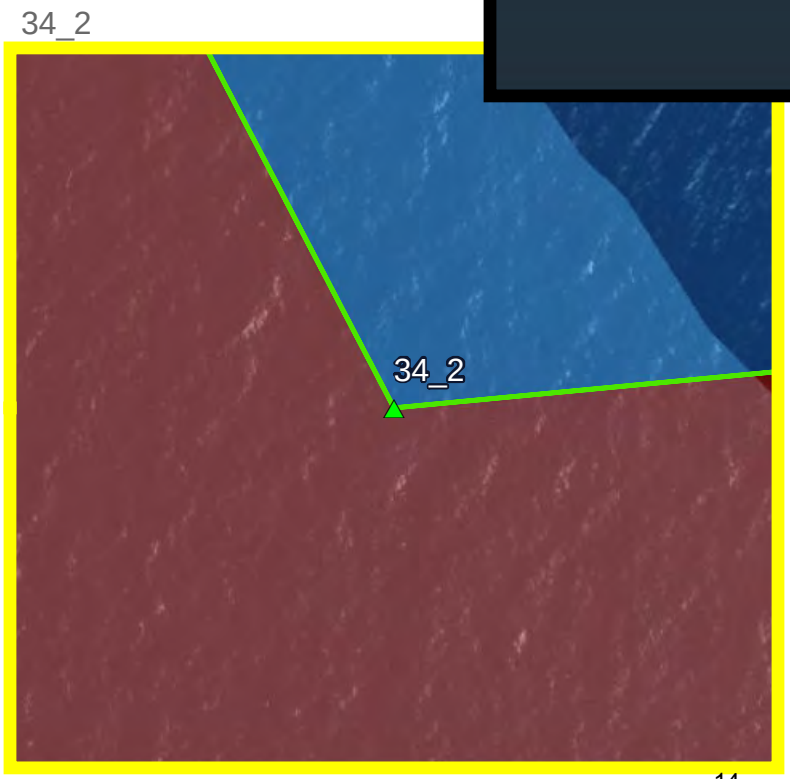
- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements





0 6,600 Meters



0 190 Meters

14

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May 8, 2015

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Stewarts Point SMR and SMCA

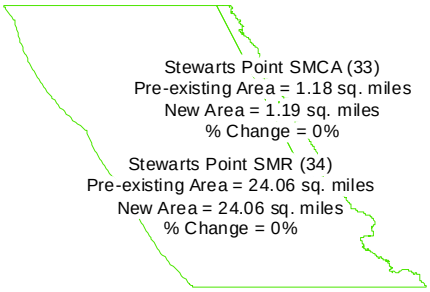
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

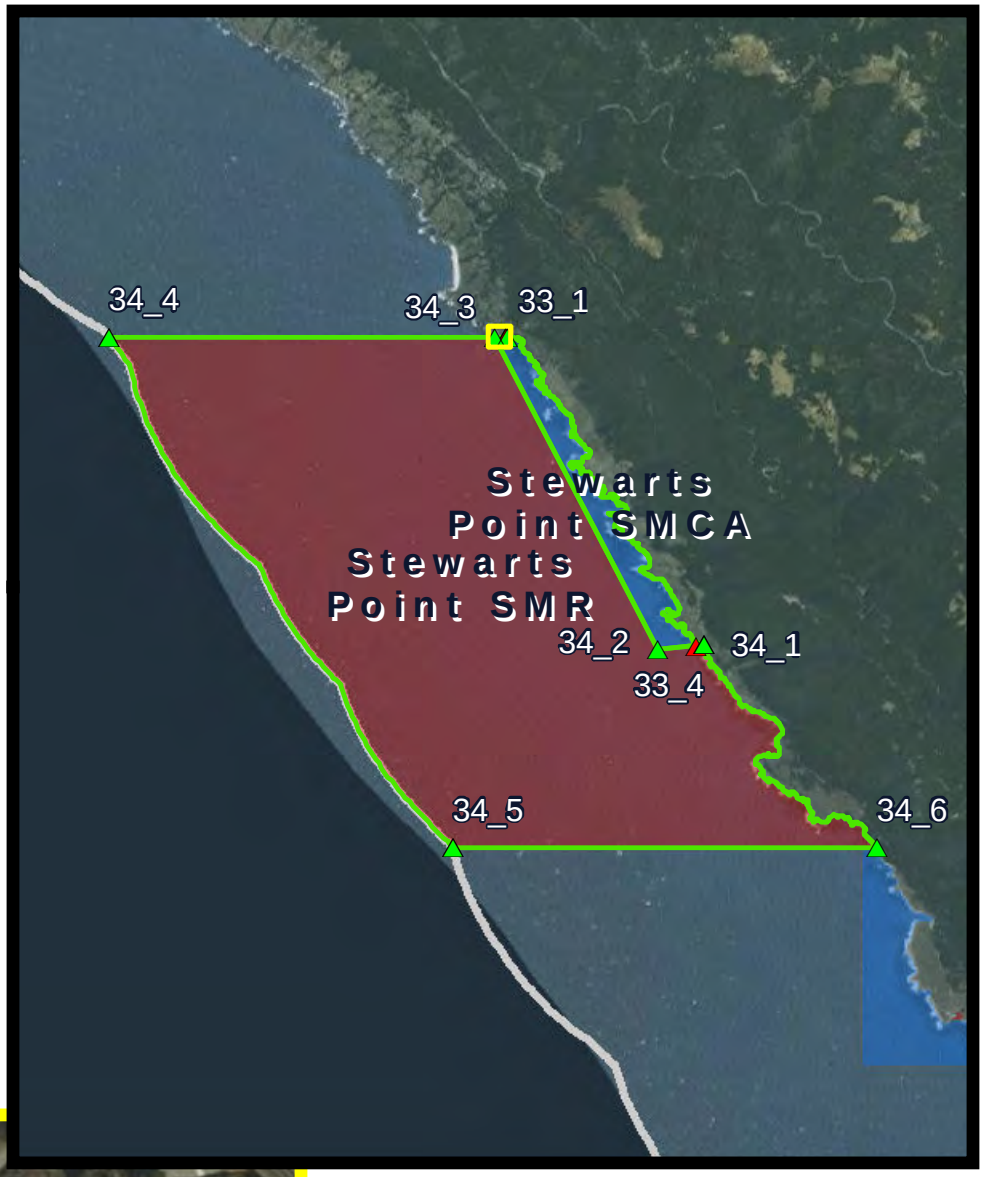
- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



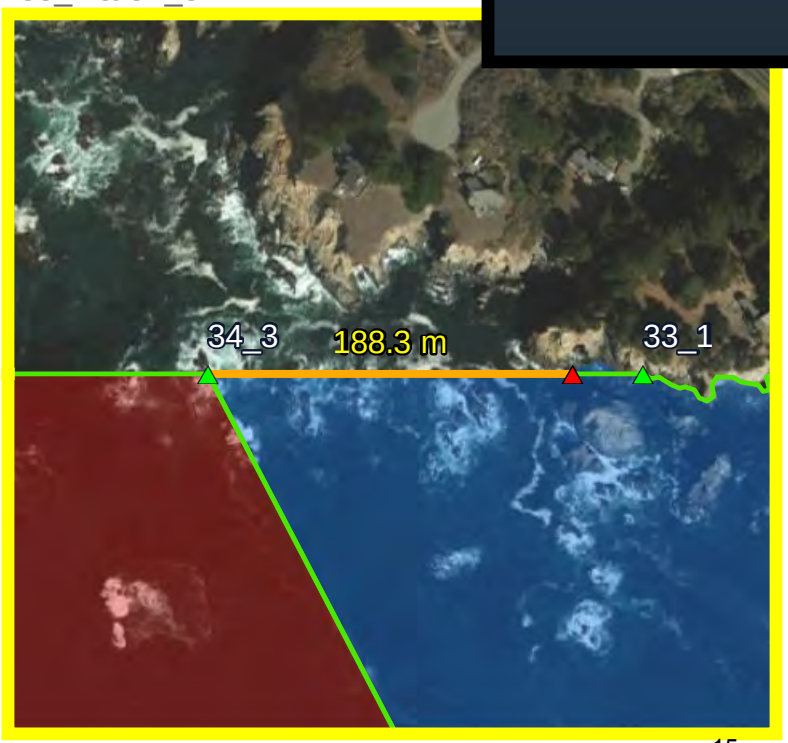
Stewarts Point SMCA (33)
Pre-existing Area = 1.18 sq. miles
New Area = 1.19 sq. miles
% Change = 0%

Stewarts Point SMR (34)
Pre-existing Area = 24.06 sq. miles
New Area = 24.06 sq. miles
% Change = 0%



0 6,600 Meters

33_1 & 34_3



0 190 Meters

15

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May 8, 2015

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Stewarts Point SMR

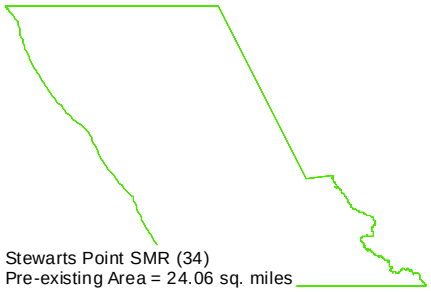
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

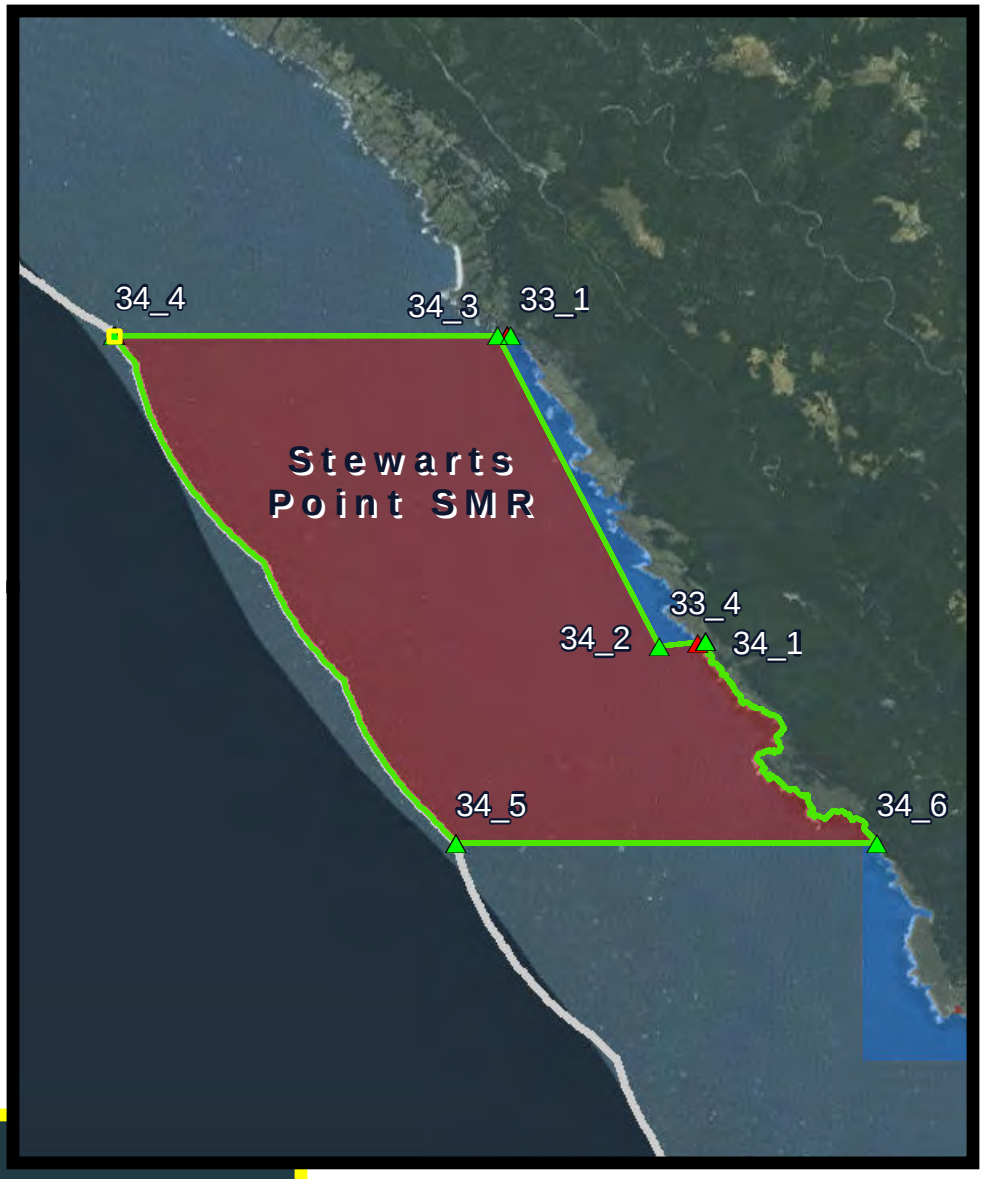
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

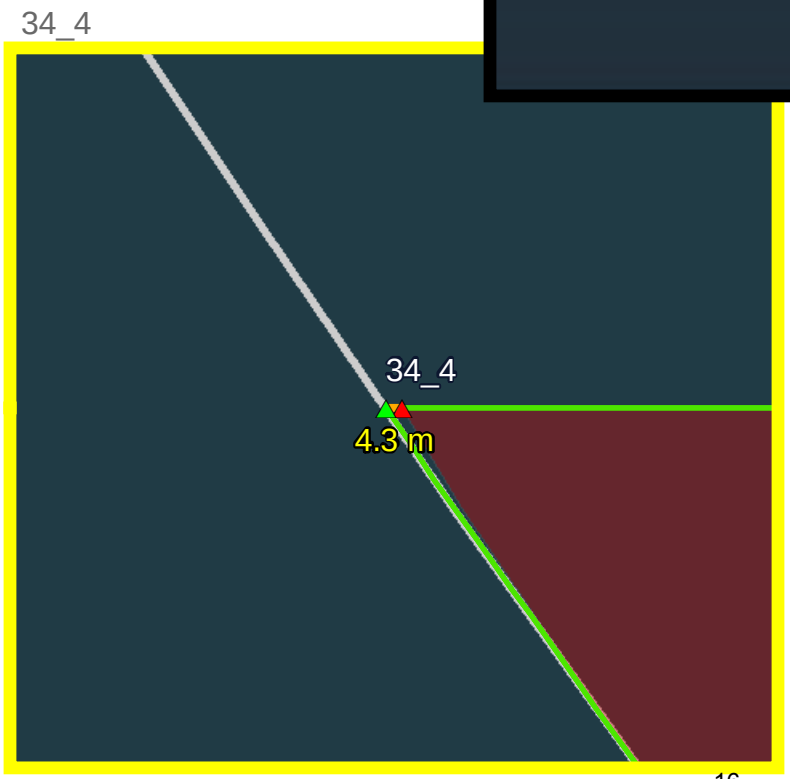
Summary of Proposed Refinements



Stewarts Point SMR (34)
Pre-existing Area = 24.06 sq. miles
New Area = 24.06 sq. miles
% Change = 0%



0 6,600 Meters



0 90 Meters

16

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May 8, 2015

Stewarts Point SMR

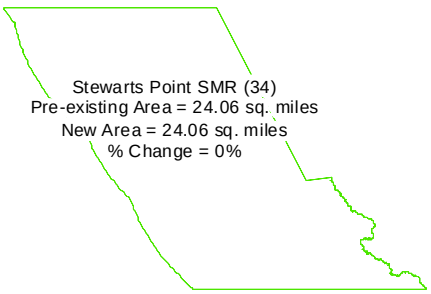
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

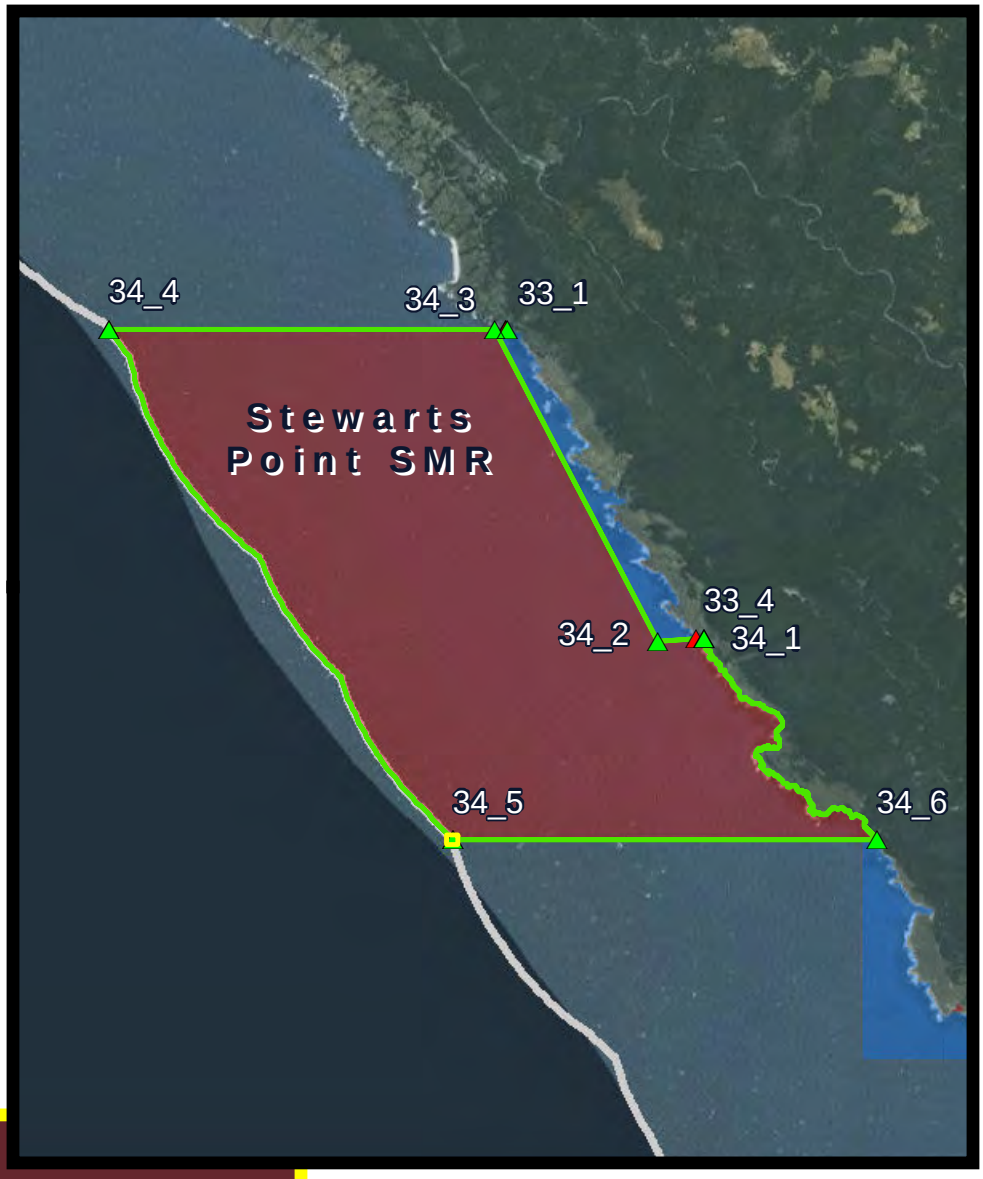
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

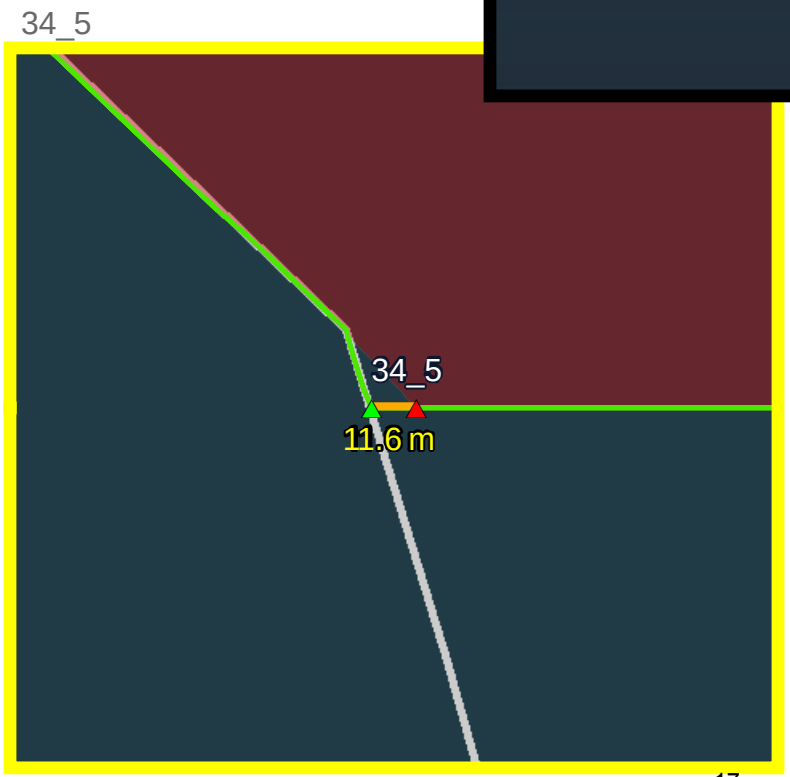
Summary of Proposed Refinements



Stewarts Point SMR (34)
Pre-existing Area = 24.06 sq. miles
New Area = 24.06 sq. miles
% Change = 0%



0 6,600 Meters



0 90 Meters

17

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Stewarts Point SMR and Salt Point SMCA

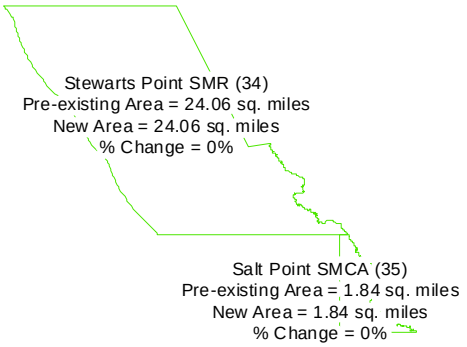
Legend

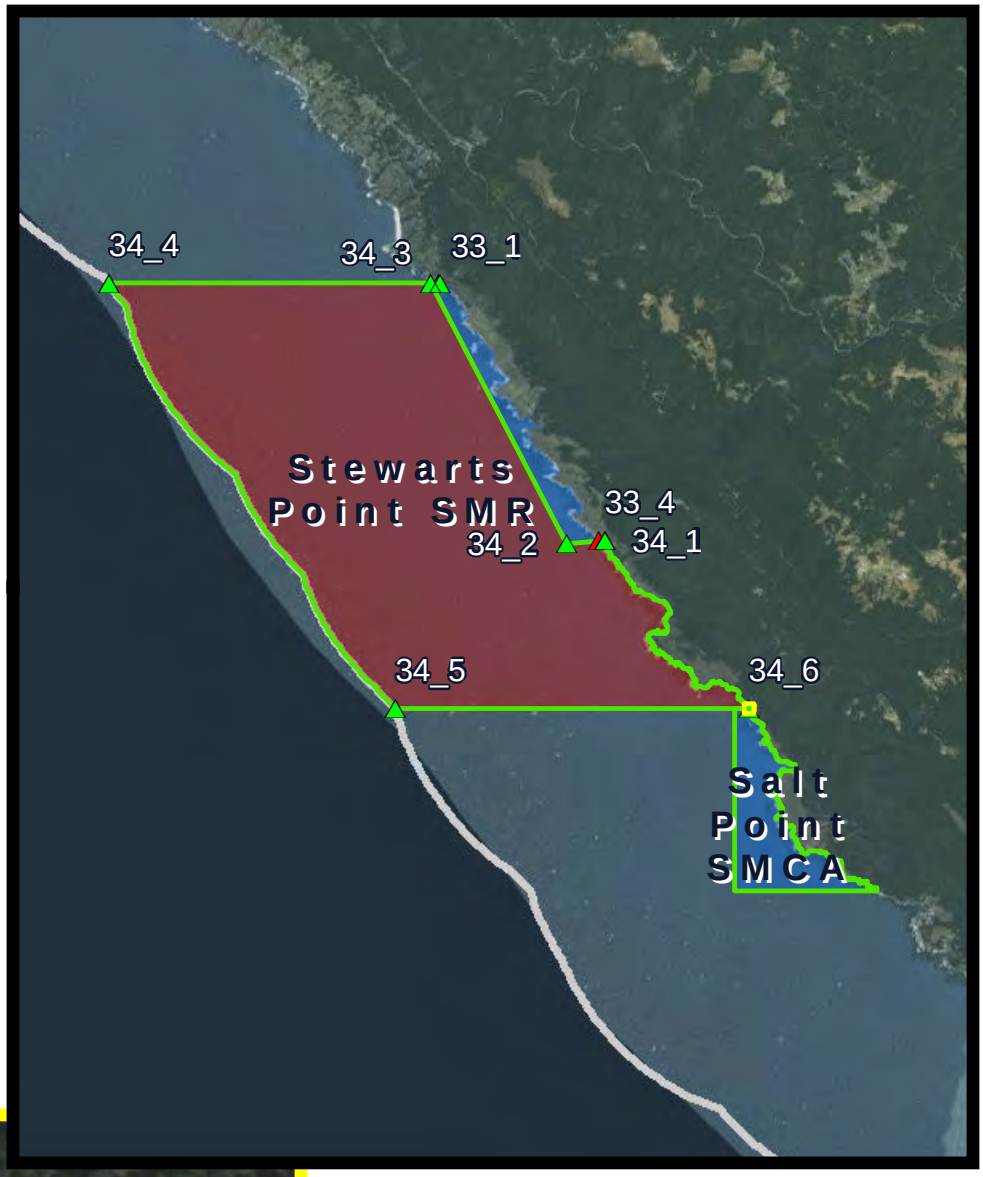
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements





0 7,900 Meters

34_6

0 90 Meters

18

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May 8, 2015

Bodega Head SMR

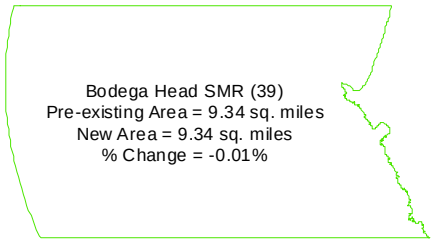
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

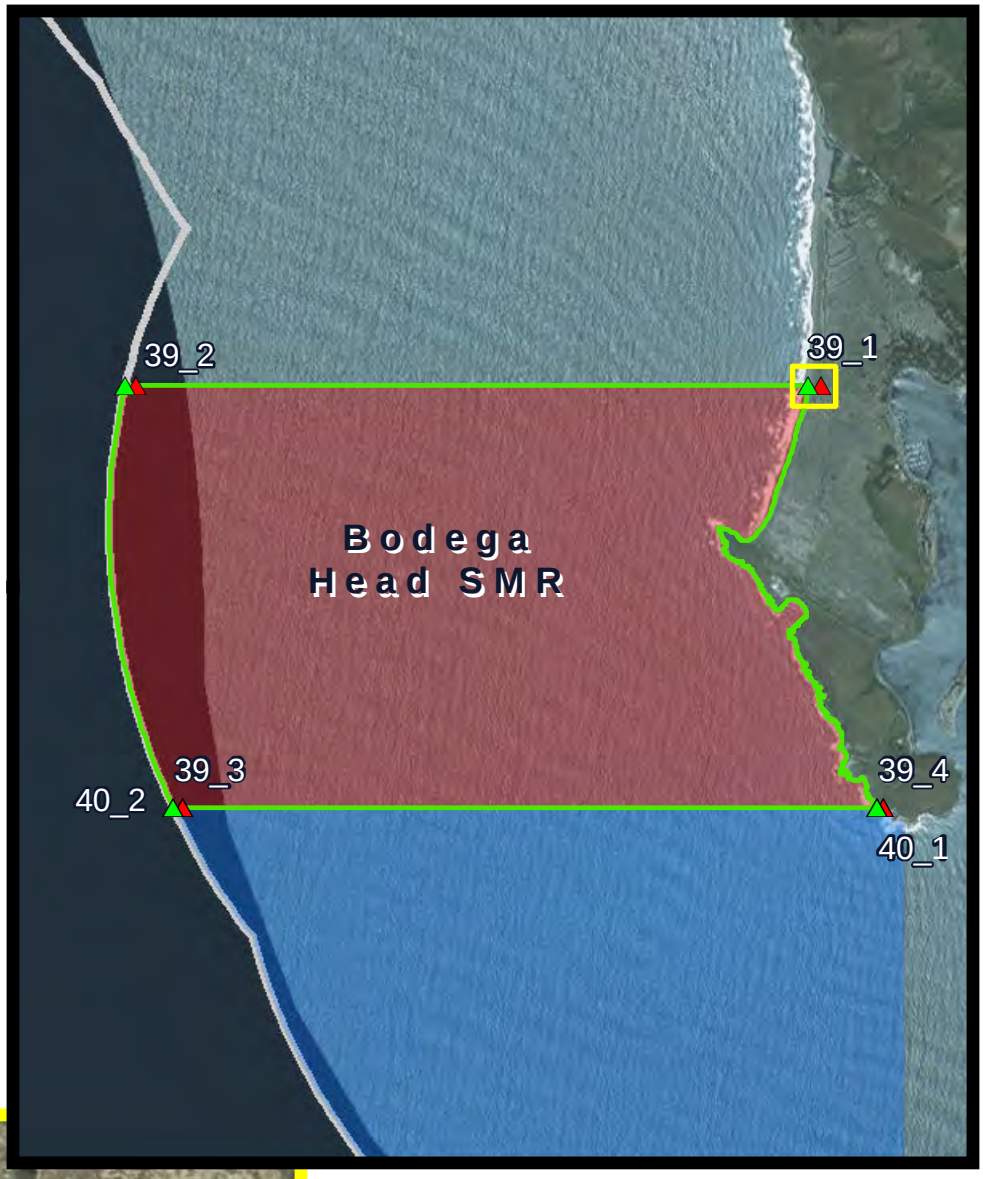
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

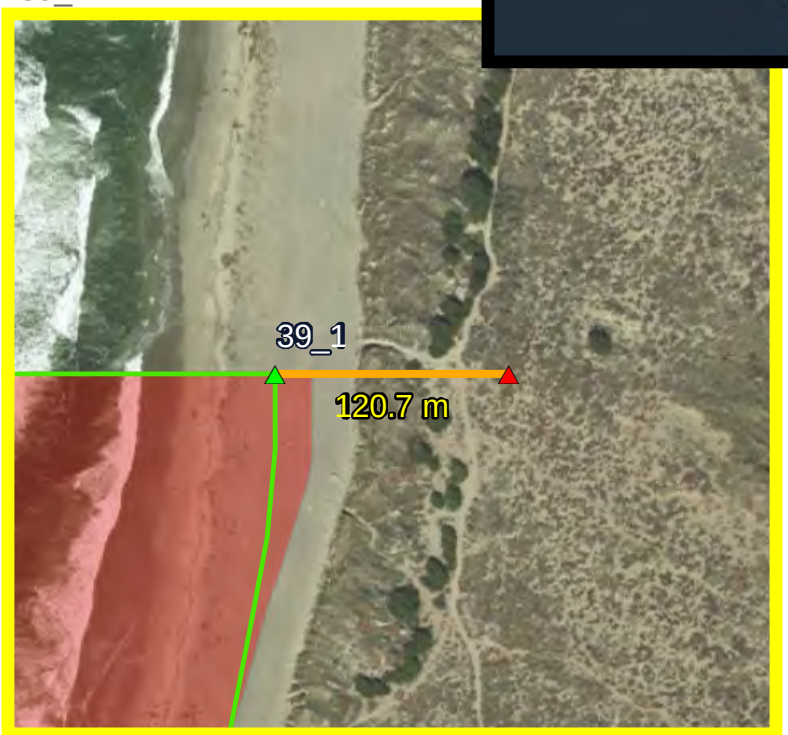


Bodega Head SMR (39)
Pre-existing Area = 9.34 sq. miles
New Area = 9.34 sq. miles
% Change = -0.01%



0 3,400 Meters

39_1



0 190 Meters

19

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Bodega Head SMR

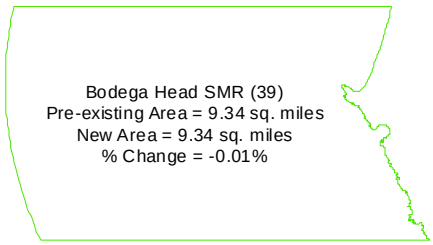
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

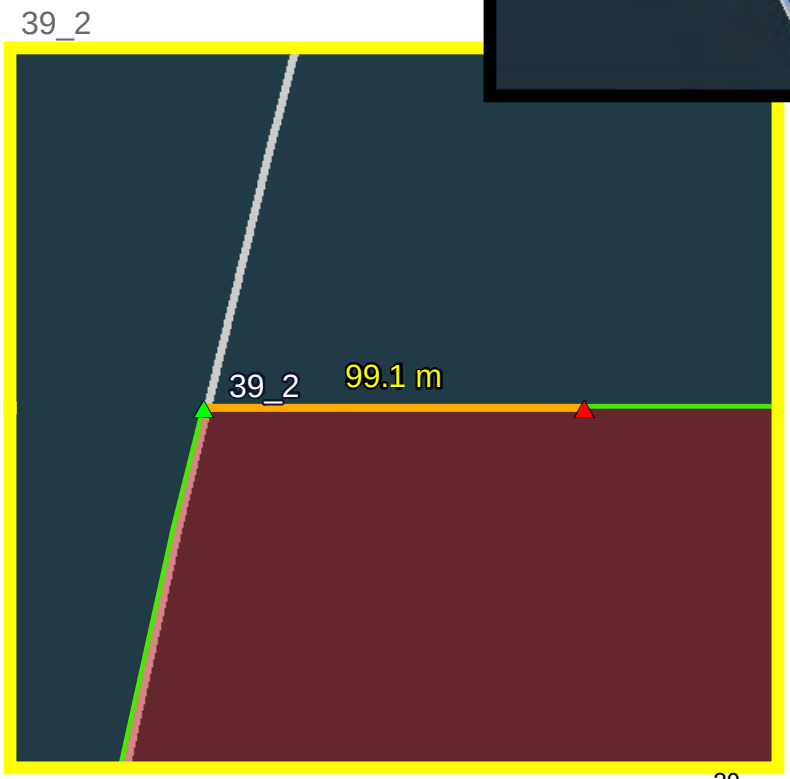
- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Bodega Head SMR (39)
Pre-existing Area = 9.34 sq. miles
New Area = 9.34 sq. miles
% Change = -0.01%

0 3,400 Meters



0 90 Meters

California Department of Fish and Wildlife
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May 8, 2015

Bodega Head SMR and SMCA

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

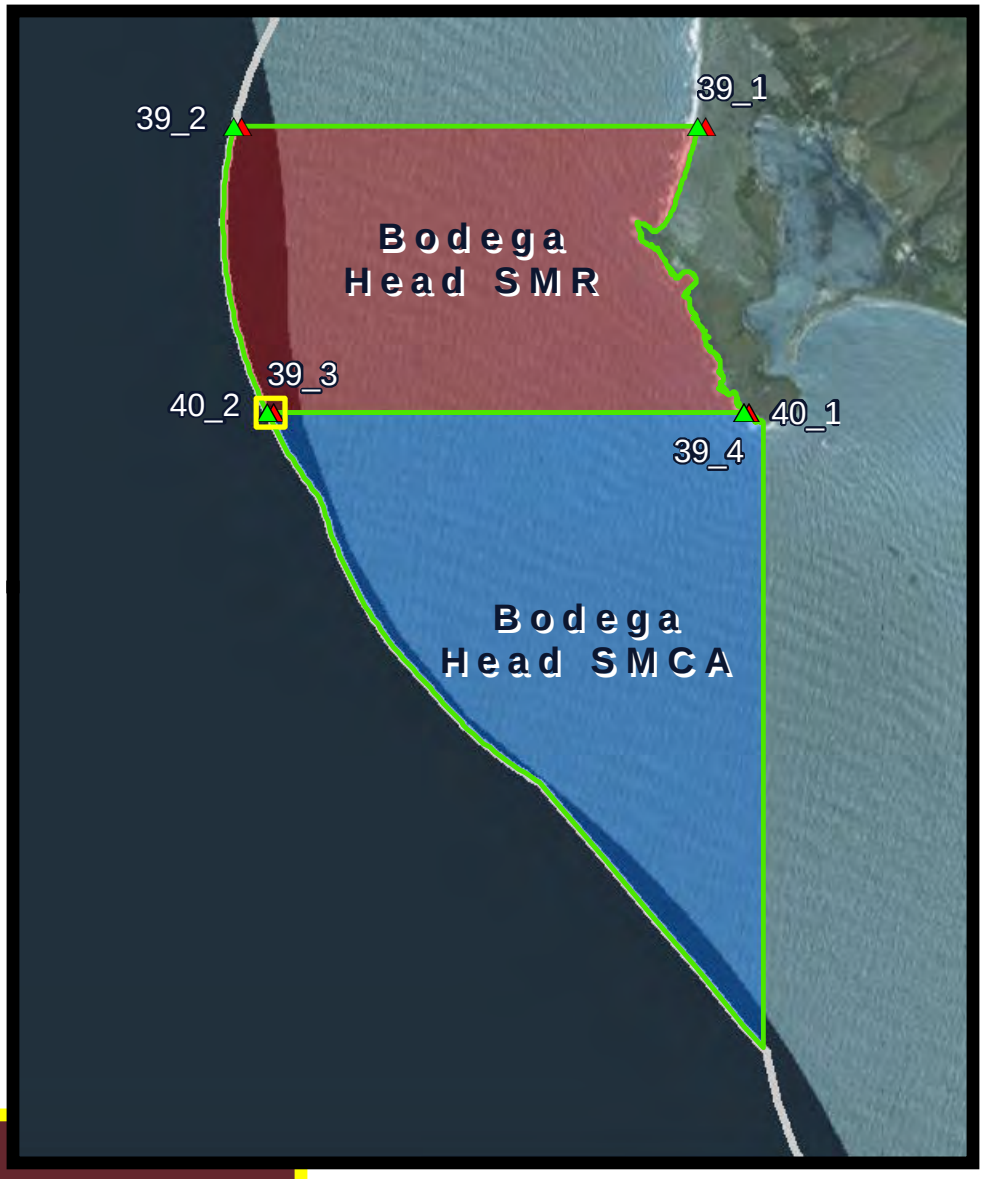
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

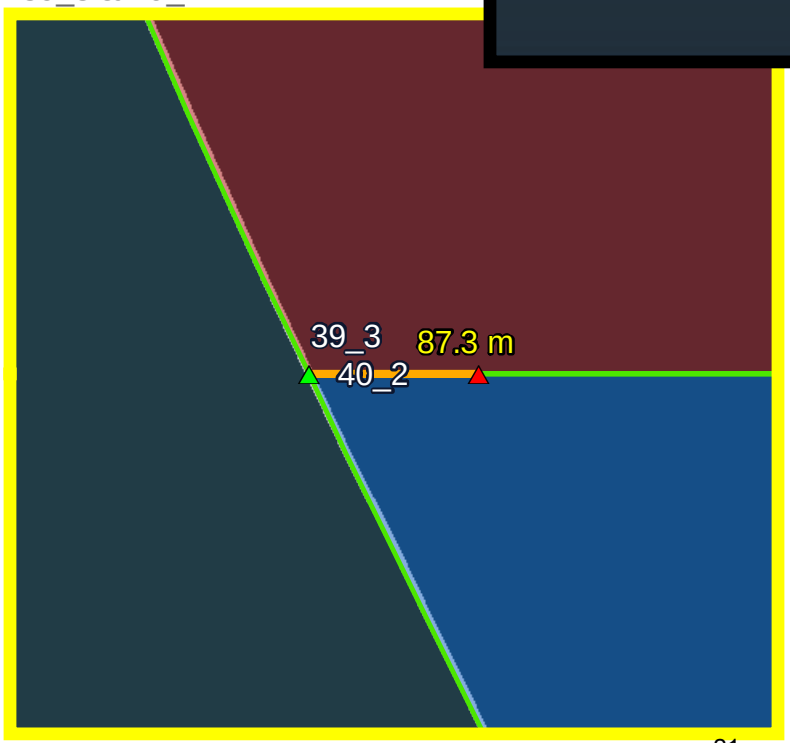
Bodega Head SMR (39)
Pre-existing Area = 9.34 sq. miles
New Area = 9.34 sq. miles
% Change = -0.01%

Bodega Head SMCA (40)
Pre-existing Area = 12.31 sq. miles
New Area = 12.31 sq. miles
% Change = -0.01%



0 5,000 Meters

39_3 & 40_2



0 190 Meters

21

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Marine Region GIS
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May 8, 2015

Bodega Head SMR and SMCA

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

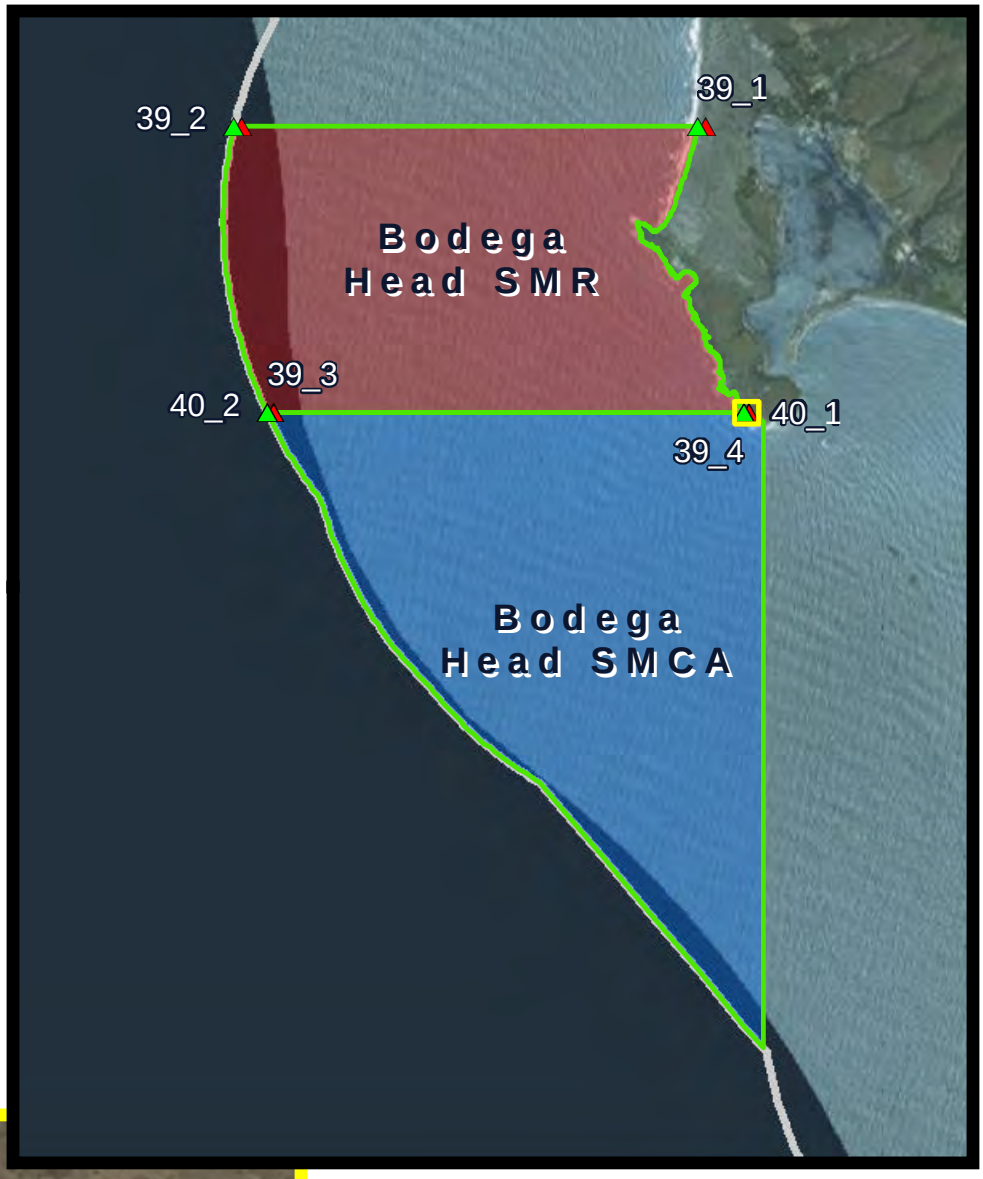
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

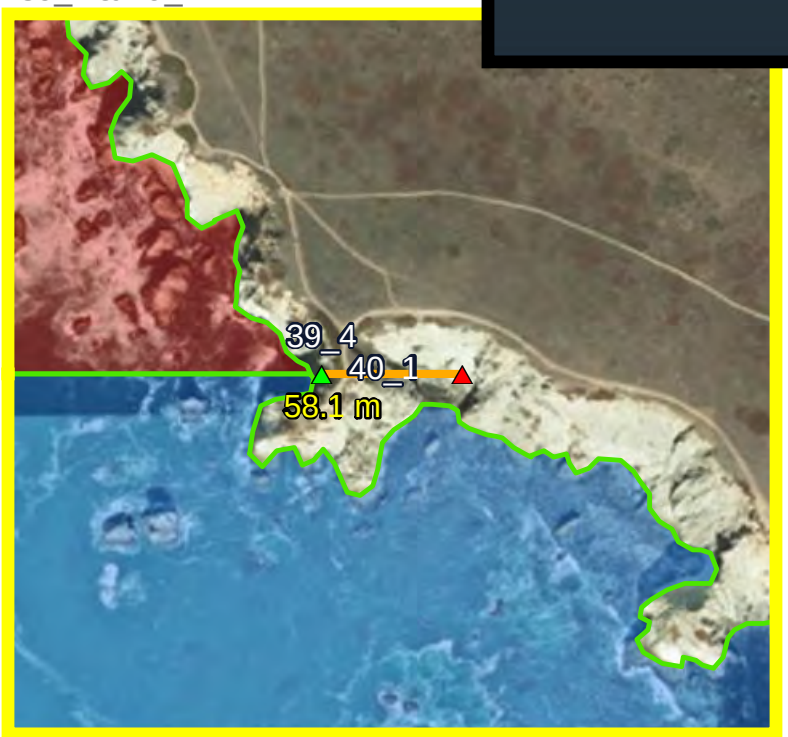
Bodega Head SMR (39)
Pre-existing Area = 9.34 sq. miles
New Area = 9.34 sq. miles
% Change = -0.01%

Bodega Head SMCA (40)
Pre-existing Area = 12.31 sq. miles
New Area = 12.31 sq. miles
% Change = -0.01%



0 5,000 Meters

39_4 & 40_1



0 150 Meters

22

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May 8, 2015

Point Reyes SMR

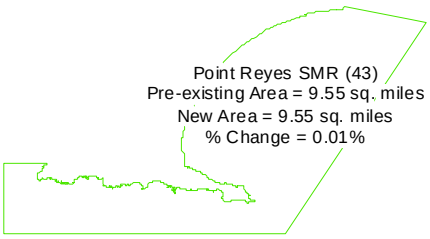
Legend

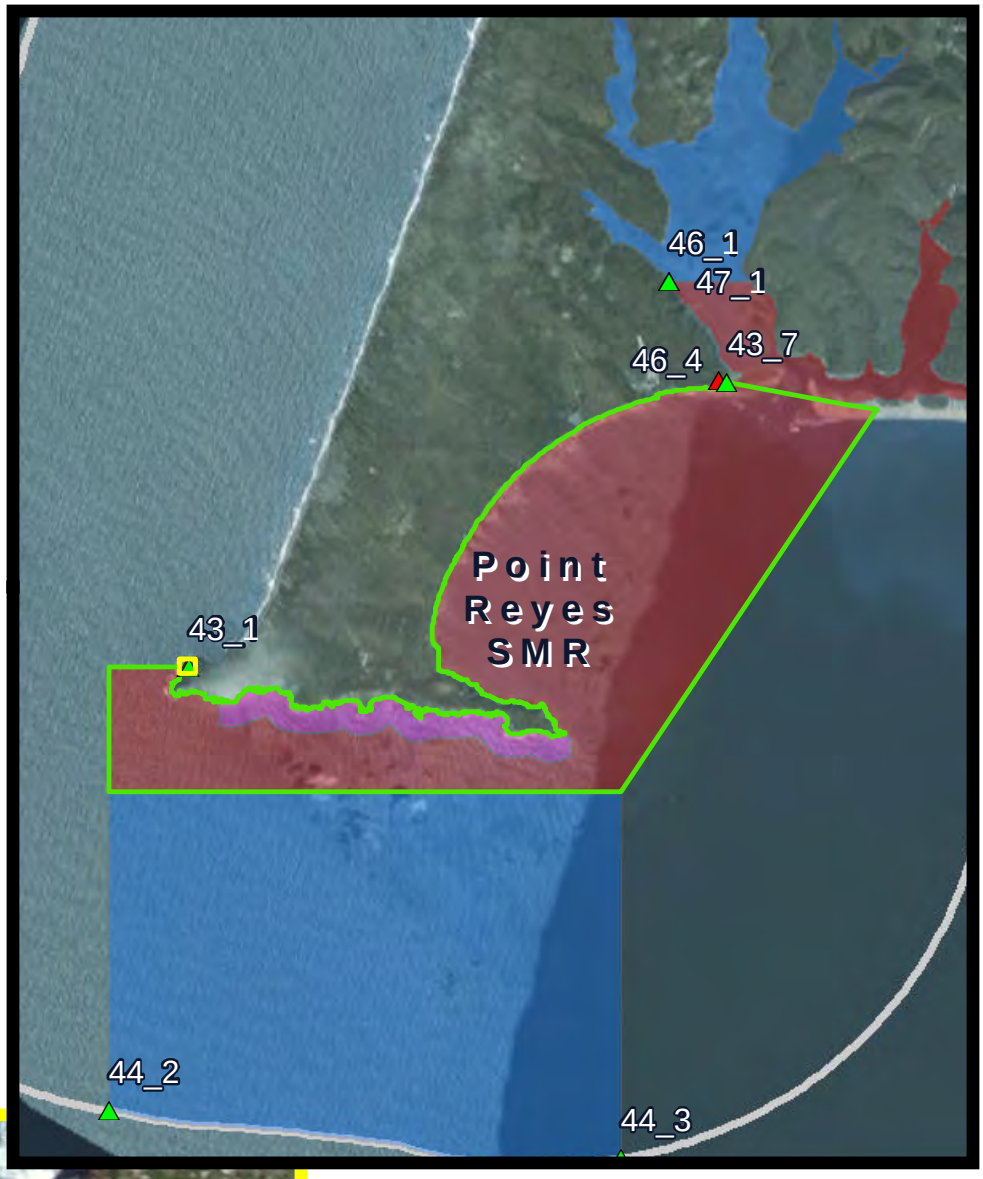
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

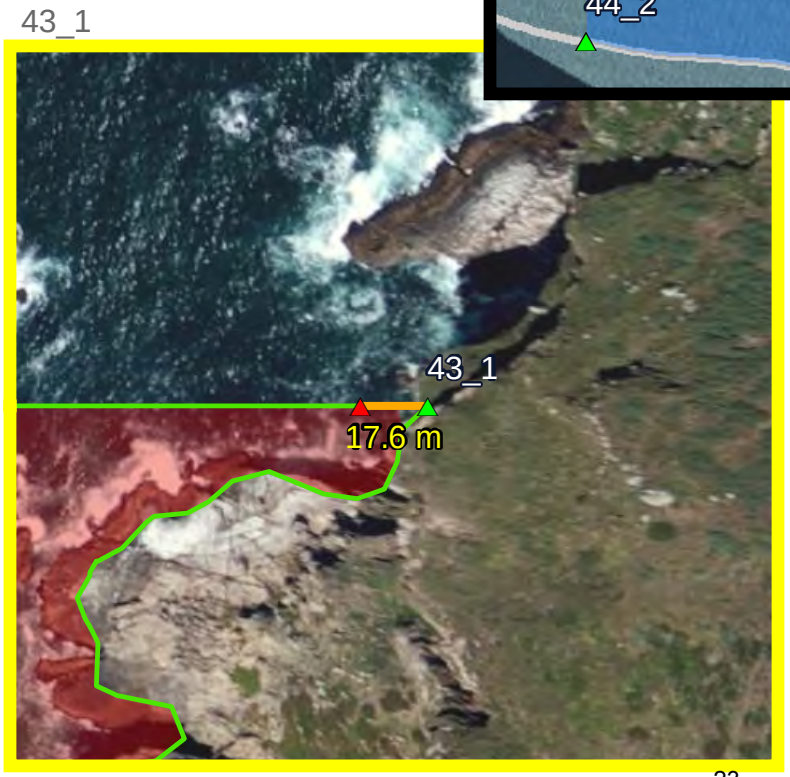
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)
- Special Closure

Summary of Proposed Refinements







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Point Reyes SMR and Estero de Limantour SMR

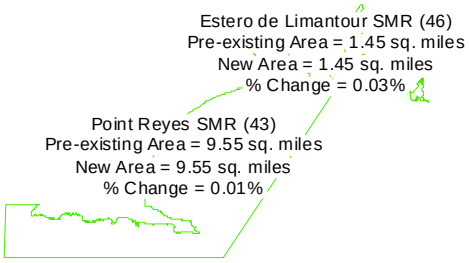
Legend

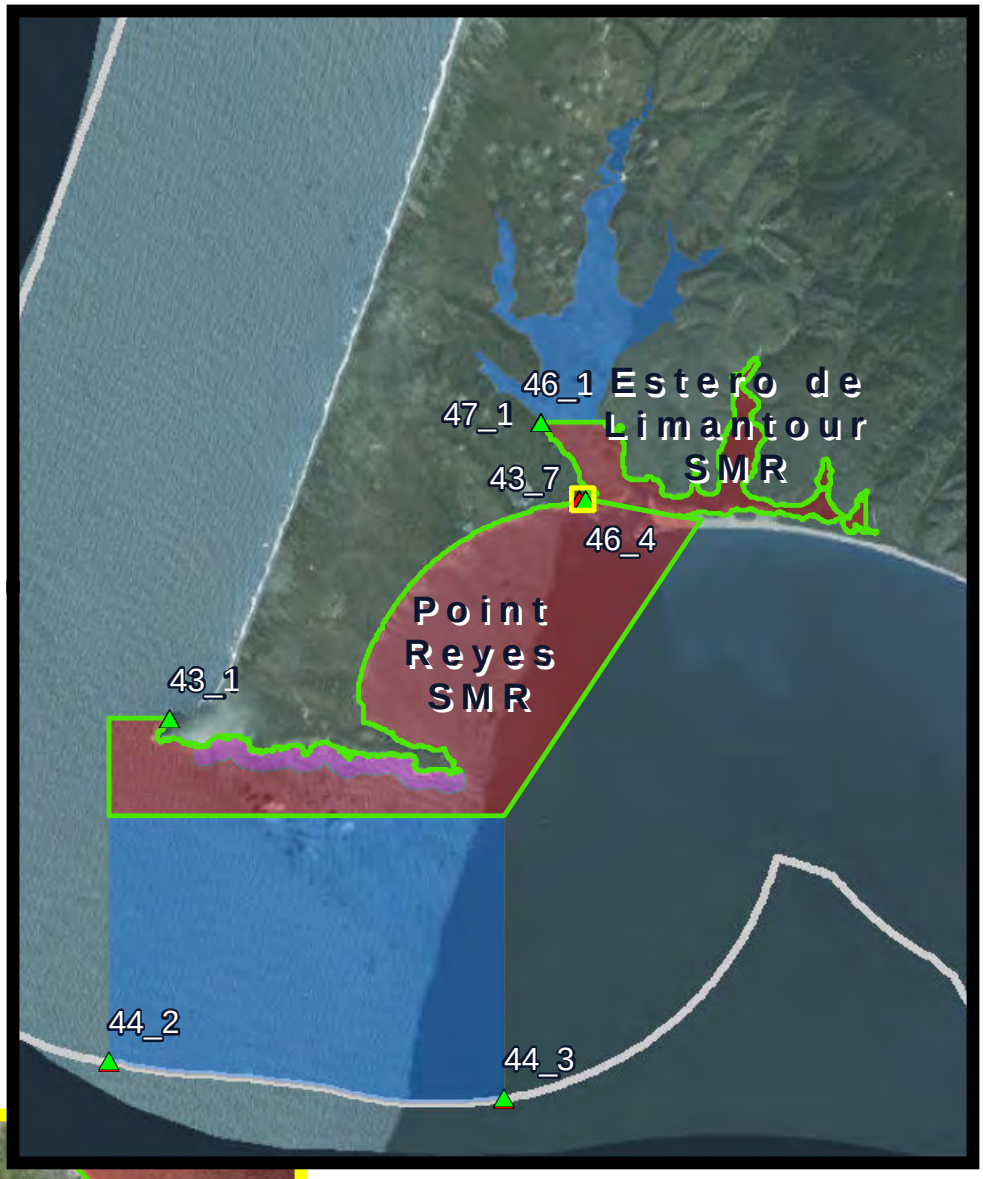
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)
- Special Closure

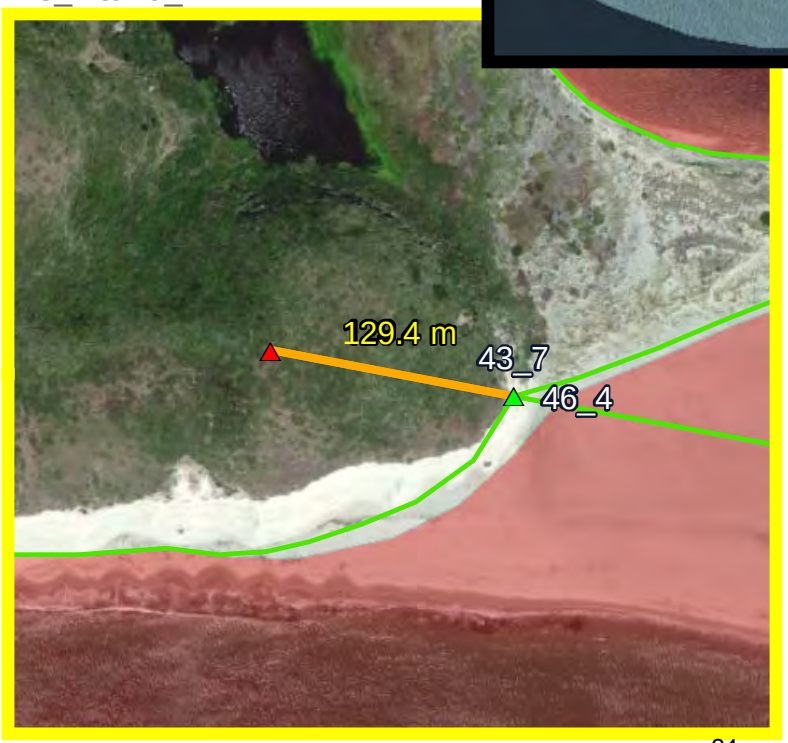
Summary of Proposed Refinements





0 6,300 Meters

43_7 & 46_4



0 190 Meters

24

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May 8, 2015

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Point Reyes SMCA

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

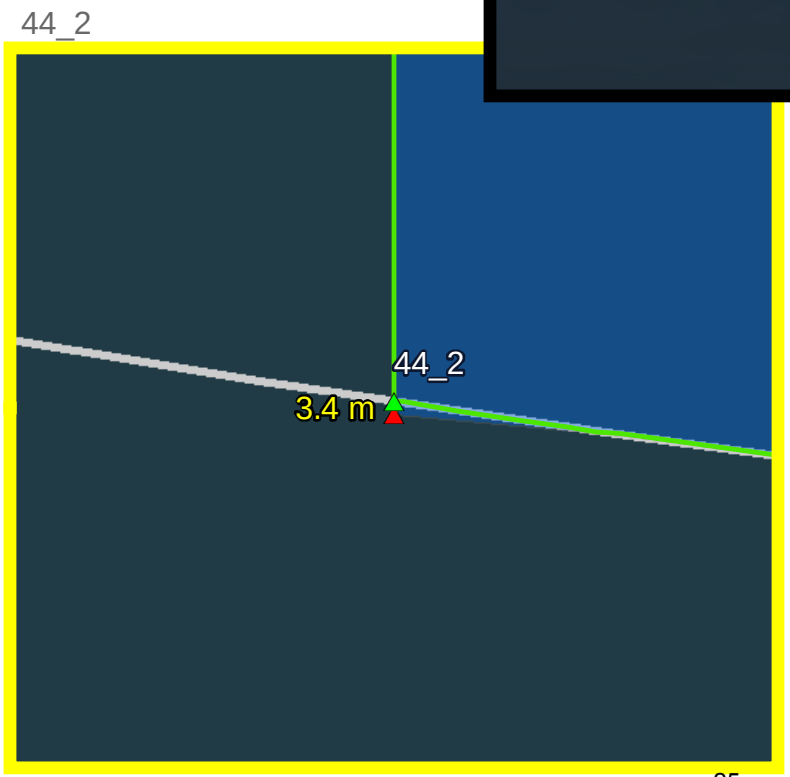
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)
- Special Closure

Summary of Proposed Refinements

Point Reyes SMCA (44)
Pre-existing Area = 12.27 sq. miles
New Area = 12.27 sq. miles
% Change = -0.01%

0 4,900 Meters



0 90 Meters

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May 8, 2015

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Point Reyes SMCA

Legend

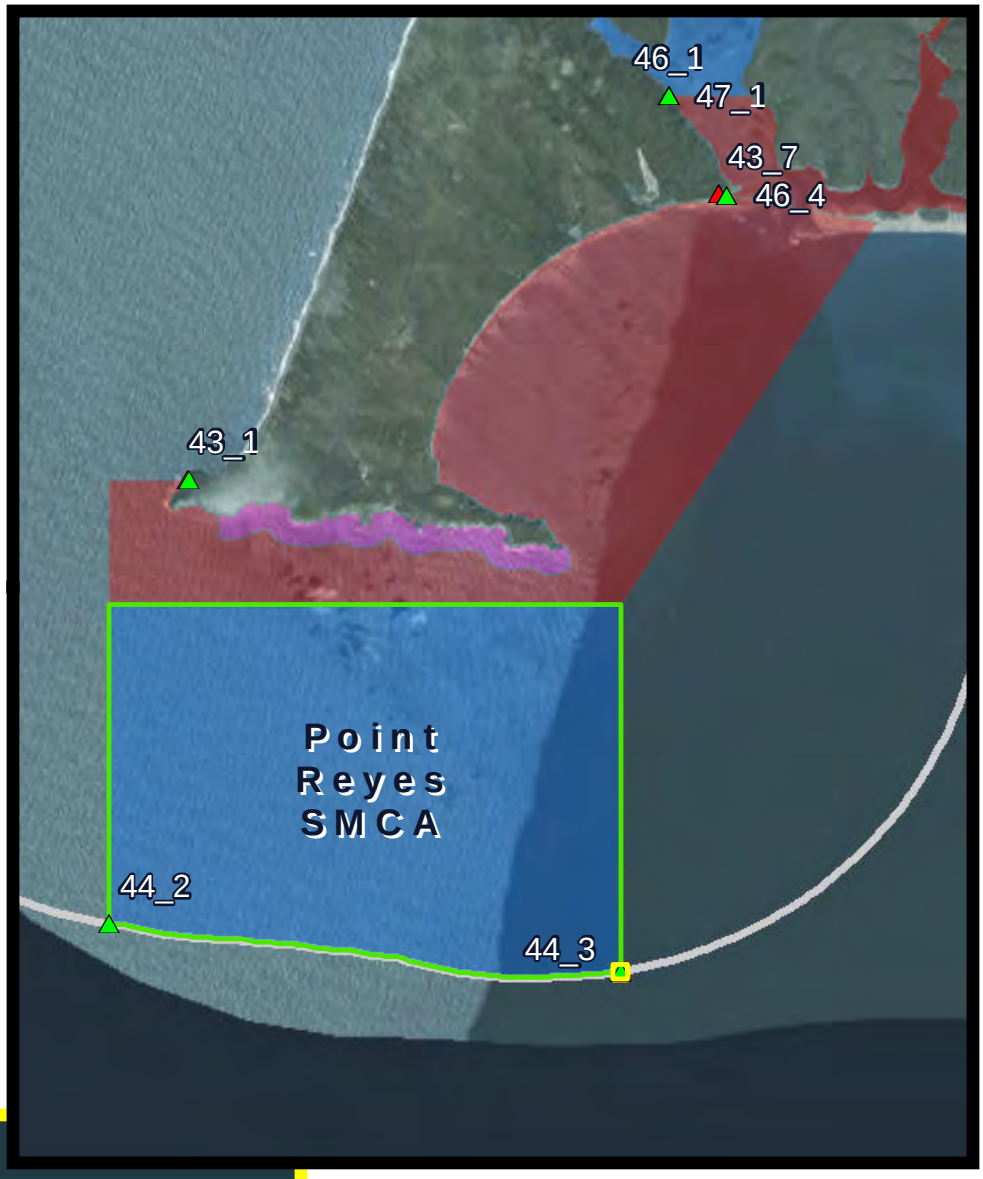
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

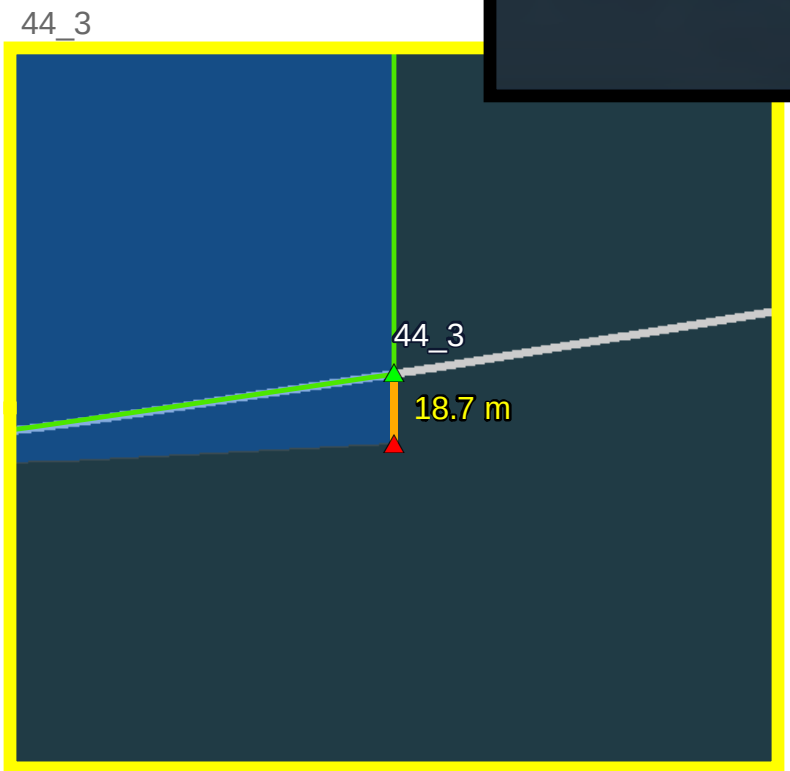
- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)
- Special Closure

Summary of Proposed Refinements

Point Reyes SMCA (44)
Pre-existing Area = 12.27 sq. miles
New Area = 12.27 sq. miles
% Change = -0.01%



0 4,900 Meters



0 90 Meters

California Department of Fish and Wildlife
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May 8, 2015

Estero de Limantour SMR and Drakes Estero SMCA

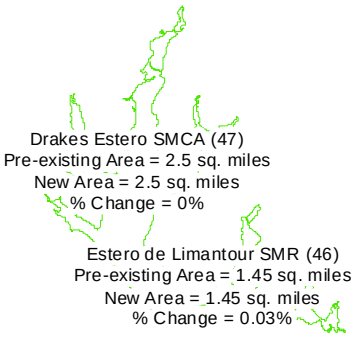
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

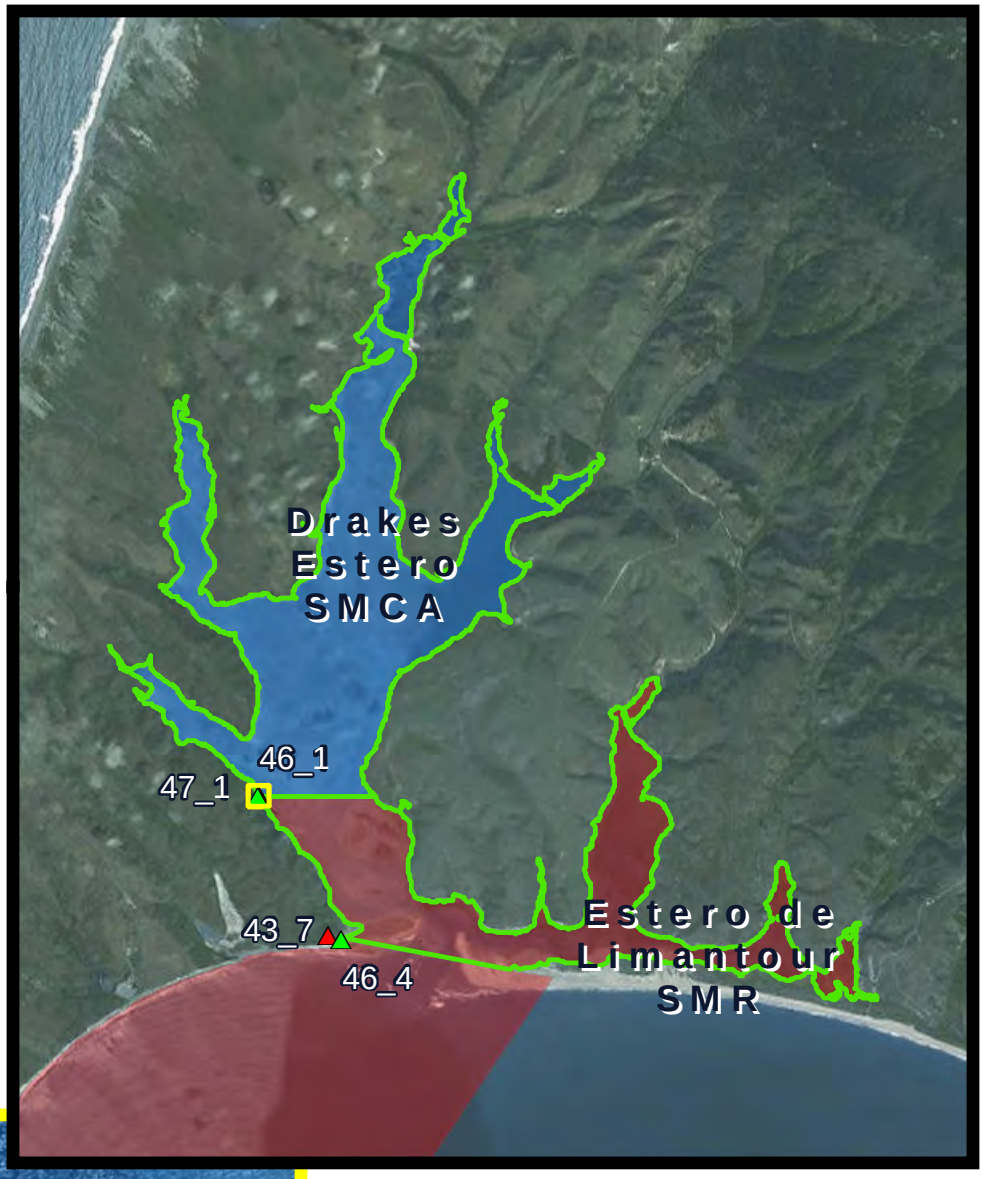
- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Drakes Estero SMCA (47)
Pre-existing Area = 2.5 sq. miles
New Area = 2.5 sq. miles
% Change = 0%

Estero de Limantour SMR (46)
Pre-existing Area = 1.45 sq. miles
New Area = 1.45 sq. miles
% Change = 0.03%



0 3,400 Meters

46_1 & 47_1

0 90 Meters

27

California Department of Fish and Wildlife
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mr_gis@wildlife.ca.gov
May 8, 2015

Point Resistance Rock Special Closure

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- Special Closure

Summary of Proposed Refinements

0 100 Meters

48_1

0 90 Meters

28

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May 8, 2015

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Duxbury Reef SMCA

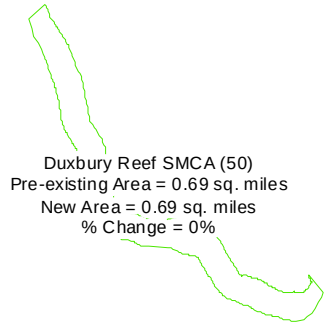
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

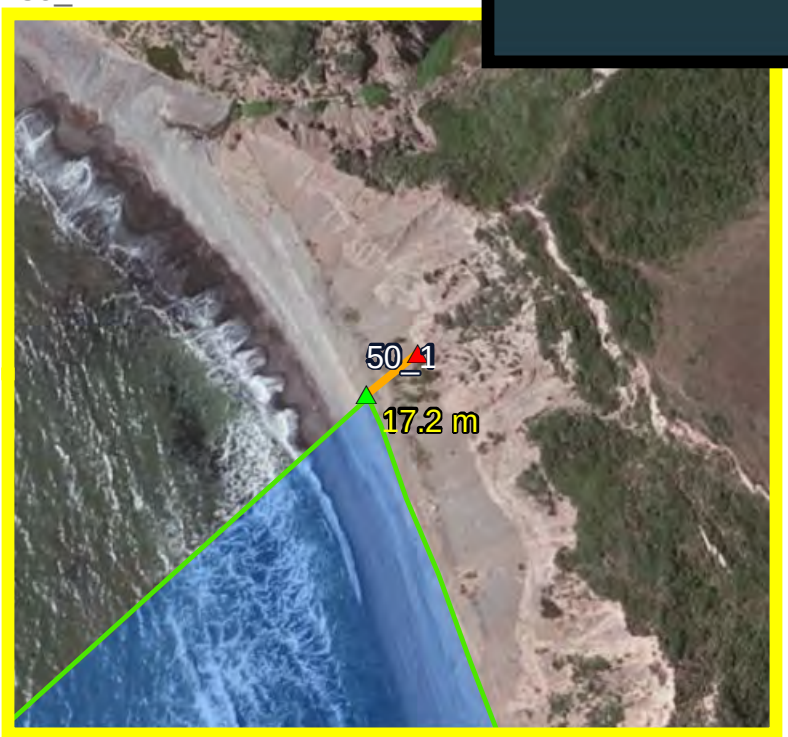
Summary of Proposed Refinements



Duxbury Reef SMCA (50)
Pre-existing Area = 0.69 sq. miles
New Area = 0.69 sq. miles
% Change = 0%

0 1,600 Meters

50_1



0 90 Meters

29

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

North Farallon Islands SMR

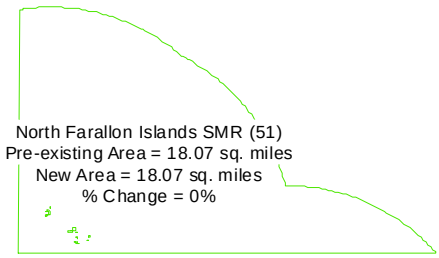
Legend

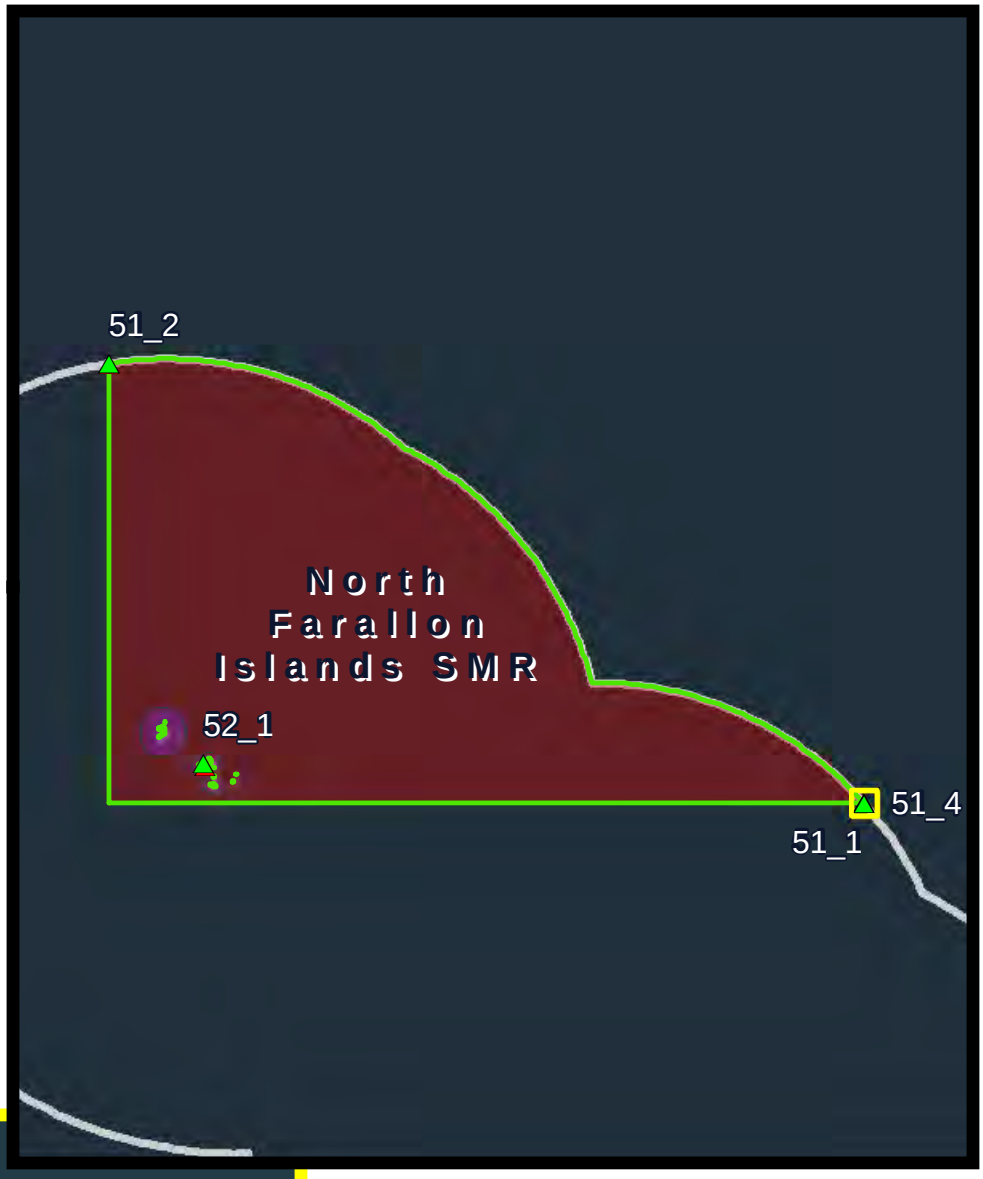
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

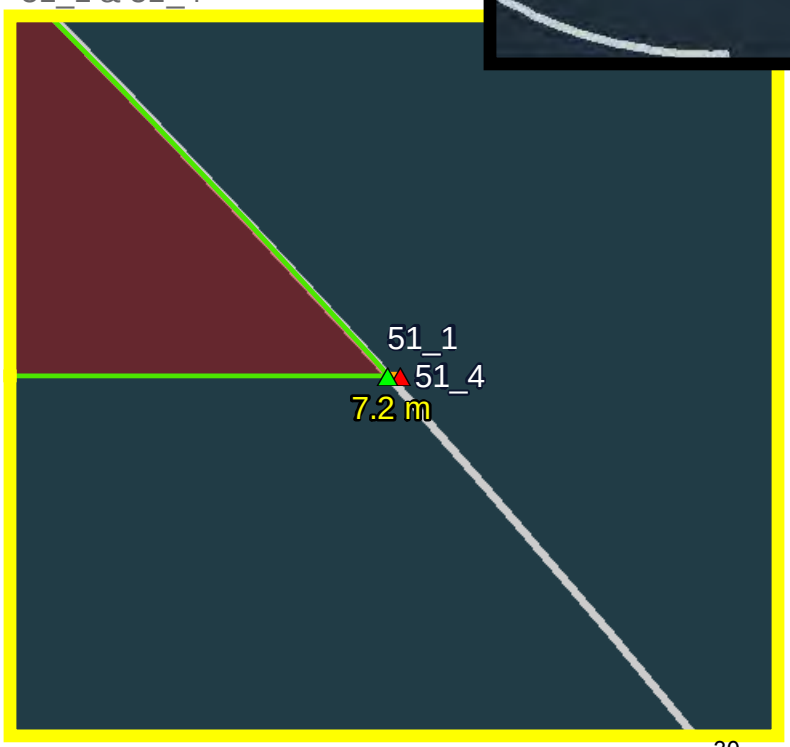
- State Marine Reserve (SMR)
- Special Closure

Summary of Proposed Refinements





51_1 & 51_4



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May 8, 2015

North Farallon Islands SMR

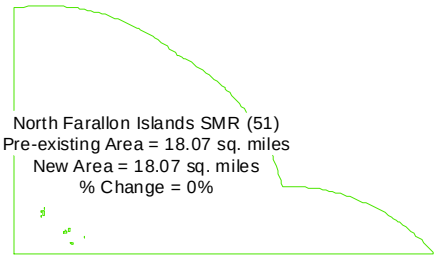
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

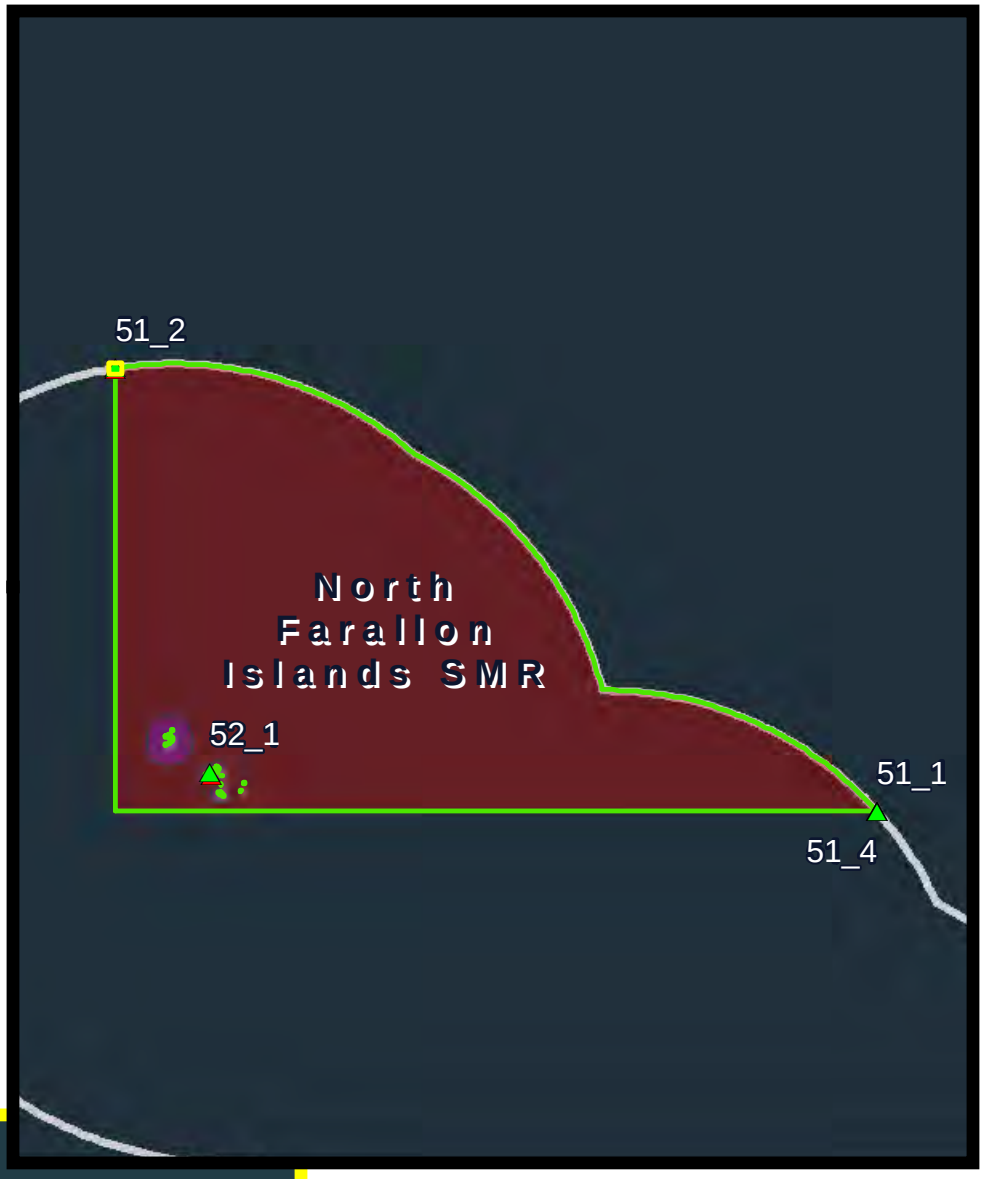
Current MPA Boundaries

- State Marine Reserve (SMR)
- Special Closure

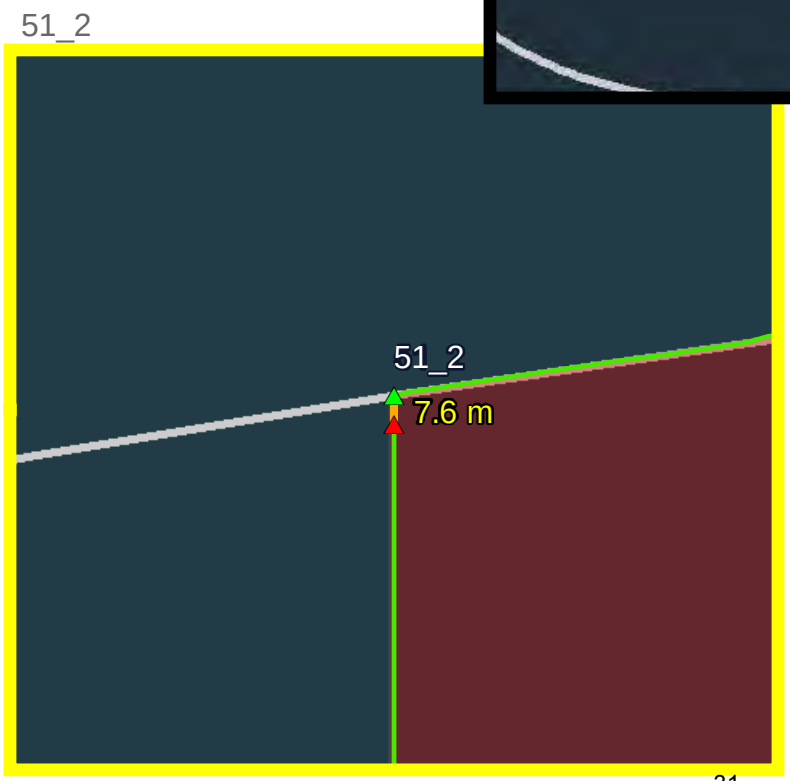
Summary of Proposed Refinements



North Farallon Islands SMR (51)
Pre-existing Area = 18.07 sq. miles
New Area = 18.07 sq. miles
% Change = 0%



0 5,500 Meters



0 90 Meters

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May 8, 2015

North Farallon Islands Special Closure

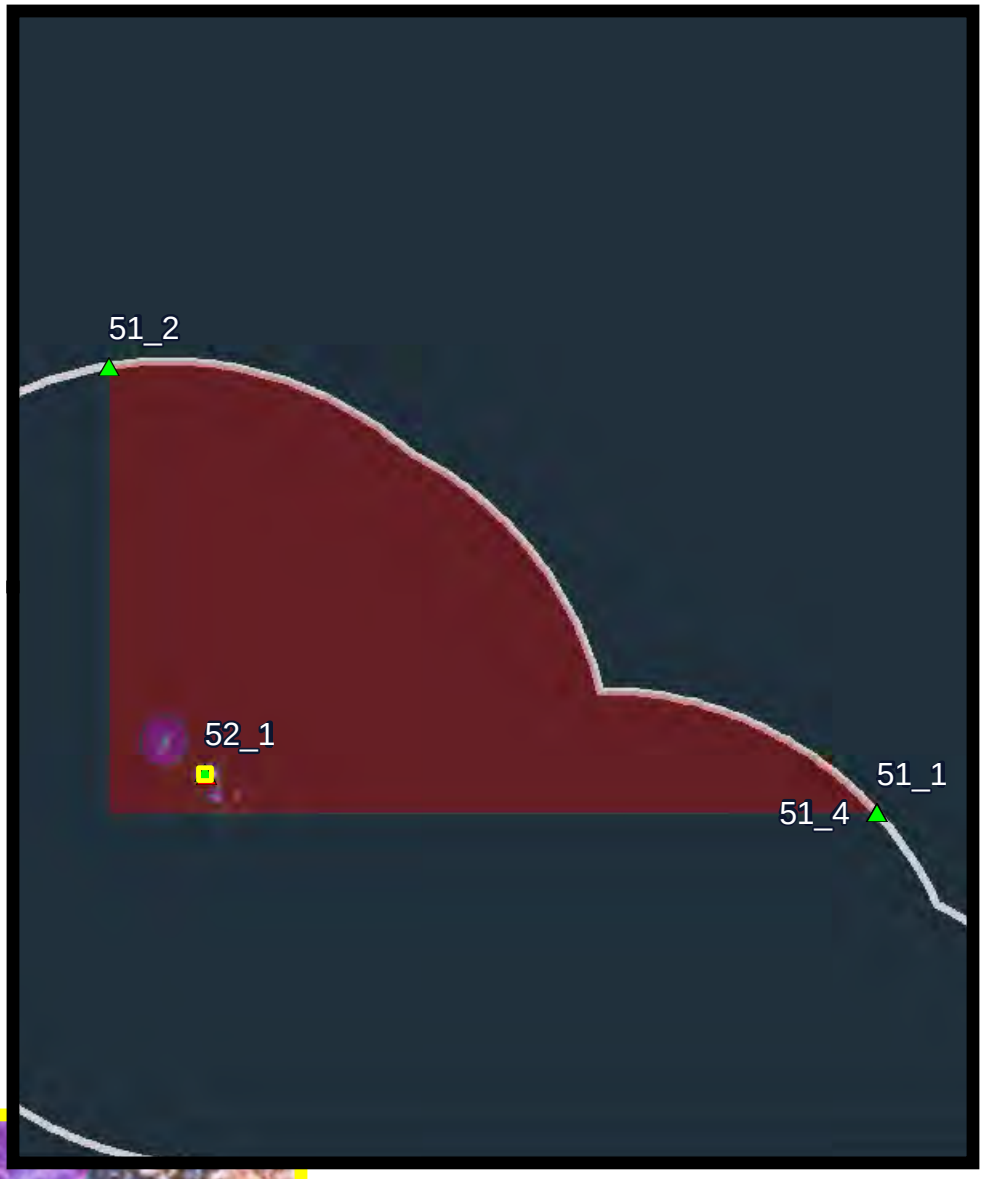
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

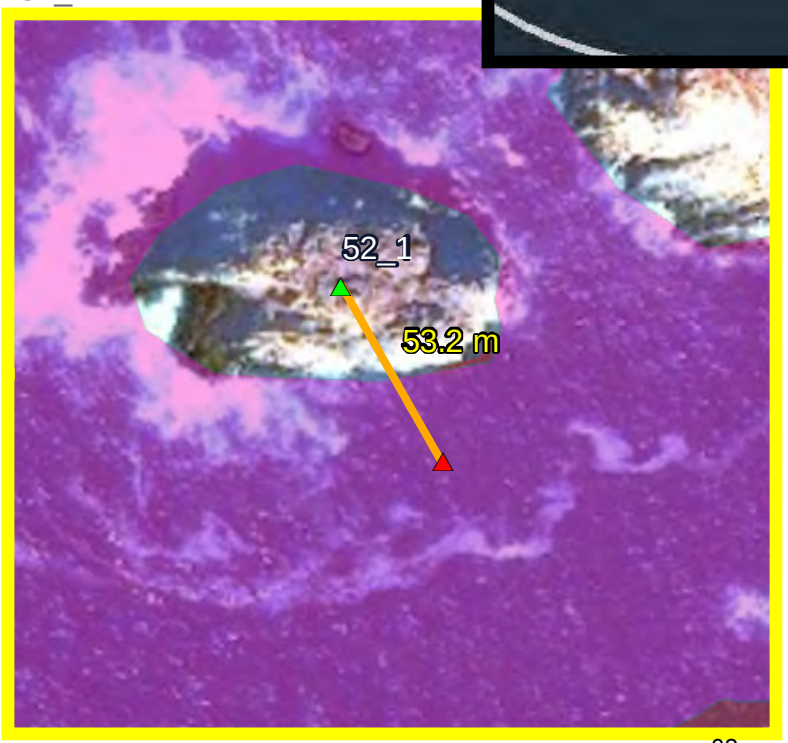
- State Marine Reserve (SMR)
- Special Closure

Summary of Proposed Refinements



0 5,500 Meters

52_1



0 90 Meters

32

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Southeast Farallon Island SMCA

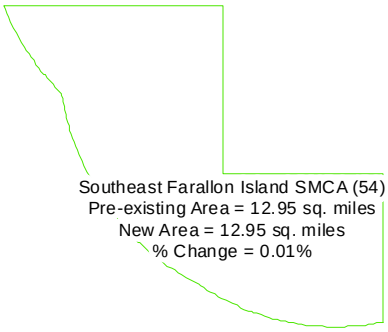
Legend

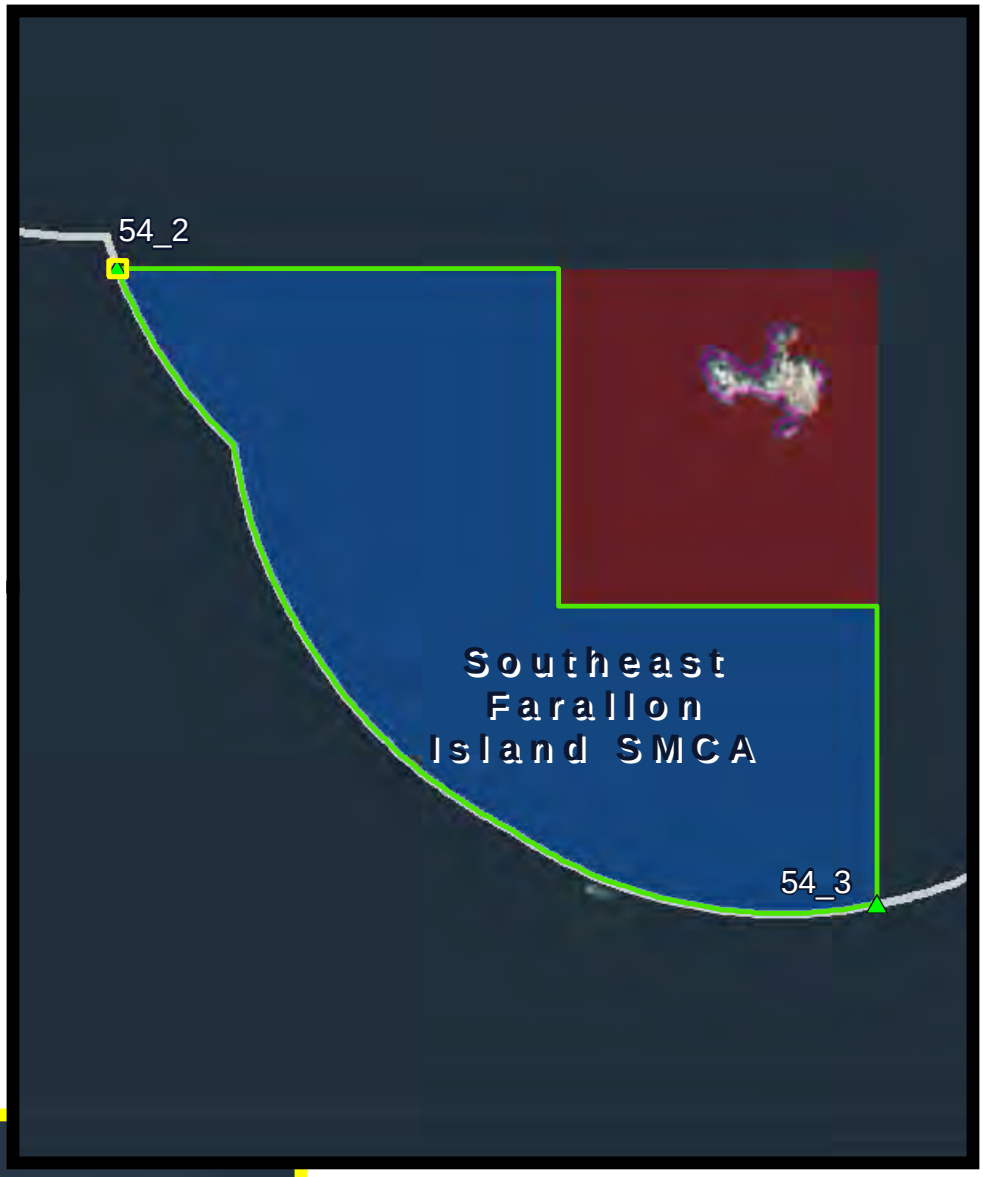
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

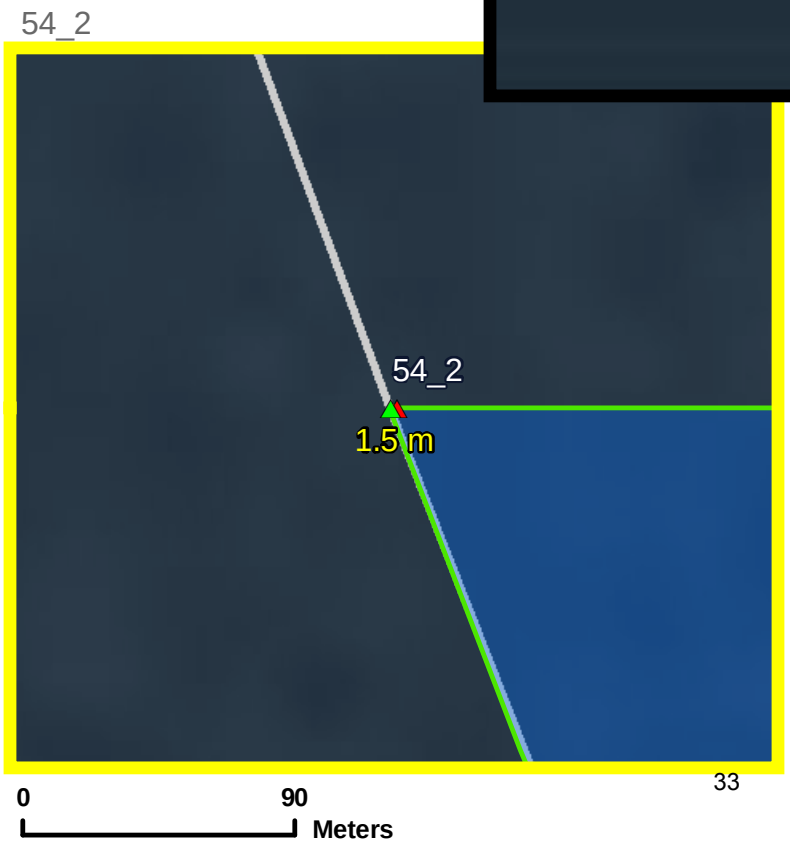
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)
- Special Closure

Summary of Proposed Refinements







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Southeast Farallon Island SMCA

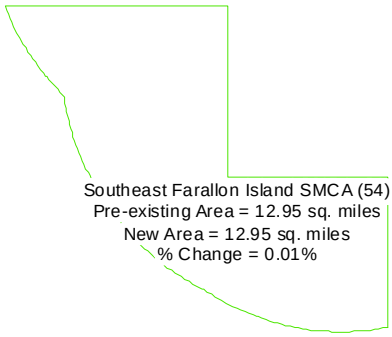
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

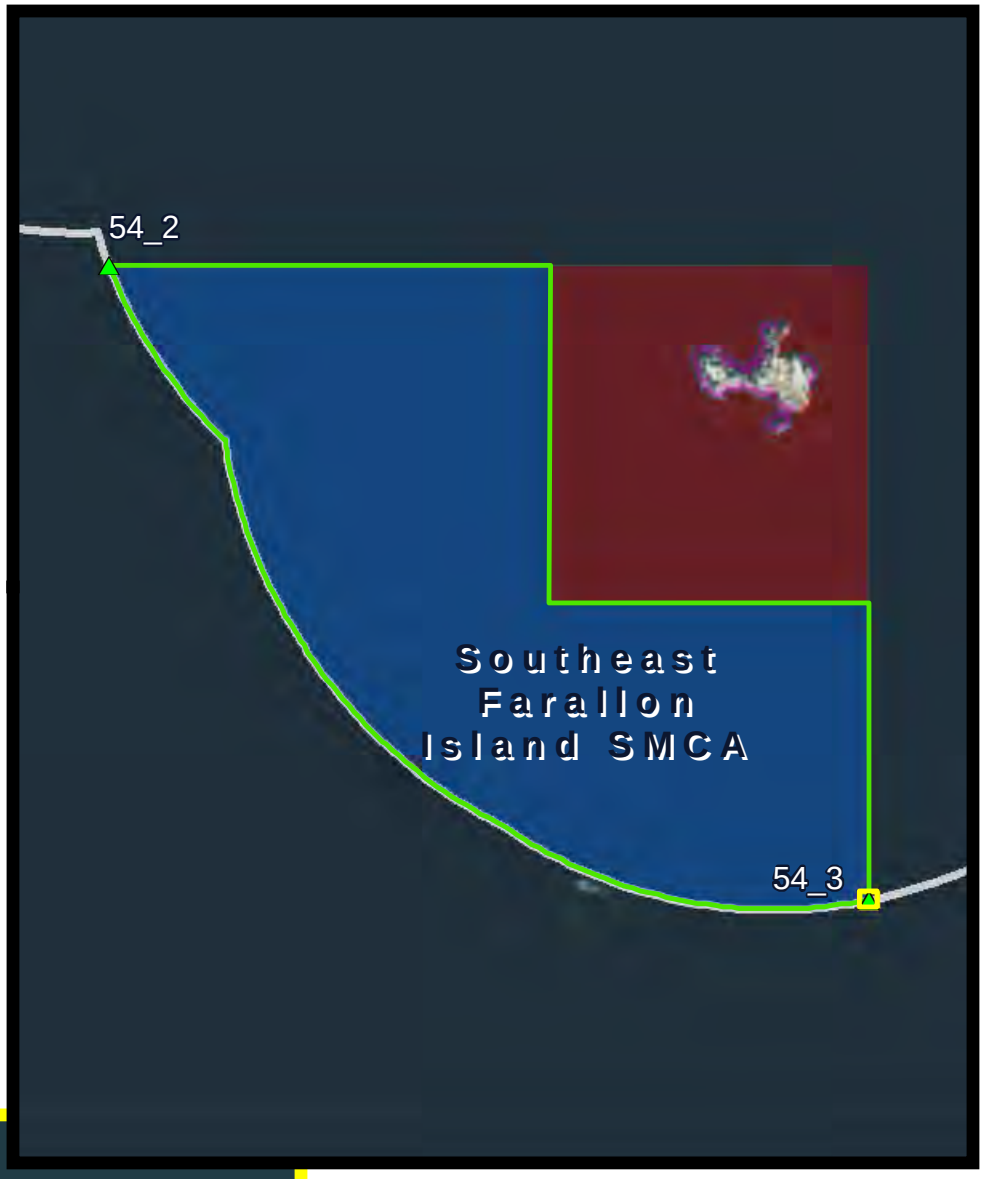
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)
- Special Closure

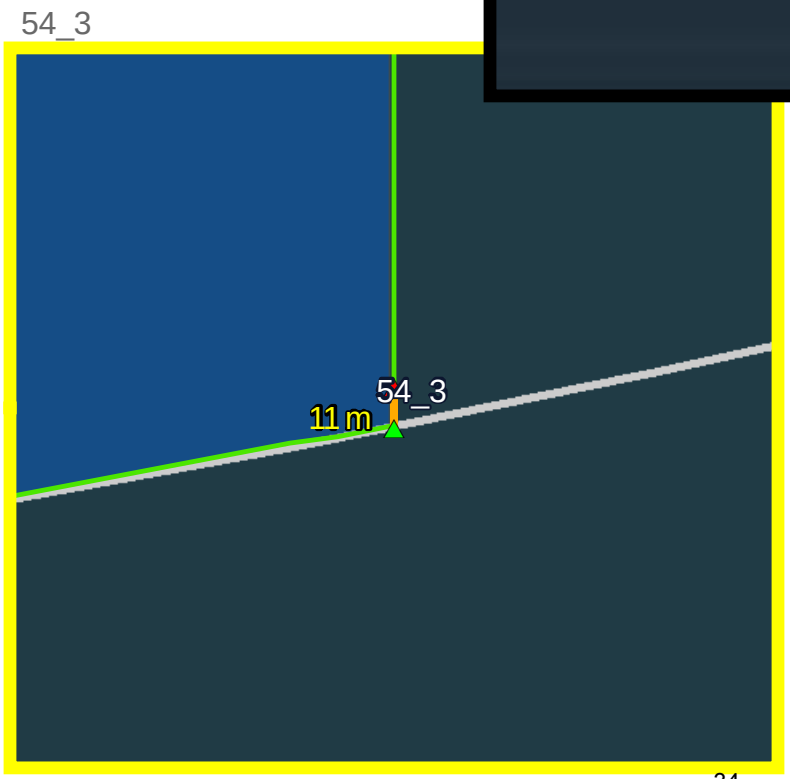
Summary of Proposed Refinements



Southeast Farallon Island SMCA (54)
Pre-existing Area = 12.95 sq. miles
New Area = 12.95 sq. miles
% Change = 0.01%



0 4,200 Meters



0 90 Meters

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Montara SMR

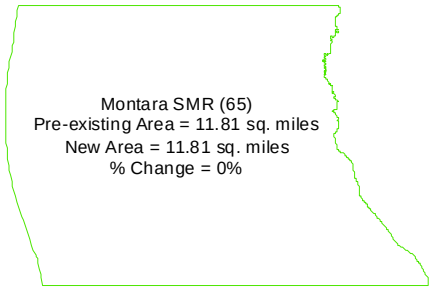
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

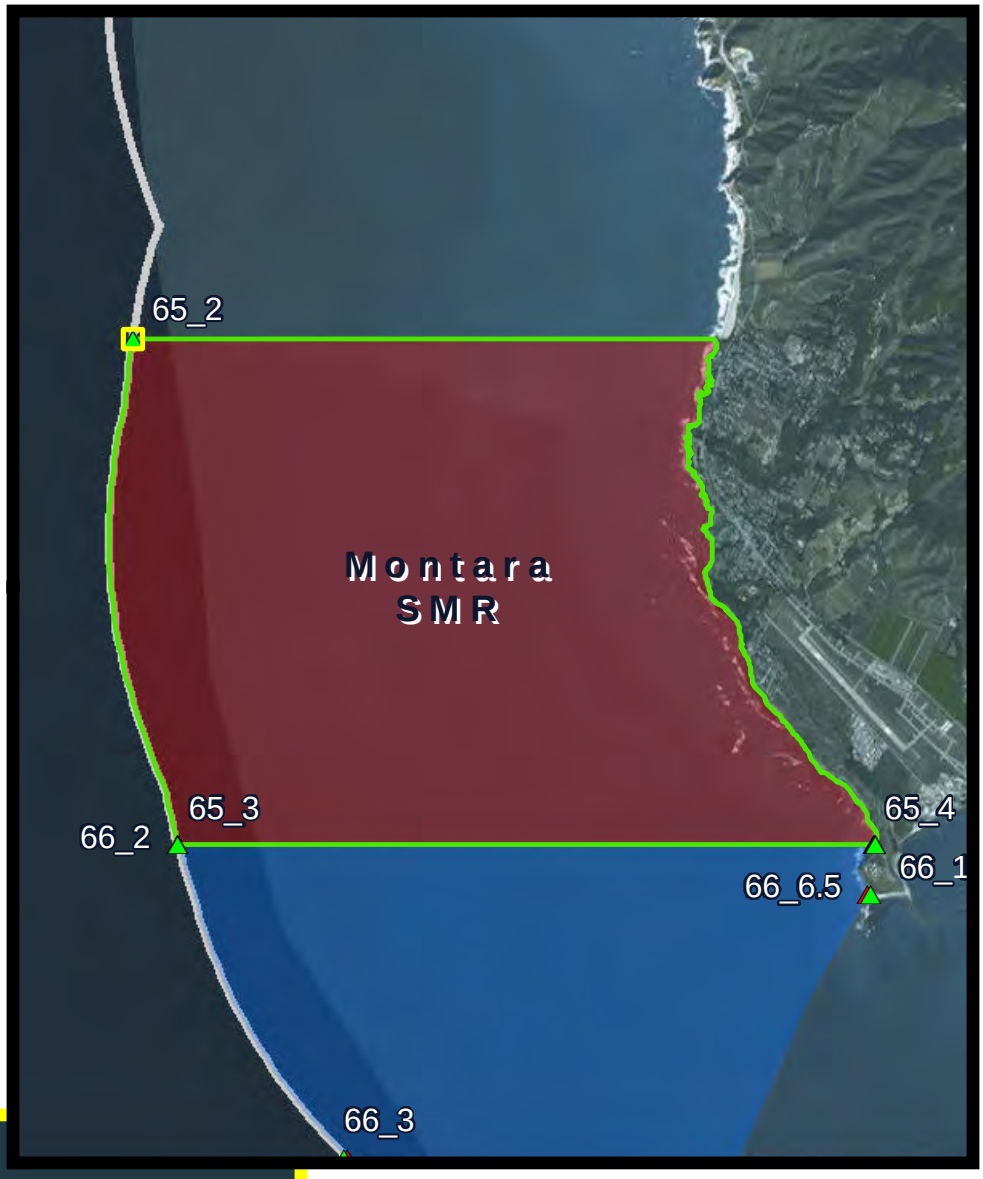
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

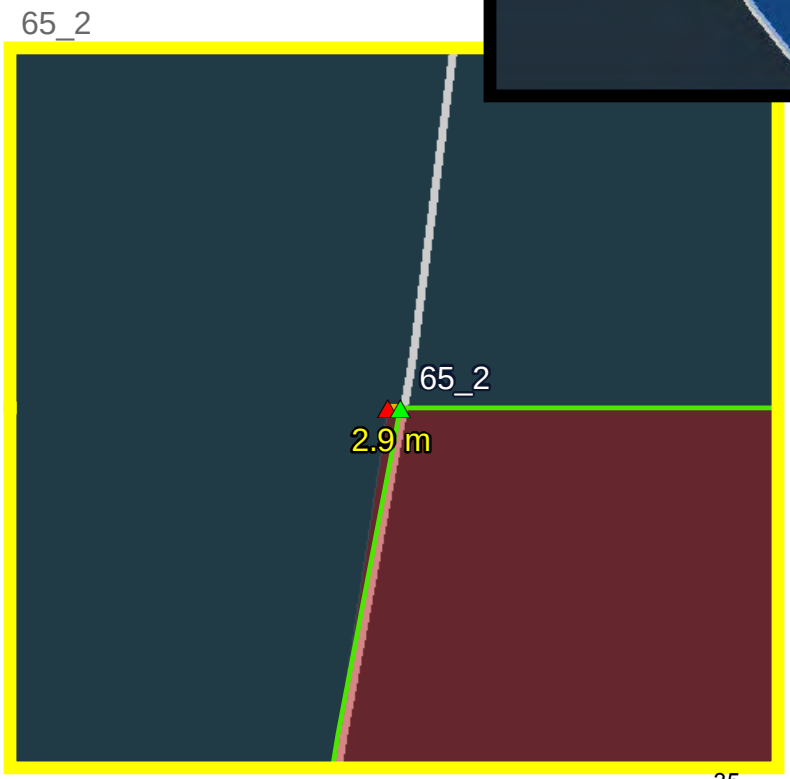
Summary of Proposed Refinements



Montara SMR (65)
Pre-existing Area = 11.81 sq. miles
New Area = 11.81 sq. miles
% Change = 0%



0 3,600 Meters



0 90 Meters

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May 8, 2015

Montara SMR and Pillar Point SMCA

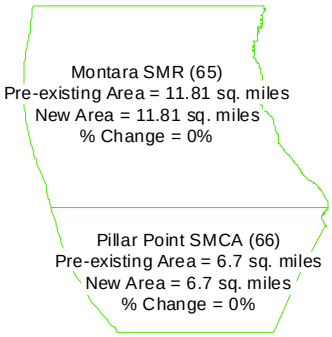
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

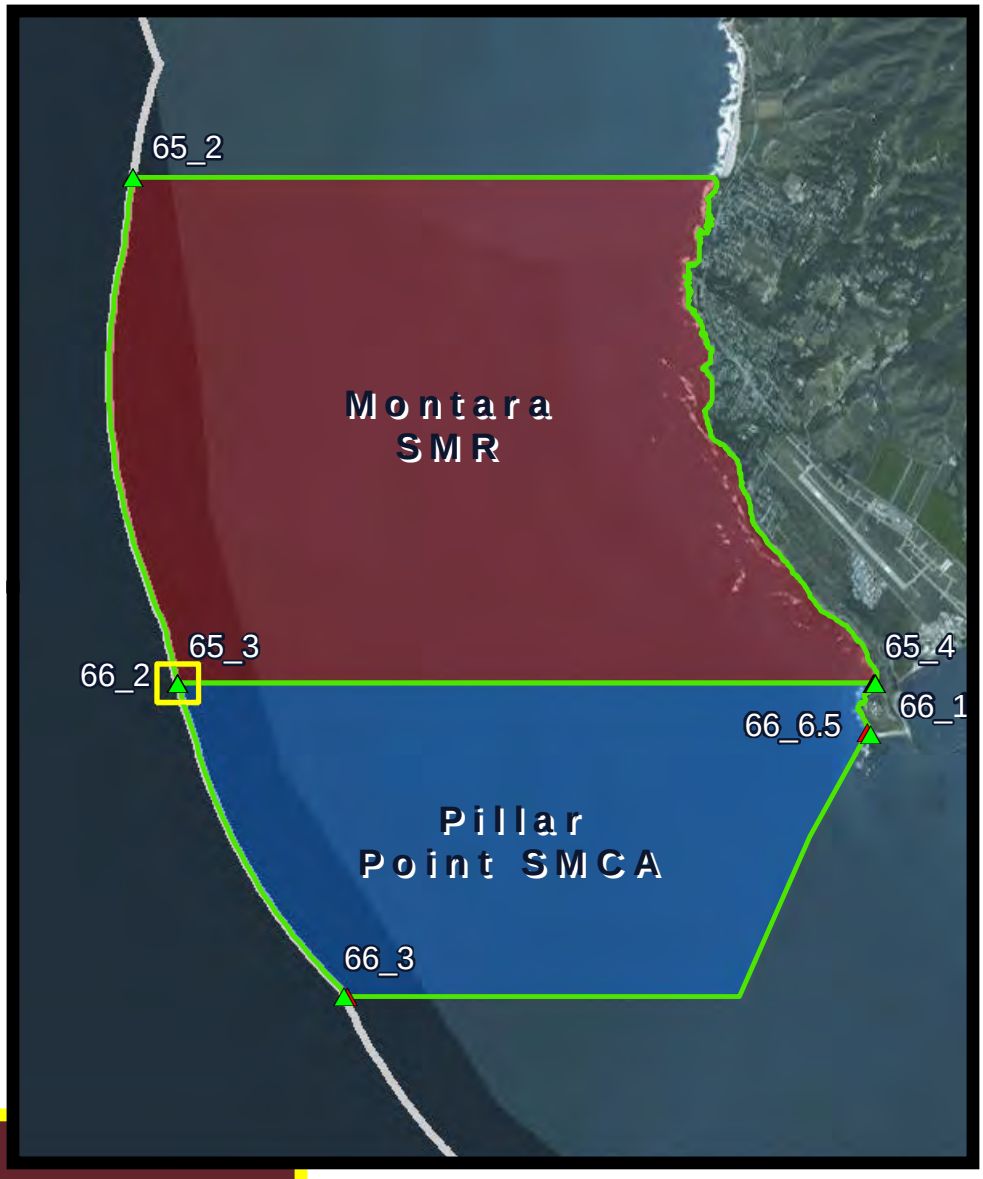
- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



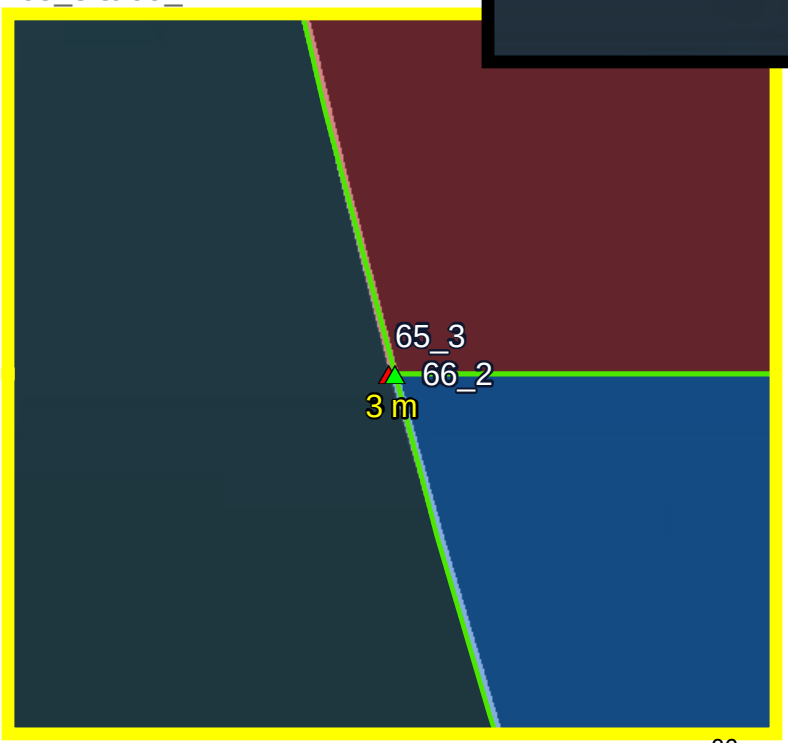
Montara SMR (65)
Pre-existing Area = 11.81 sq. miles
New Area = 11.81 sq. miles
% Change = 0%

Pillar Point SMCA (66)
Pre-existing Area = 6.7 sq. miles
New Area = 6.7 sq. miles
% Change = 0%



0 3,600 Meters

65_3 & 66_2



0 190 Meters

36

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Montara SMR and Pillar Point SMCA

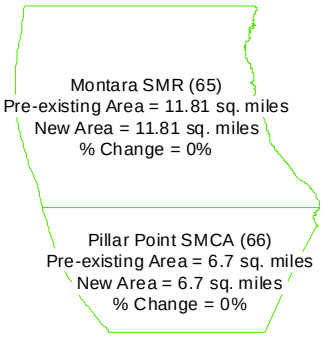
Legend

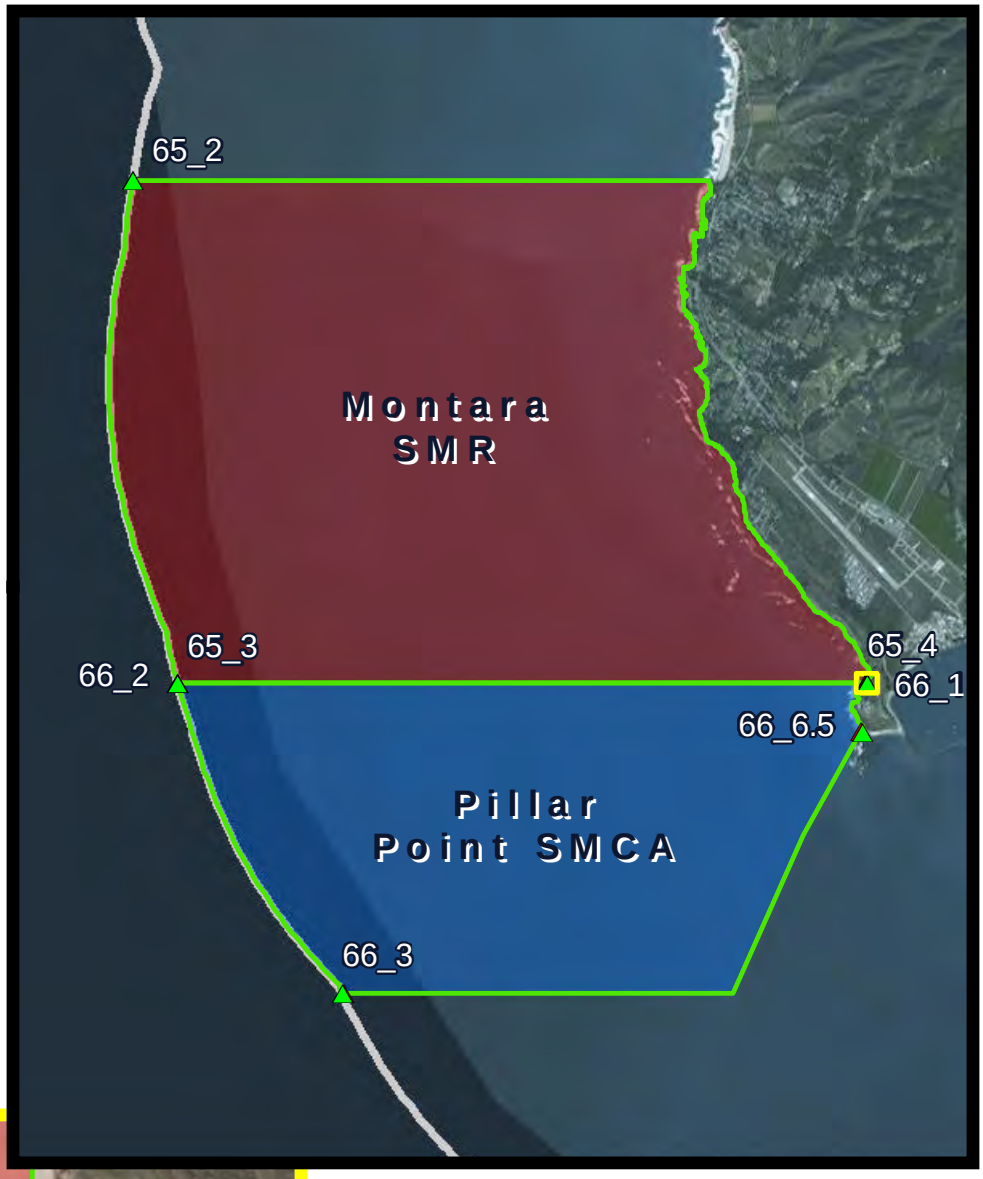
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements





65_4 & 66_1

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Pillar Point SMCA

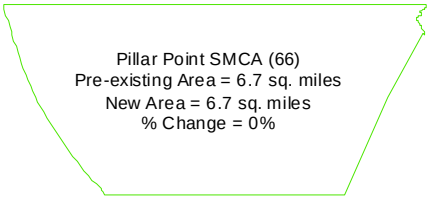
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

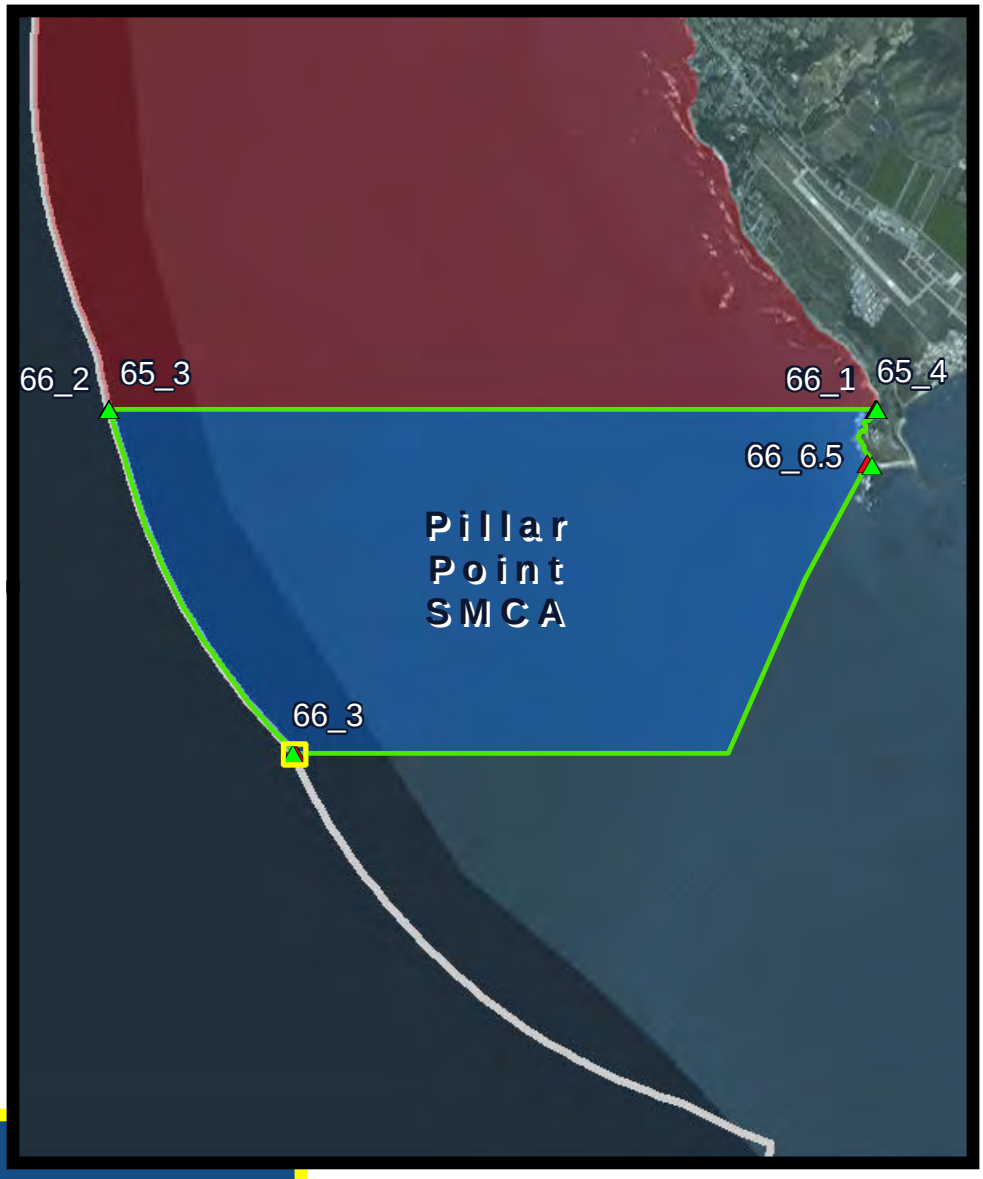
Current MPA Boundaries

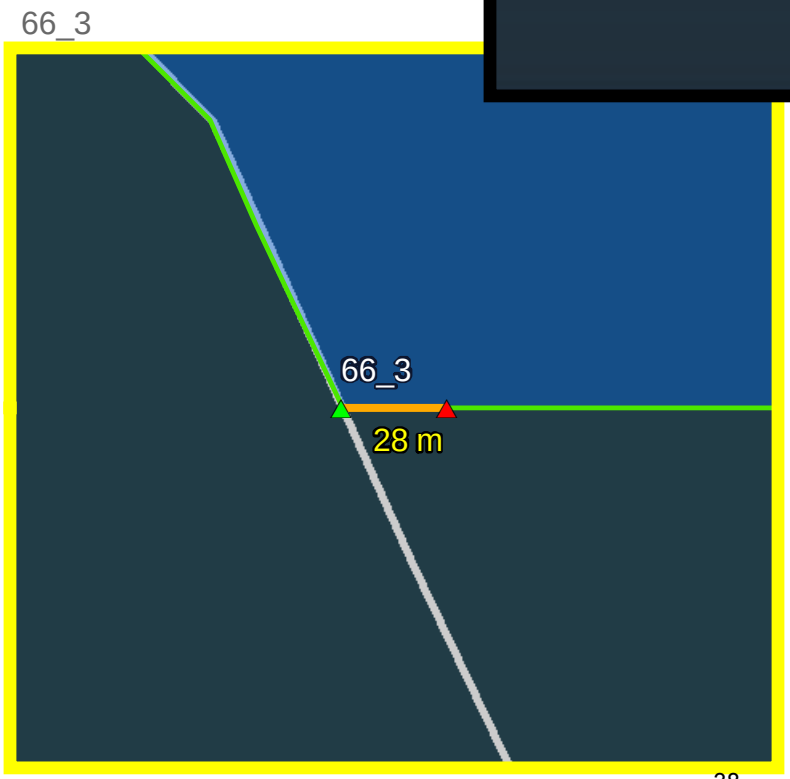
- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Pillar Point SMCA (66)
Pre-existing Area = 6.7 sq. miles
New Area = 6.7 sq. miles
% Change = 0%





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May 8, 2015

Pillar Point SMCA

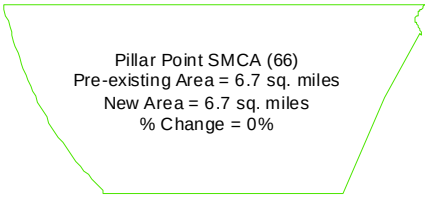
Legend

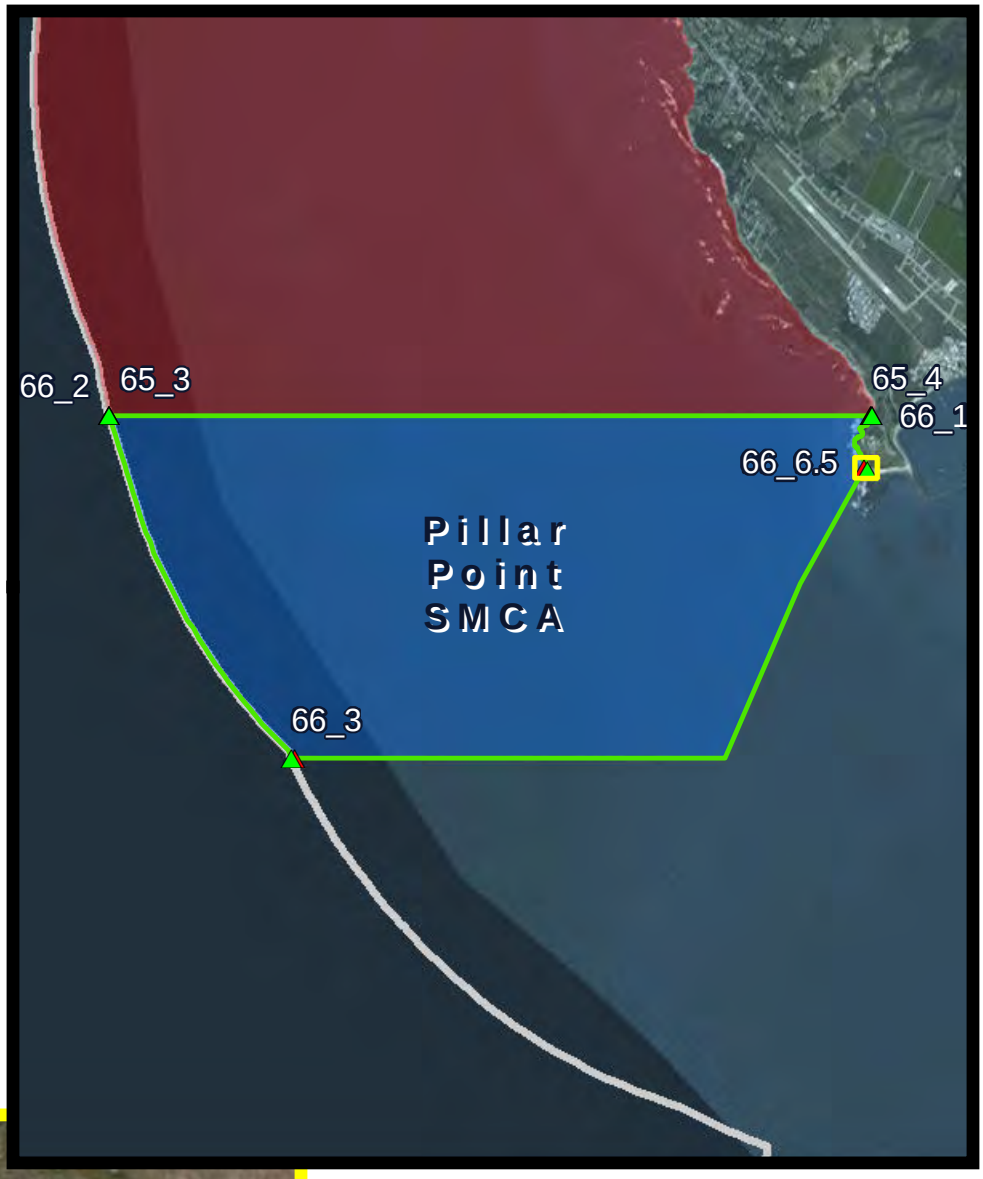
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements





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Año Nuevo SMCA

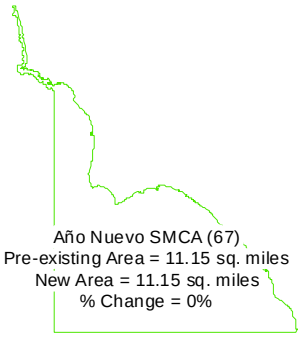
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

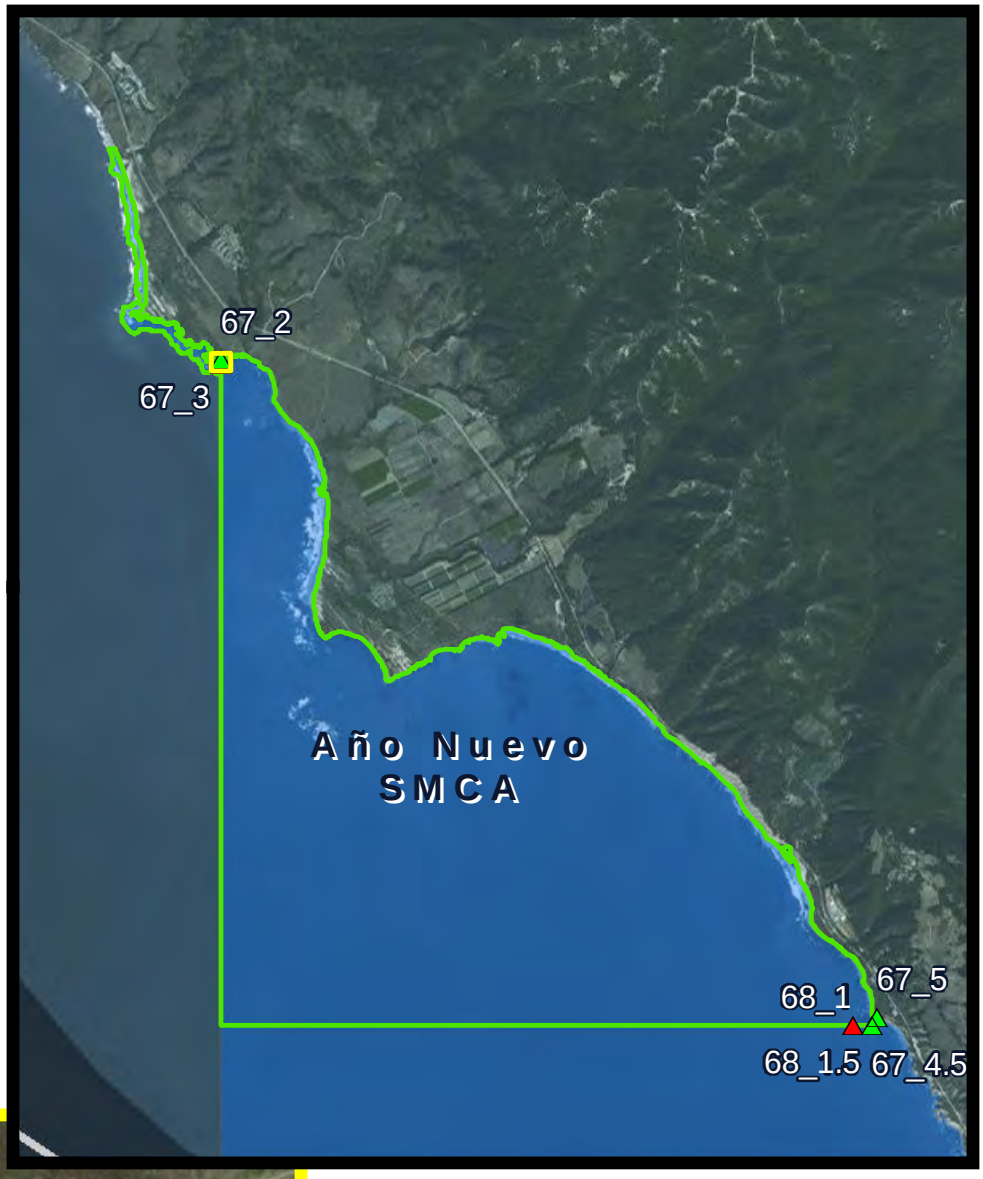
Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

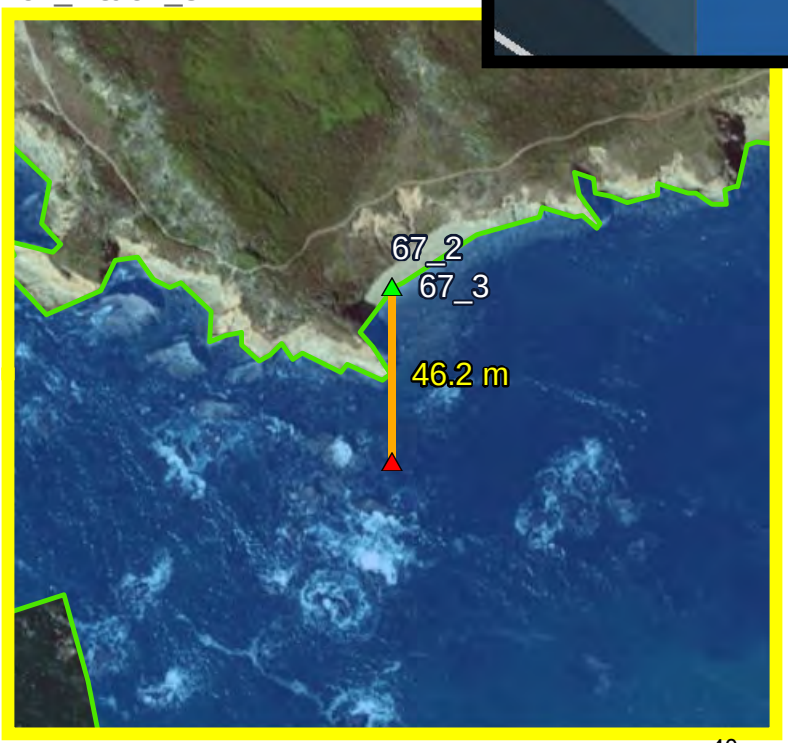


Año Nuevo SMCA (67)
Pre-existing Area = 11.15 sq. miles
New Area = 11.15 sq. miles
% Change = 0%



0 4,000 Meters

67_2 & 67_3



0 90 Meters

40

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May 8, 2015

Año Nuevo SMCA and Greyhound Rock SMCA

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

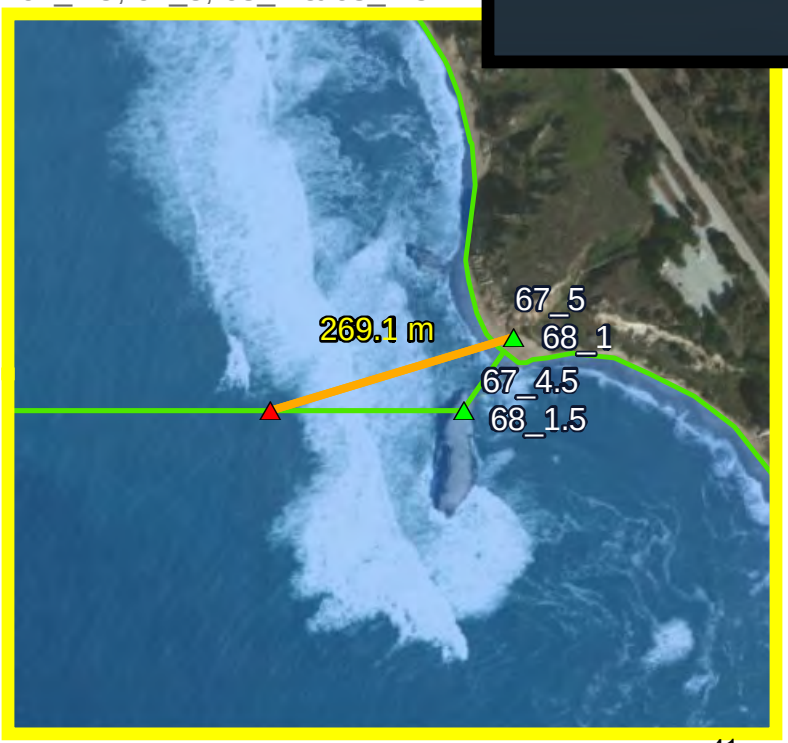
Summary of Proposed Refinements

Año Nuevo SMCA (67)
Pre-existing Area = 11.15 sq. miles
New Area = 11.15 sq. miles
% Change = 0%

Greyhound Rock SMCA (68)
Pre-existing Area = 12 sq. miles
New Area = 12 sq. miles
% Change = 0%

0 5,500 Meters

67_4.5, 67_5, 68_1 & 68_1.5



0 380 Meters

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Greyhound Rock SMCA

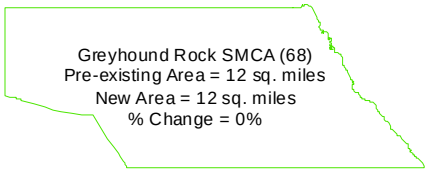
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

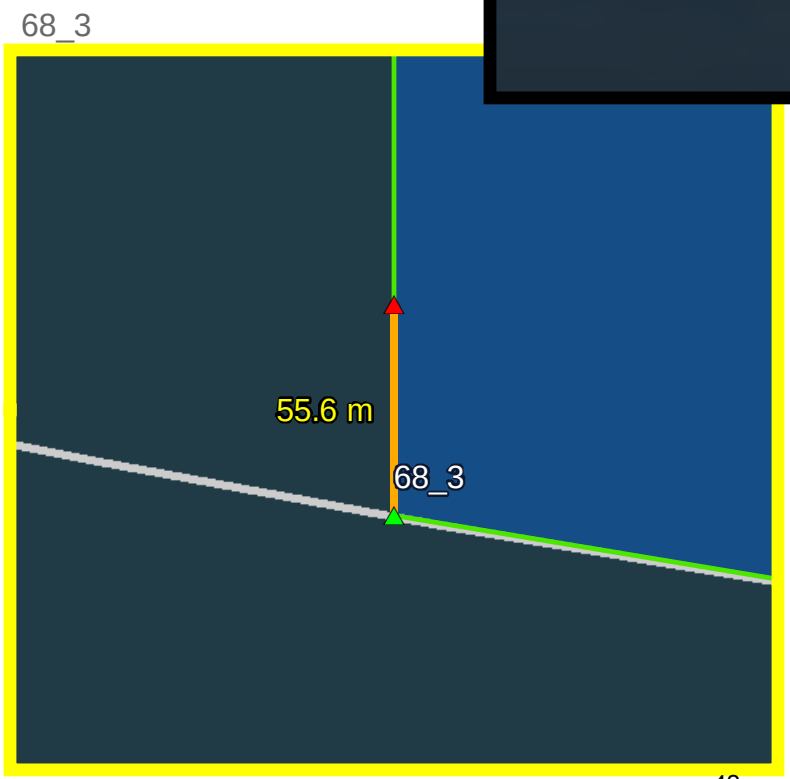
Current MPA Boundaries

- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



0 5,500 Meters



0 90 Meters

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Greyhound Rock SMCA

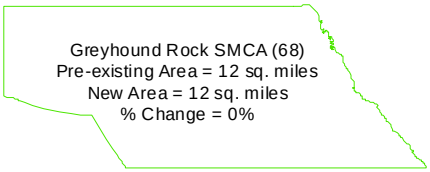
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

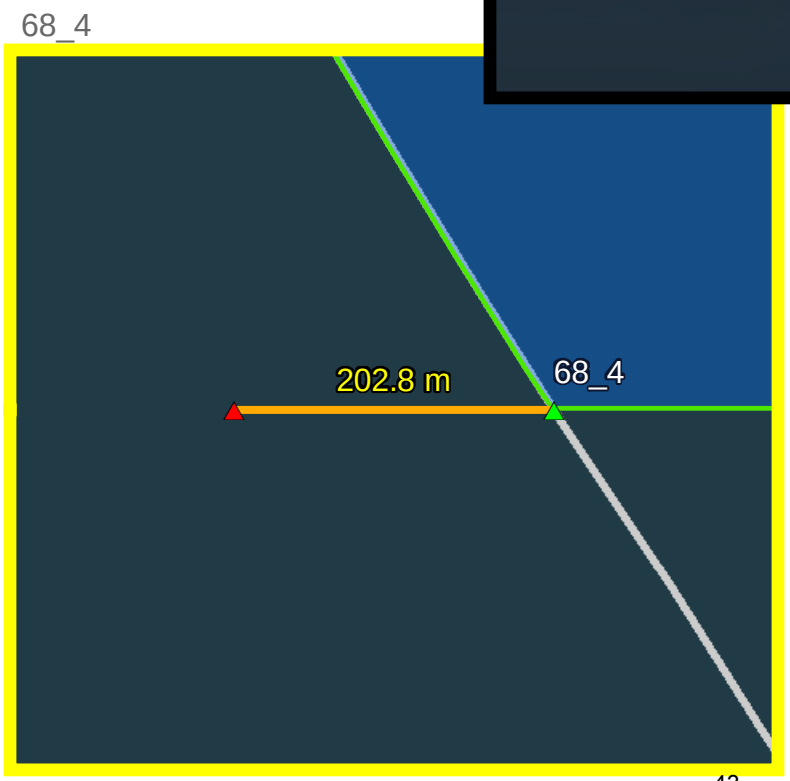
Current MPA Boundaries

- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



0 5,500 Meters



0 230 Meters

43

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Greyhound Rock SMCA

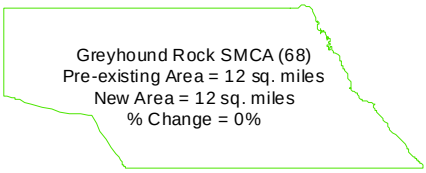
Legend

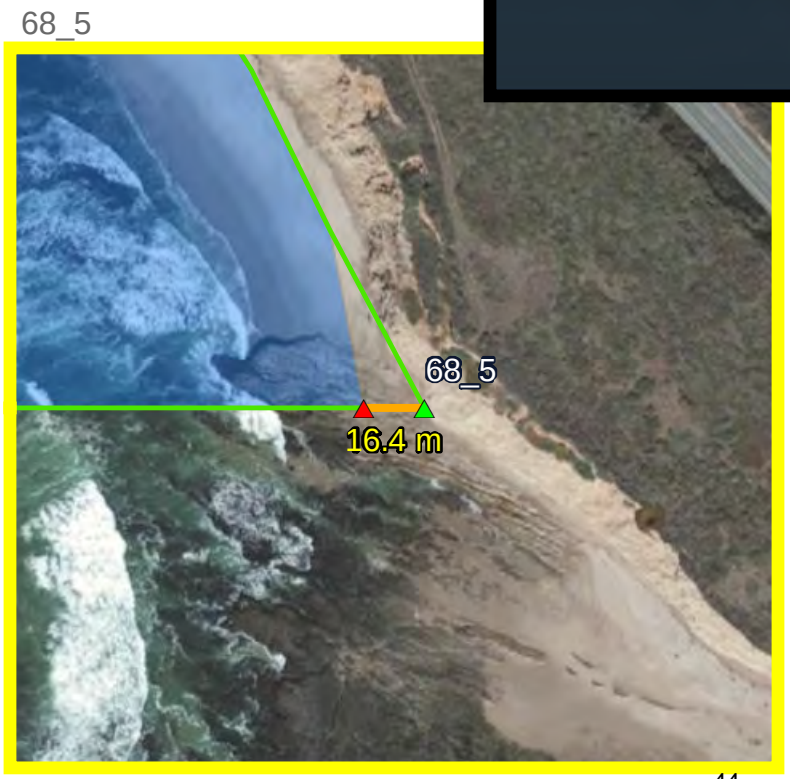
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements





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Natural Bridges SMR

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

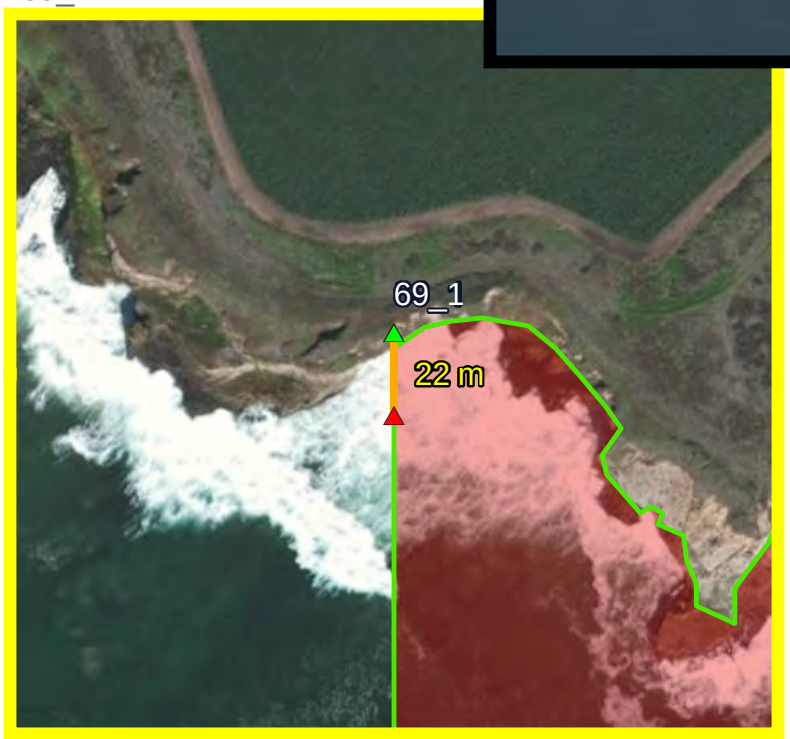
State Marine Reserve (SMR)

Summary of Proposed Refinements

Natural Bridges SMR (69)
Pre-existing Area = 0.25 sq. miles
New Area = 0.25 sq. miles
% Change = -0.07%

0 2,900 Meters

69_1



0 90 45 Meters

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May 8, 2015

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Natrual Bridges SMR

Legend

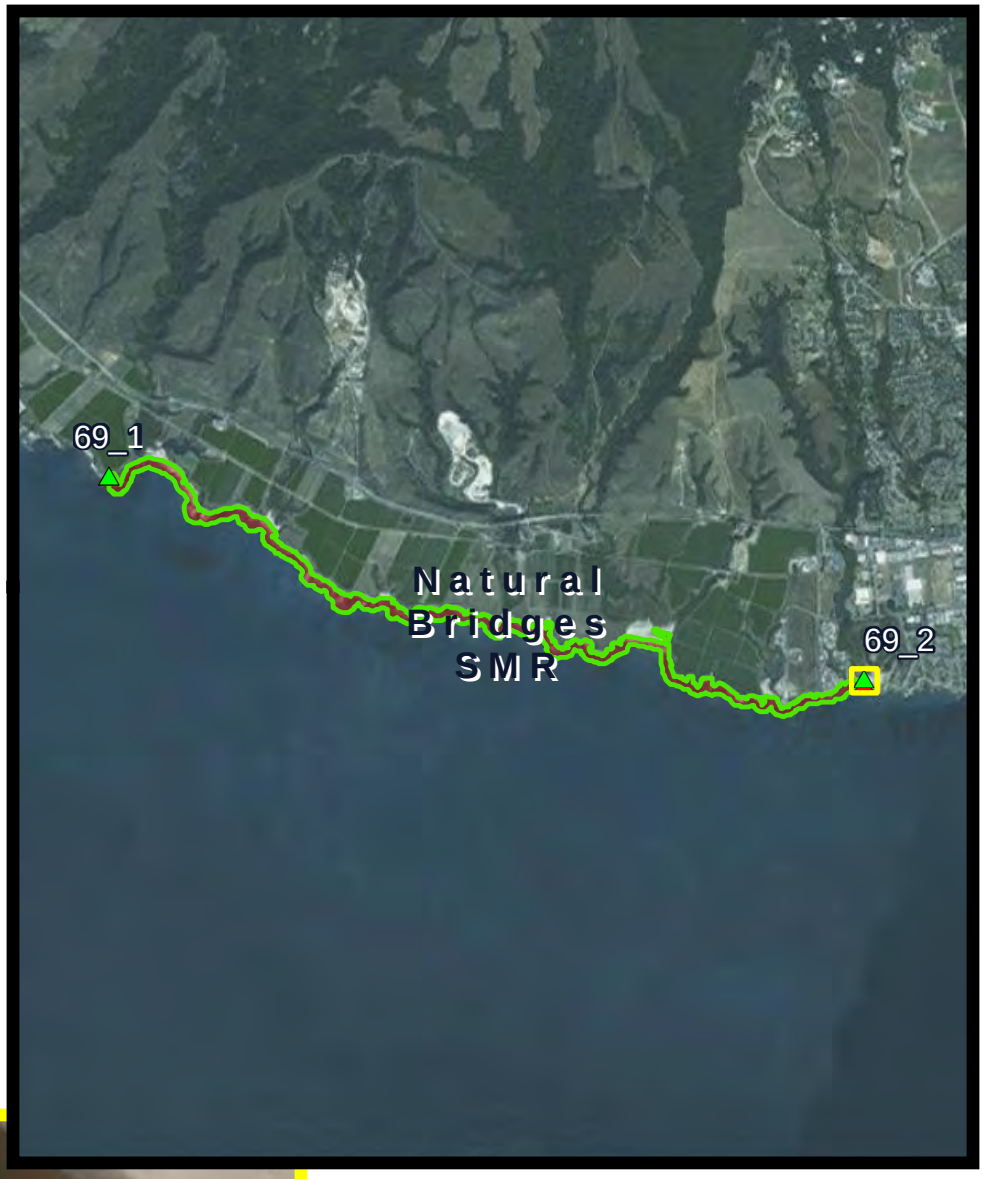
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Reserve (SMR)

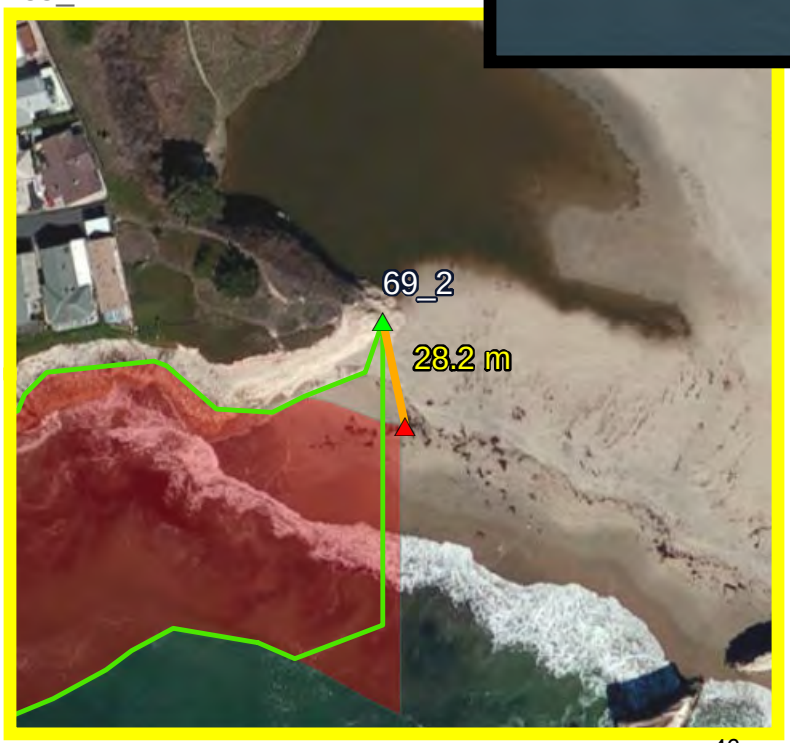
Summary of Proposed Refinements

Natural Bridges SMR (69)
Pre-existing Area = 0.25 sq. miles
New Area = 0.25 sq. miles
% Change = -0.07%



0 2,900 Meters

69_2



0 90 Meters

46

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Soquel Canyon SMCA

Legend

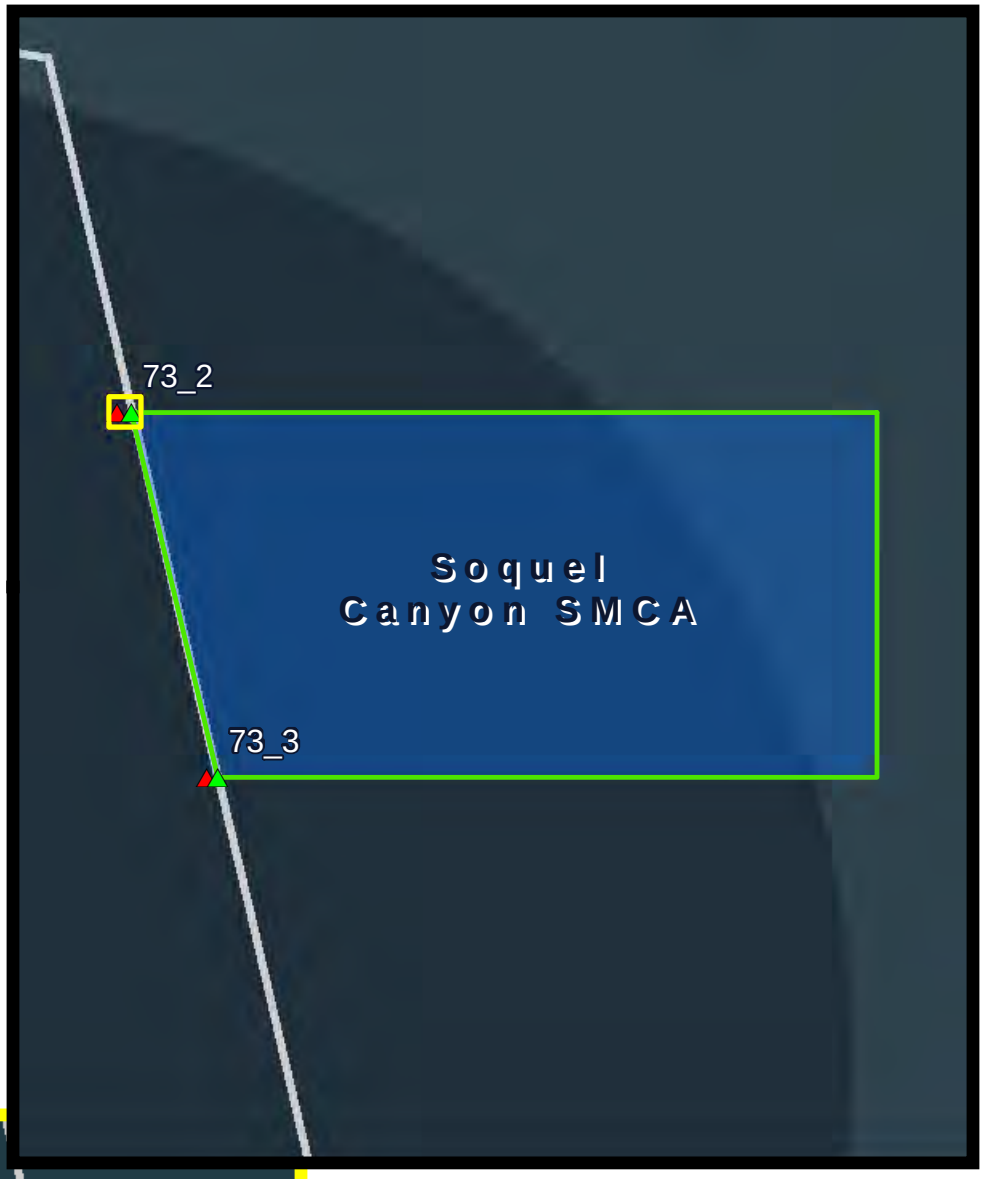
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

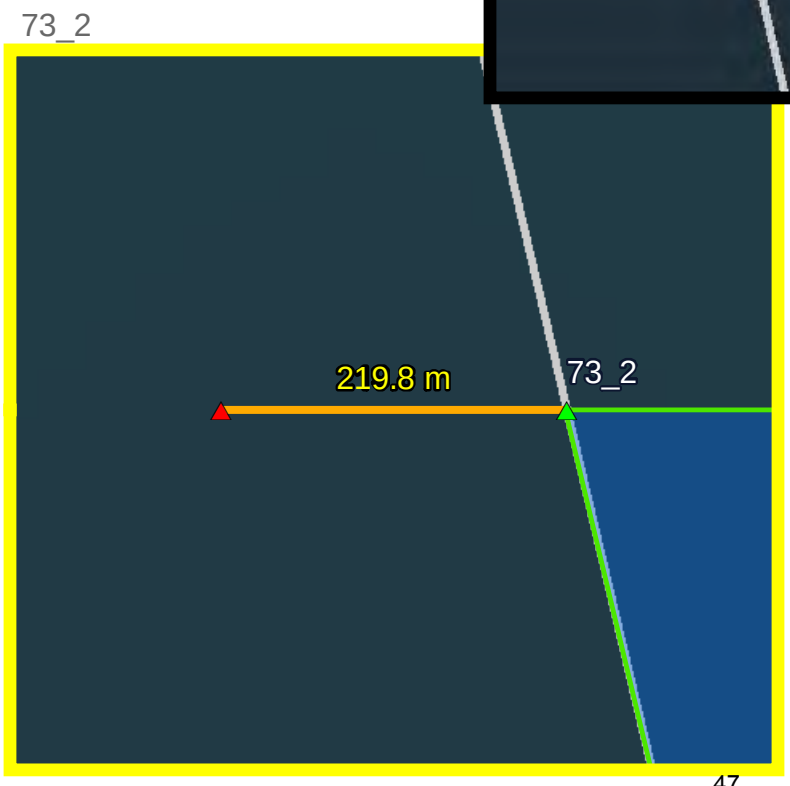
Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Soquel Canyon SMCA (73)
Pre-existing Area = 22.97 sq. miles
New Area = 22.97 sq. miles
% Change = 0%





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May 8, 2015

Soquel Canyon SMCA

Legend

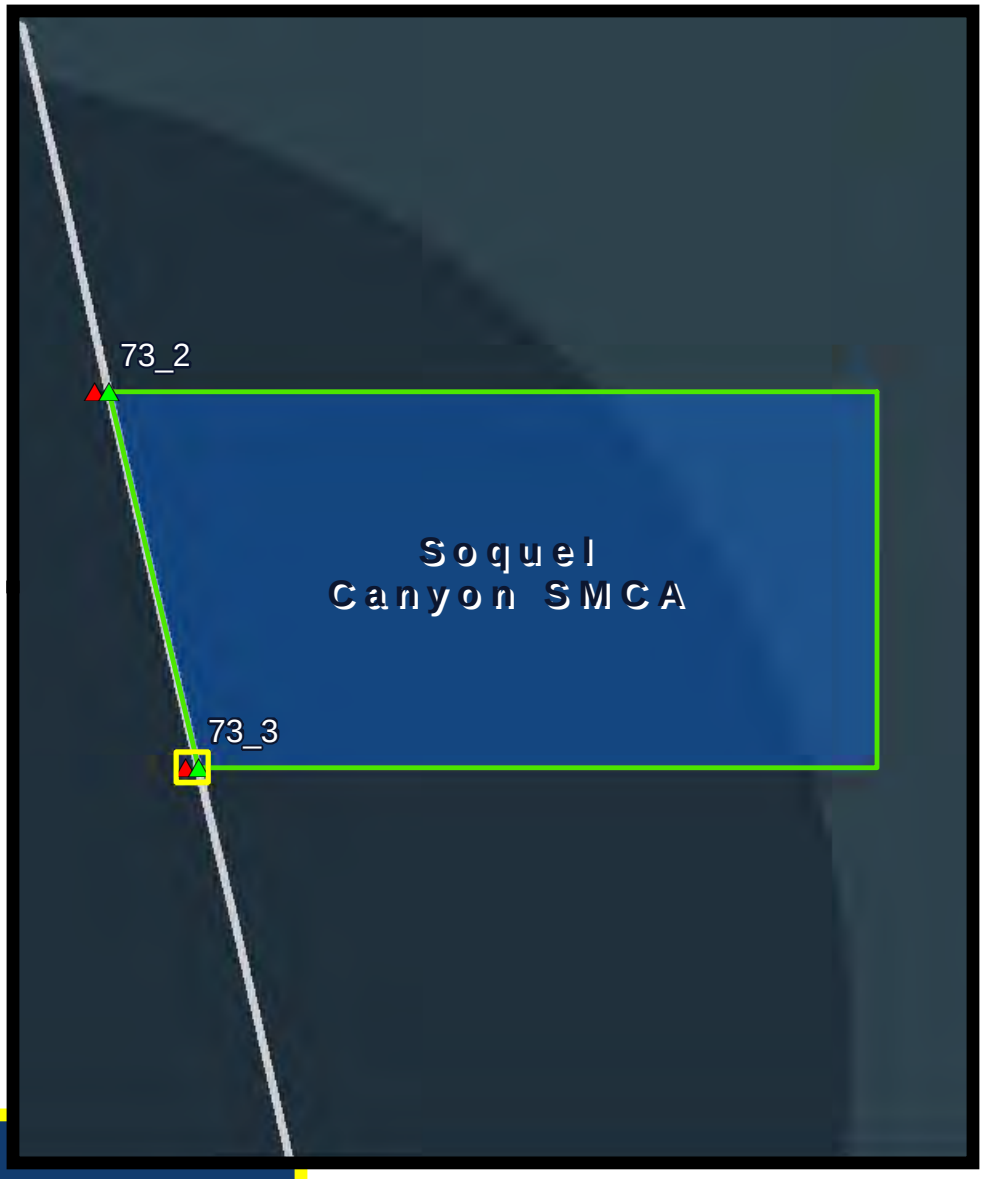
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

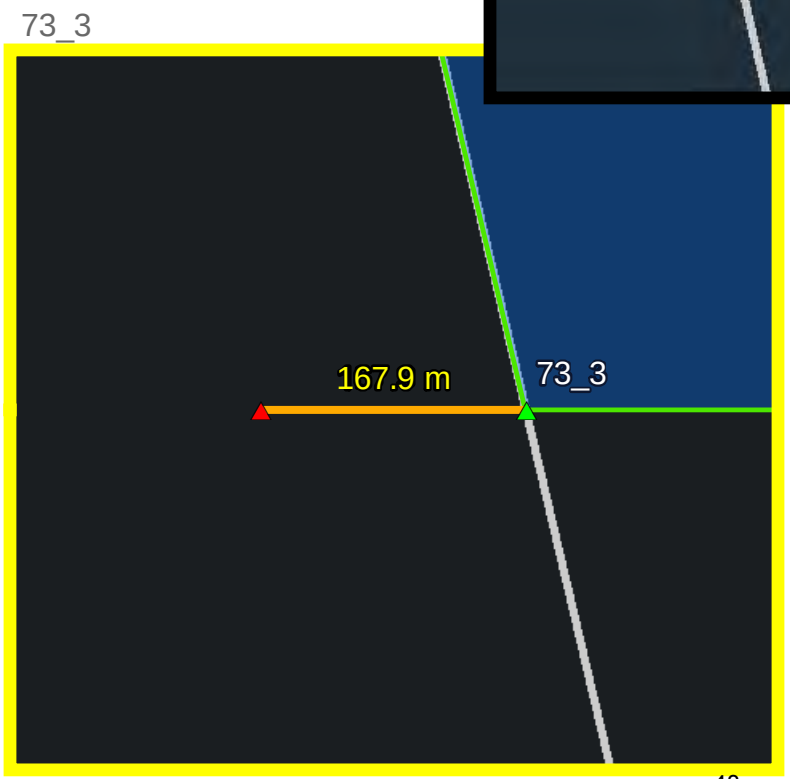
Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Soquel Canyon SMCA (73)
Pre-existing Area = 22.97 sq. miles
New Area = 22.97 sq. miles
% Change = 0%





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May 8, 2015

Portuguese Ledge SMCA

Legend

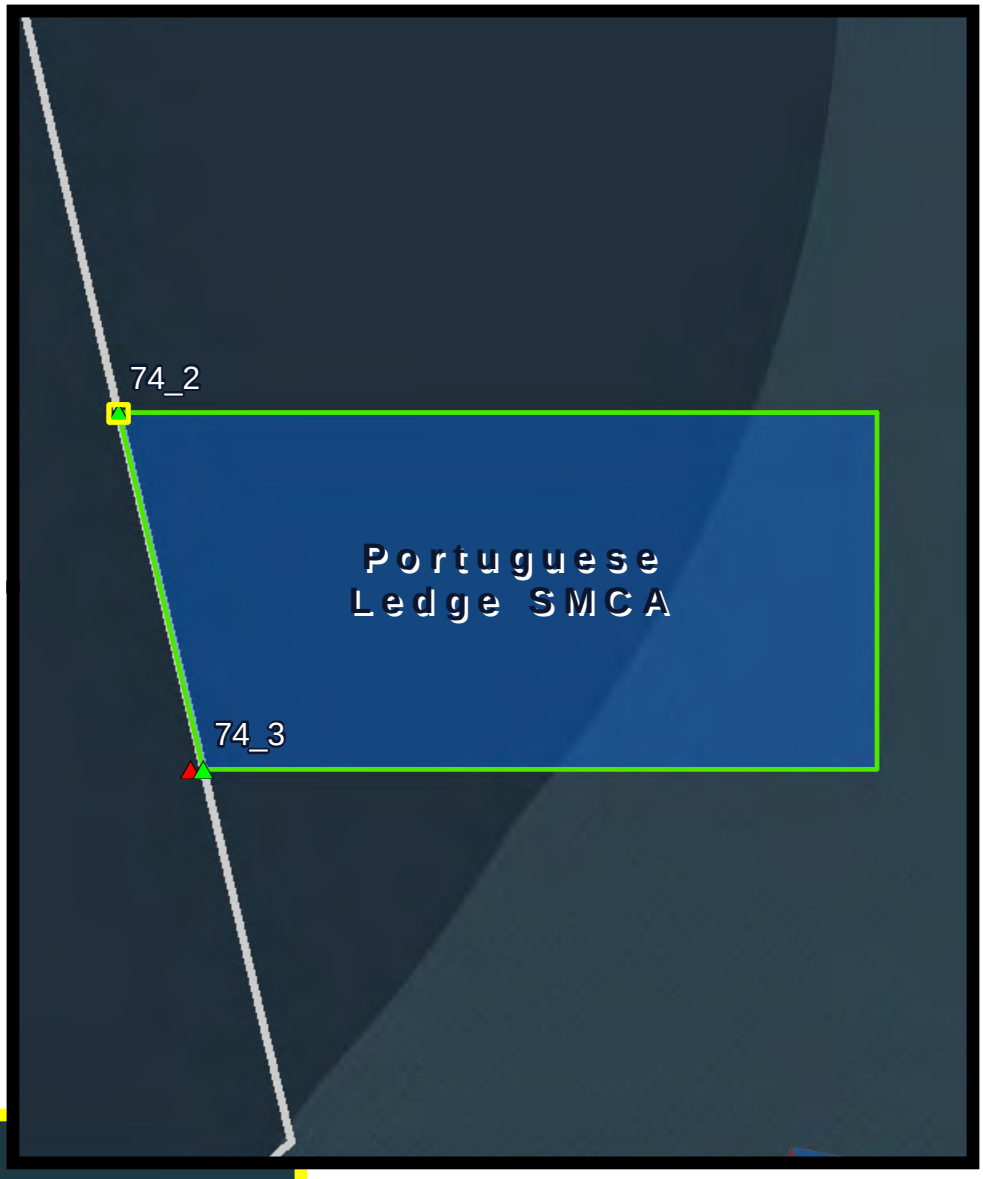
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

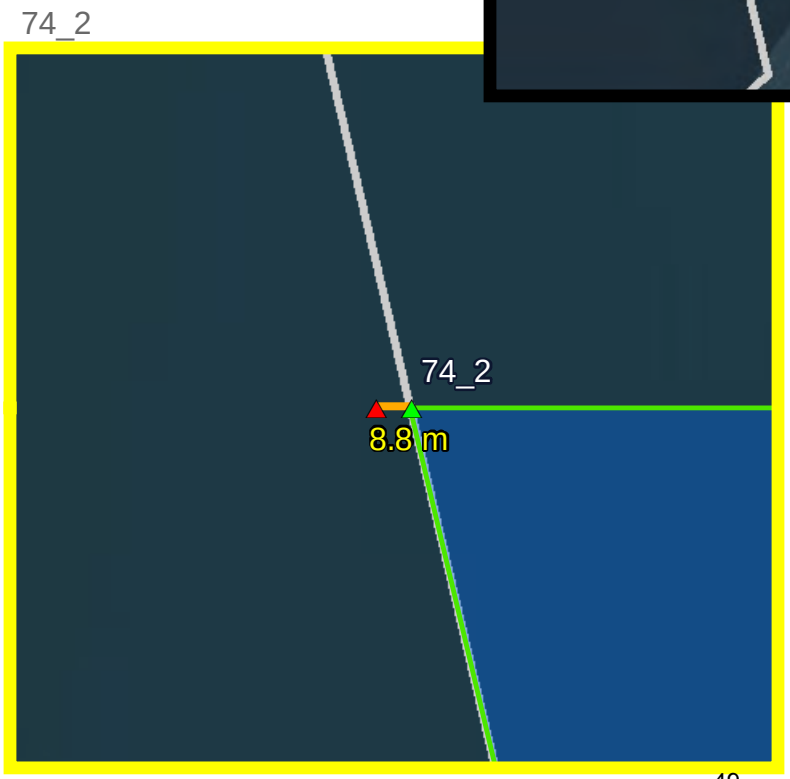
- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Portuguese Ledge SMCA (74)
Pre-existing Area = 10.64 sq. miles
New Area = 10.64 sq. miles
% Change = 0%



0 3,750 Meters



0 90 Meters

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mr_gis@wildlife.ca.gov
May 8, 2015

Portuguese Ledge SMCA

Legend

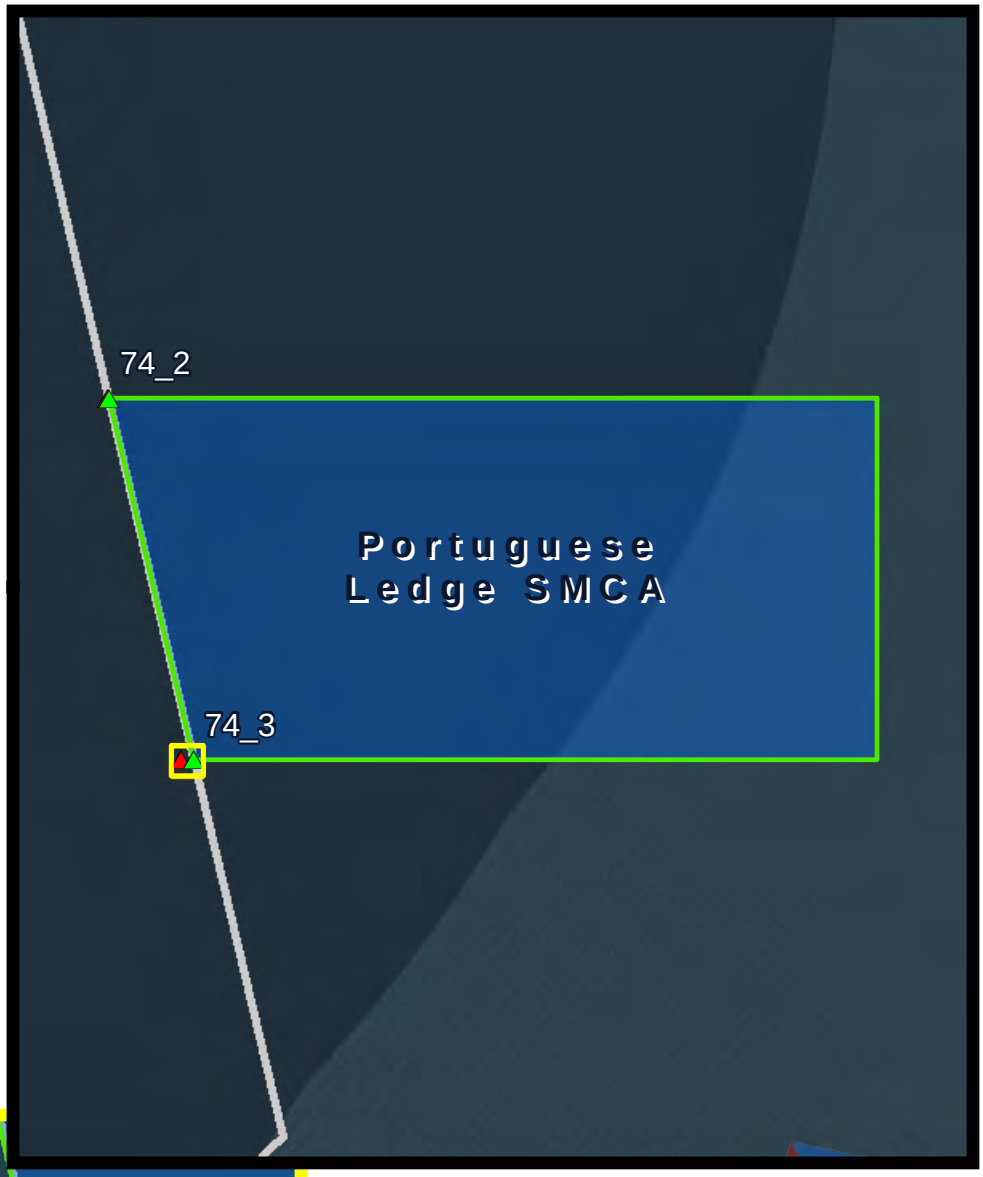
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

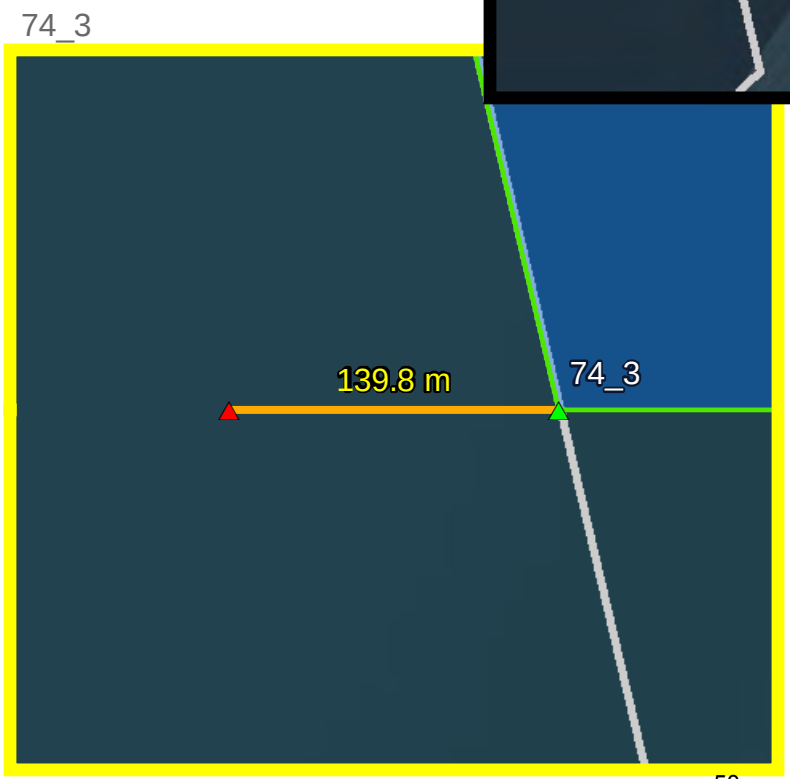
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Portuguese Ledge SMCA (74)
Pre-existing Area = 10.64 sq. miles
New Area = 10.64 sq. miles
% Change = 0%





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May 8, 2015

Edward F. Ricketts SMCA

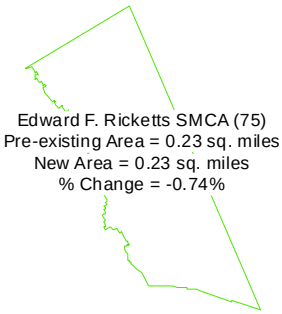
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Edward F. Ricketts SMCA (75)
Pre-existing Area = 0.23 sq. miles
New Area = 0.23 sq. miles
% Change = -0.74%

0 575 Meters

0 90 Meters

51

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May 8, 2015

Edward F. Ricketts SMCA and Lovers Point SMR

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Lovers Point - Julia Platt SMR (76)
Pre-existing Area = 0.3 sq. miles
New Area = 0.3 sq. miles
% Change = 0%

Edward F. Ricketts SMCA (75)
Pre-existing Area = 0.23 sq. miles
New Area = 0.23 sq. miles
% Change = -0.74%

0 1,100 Meters

75_3 & 76_1

0 90 Meters

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Lovers Point SMR and Pacific Grove Marine Gardens SMCA

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

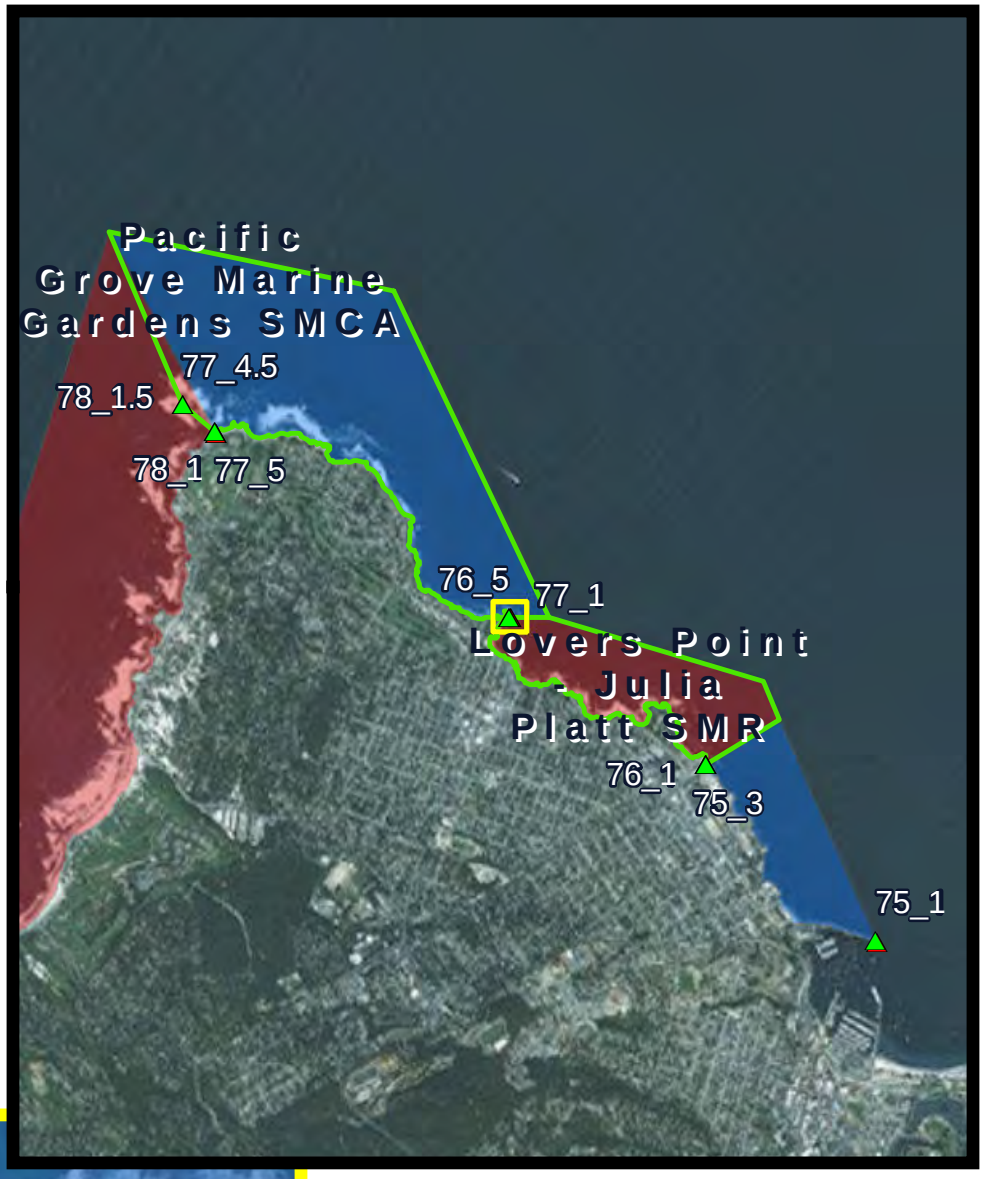
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

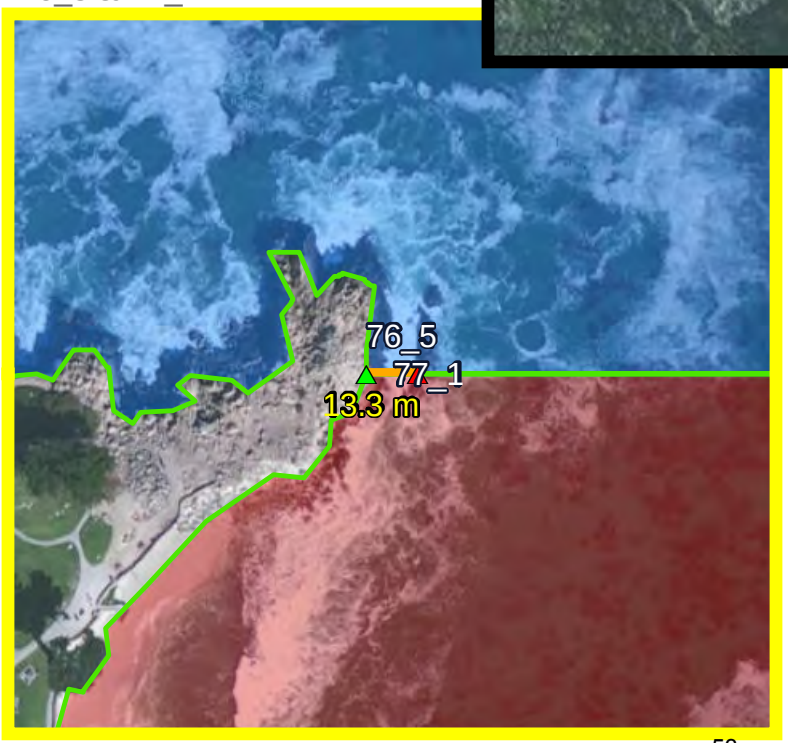
Pacific Grove Marine Gardens SMCA (77)
Pre-existing Area = 0.95 sq. miles
New Area = 0.98 sq. miles
% Change = 3%

Lovers Point - Julia Platt SMR (76)
Pre-existing Area = 0.3 sq. miles
New Area = 0.3 sq. miles
% Change = 0%



0 2,250 Meters

76_5 & 77_1



0 90 Meters

53

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Pacific Grove Marine Gardens SMCA and Asilomar SMR

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

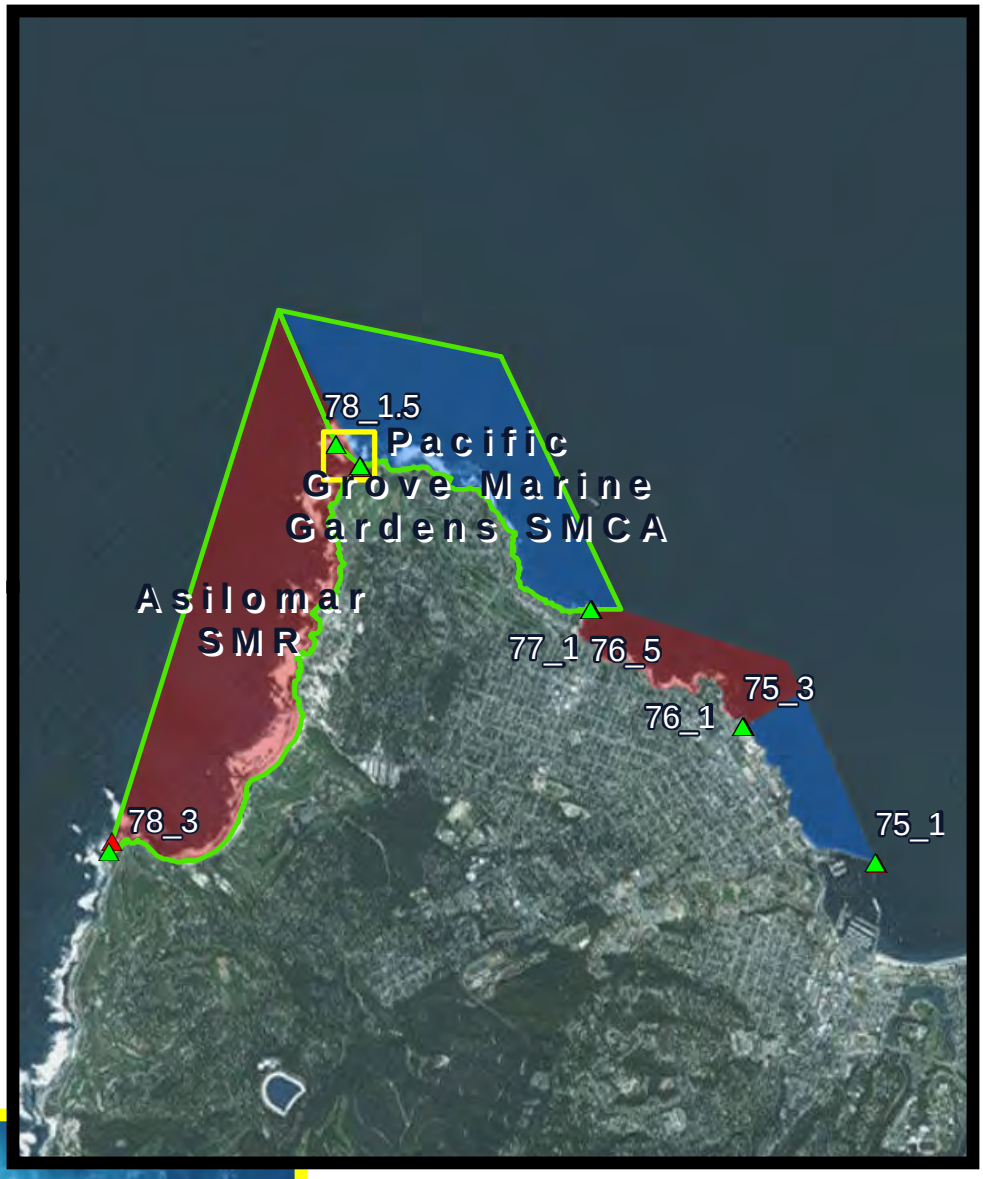
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Pacific Grove Marine Gardens SMCA (77)
Pre-existing Area = 0.95 sq. miles
New Area = 0.98 sq. miles
% Change = 3%

Asilomar SMR (78)
Pre-existing Area = 1.53 sq. miles
New Area = 1.51 sq. miles
% Change = -1.87%



0 2,900 Meters

77_4.5, 77_5, 78_1 & 78_1.5

0 190 Meters

54

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Asilomar SMR

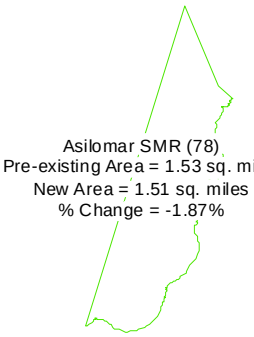
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

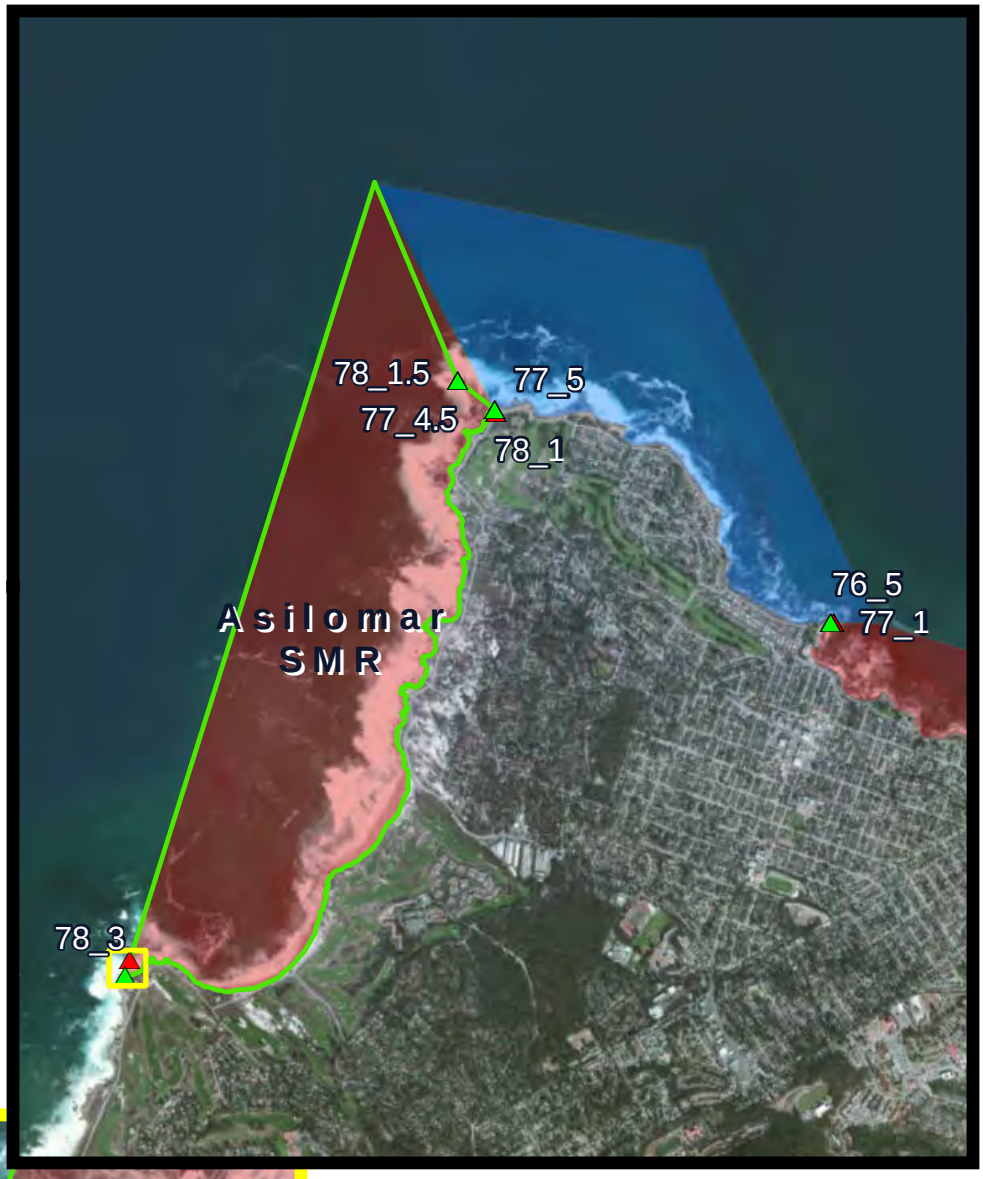
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Asilomar SMR (78)
Pre-existing Area = 1.53 sq. miles
New Area = 1.51 sq. miles
% Change = -1.87%



0 1,900 Meters

78_3

55

0 90 Meters

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mr_gis@wildlife.ca.gov
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Carmel Bay SMCA

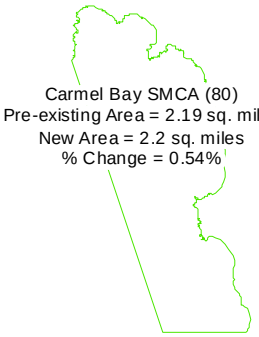
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



0 1,700 Meters

80_1

0 90 Meters

56

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Point Lobos SMR

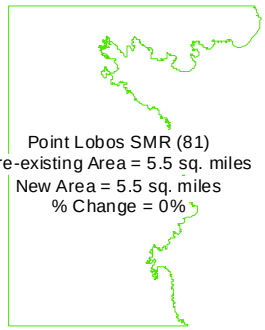
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

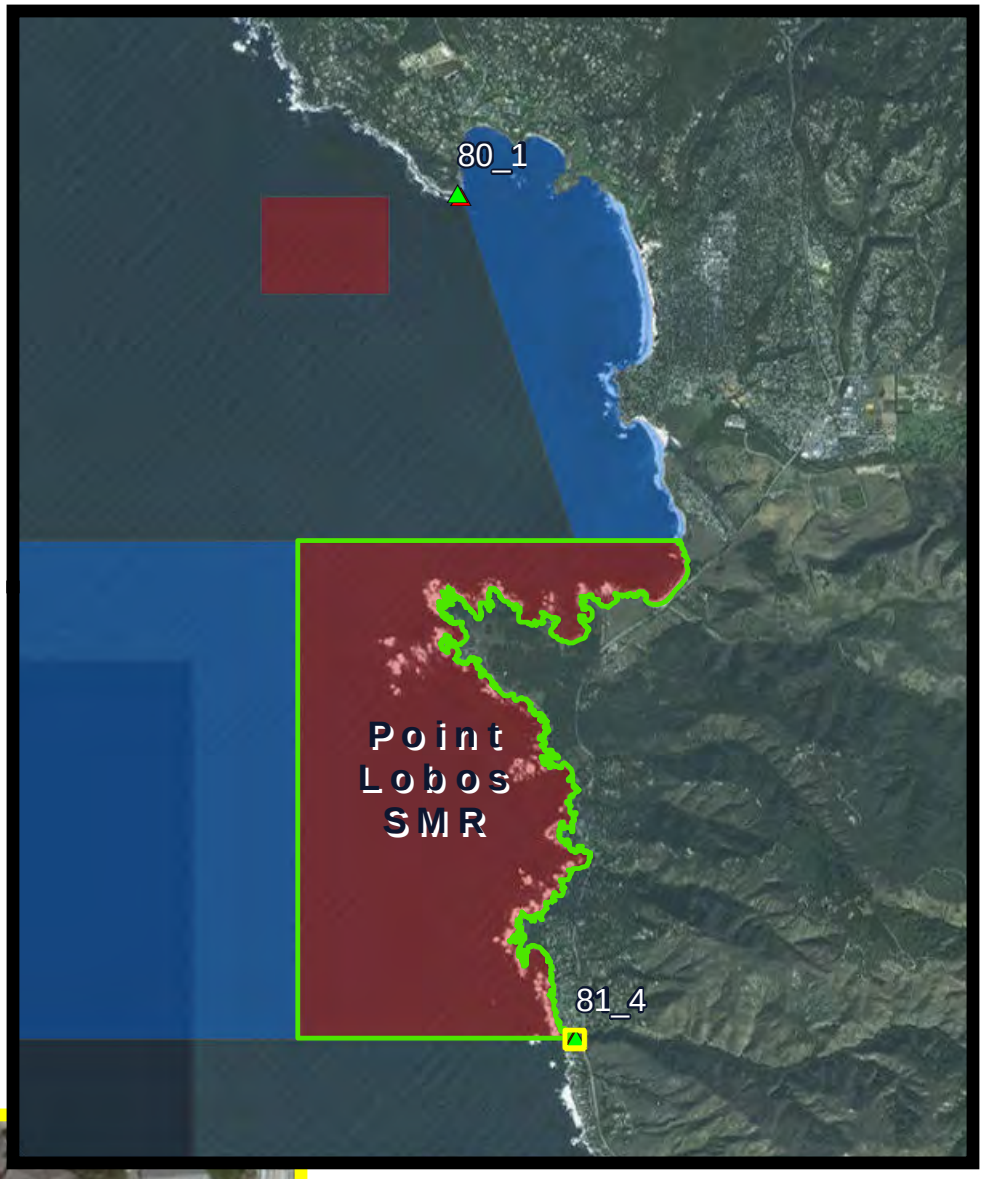
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Point Lobos SMR (81)
Pre-existing Area = 5.5 sq. miles
New Area = 5.5 sq. miles
% Change = 0%



0 3,750 Meters

81_4

0 90 Meters

57

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May 8, 2015

Point Lobos SMCA

Legend

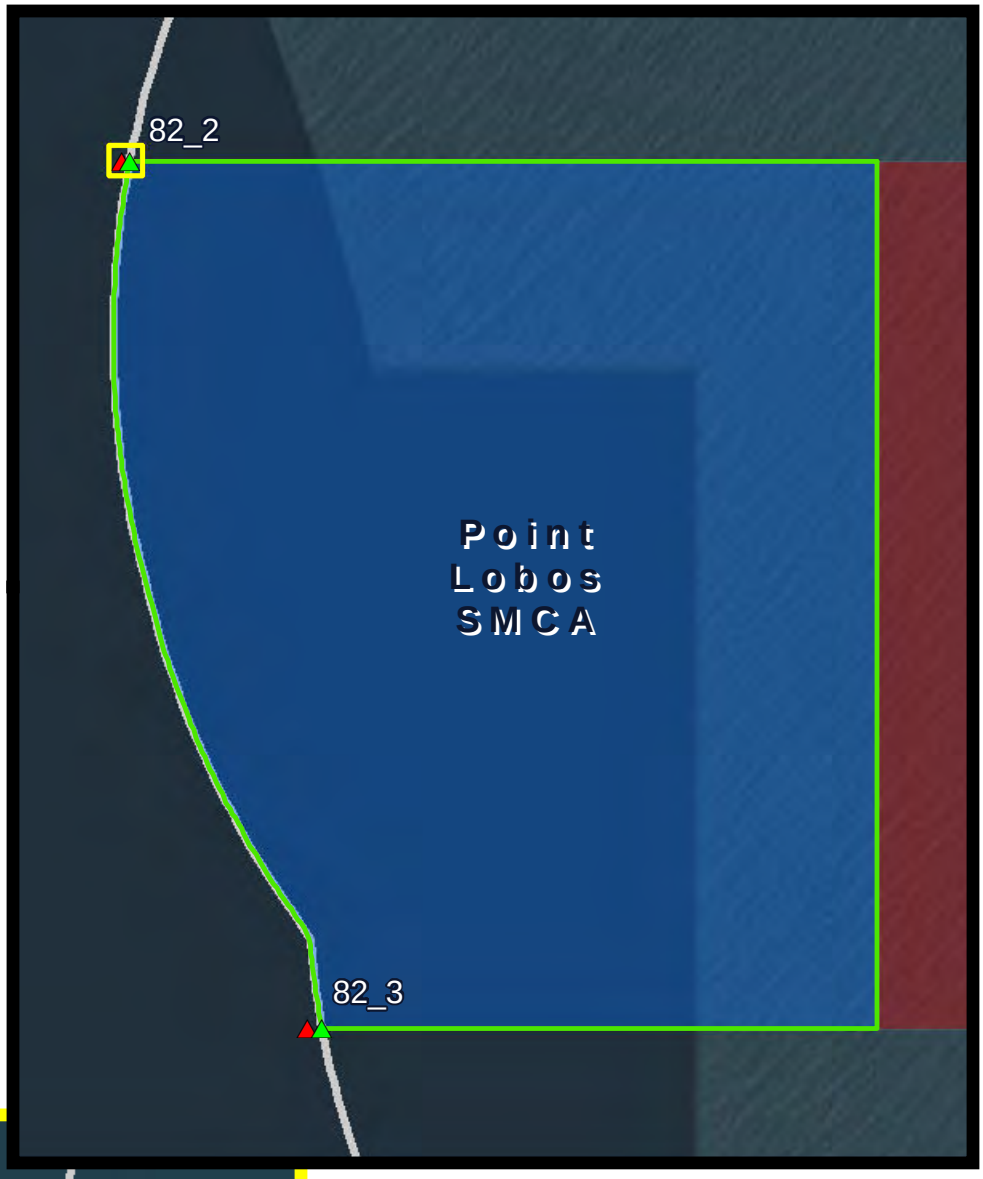
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

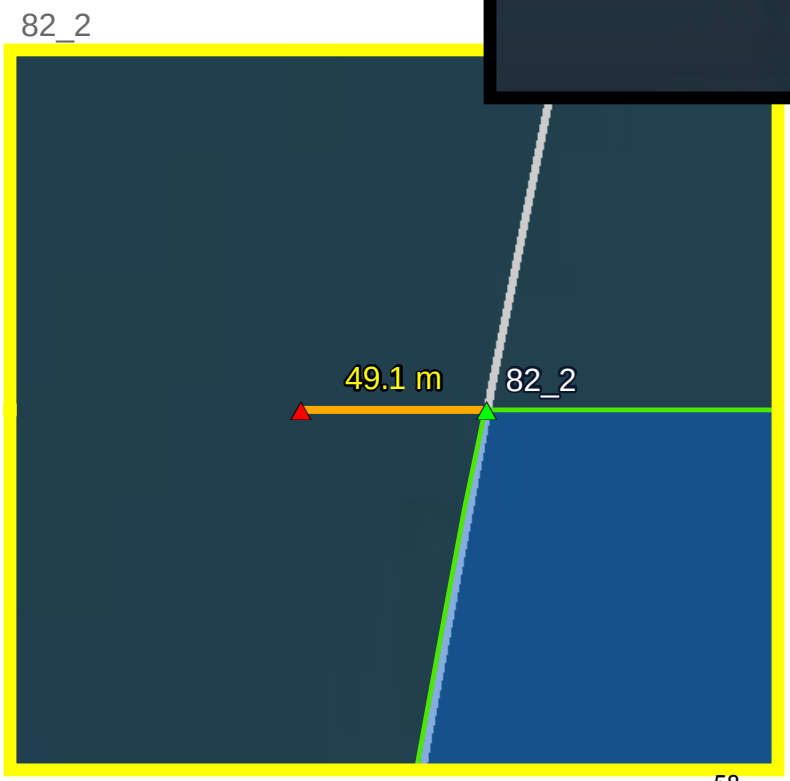
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Point Lobos SMCA (82)
Pre-existing Area = 8.47 sq. miles
New Area = 8.47 sq. miles
% Change = 0%





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May 8, 2015

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Point Lobos SMCA

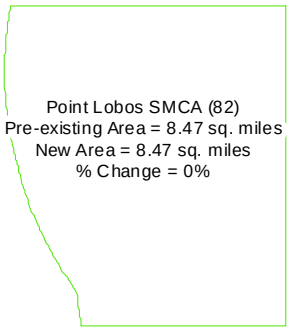
Legend

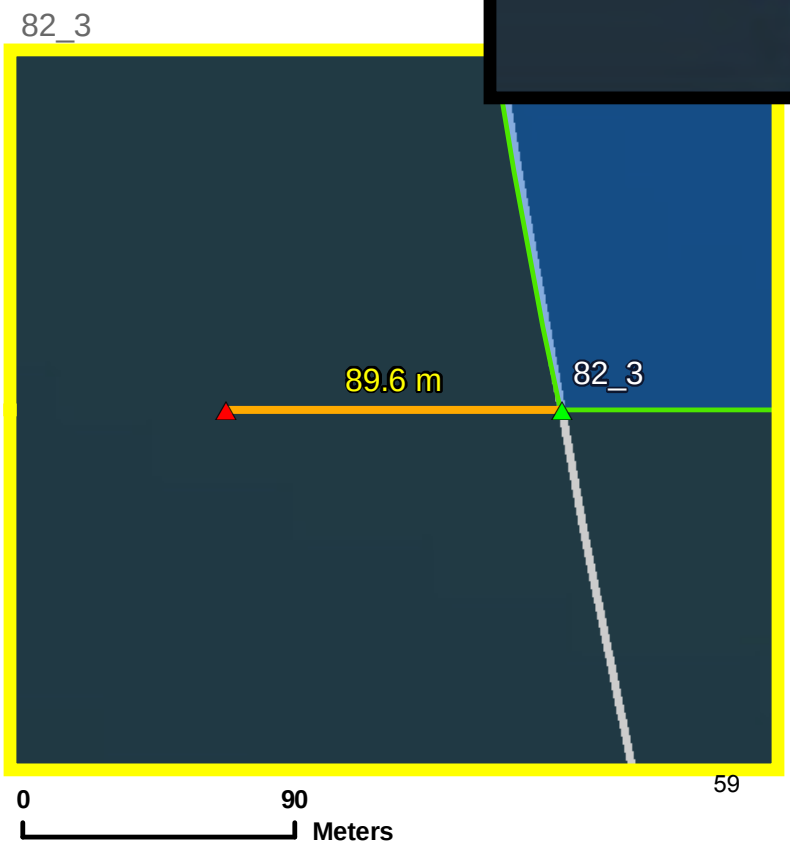
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements





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May 8, 2015

Point Sur SMR

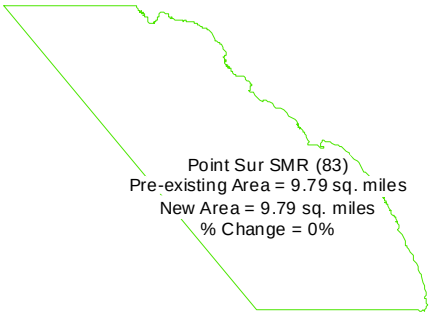
Legend

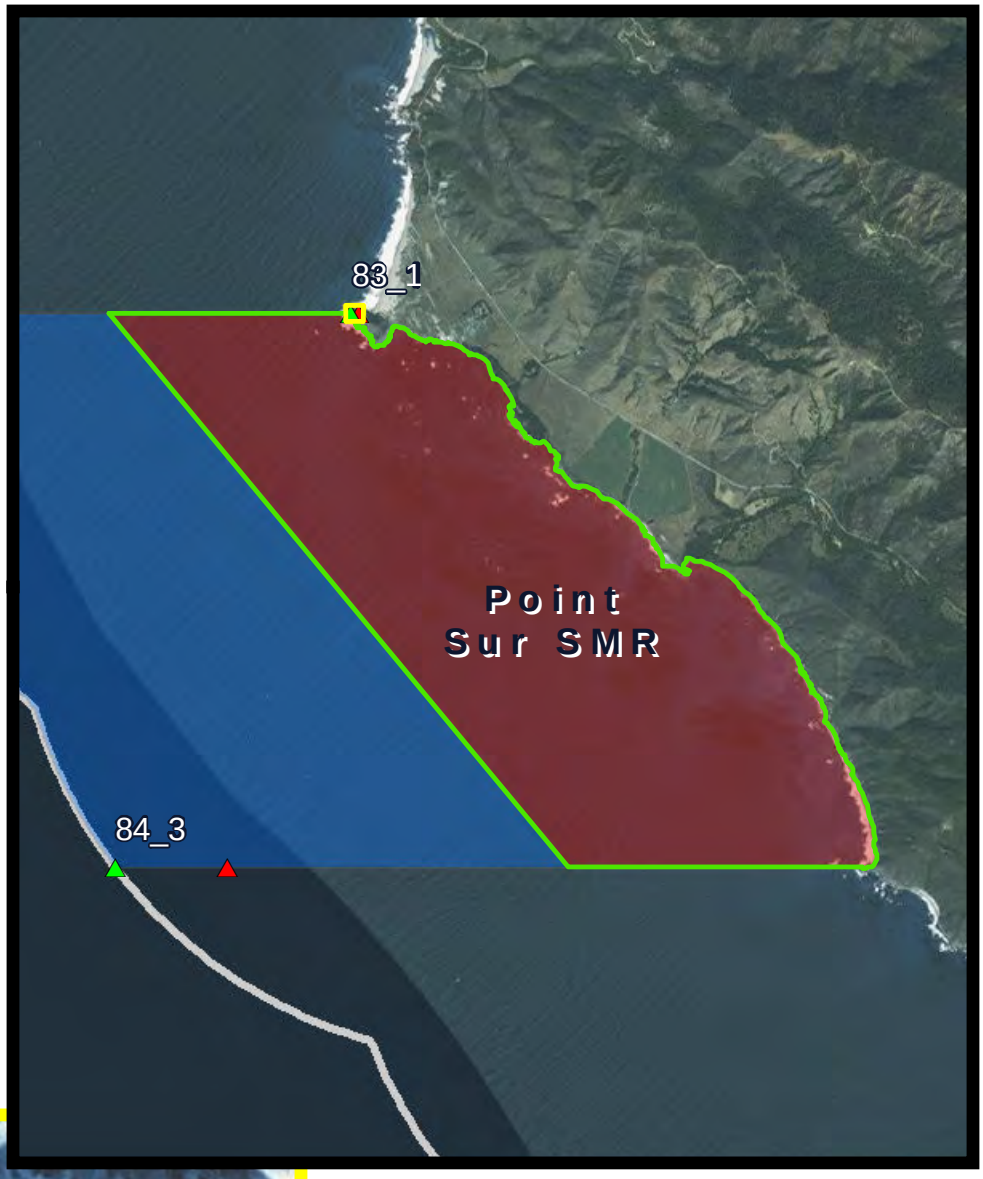
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements





0 4,100 Meters

83_1

0 90 Meters

60

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Point Sur SMCA

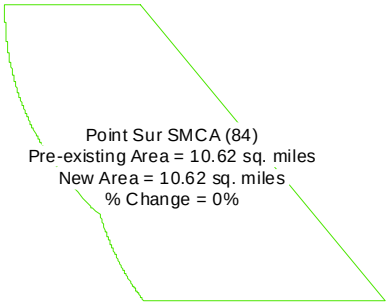
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

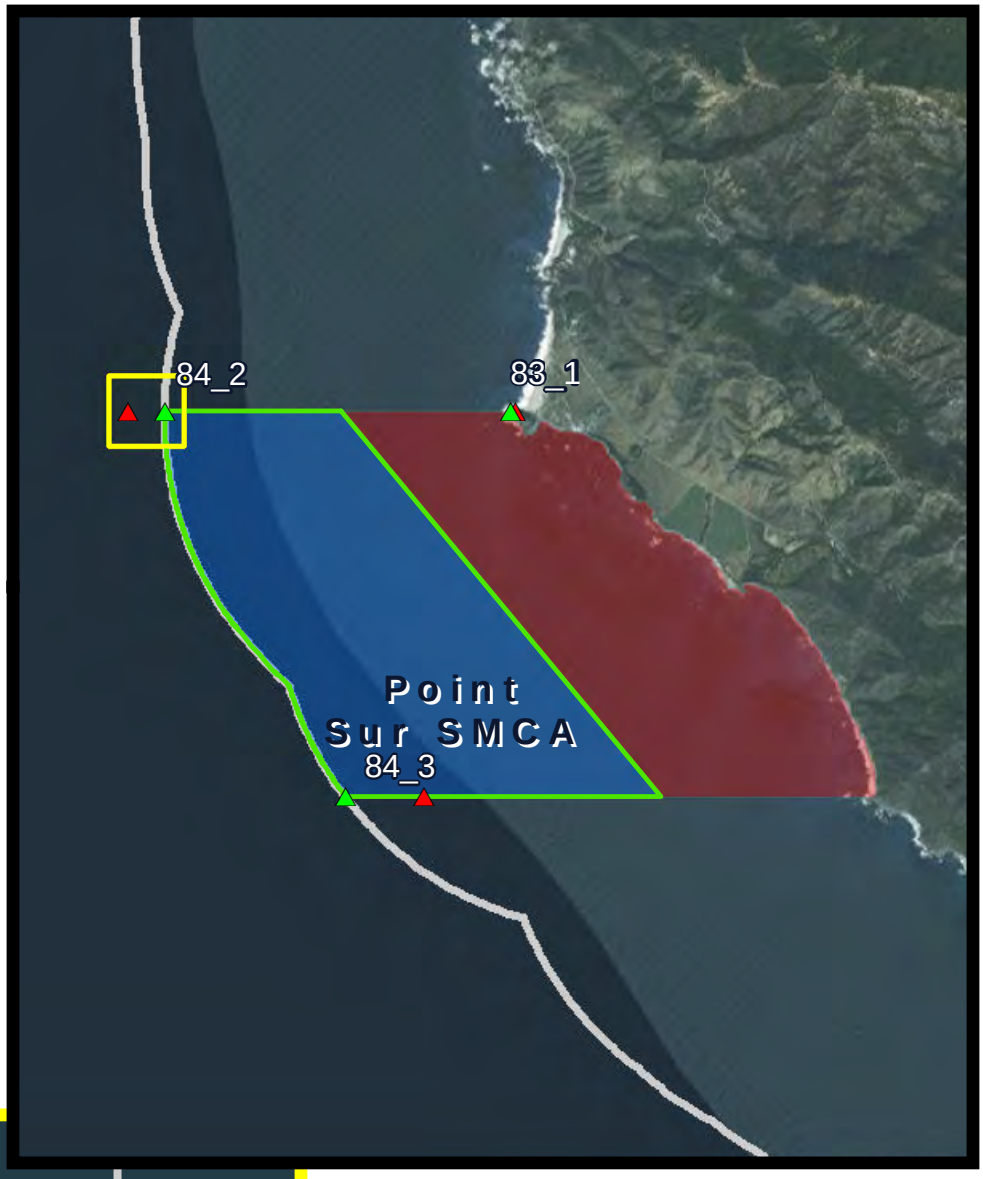
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

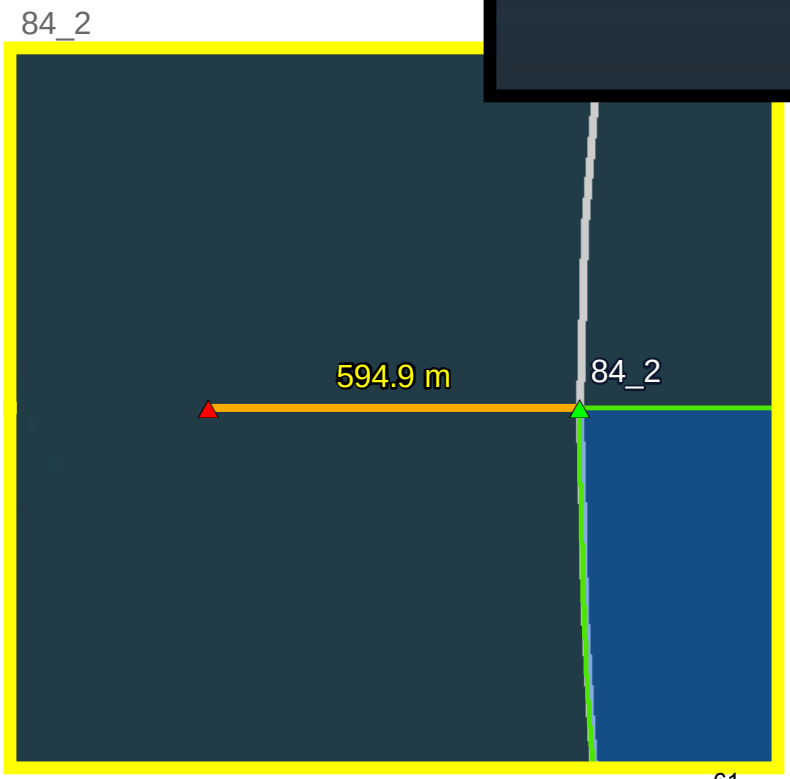
Summary of Proposed Refinements



Point Sur SMCA (84)
Pre-existing Area = 10.62 sq. miles
New Area = 10.62 sq. miles
% Change = 0%



0 5,800 Meters



0 570 Meters

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Point Sur SMCA

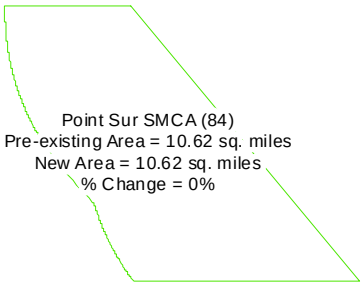
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

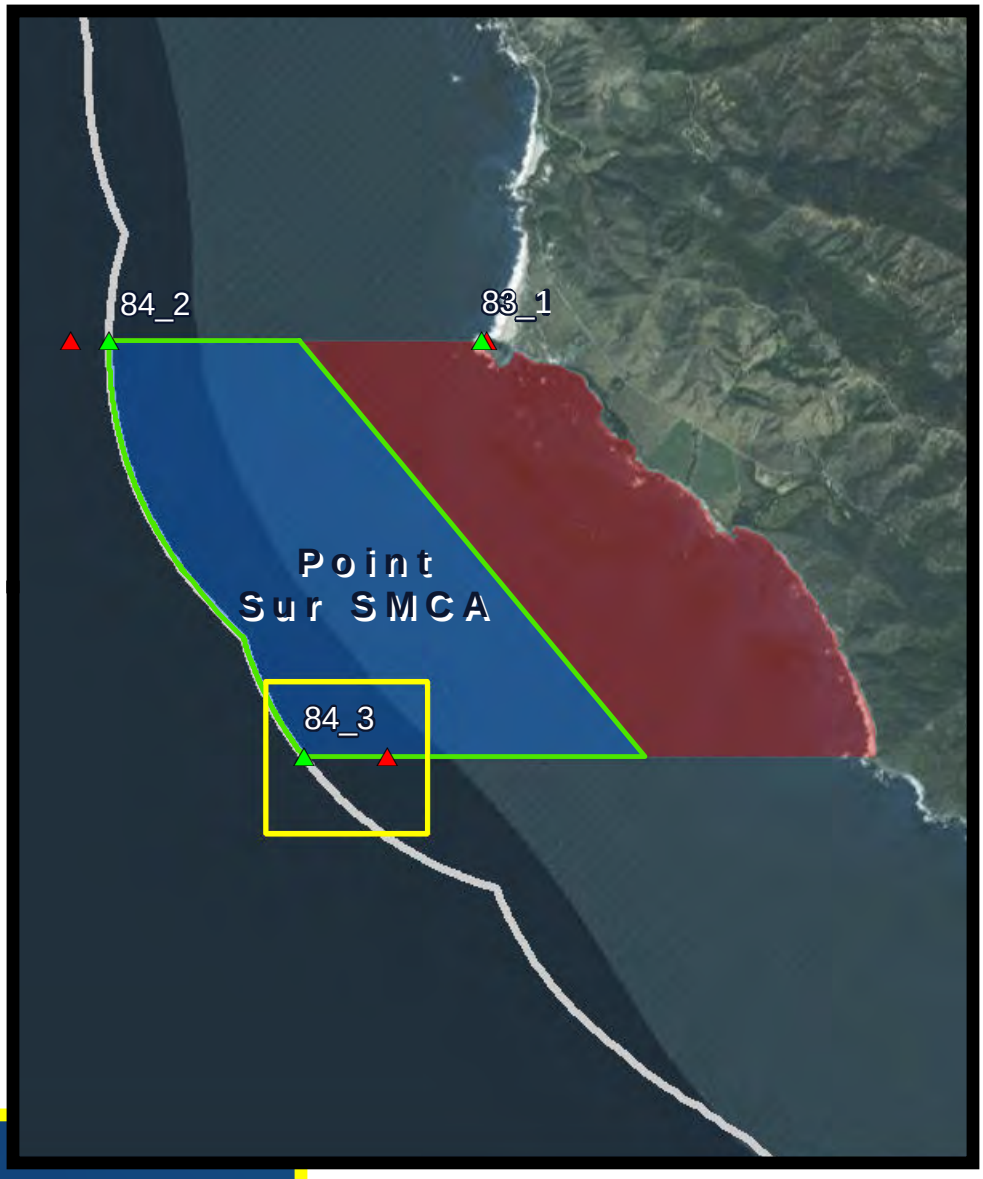
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

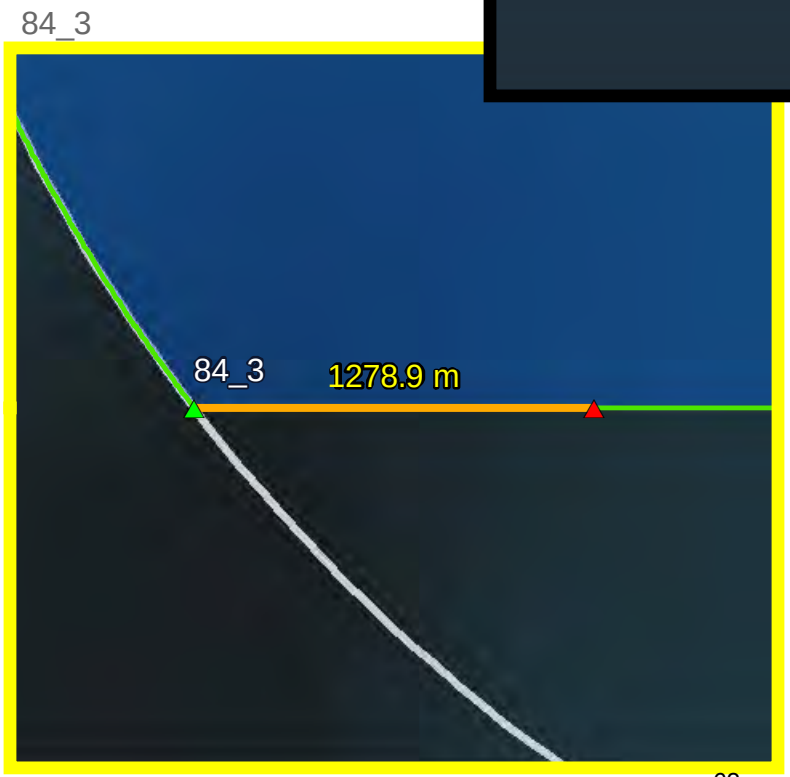
Summary of Proposed Refinements



Point Sur SMCA (84)
Pre-existing Area = 10.62 sq. miles
New Area = 10.62 sq. miles
% Change = 0%



0 5,400 Meters



0 1,100 Meters

62

California Department of Fish and Wildlife
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May 8, 2015

Big Creek SMR

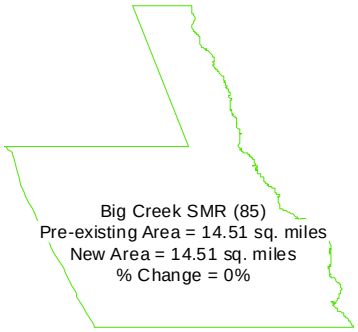
Legend

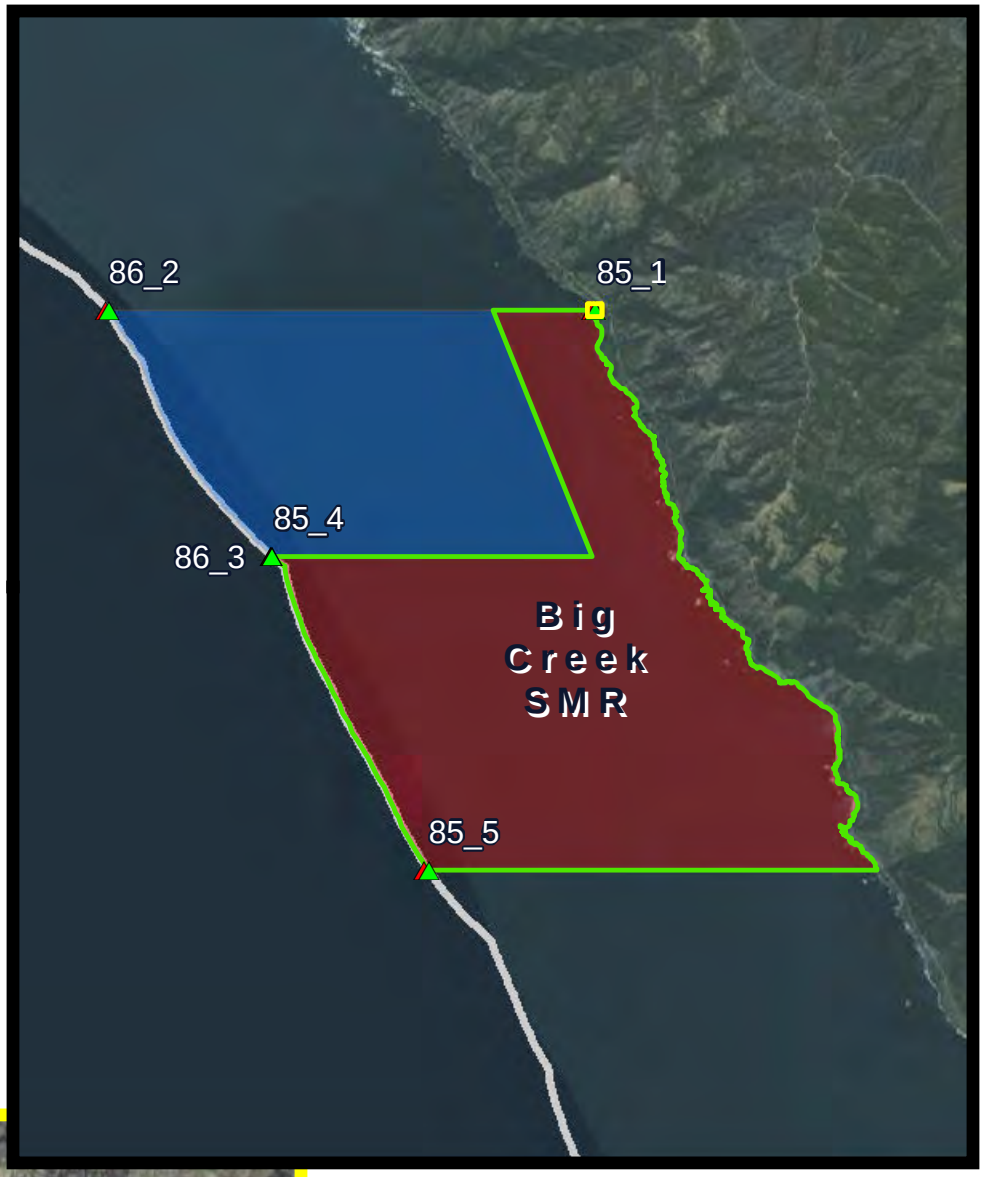
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

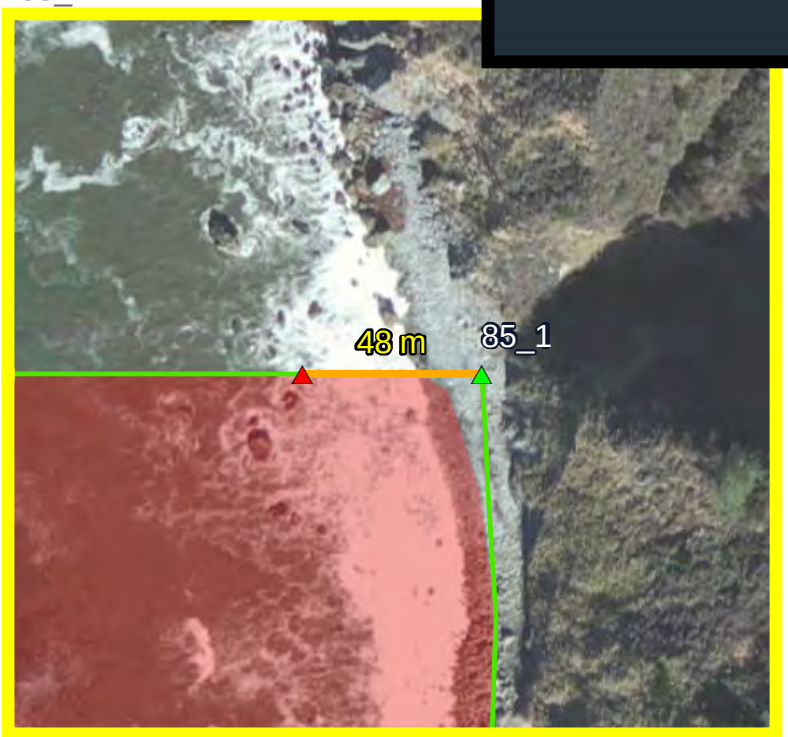
Summary of Proposed Refinements





0 5,400 Meters

85_1



0 90 Meters

63

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May 8, 2015

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Big Creek SMR and SMCA

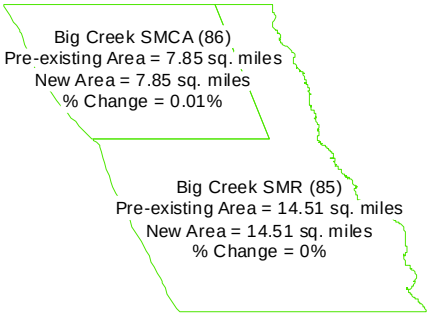
Legend

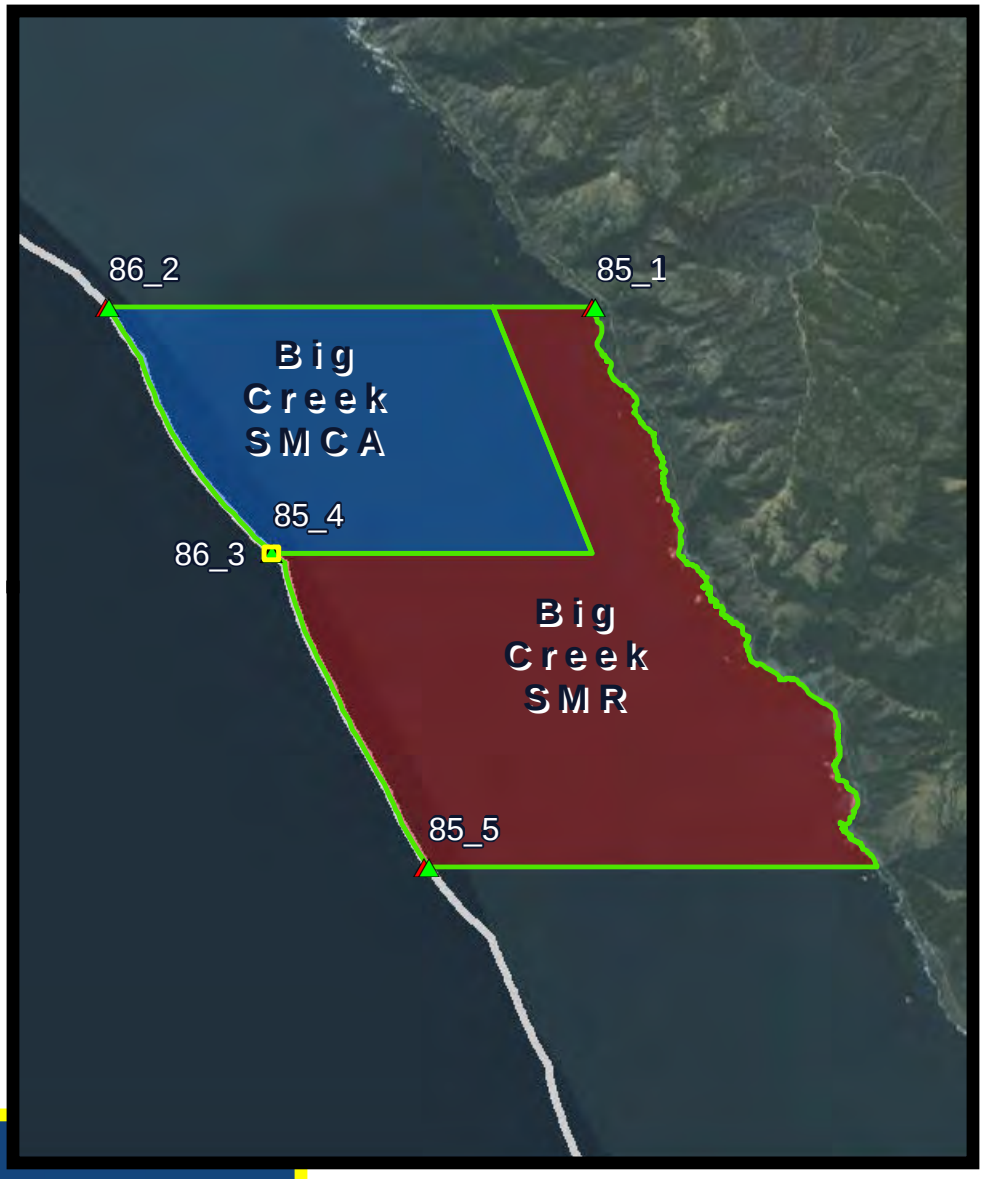
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

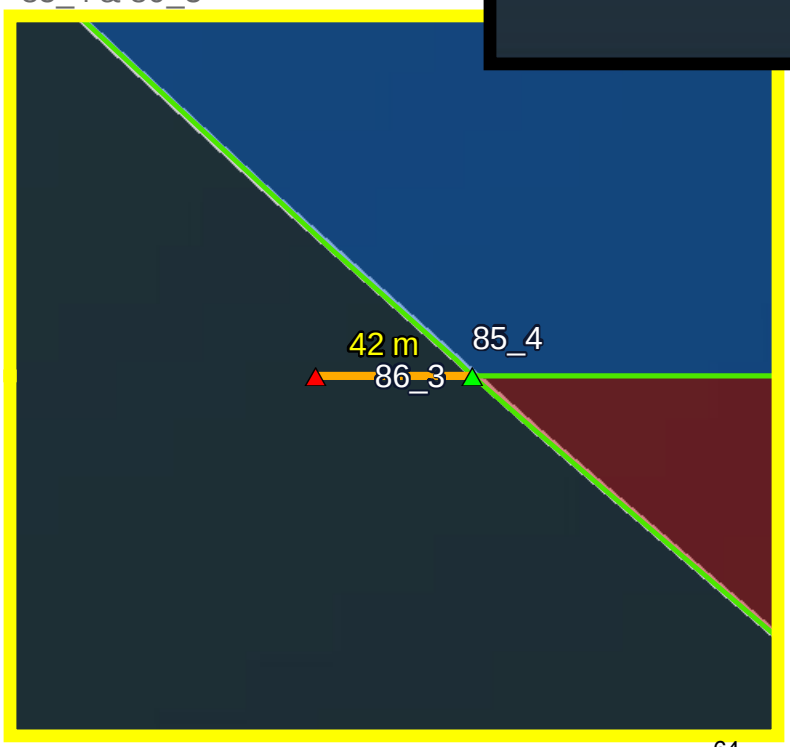
Summary of Proposed Refinements





0 5,400 Meters

85_4 & 86_3



0 90 Meters

64

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Big Creek SMR

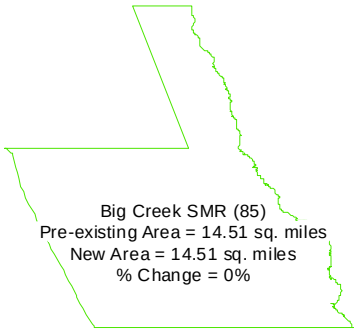
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

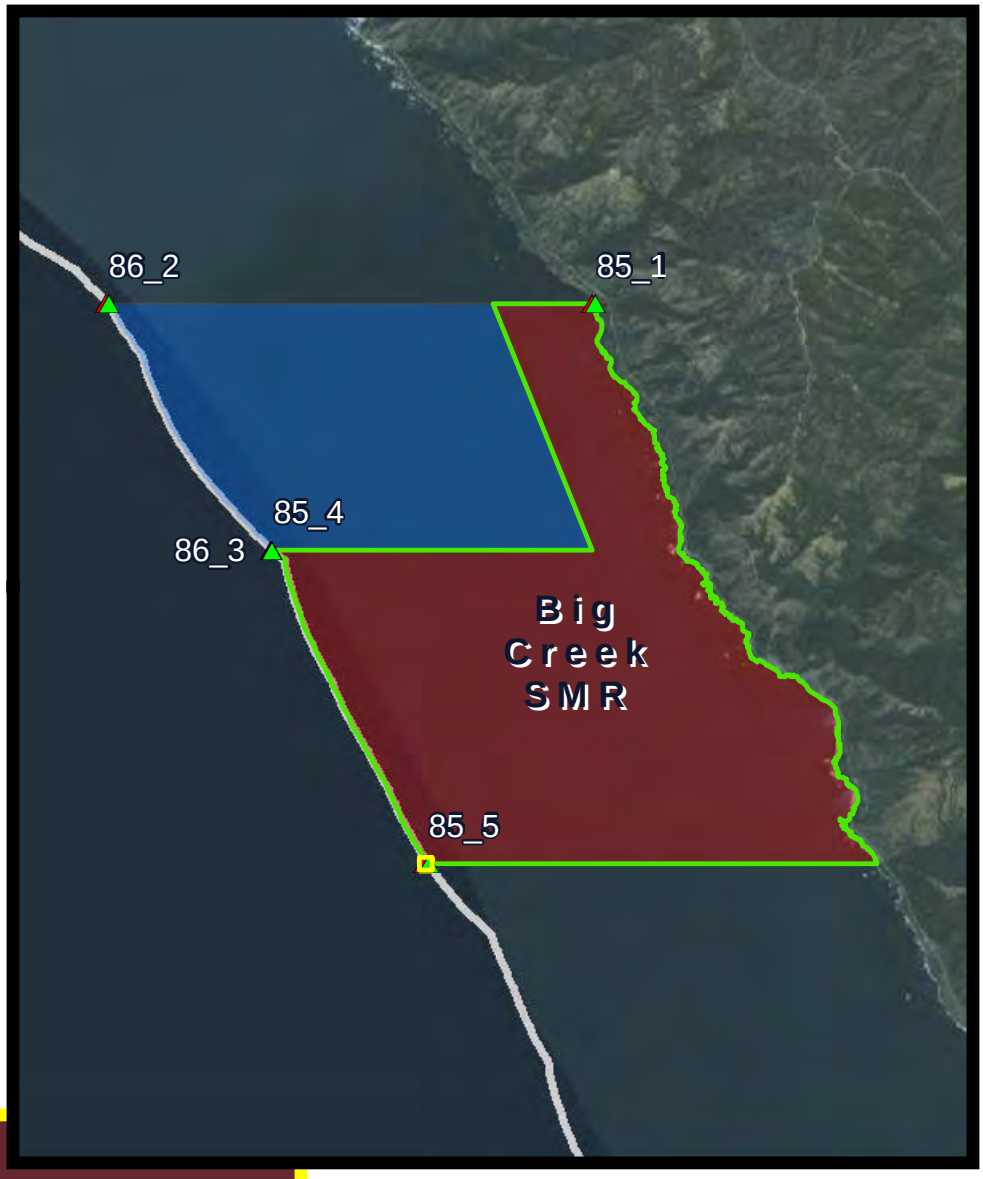
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

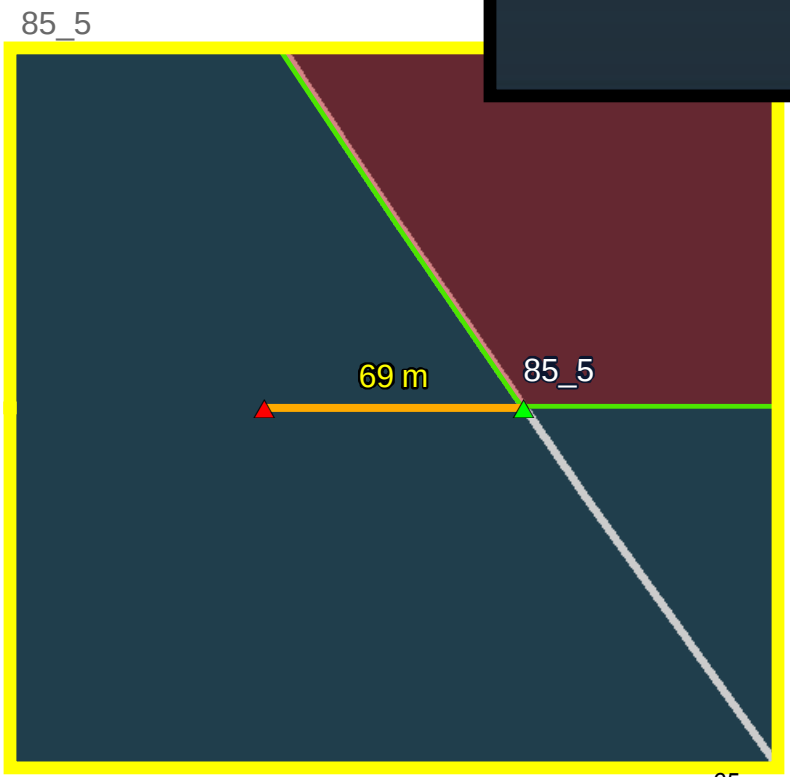
Summary of Proposed Refinements



Big Creek SMR (85)
Pre-existing Area = 14.51 sq. miles
New Area = 14.51 sq. miles
% Change = 0%



0 5,400 Meters



0 90 Meters

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Big Creek SMCA

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

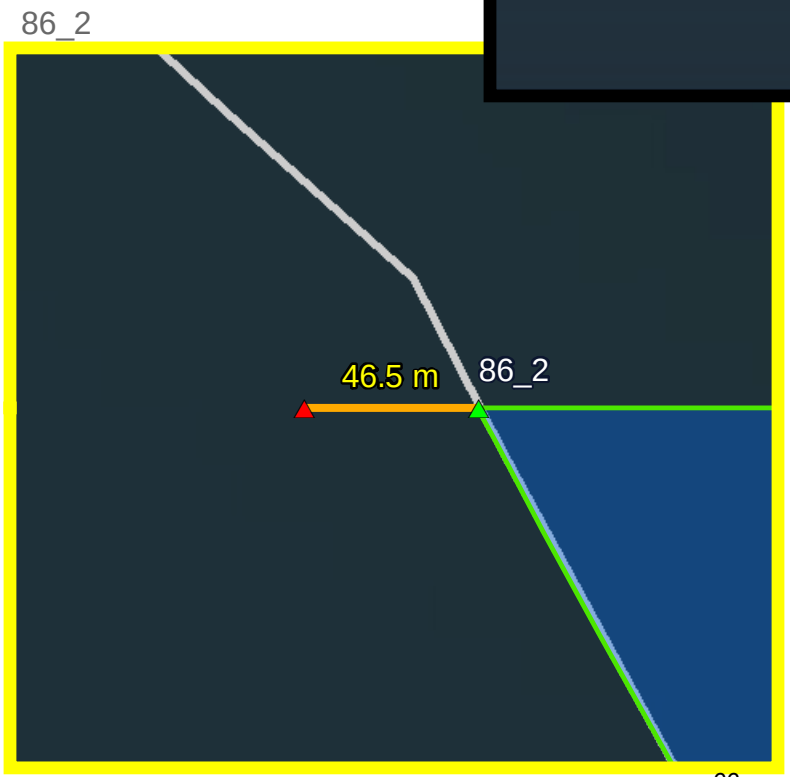
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Big Creek SMCA (86)
Pre-existing Area = 7.85 sq. miles
New Area = 7.85 sq. miles
% Change = 0.01%

0 3,400 Meters



0 90 Meters

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May 8, 2015

Piedras Blancas SMR

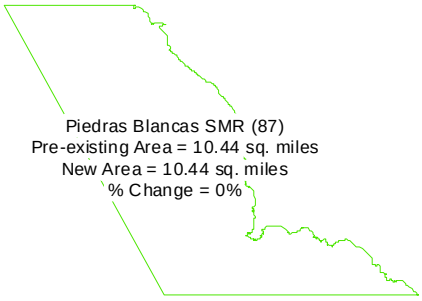
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

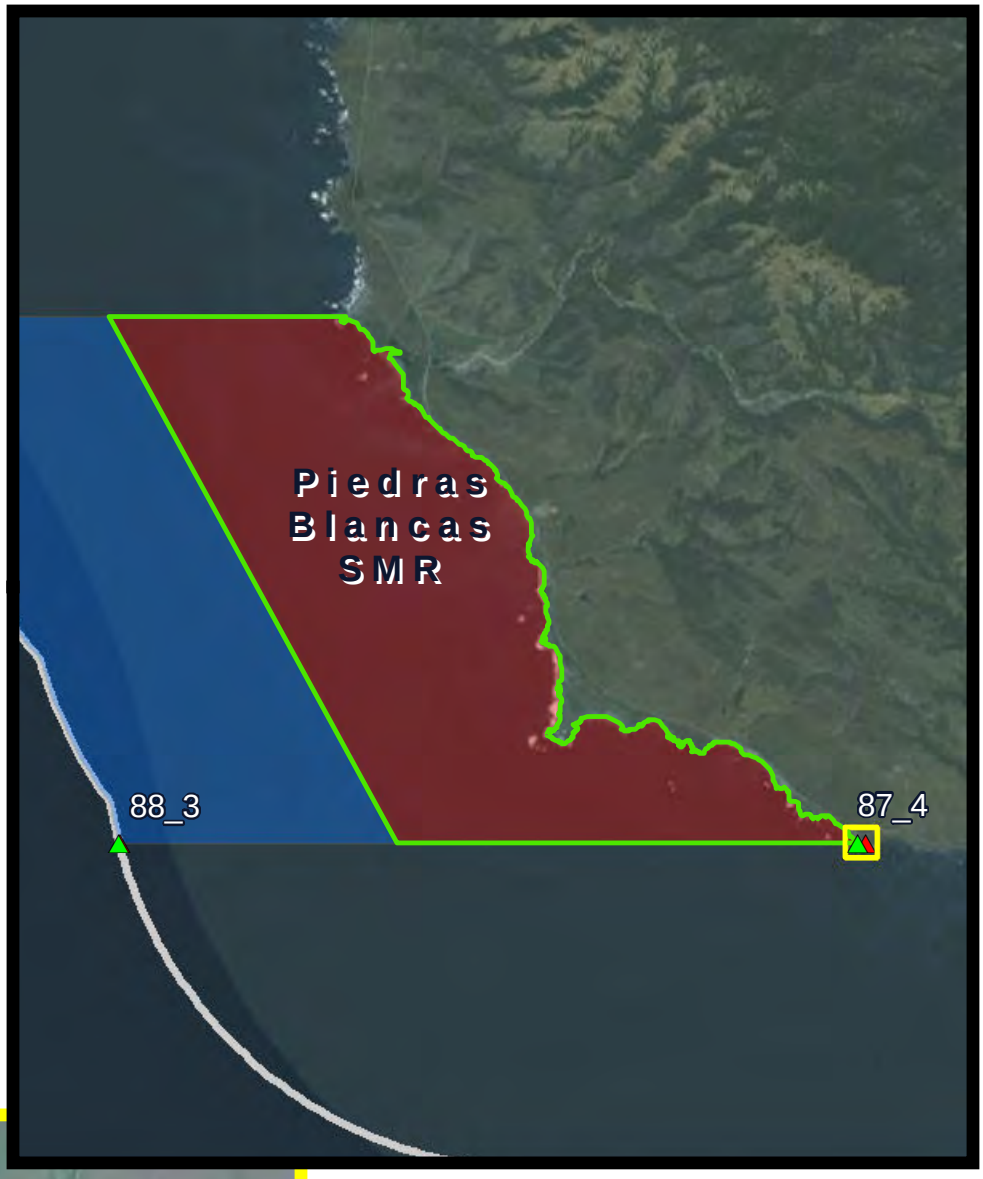
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Piedras Blancas SMR (87)
Pre-existing Area = 10.44 sq. miles
New Area = 10.44 sq. miles
% Change = 0%



0 4,600 Meters

87_4

0 190 Meters

67

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May 8, 2015

Piedras Blancas SMCA

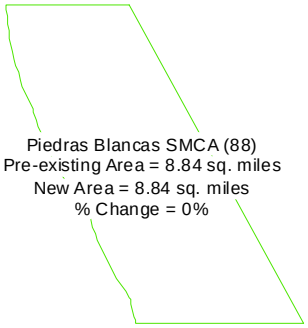
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

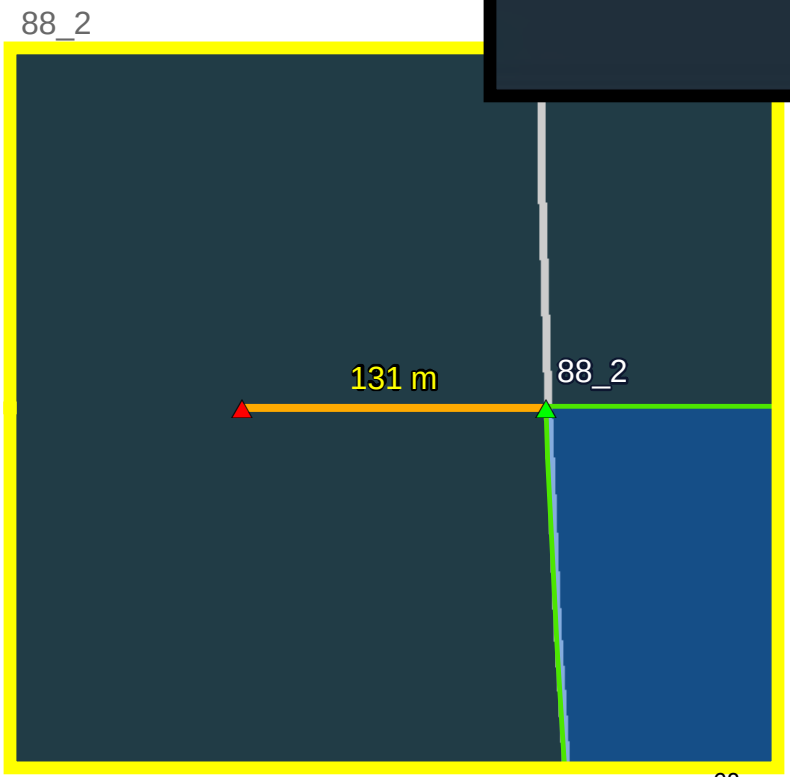
- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Piedras Blancas SMCA (88)
Pre-existing Area = 8.84 sq. miles
New Area = 8.84 sq. miles
% Change = 0%

0 3,100 Meters



0 150 Meters

68

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mr_gis@wildlife.ca.gov
May 8, 2015

Piedras Blancas SMCA

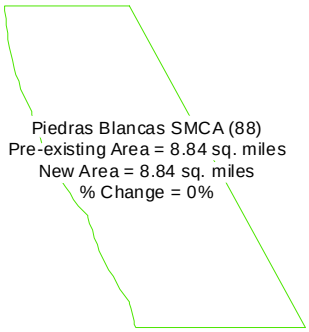
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

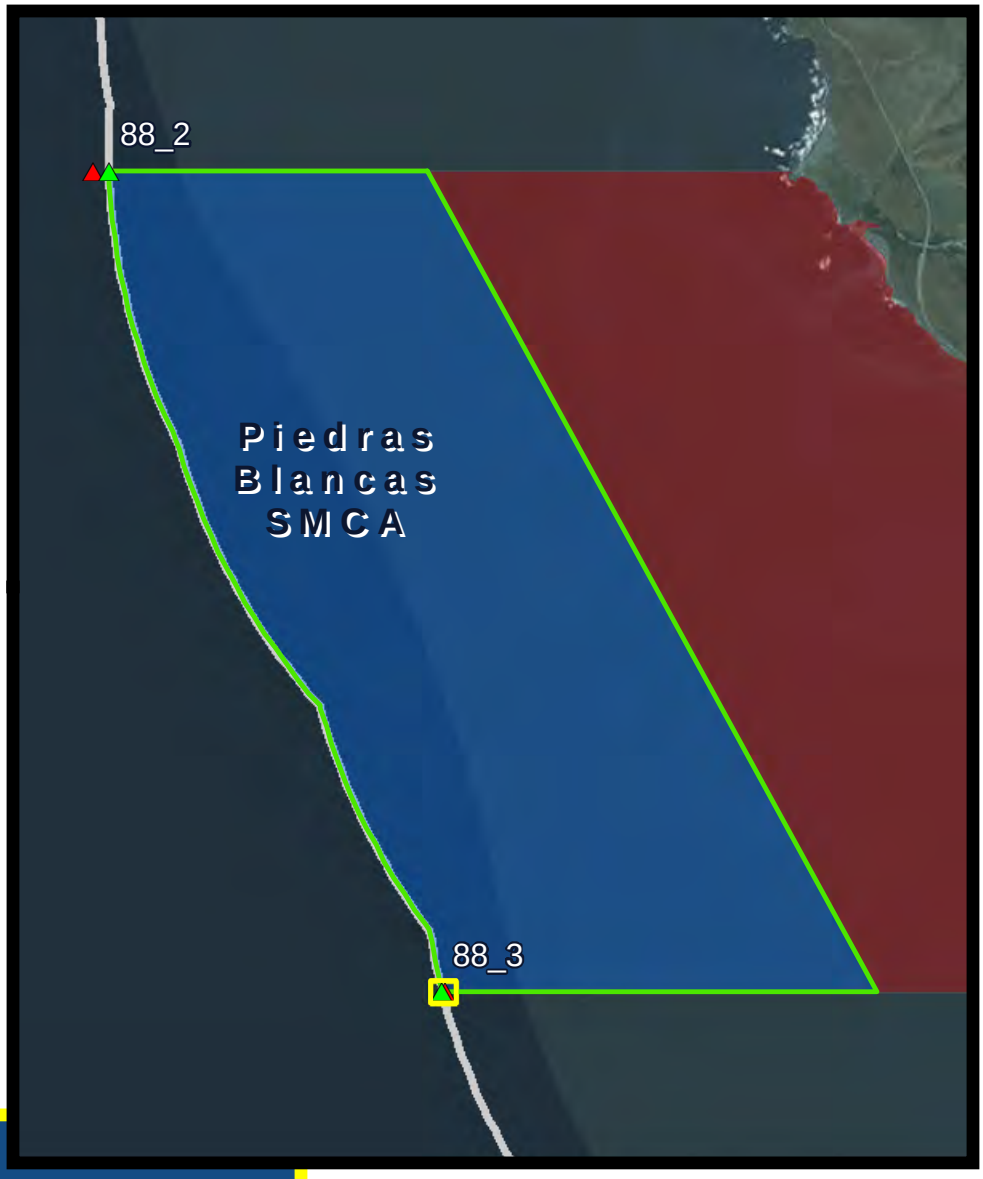
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

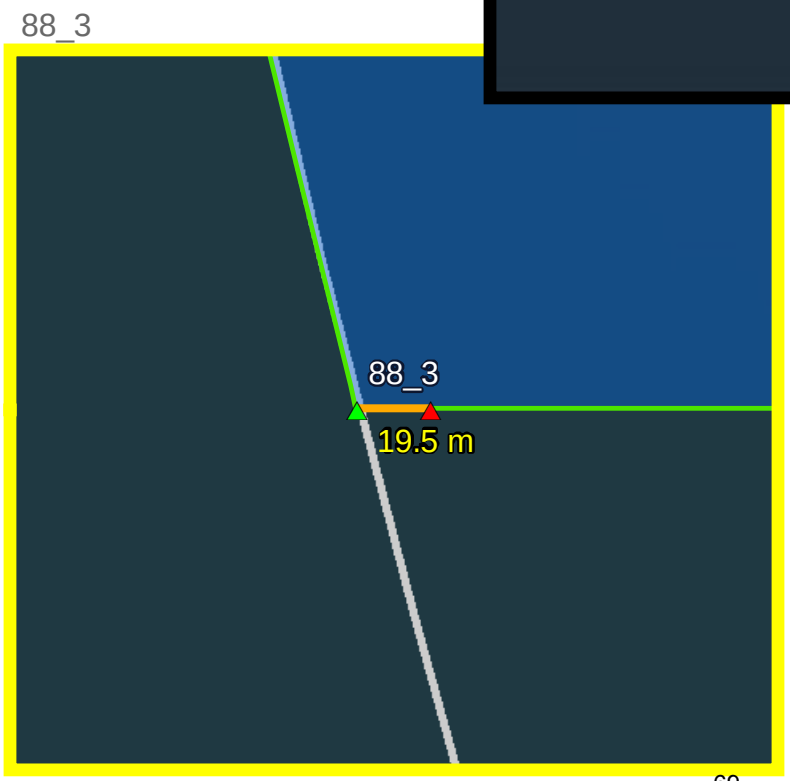
Summary of Proposed Refinements



Piedras Blancas SMCA (88)
Pre-existing Area = 8.84 sq. miles
New Area = 8.84 sq. miles
% Change = 0%



0 2,900 Meters



0 90 Meters

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mr_gis@wildlife.ca.gov
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Cambria SMCA

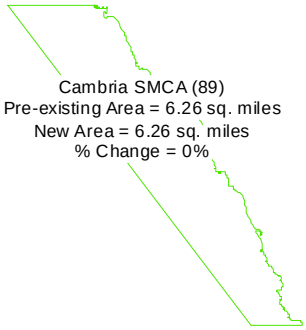
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Cambria SMCA (89)
Pre-existing Area = 6.26 sq. miles
New Area = 6.26 sq. miles
% Change = 0%

0 3,300 Meters

89_1

0 150 Meters

70

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Cambria SMCA and White Rock SMCA

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Cambria SMCA (89)
Pre-existing Area = 6.26 sq. miles
New Area = 6.26 sq. miles
% Change = 0%

White Rock (Cambria) SMCA (90)
Pre-existing Area = 2.91 sq. miles
New Area = 2.91 sq. miles
% Change = 0%

0 5,000 Meters

89_4 & 90_1

0 90 Meters

71

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White Rock SMCA

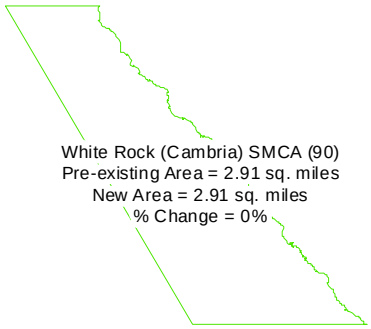
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



White Rock (Cambria) SMCA (90)
Pre-existing Area = 2.91 sq. miles
New Area = 2.91 sq. miles
% Change = 0%

0 2,300 Meters

90_4

0 90 Meters

72

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May 8, 2015

Point Buchon SMR

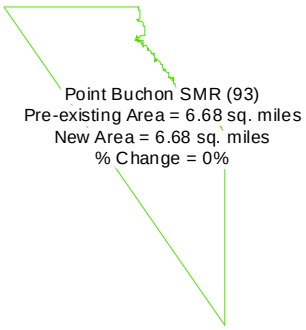
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

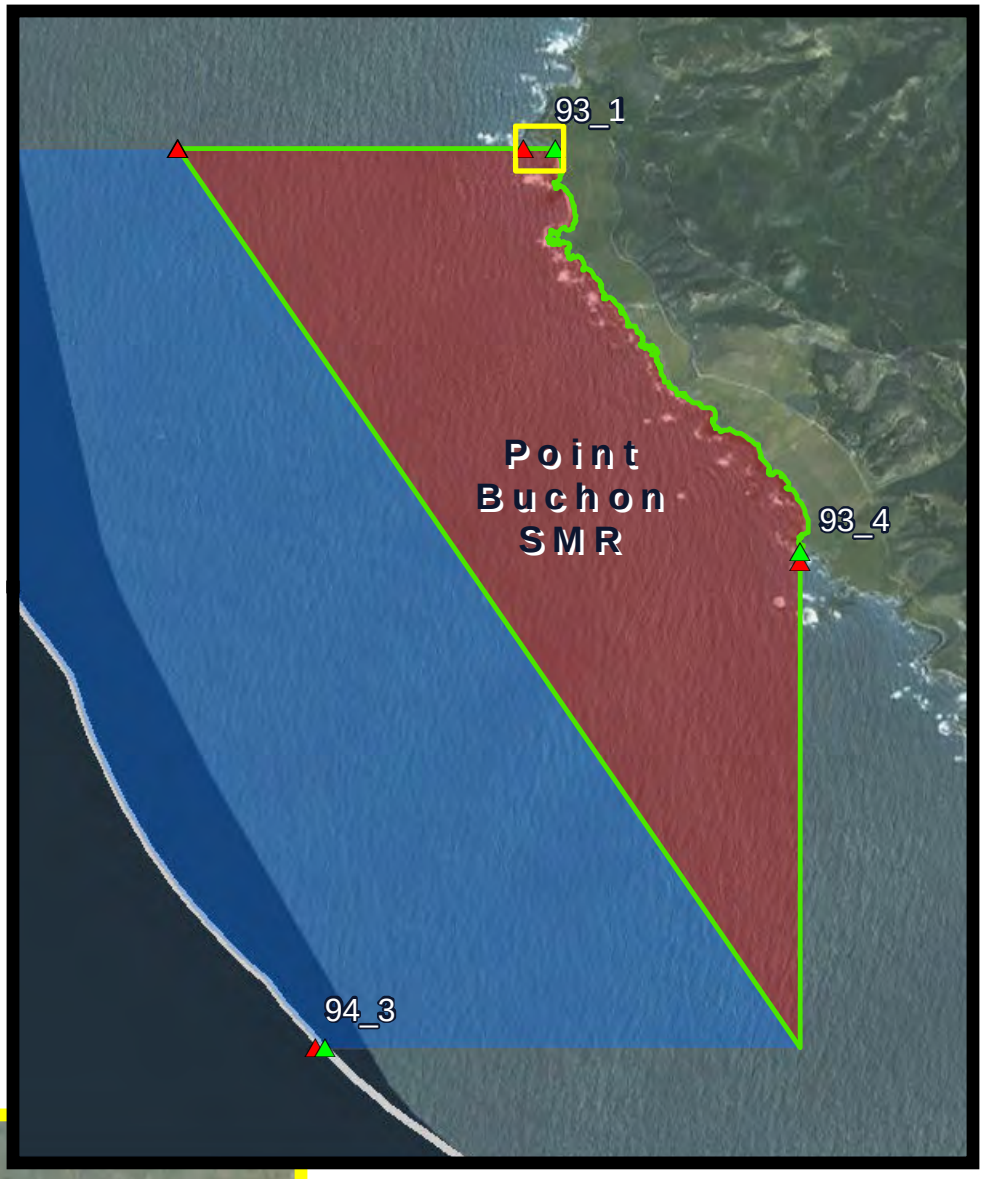
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

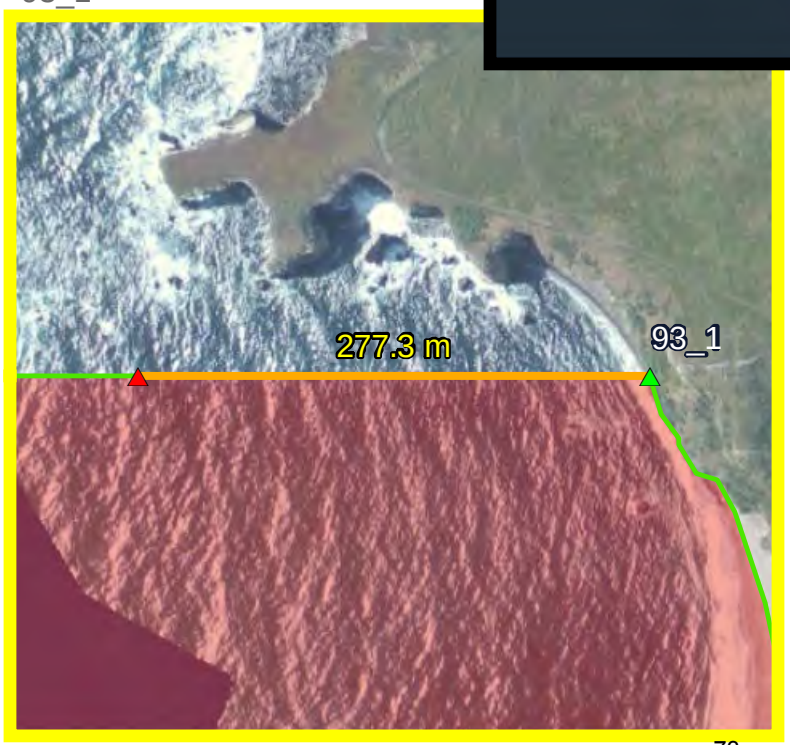


Point Buchon SMR (93)
Pre-existing Area = 6.68 sq. miles
New Area = 6.68 sq. miles
% Change = 0%



0 3,100 Meters

93_1



0 190 Meters

73

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May 8, 2015

Point Buchon SMR

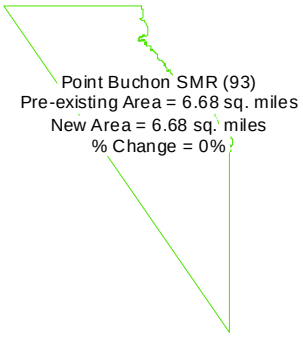
Legend

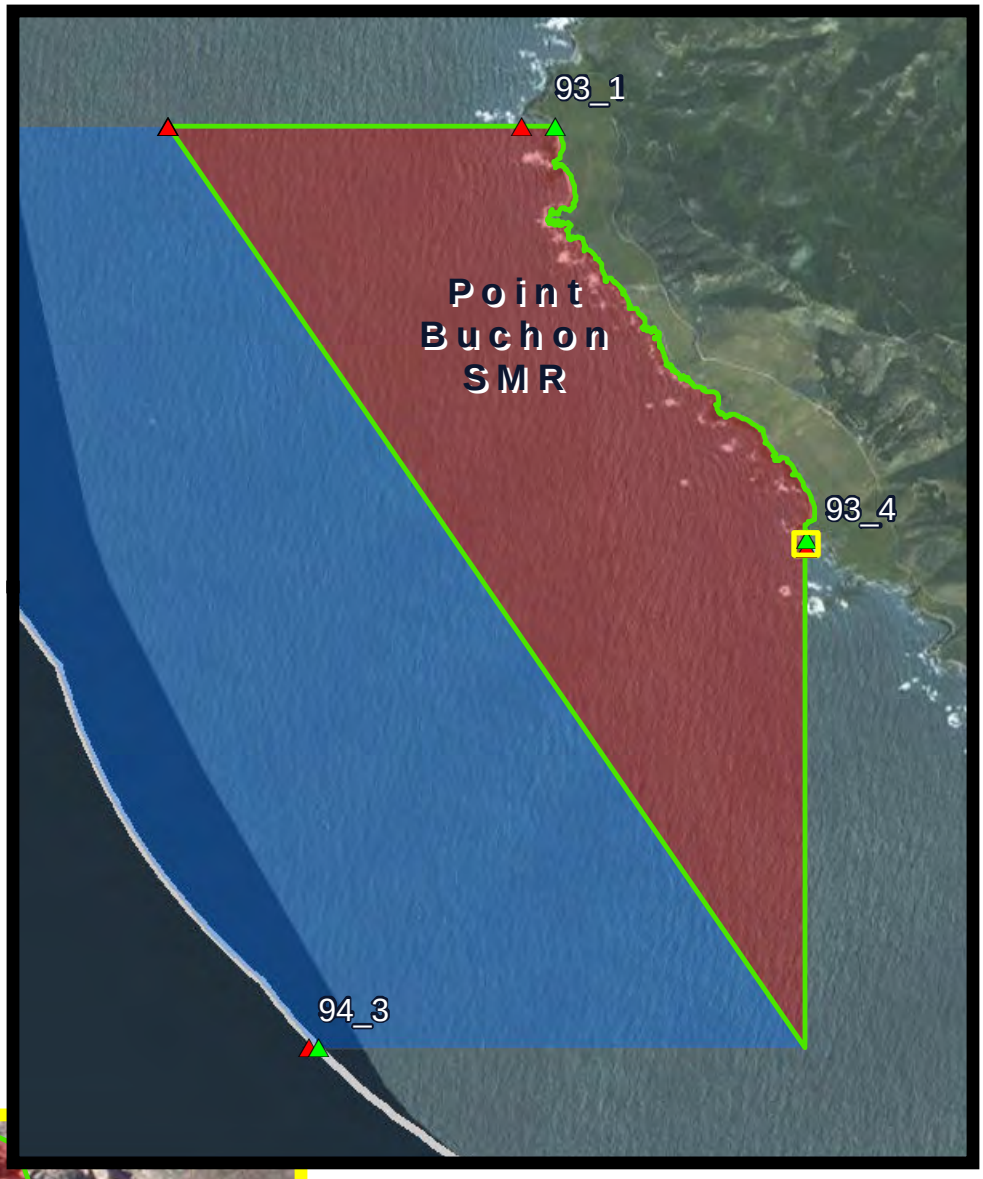
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

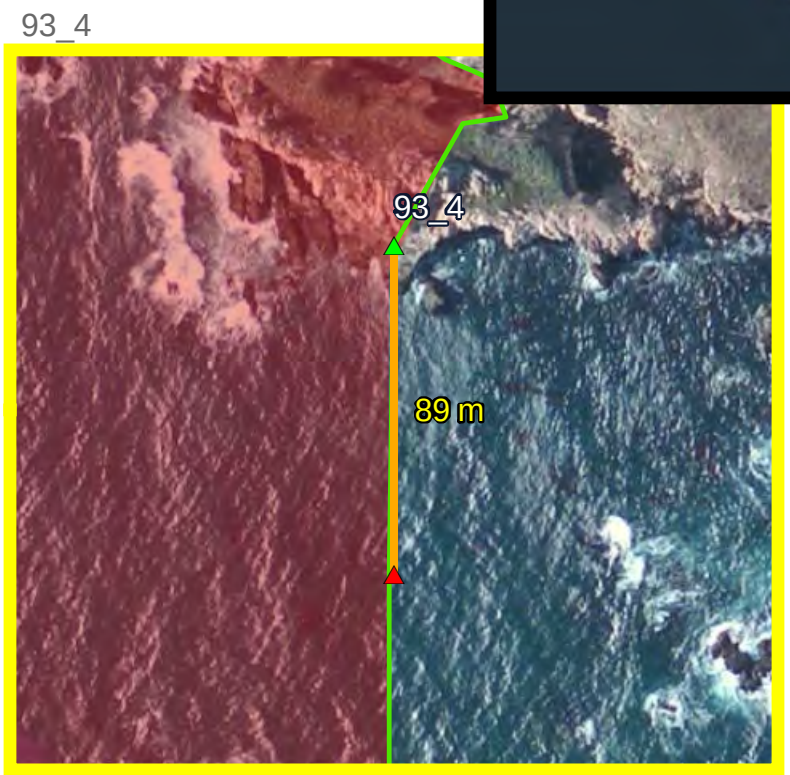
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements







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May 8, 2015

Point Buchon SMCA

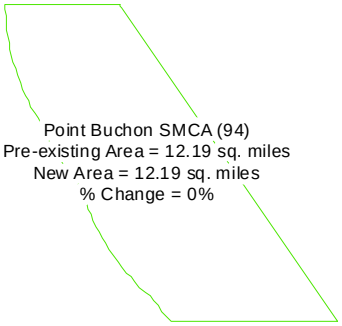
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

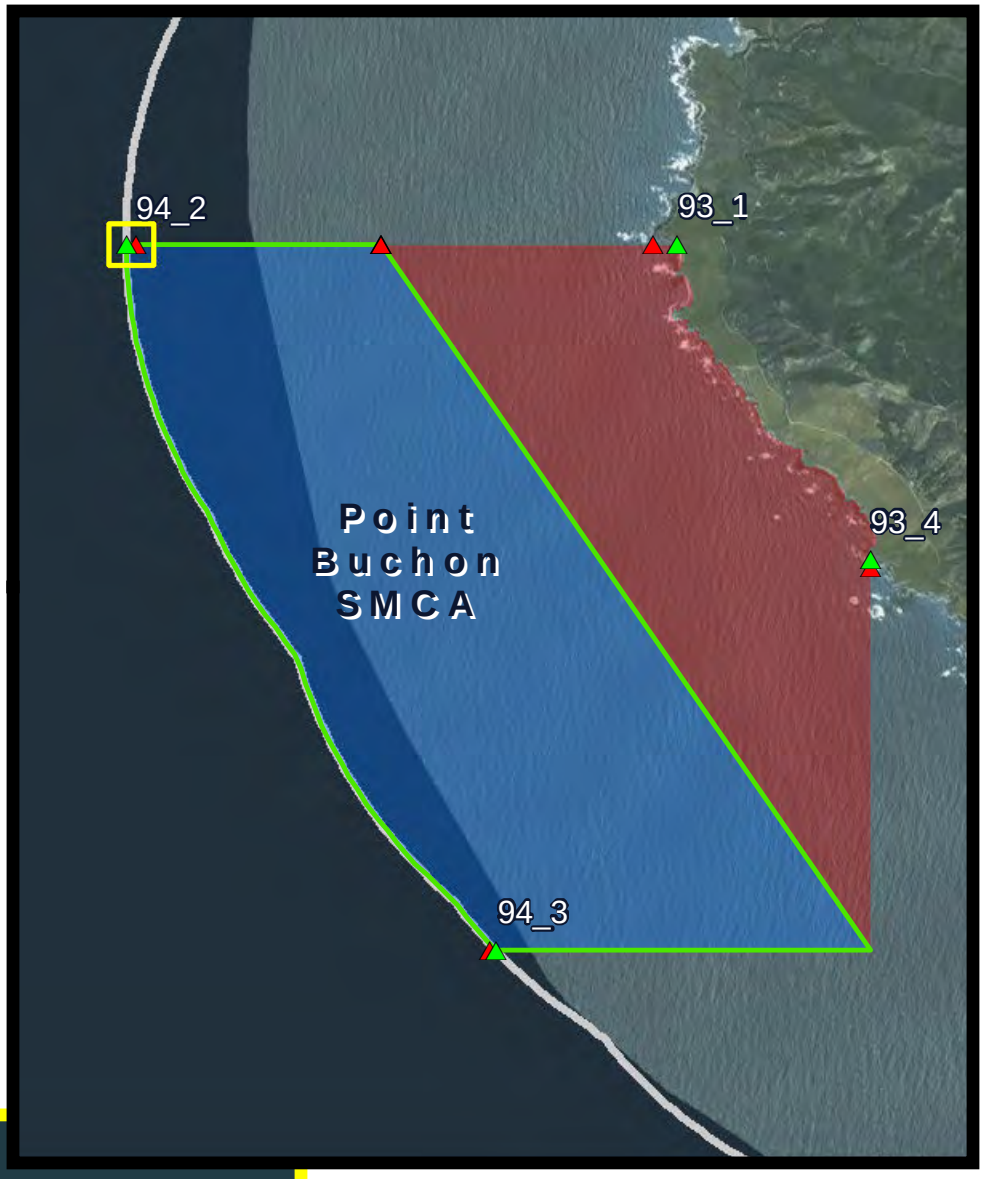
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Point Buchon SMCA (94)
Pre-existing Area = 12.19 sq. miles
New Area = 12.19 sq. miles
% Change = 0%



0 3,900 Meters

0 230 Meters

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Point Buchon SMCA

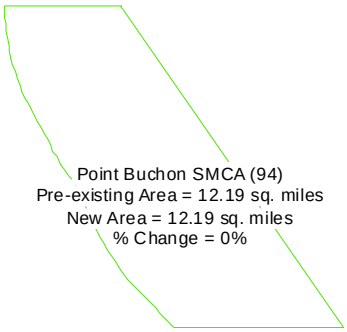
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

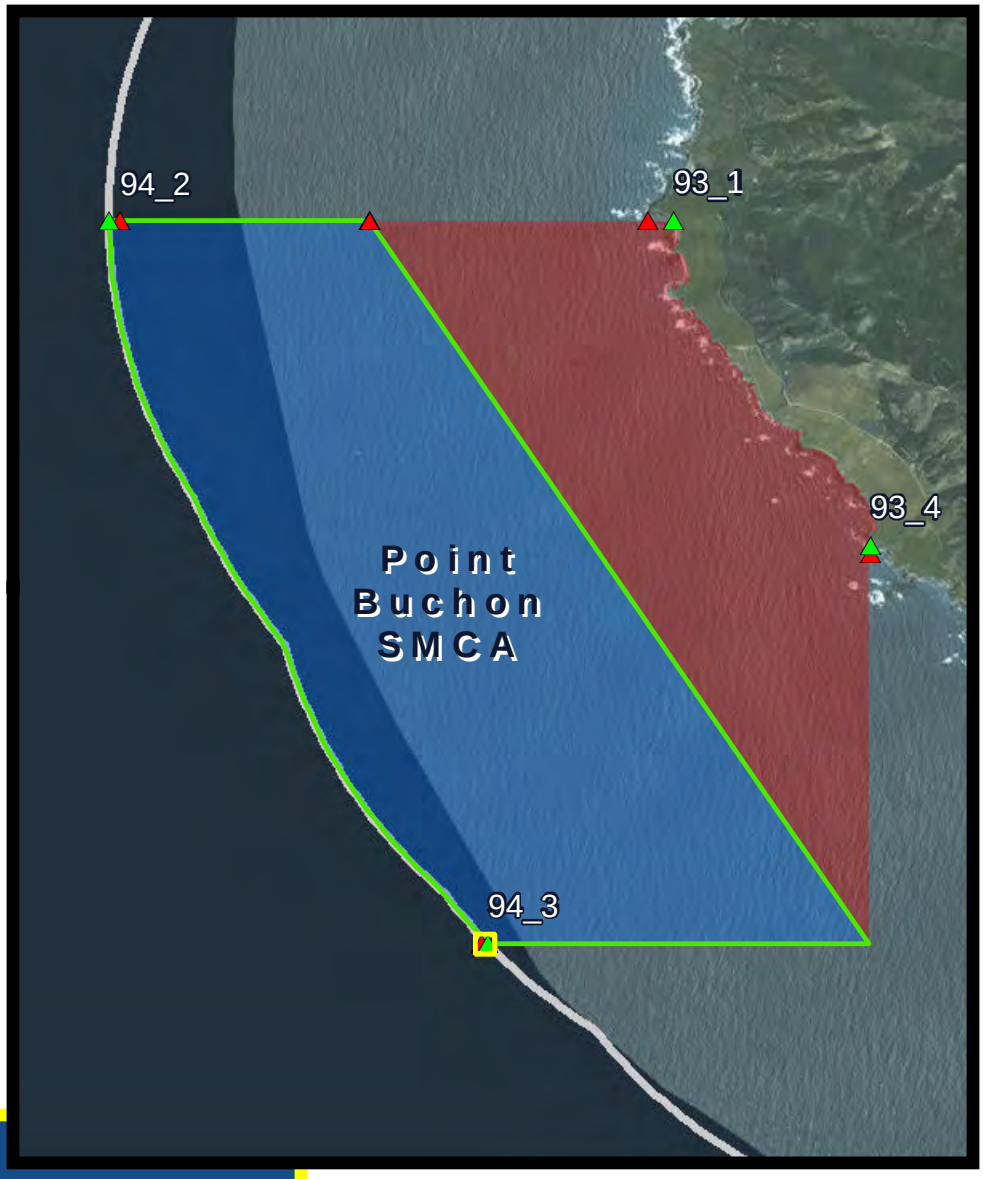
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

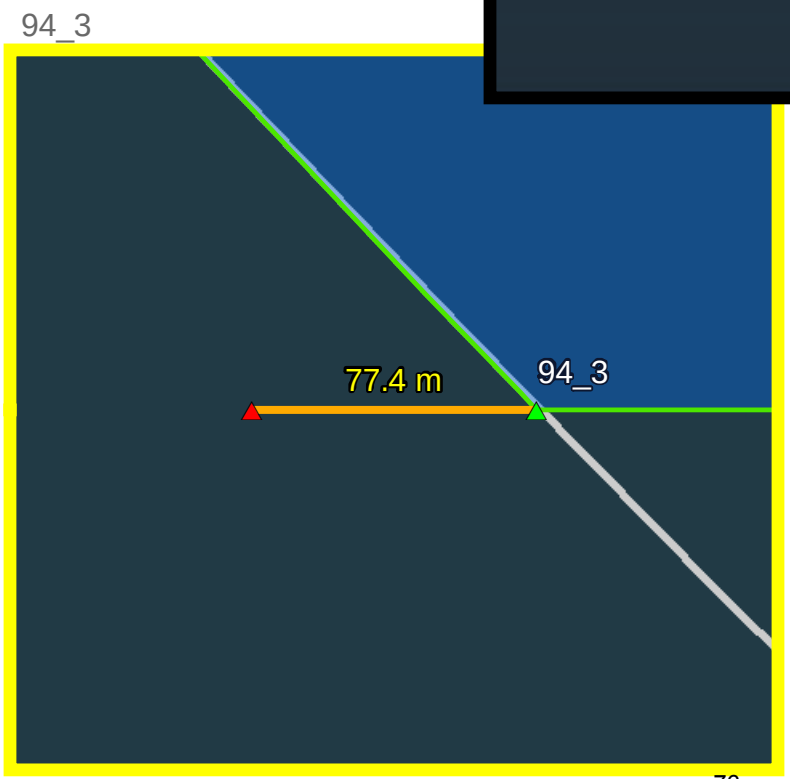
Summary of Proposed Refinements



Point Buchon SMCA (94)
Pre-existing Area = 12.19 sq. miles
New Area = 12.19 sq. miles
% Change = 0%



0 3,800 Meters



0 90 Meters

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Vandenberg SMR

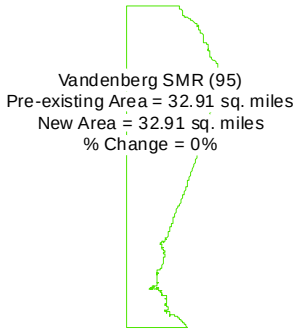
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

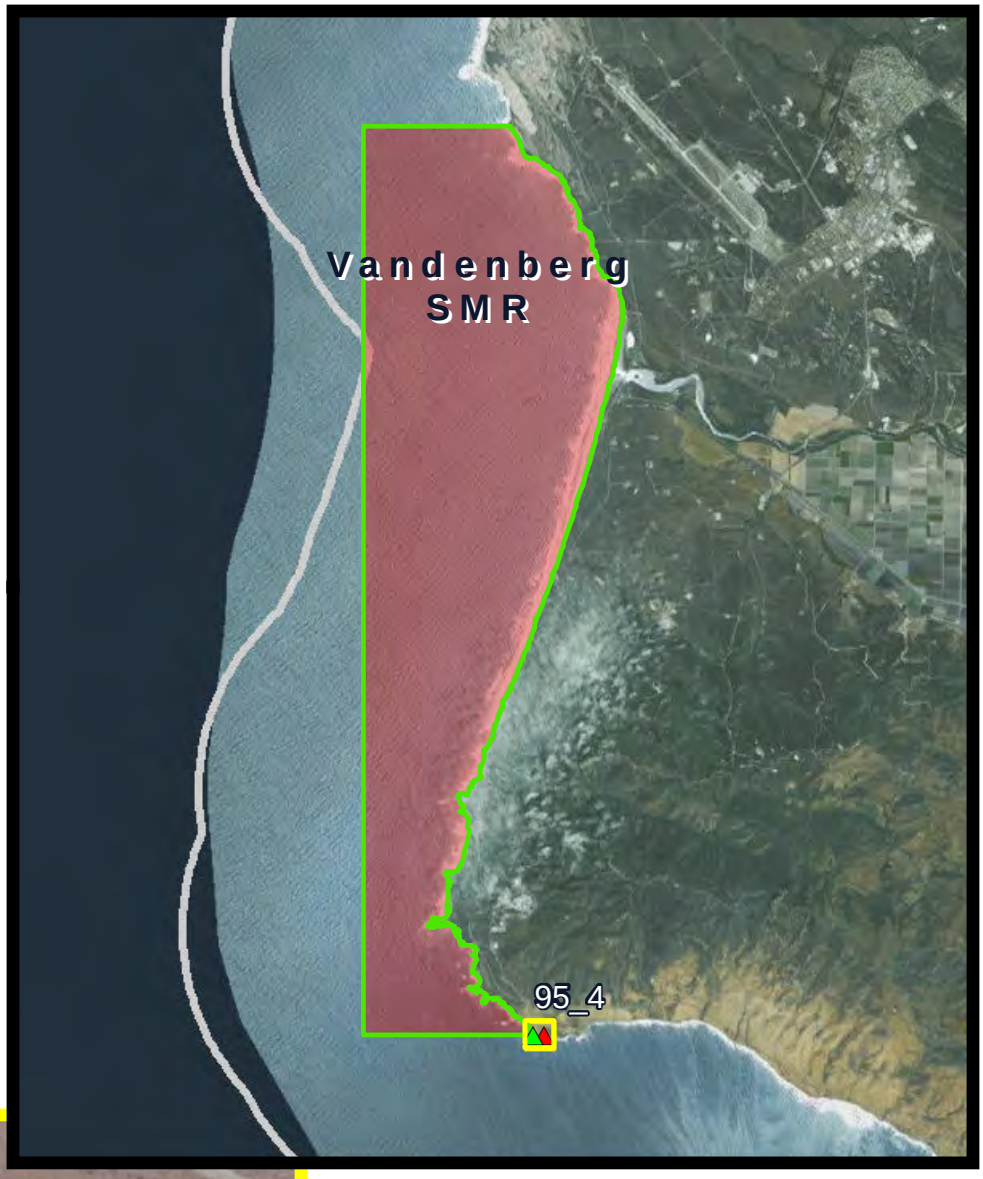
Current MPA Boundaries

State Marine Reserve (SMR)

Summary of Proposed Refinements

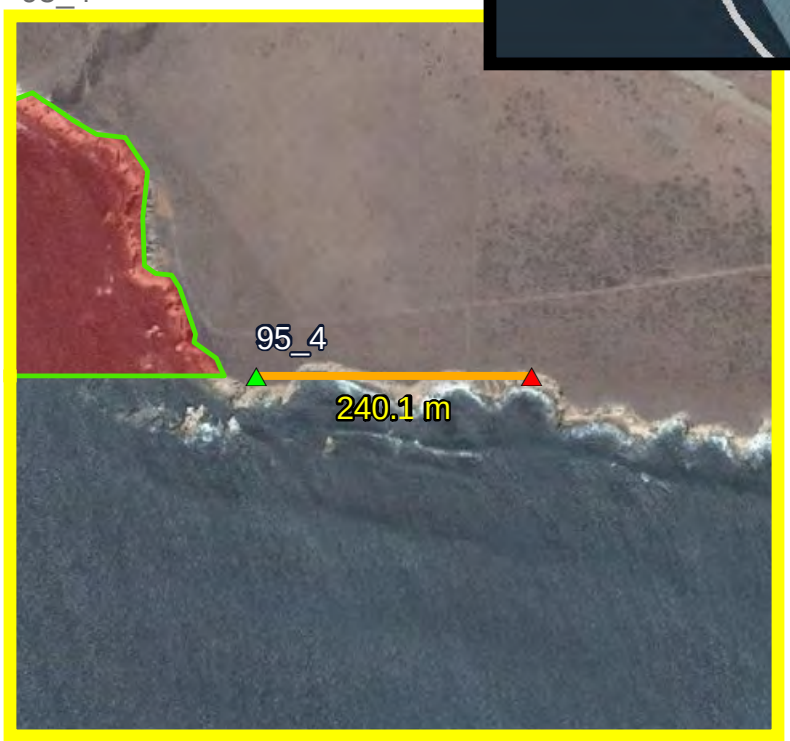


Vandenberg SMR (95)
Pre-existing Area = 32.91 sq. miles
New Area = 32.91 sq. miles
% Change = 0%



0 8,200 Meters

95_4



0 300 Meters

77

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May 8, 2015

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Point Conception SMR

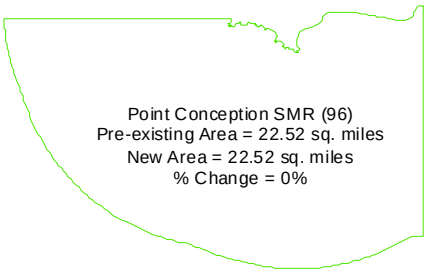
Legend

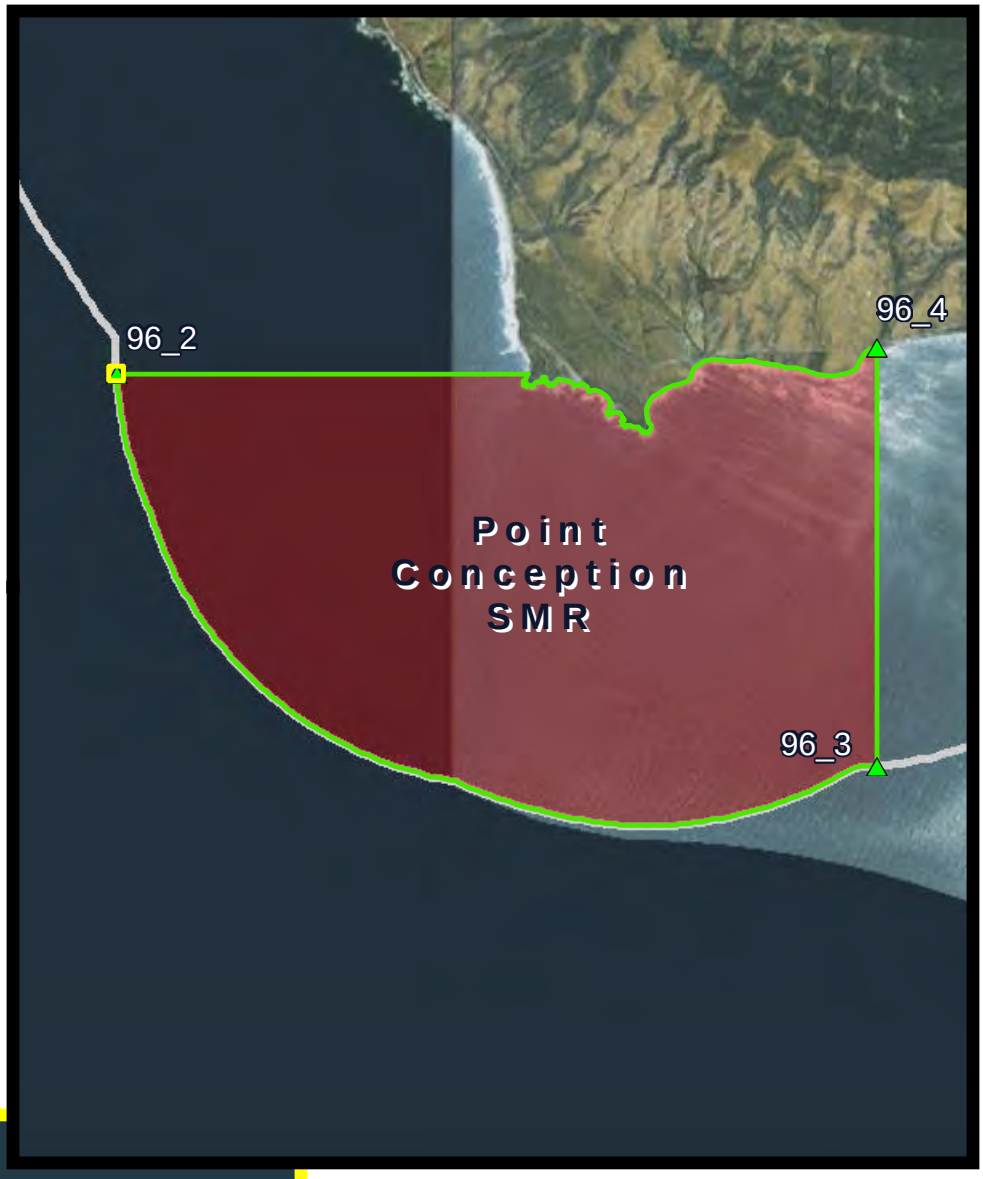
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

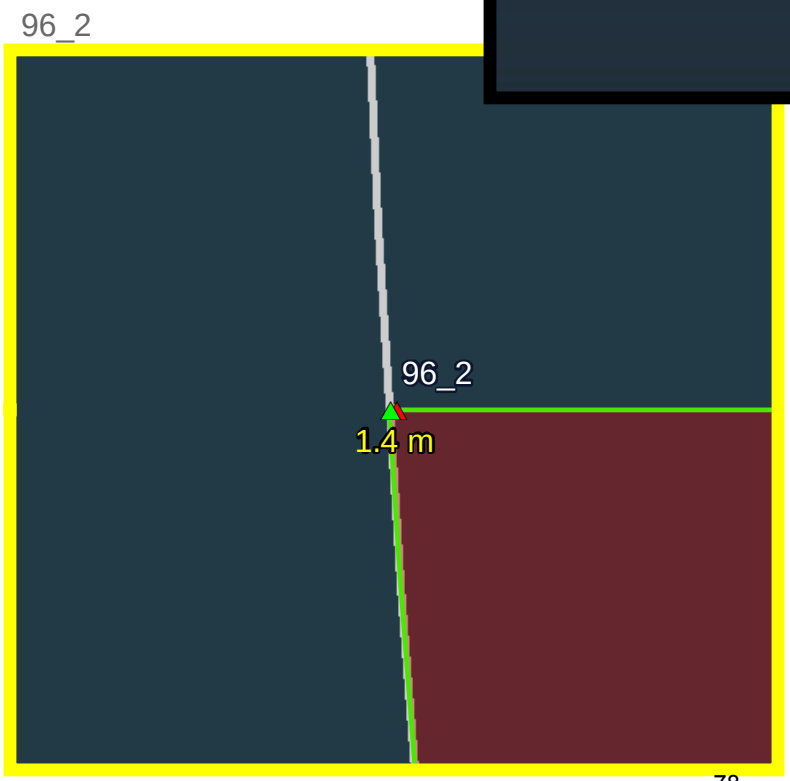
Current MPA Boundaries

- State Marine Reserve (SMR)

Summary of Proposed Refinements







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May 8, 2015

Point Conception SMR

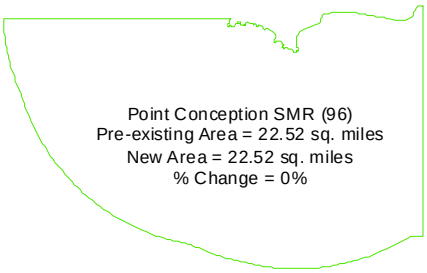
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

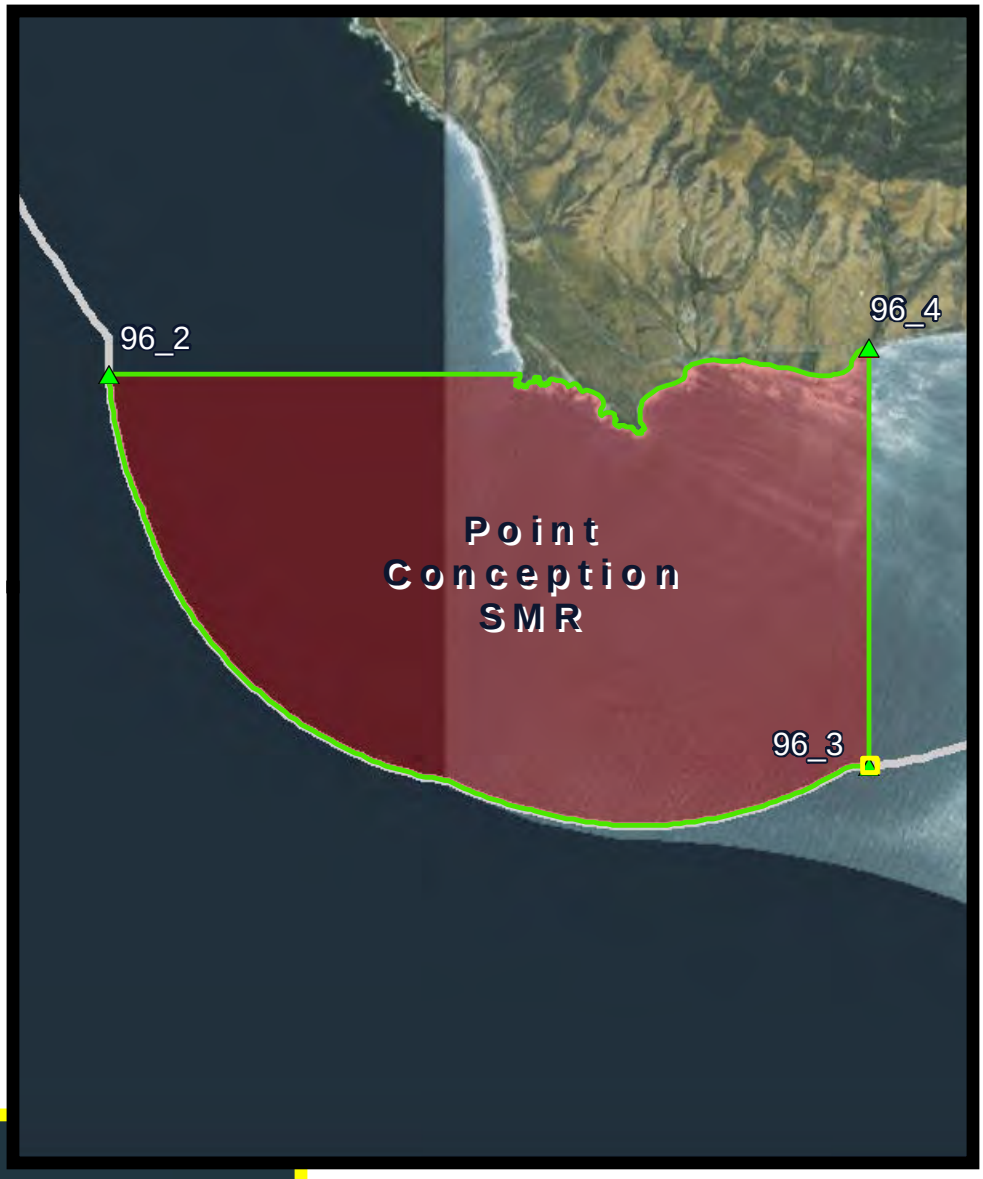
Current MPA Boundaries

- State Marine Reserve (SMR)

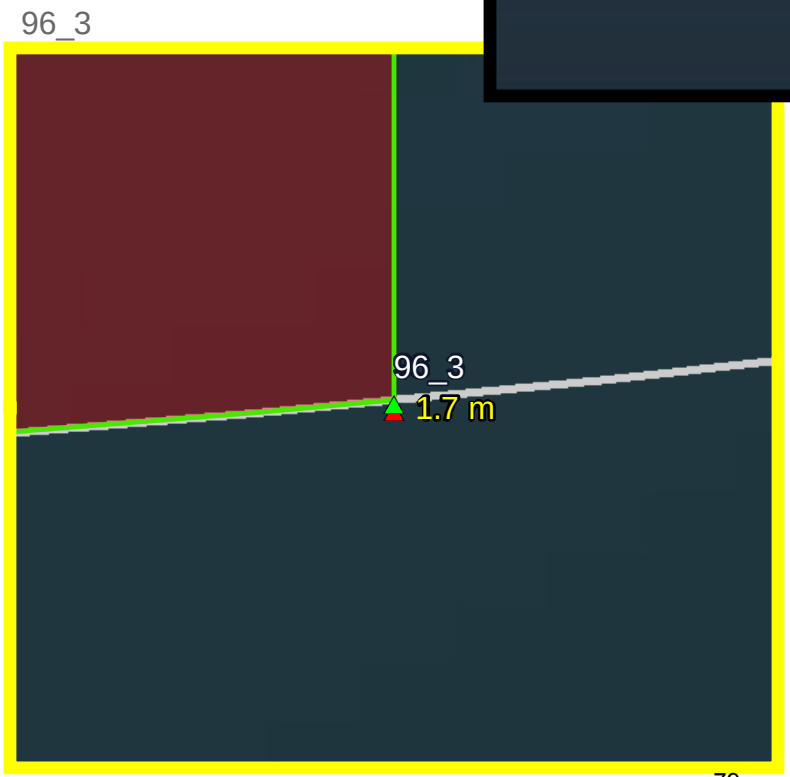
Summary of Proposed Refinements



Point Conception SMR (96)
Pre-existing Area = 22.52 sq. miles
New Area = 22.52 sq. miles
% Change = 0%



0 5,000 Meters



0 90 Meters

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May 8, 2015

Point Conception SMR

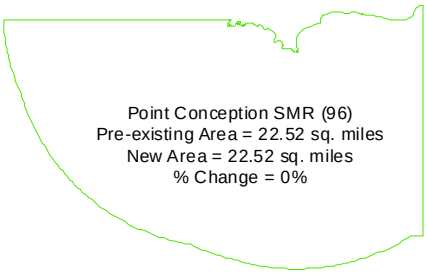
Legend

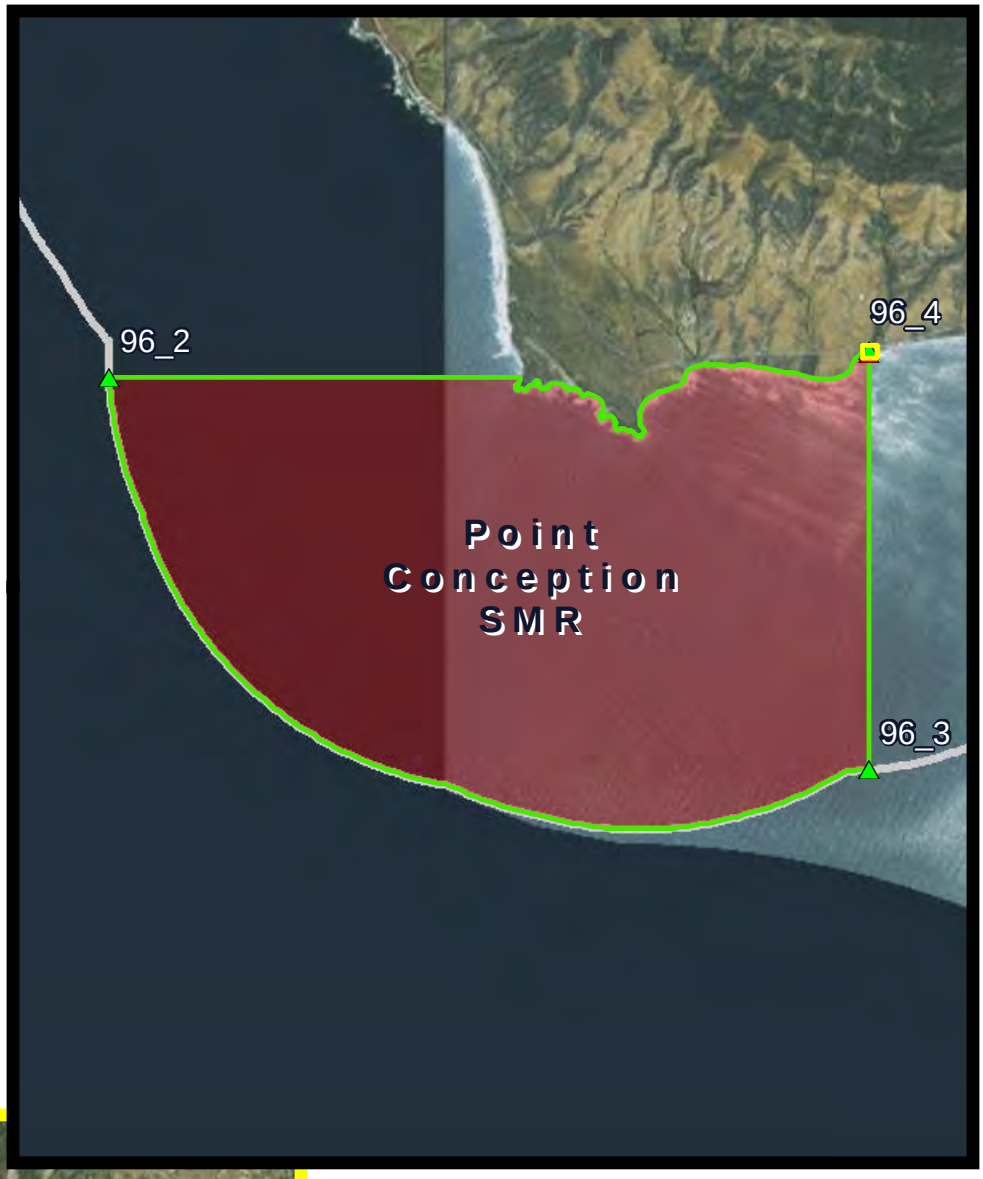
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Reserve (SMR)

Summary of Proposed Refinements





0 5,000 Meters

0 90 Meters

80

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May 8, 2015

Naples SMCA

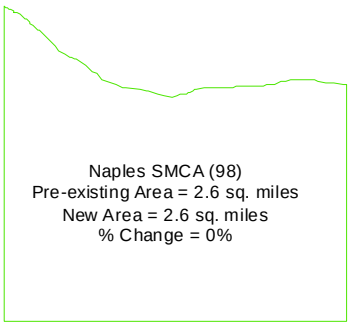
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Naples SMCA (98)
Pre-existing Area = 2.6 sq. miles
New Area = 2.6 sq. miles
% Change = 0%

0 1,400 Meters

98_1

0 90 Meters

81

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May 8, 2015

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Naples SMCA

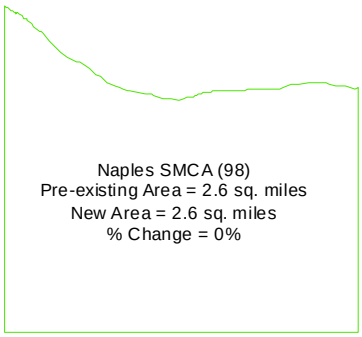
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Naples SMCA (98)
Pre-existing Area = 2.6 sq. miles
New Area = 2.6 sq. miles
% Change = 0%

0 1,400 Meters

98_4

0 90 Meters

82

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May 8, 2015

Campus Point SMCA

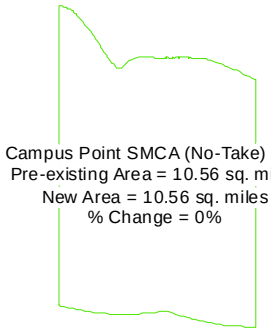
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

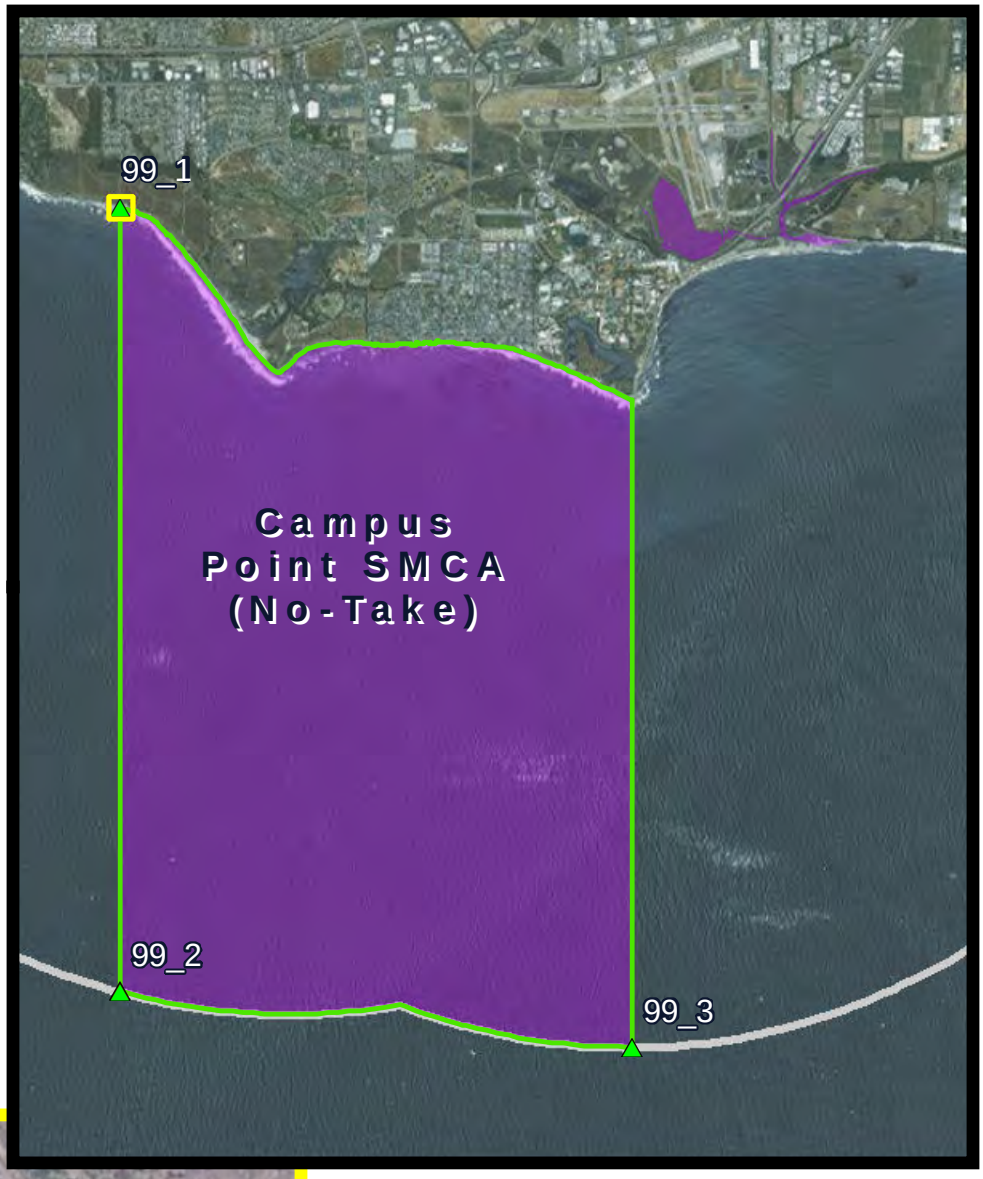
Current MPA Boundaries

State Marine Conservation Area (SMCA No-Take)

Summary of Proposed Refinements

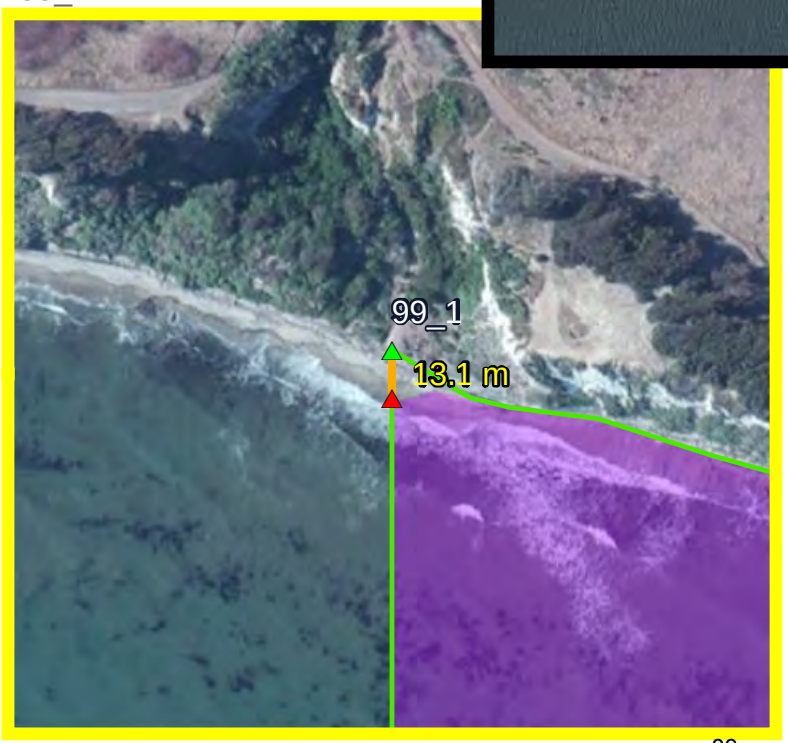


Campus Point SMCA (No-Take) (99)
Pre-existing Area = 10.56 sq. miles
New Area = 10.56 sq. miles
% Change = 0%



0 3,100 Meters

99_1



0 90 Meters

83

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Campus Point SMCA

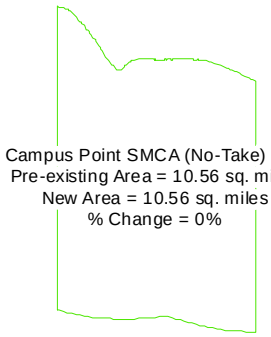
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

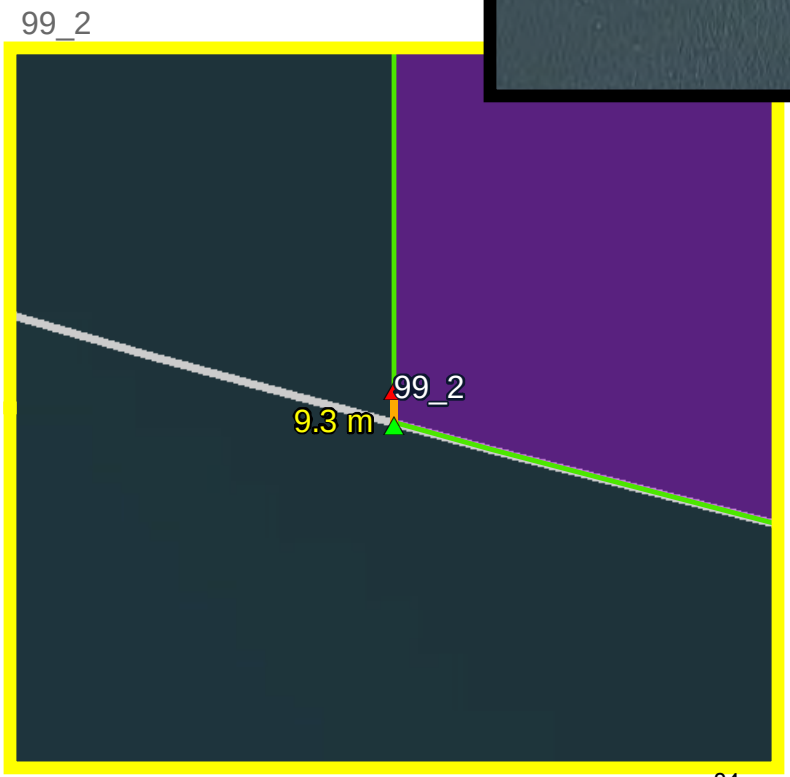
State Marine Conservation Area (SMCA No-Take)

Summary of Proposed Refinements



Campus Point SMCA (No-Take) (99)
Pre-existing Area = 10.56 sq. miles
New Area = 10.56 sq. miles
% Change = 0%

0 2,800 Meters



0 90 Meters

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May 8, 2015

Campus Point SMCA

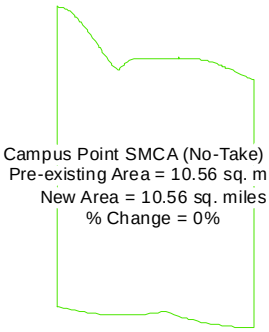
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

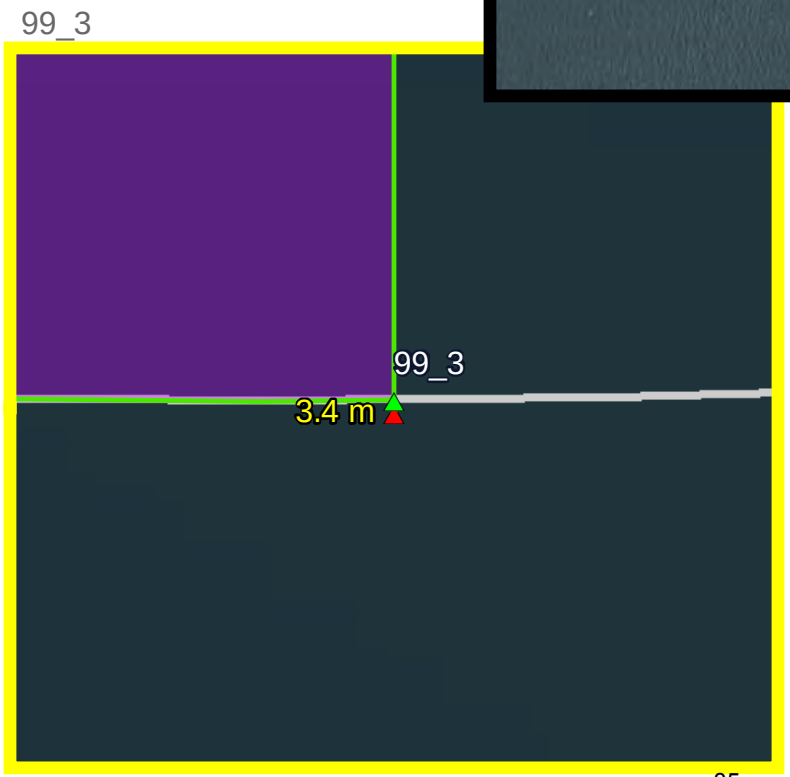
State Marine Conservation Area (SMCA No-Take)

Summary of Proposed Refinements



Campus Point SMCA (No-Take) (99)
Pre-existing Area = 10.56 sq. miles
New Area = 10.56 sq. miles
% Change = 0%

0 2,800 Meters



0 90 Meters

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Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Judith Rock SMR

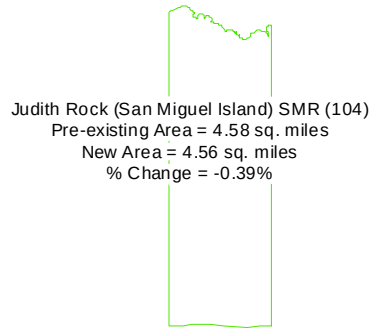
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

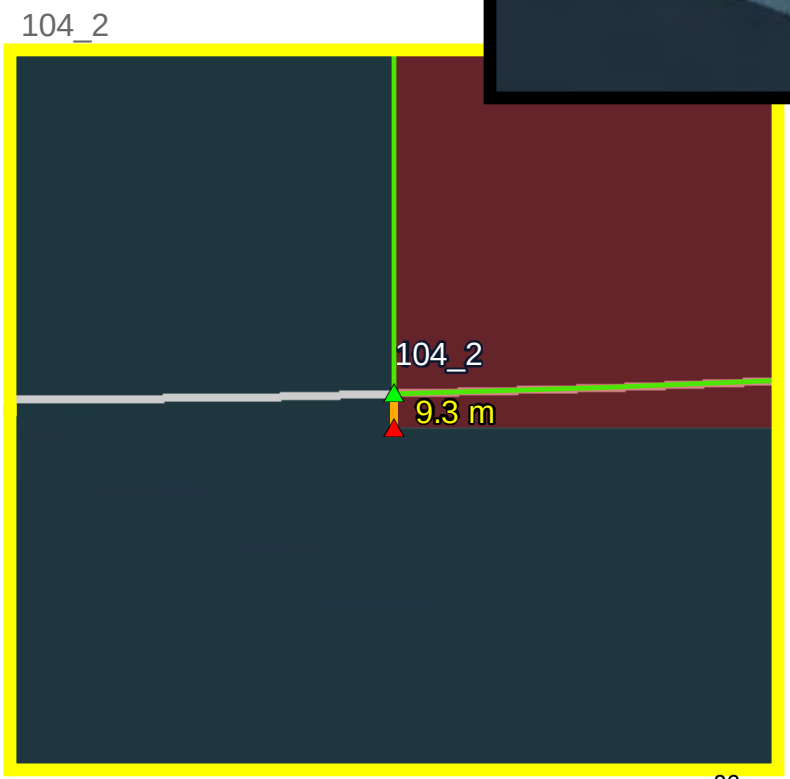
- State Marine Reserve (SMR)
- Special Closure

Summary of Proposed Refinements



Judith Rock (San Miguel Island) SMR (104)
Pre-existing Area = 4.58 sq. miles
New Area = 4.56 sq. miles
% Change = -0.39%

0 2,400 Meters



0 90 Meters

California Department of Fish and Wildlife
Marine Region GIS
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May 8, 2015

Judith Rock SMR

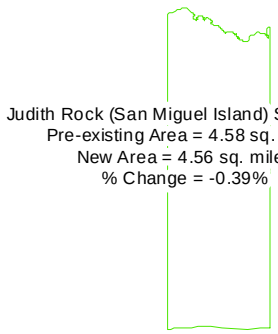
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

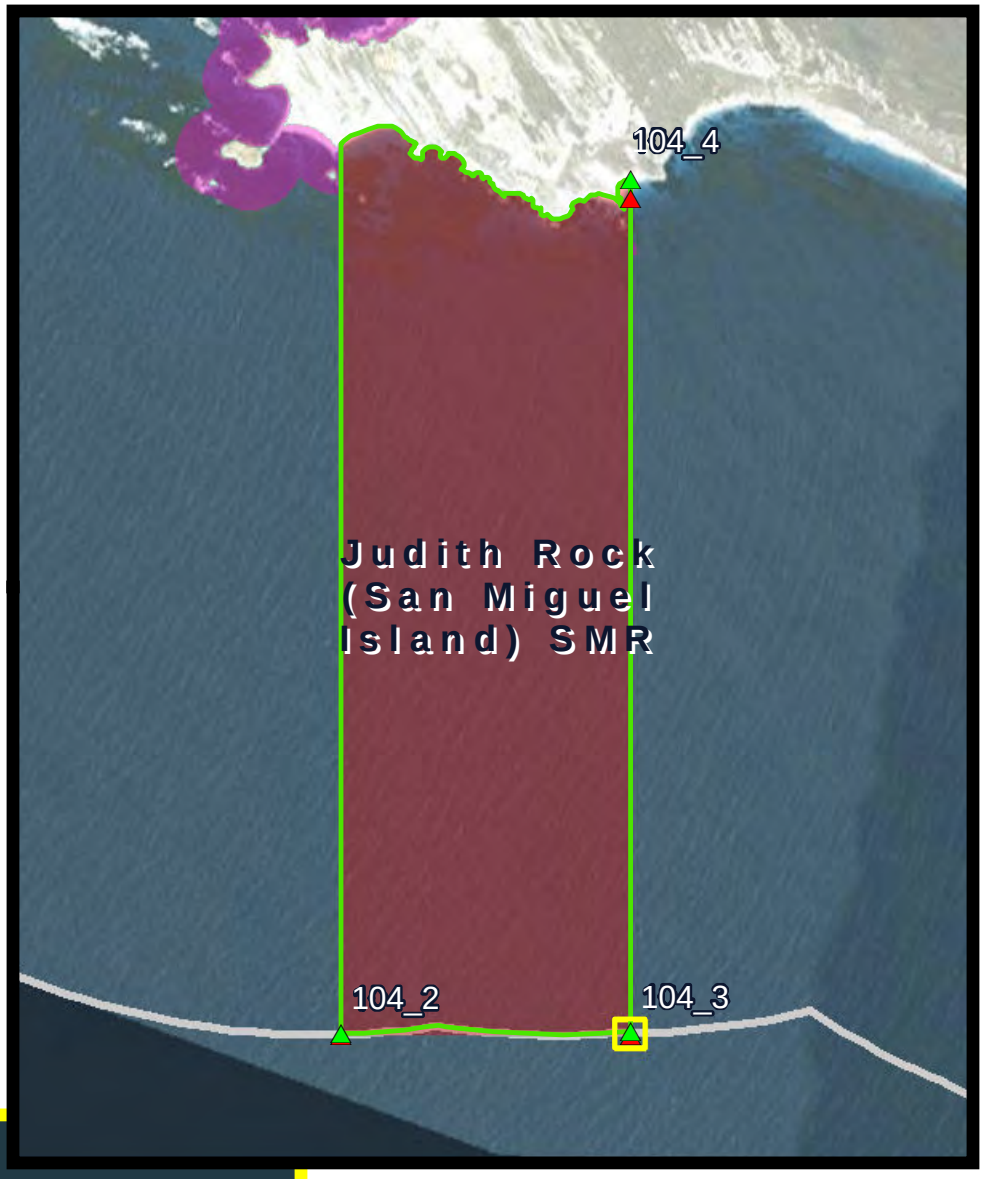
Current MPA Boundaries

- State Marine Reserve (SMR)
- Special Closure

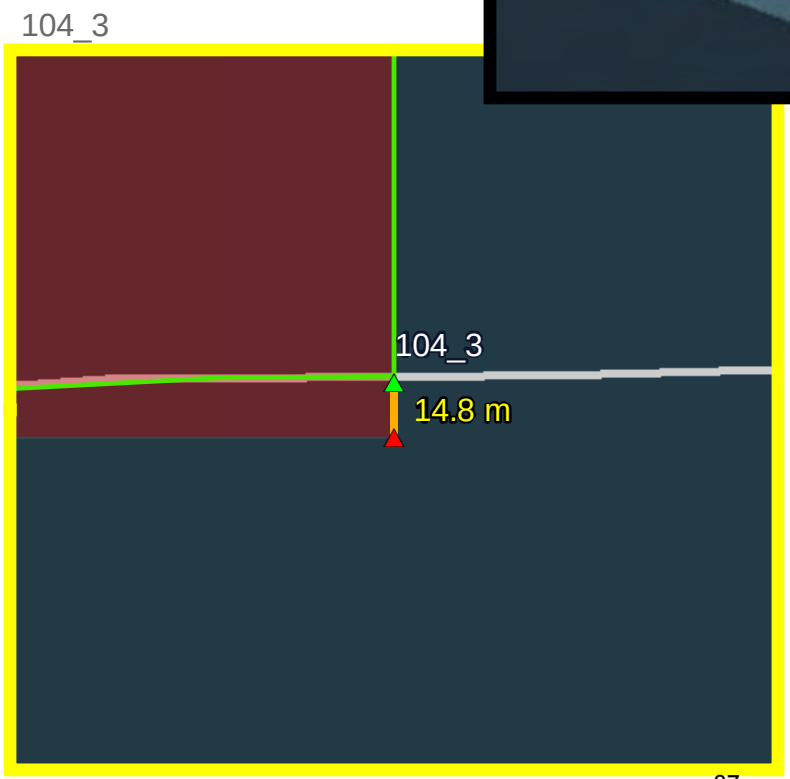
Summary of Proposed Refinements



Judith Rock (San Miguel Island) SMR (104)
Pre-existing Area = 4.58 sq. miles
New Area = 4.56 sq. miles
% Change = -0.39%



0 2,400 Meters



0 90 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Judith Rock SMR

Legend

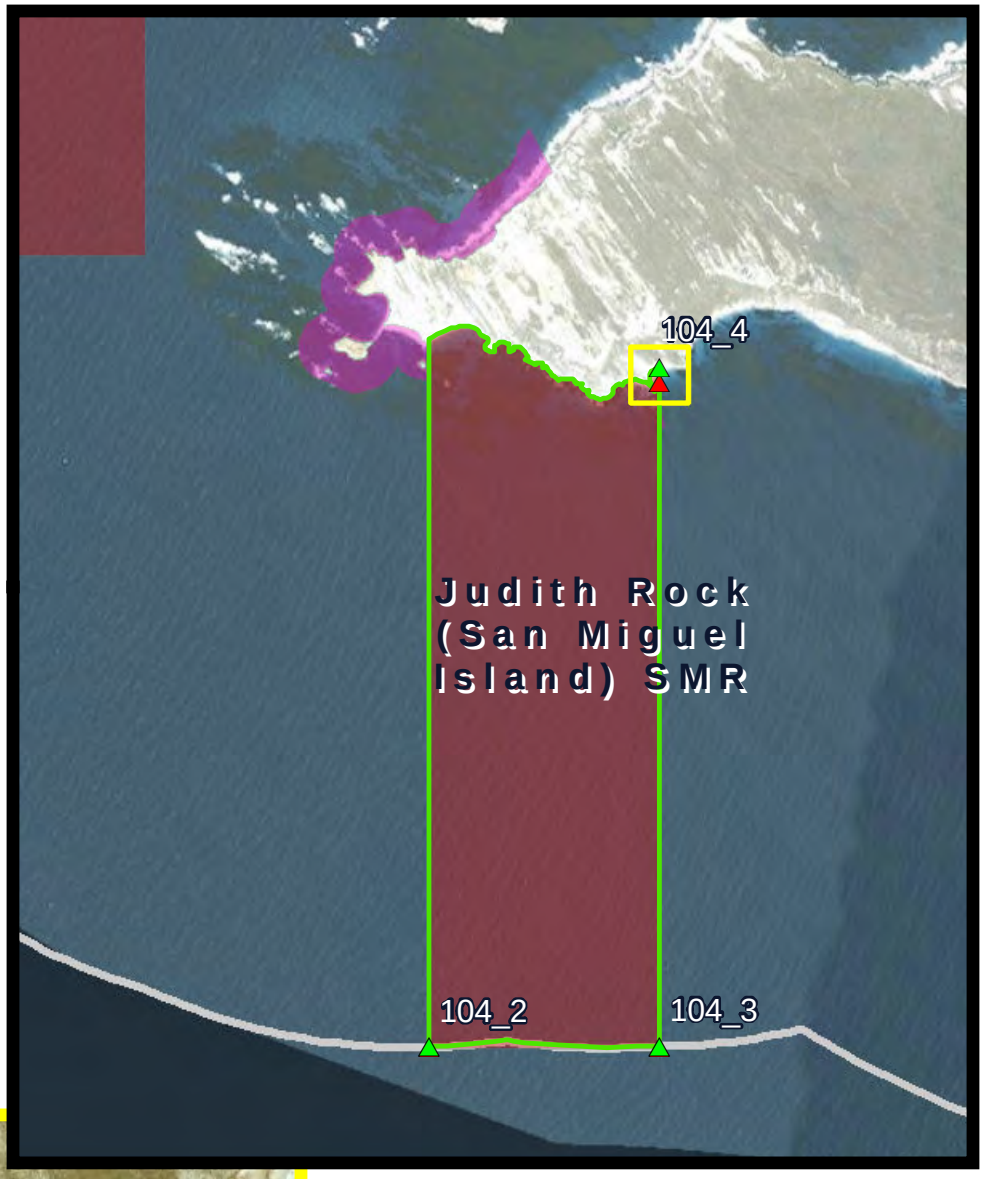
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- Special Closure

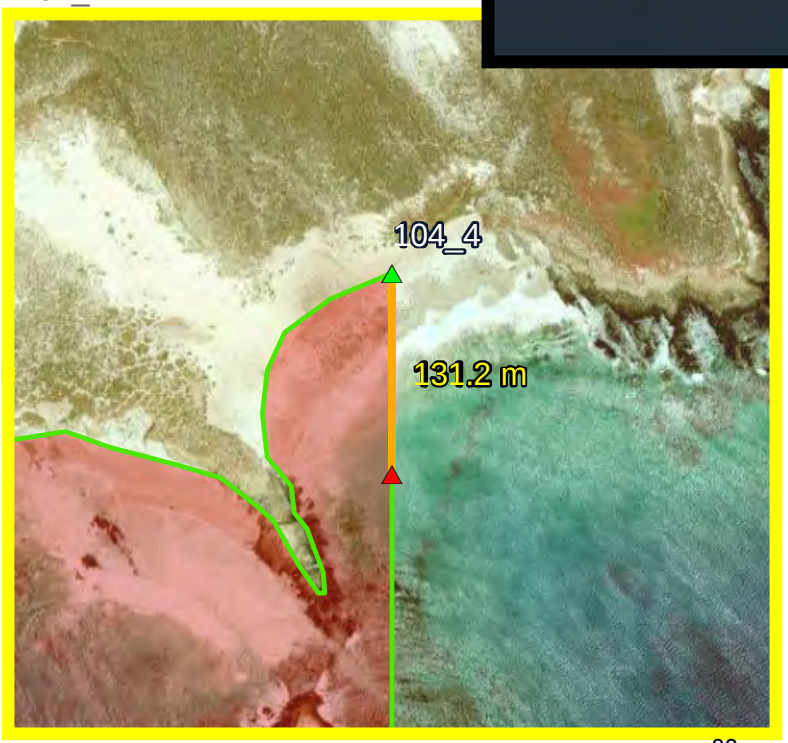
Summary of Proposed Refinements

Judith Rock (San Miguel Island) SMR (104)
Pre-existing Area = 4.58 sq. miles
New Area = 4.56 sq. miles
% Change = -0.39%



0 3,000 Meters

104_4



0 230 Meters

88

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May 8, 2015

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Carrington Point SMR

Legend

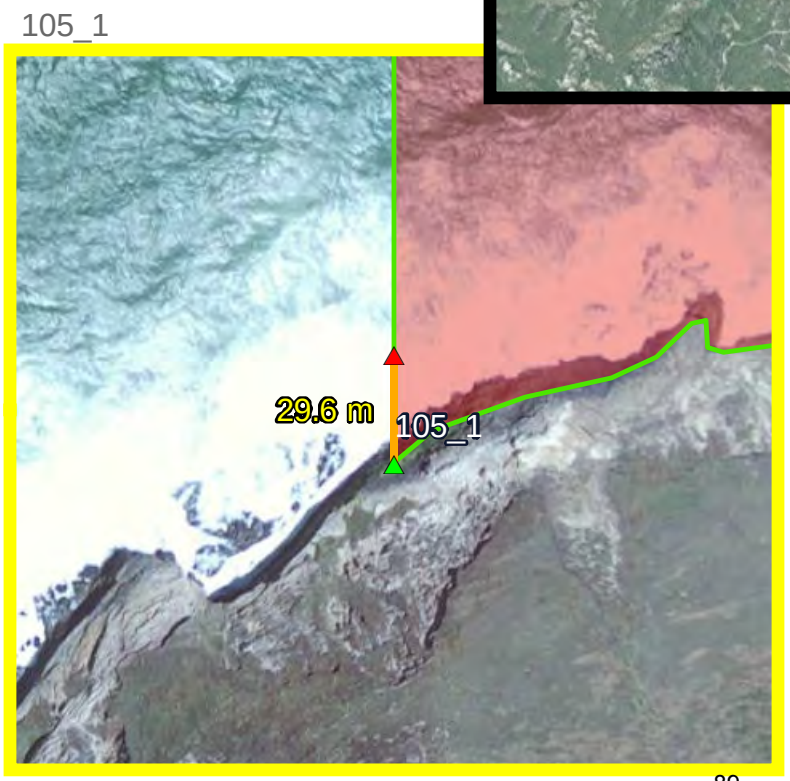
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Reserve (SMR)

Summary of Proposed Refinements

Carrington Point (Santa Rosa Island) SMR (105)
Pre-existing Area = 12.78 sq. miles
New Area = 12.78 sq. miles
% Change = 0%



0 90 Meters

0 3,000 Meters

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Skunk Point SMR

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

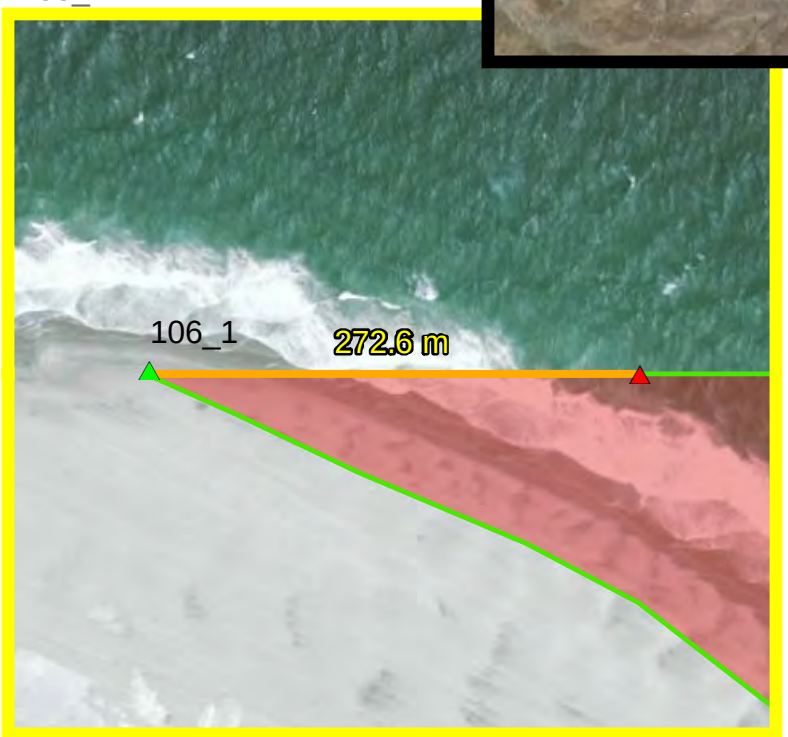
State Marine Reserve (SMR)

Summary of Proposed Refinements

Skunk Point (Santa Rosa Island) SMR (106)
Pre-existing Area = 1.47 sq. miles
New Area = 1.47 sq. miles
% Change = 0%

0 1,400 Meters

106_1



0 190 Meters

90

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mr_gis@wildlife.ca.gov
May 8, 2015

Gull Island SMR

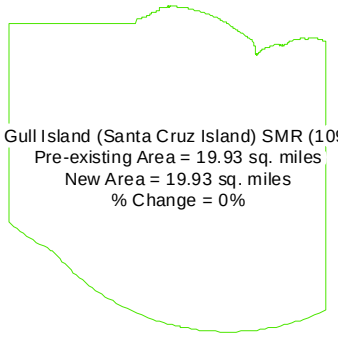
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Reserve (SMR)

Summary of Proposed Refinements



Gull Island (Santa Cruz Island) SMR (109)
Pre-existing Area = 19.93 sq. miles
New Area = 19.93 sq. miles
% Change = 0%

0 3,500 Meters

109_6

0 90 Meters

91

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mr_gis@wildlife.ca.gov
May 8, 2015

Anacapa Island SMR, SMCA and Special Closure

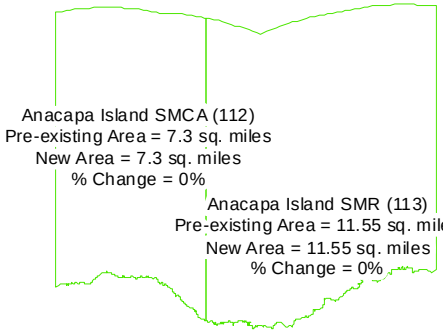
Legend

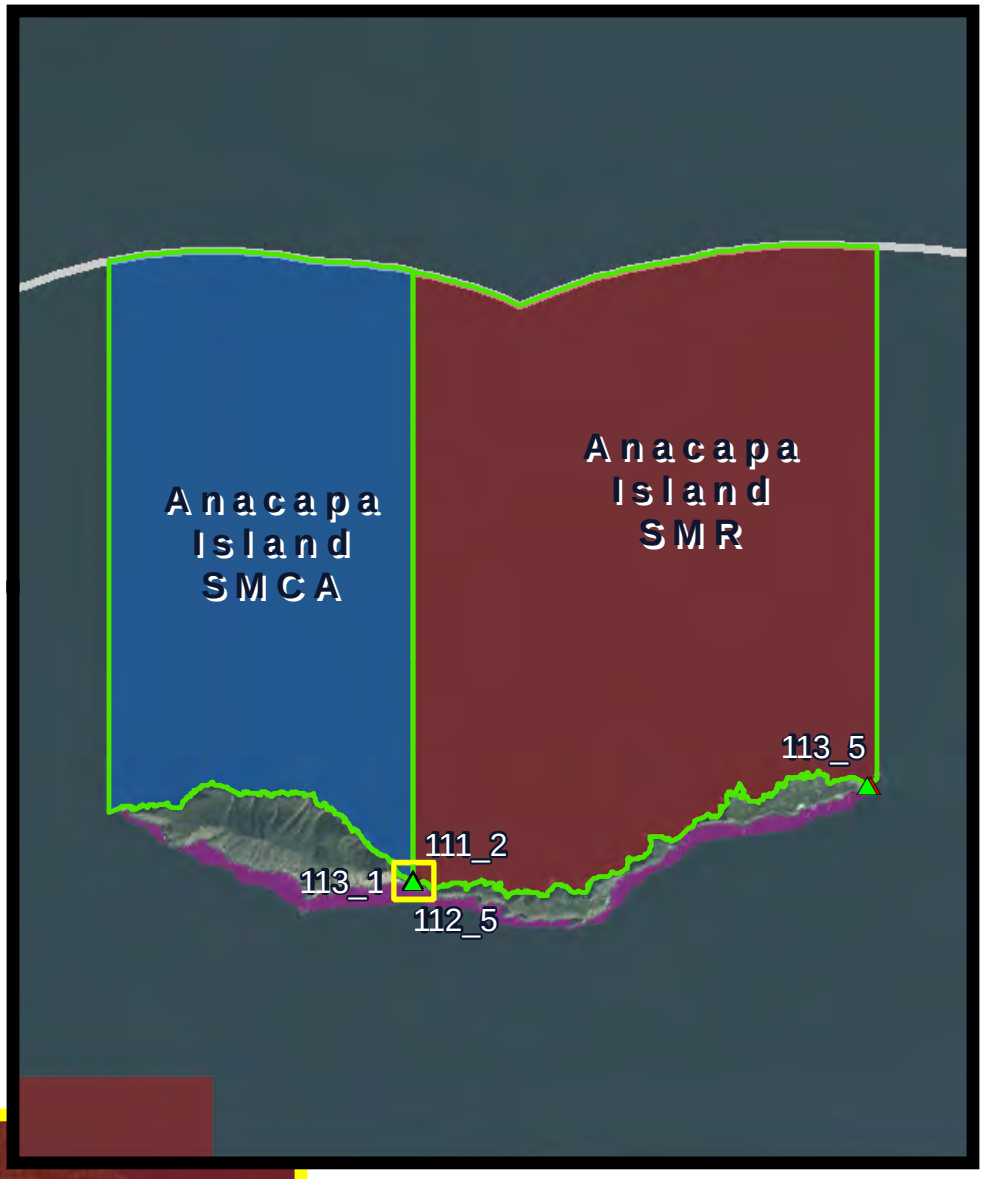
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)
- Special Closure

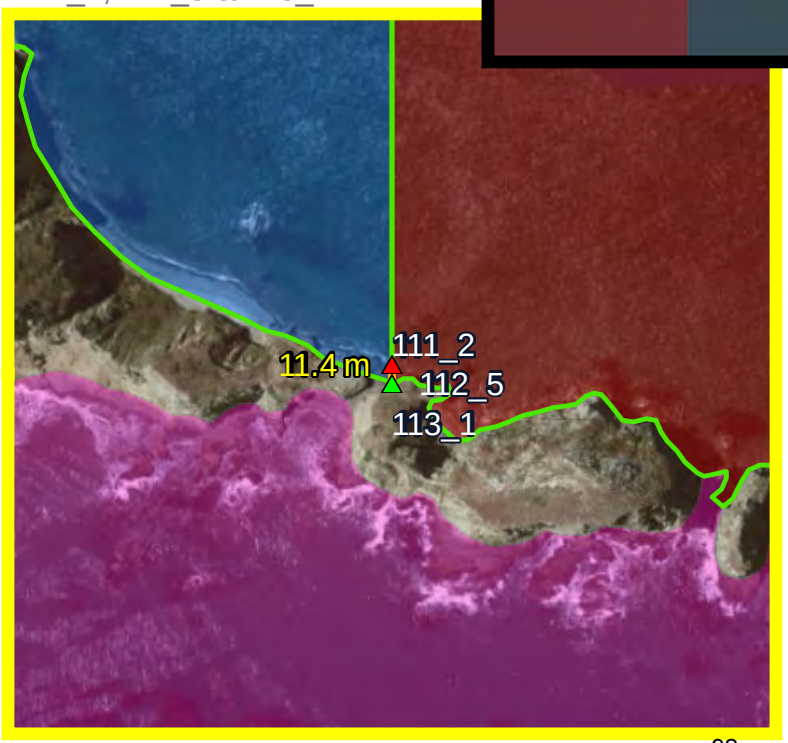
Summary of Proposed Refinements





0 3,700 Meters

111_2, 112_5 & 113_1



0 190 Meters

92

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May 8, 2015

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Anacapa Island SMR

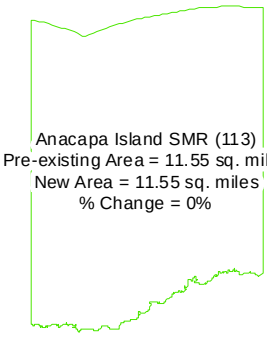
Legend

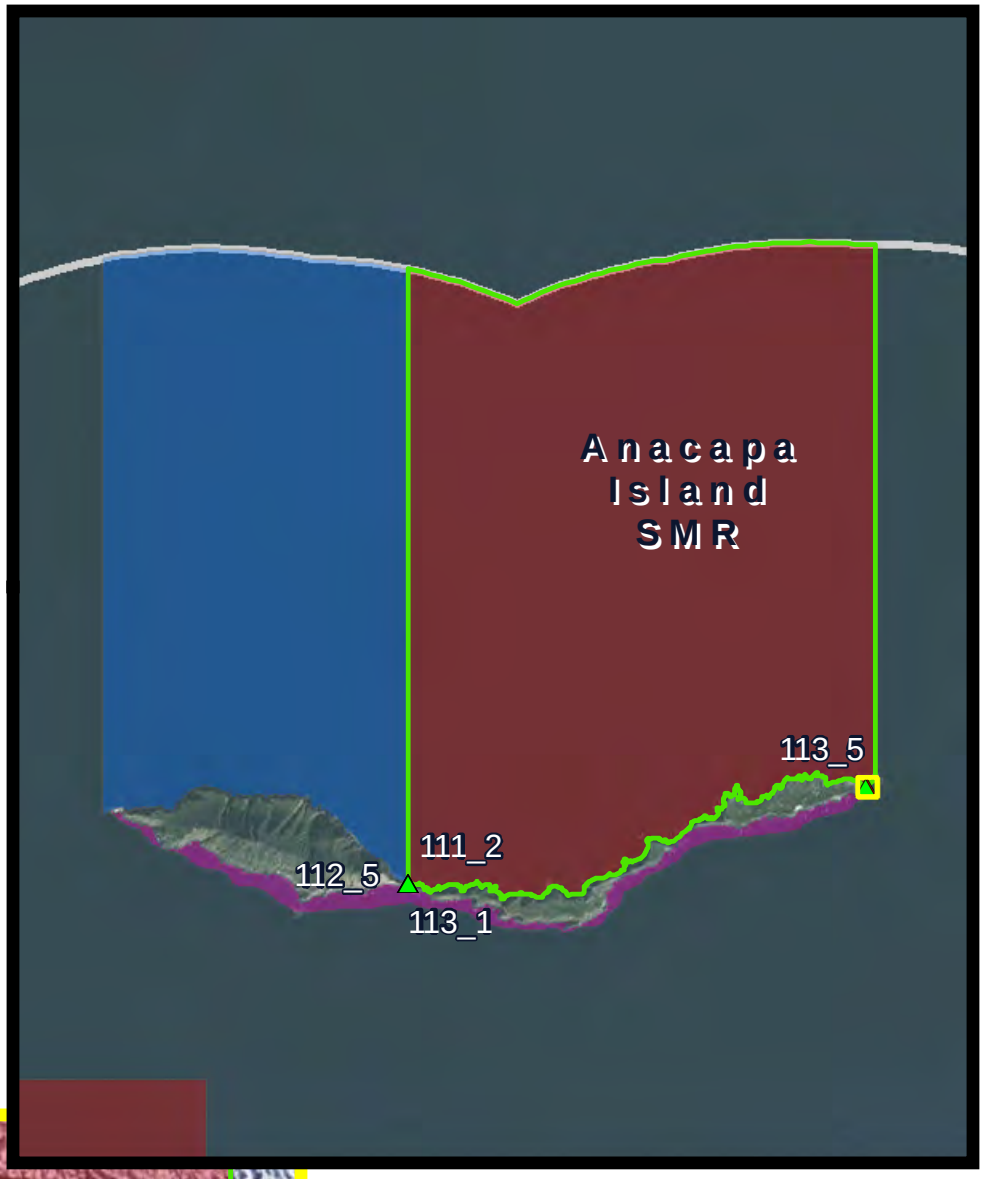
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)
- Special Closure

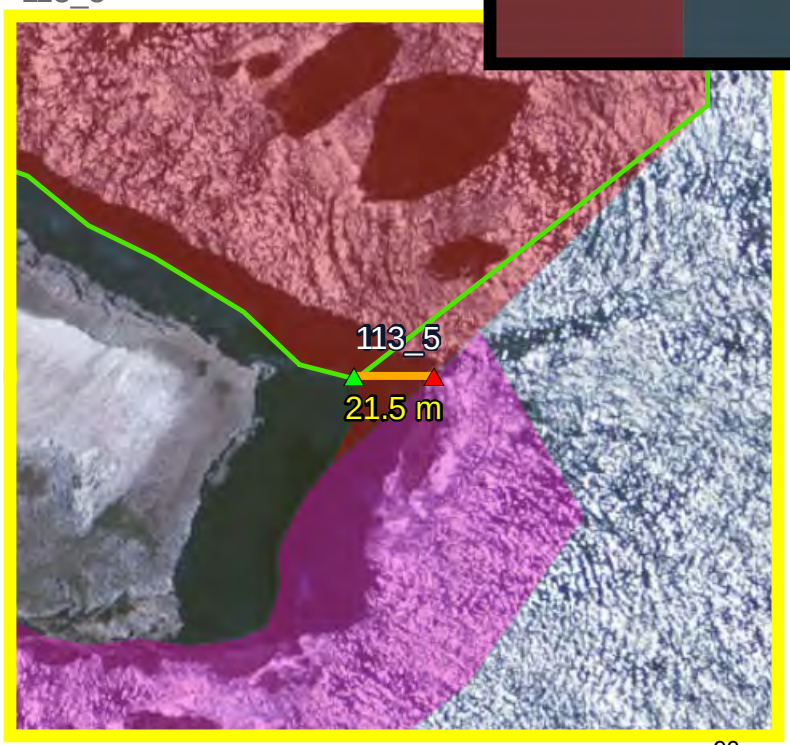
Summary of Proposed Refinements





0 3,600 Meters

113_5



0 90 Meters

93

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May 8, 2015

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Begg Rock SMR

Legend

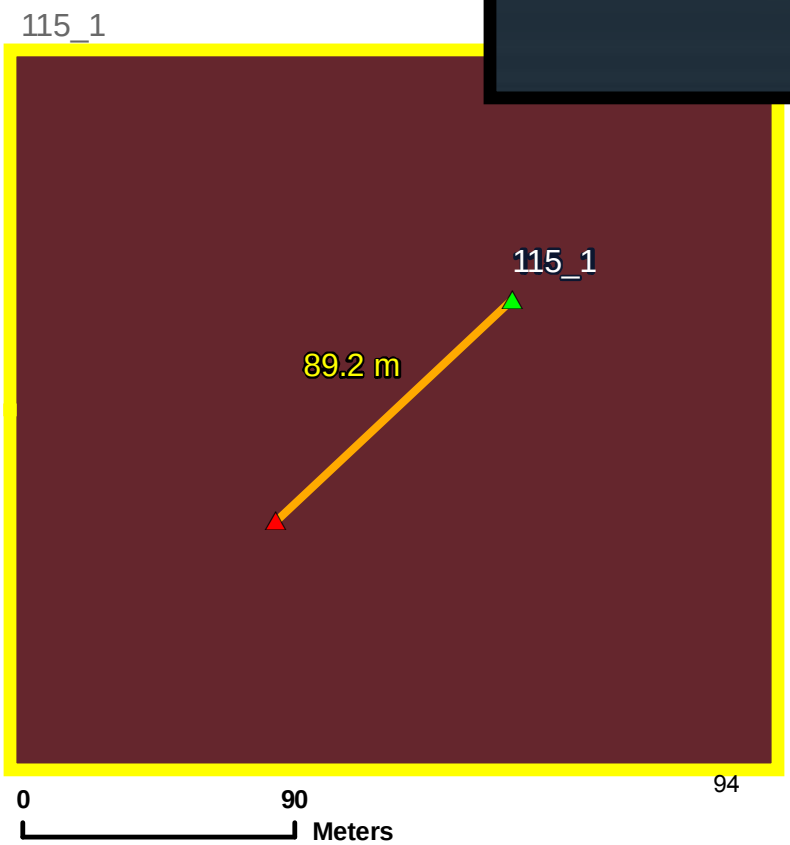
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Reserve (SMR)

Summary of Proposed Refinements

Begg Rock (San Nicolas Island) SMR (115)
Pre-existing Area = 37.96 sq. miles
New Area = 37.96 sq. miles
% Change = 0%



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mr_gis@wildlife.ca.gov
May 8, 2015

Santa Barbara Island SMR

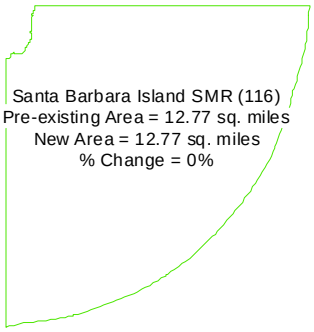
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Reserve (SMR)

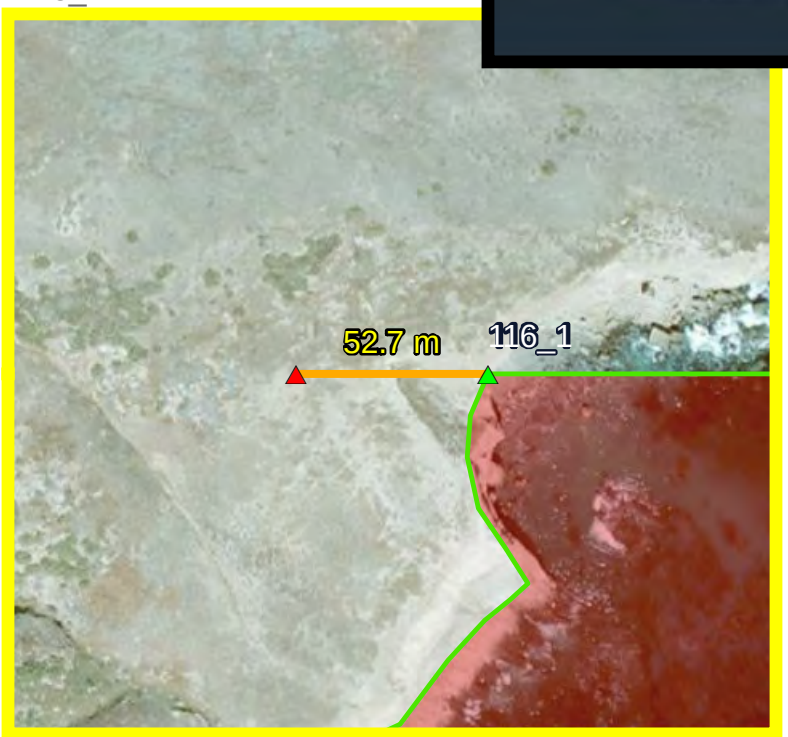
Summary of Proposed Refinements



Santa Barbara Island SMR (116)
Pre-existing Area = 12.77 sq. miles
New Area = 12.77 sq. miles
% Change = 0%

0 2,900 Meters

116_1



0 90 95 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Santa Barbara Island SMR

Legend

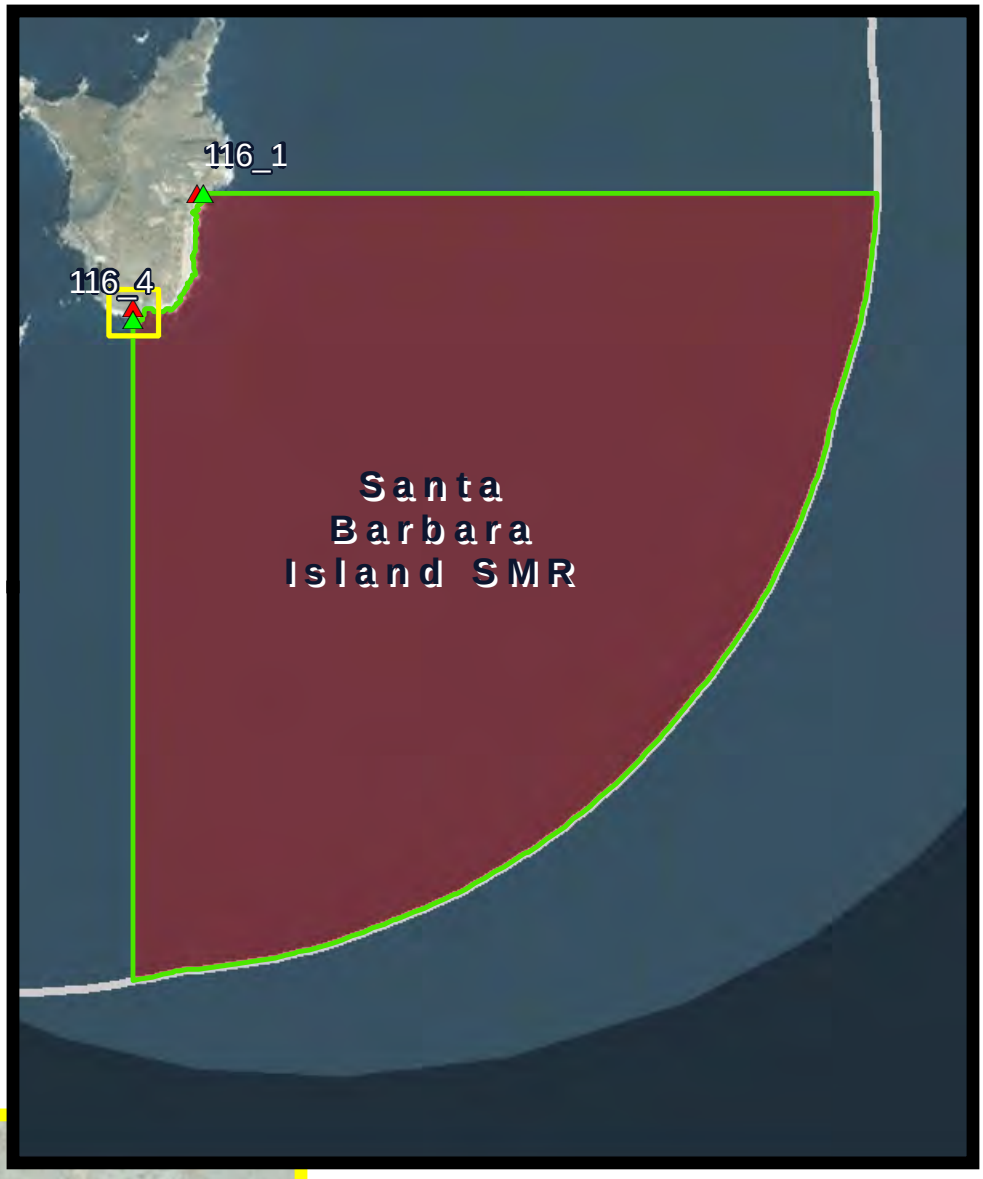
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Reserve (SMR)

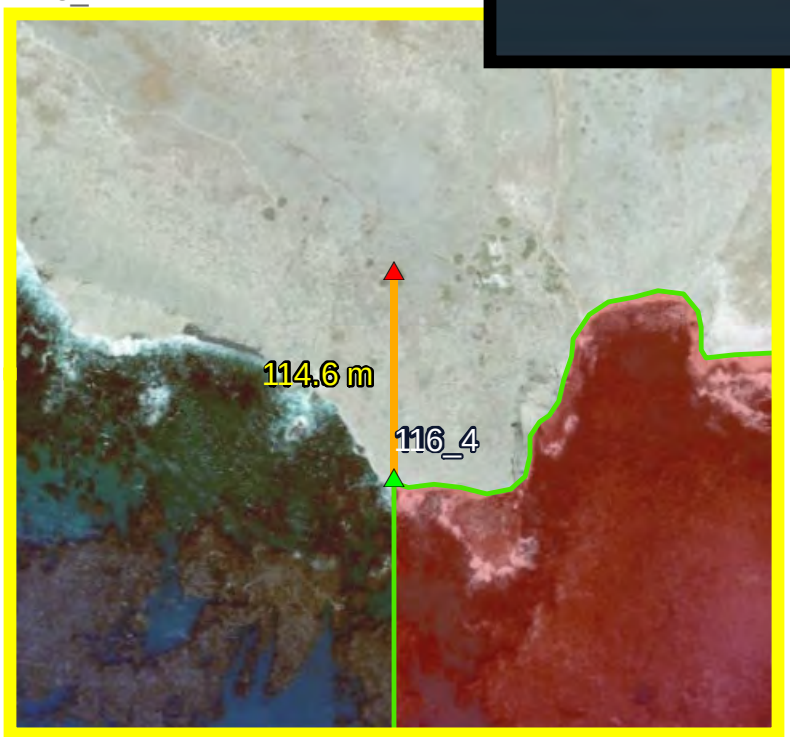
Summary of Proposed Refinements

Santa Barbara Island SMR (116)
Pre-existing Area = 12.77 sq. miles
New Area = 12.77 sq. miles
% Change = 0%



0 3,000 Meters

116_4



0 190 Meters

96

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Point Dume SMCA

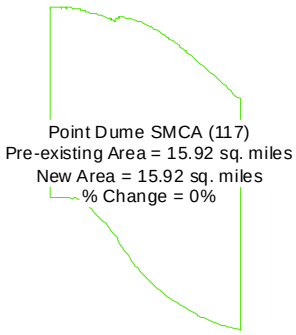
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

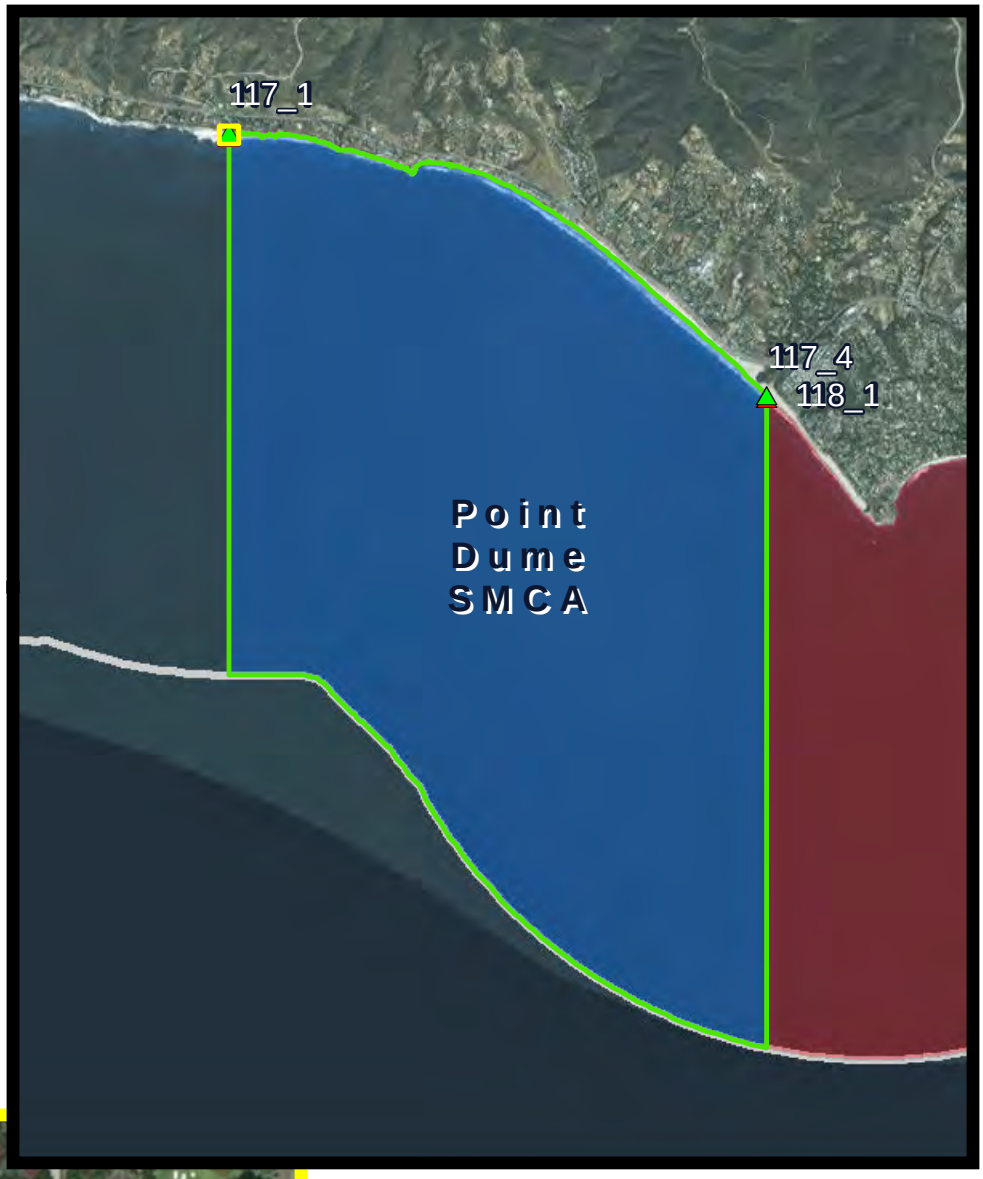
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Point Dume SMCA (117)
Pre-existing Area = 15.92 sq. miles
New Area = 15.92 sq. miles
% Change = 0%



0 3,750 Meters

117_1

0 90 97 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Point Dume SMR and SMCA

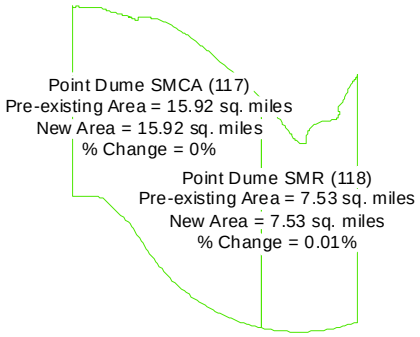
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

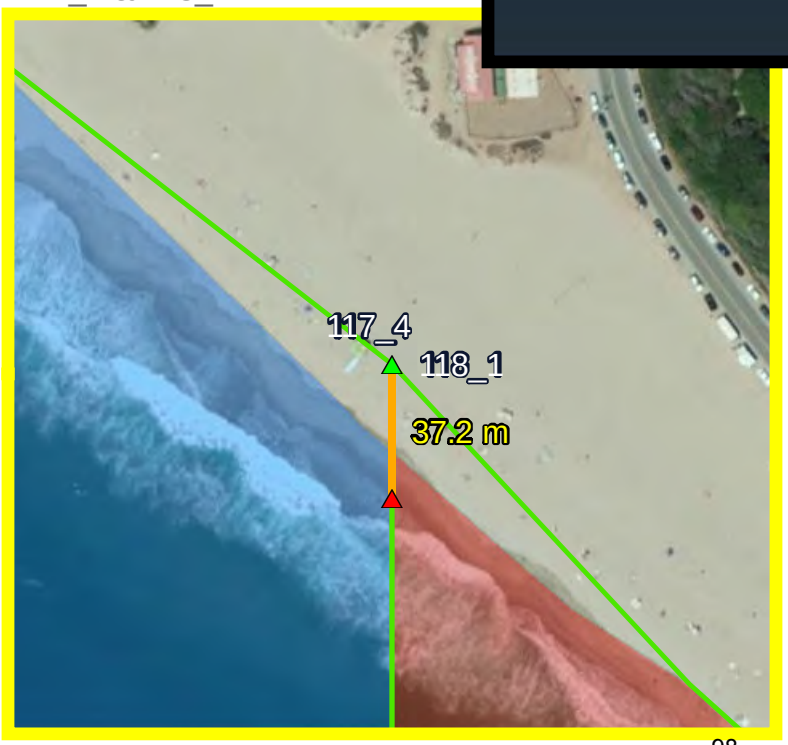
- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



0 4,000 Meters

117_4 & 118_1



0 90 98 Meters

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Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Point Dume SMR

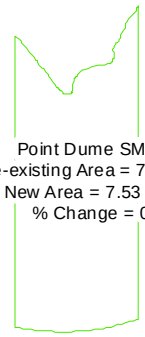
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

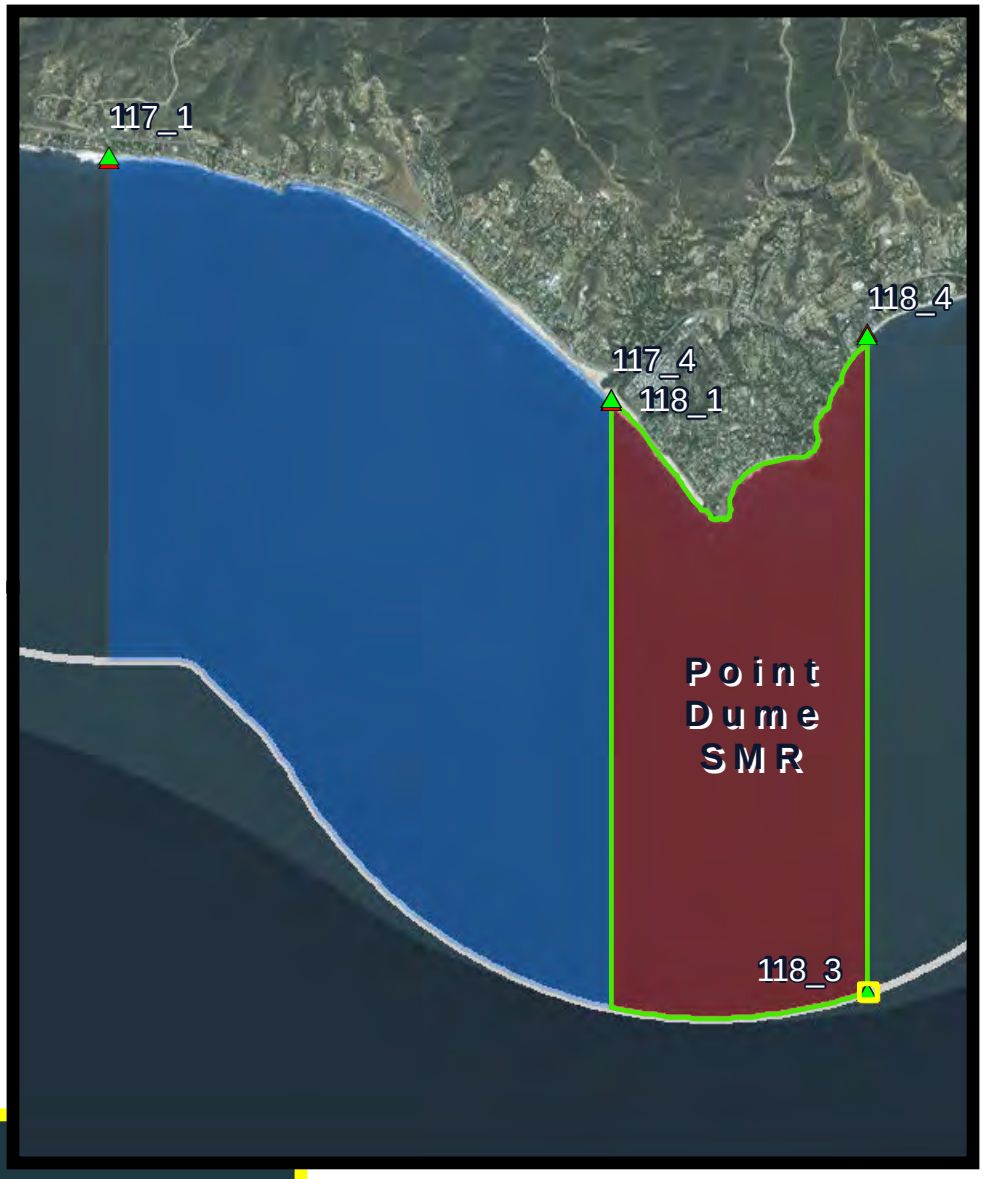
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

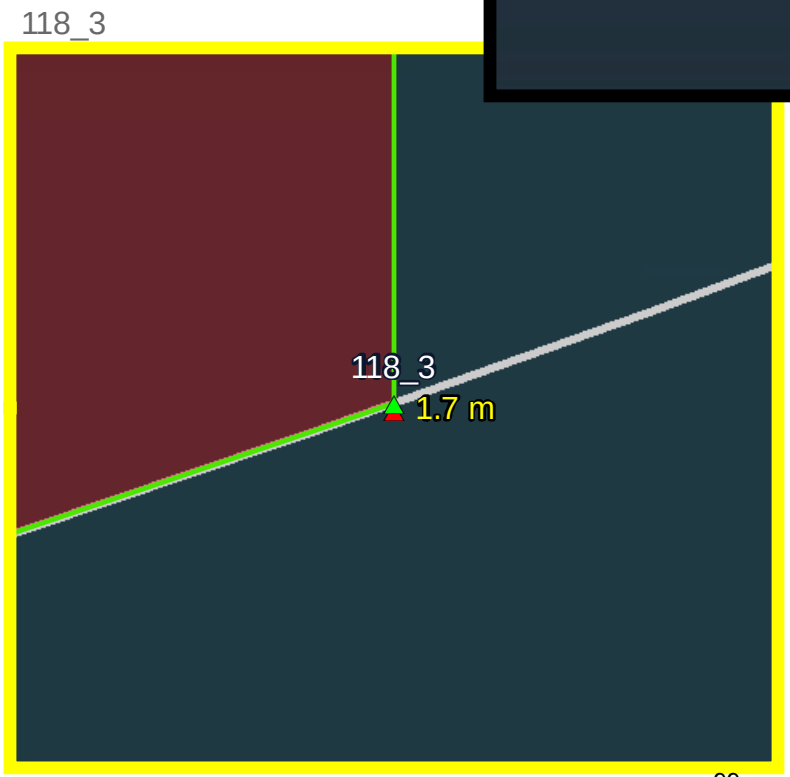
Summary of Proposed Refinements



Point Dume SMR (118)
Pre-existing Area = 7.53 sq. miles
New Area = 7.53 sq. miles
% Change = 0.01%



0 4,000 Meters



0 90 Meters

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Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Point Dume SMR

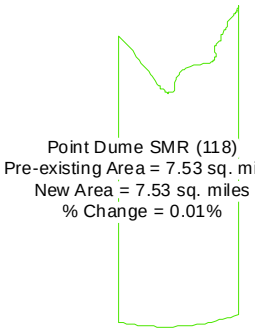
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

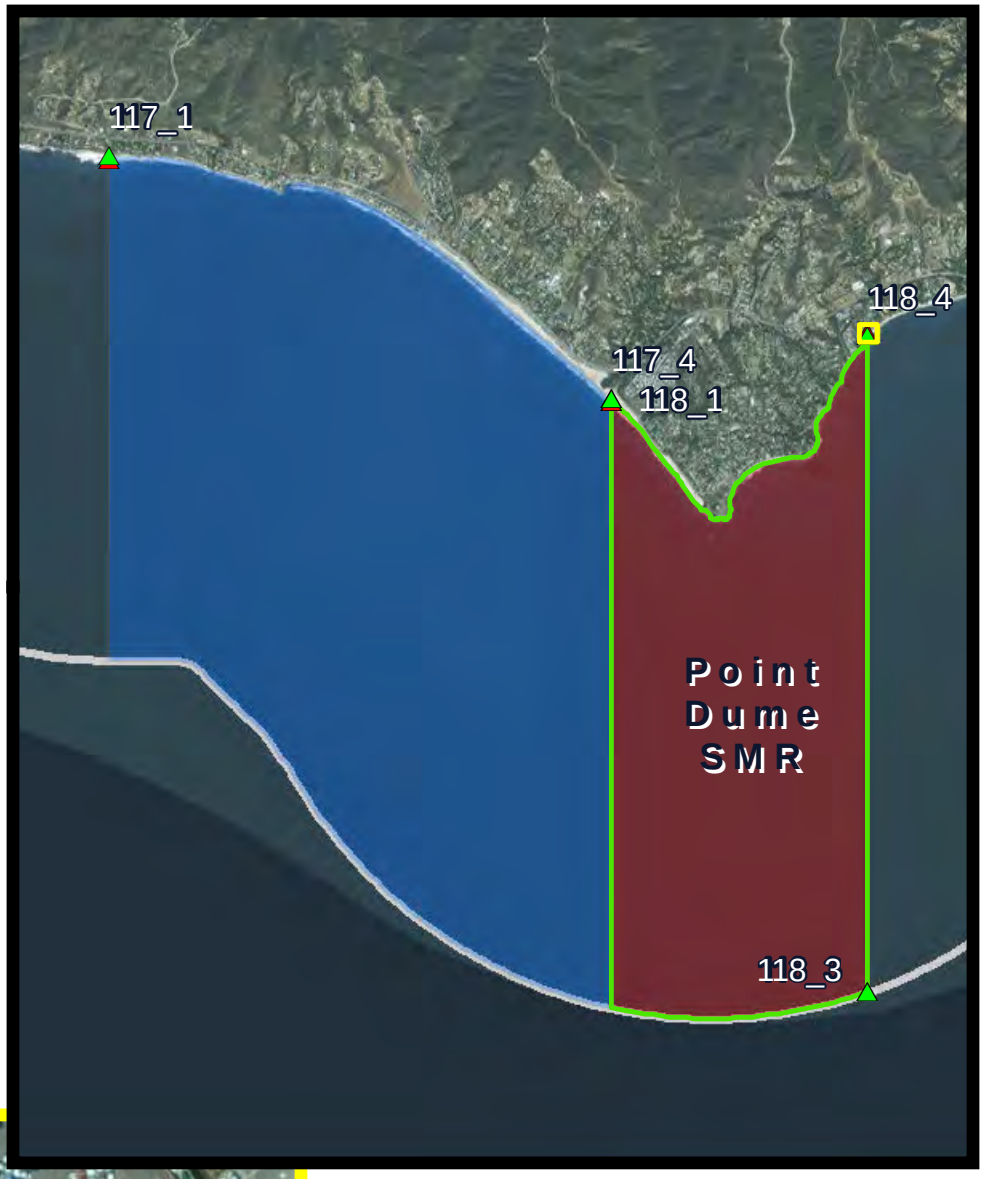
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Point Dume SMR (118)
Pre-existing Area = 7.53 sq. miles
New Area = 7.53 sq. miles
% Change = 0.01%



0 4,000 Meters

118_4

0 90 100 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Point Vicente SMCA

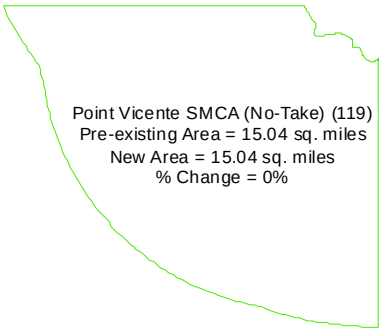
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

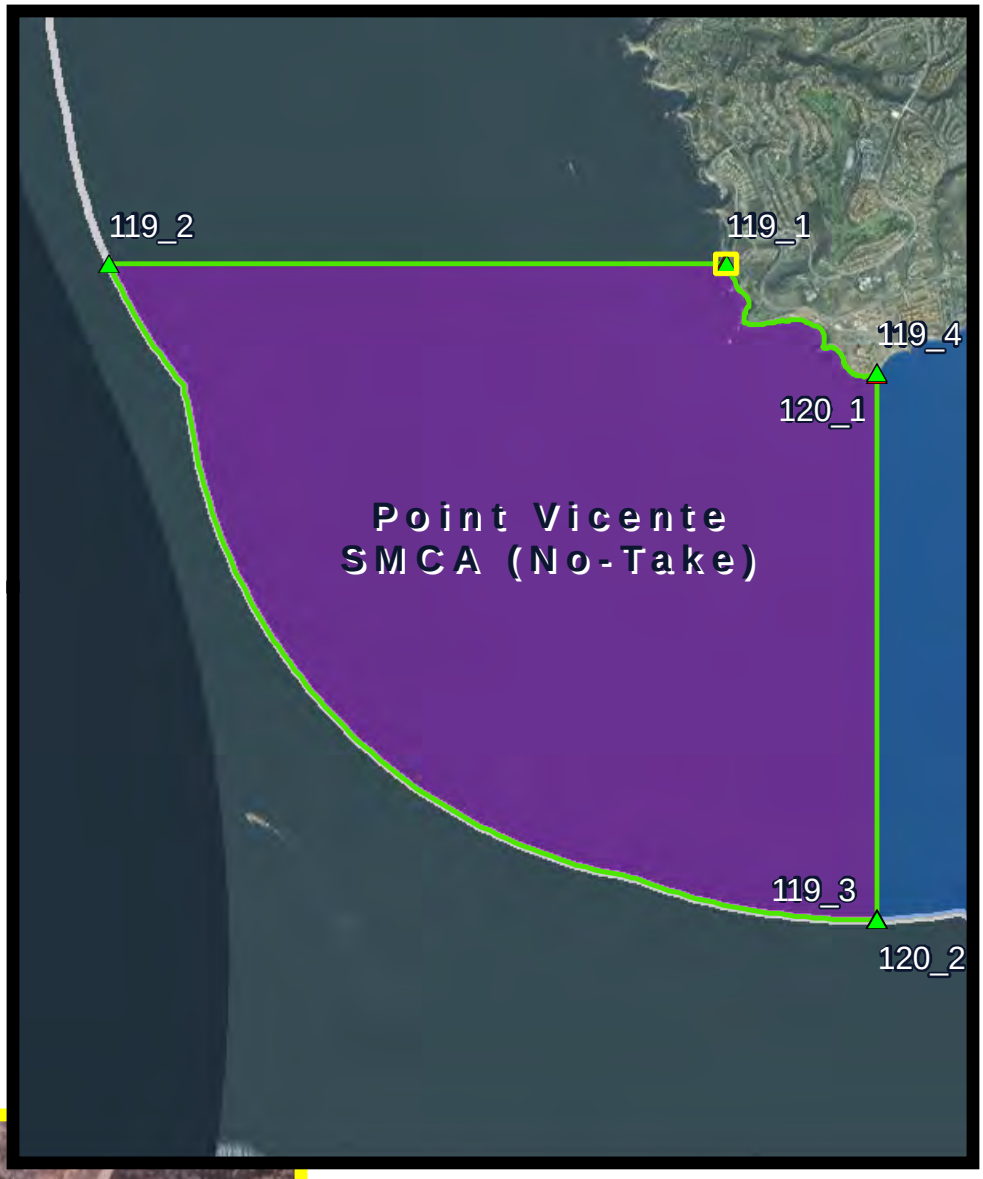
Current MPA Boundaries

- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Point Vicente SMCA (No-Take) (119)
Pre-existing Area = 15.04 sq. miles
New Area = 15.04 sq. miles
% Change = 0%



0 3,600 Meters

0 90 Meters

California Department of Fish and Wildlife
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May 8, 2015

Point Vicente SMCA

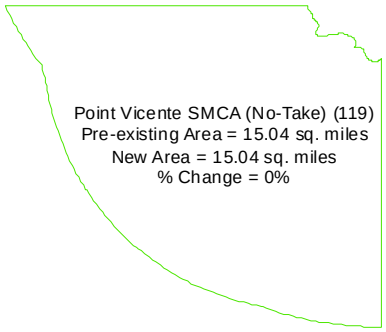
Legend

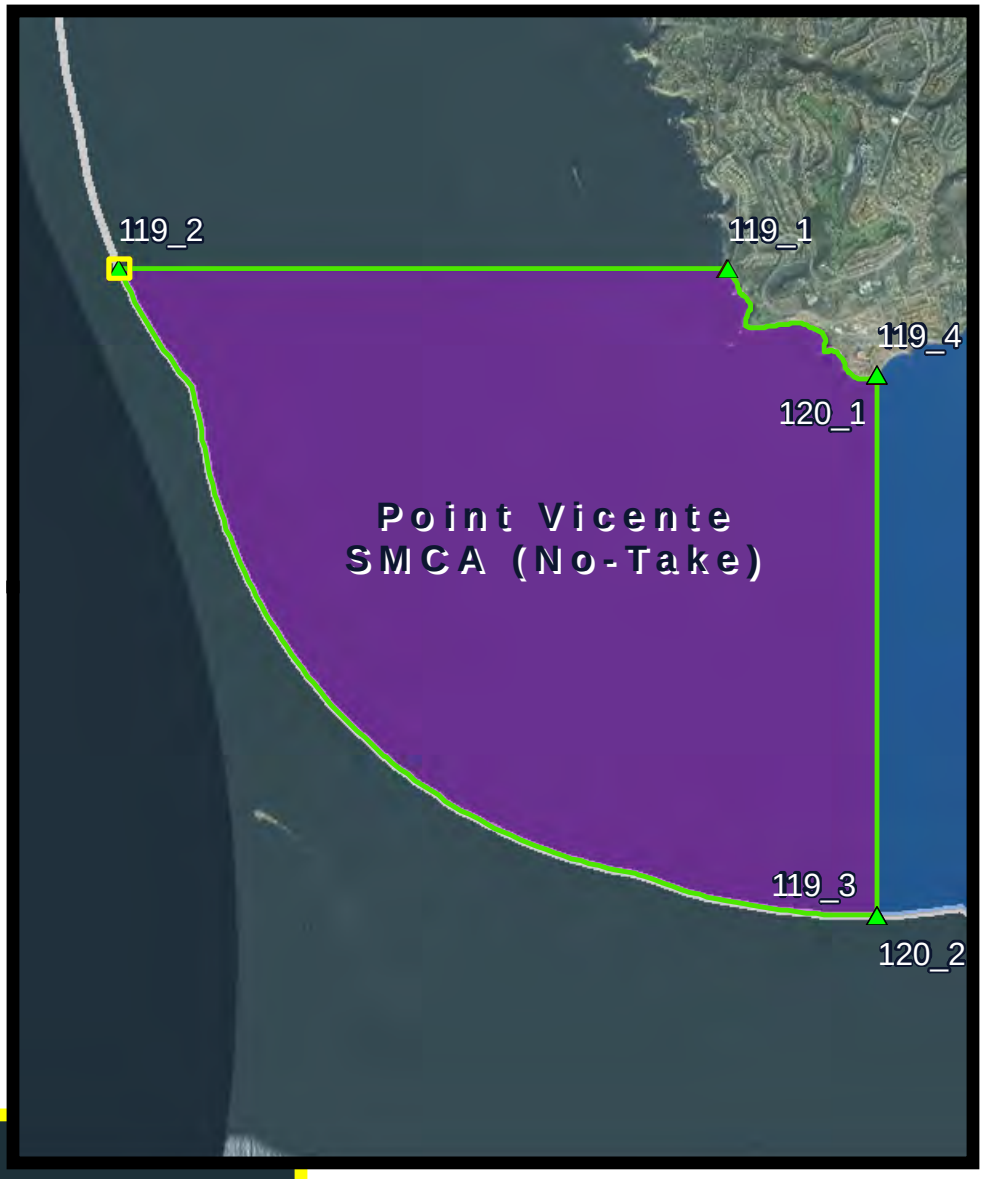
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

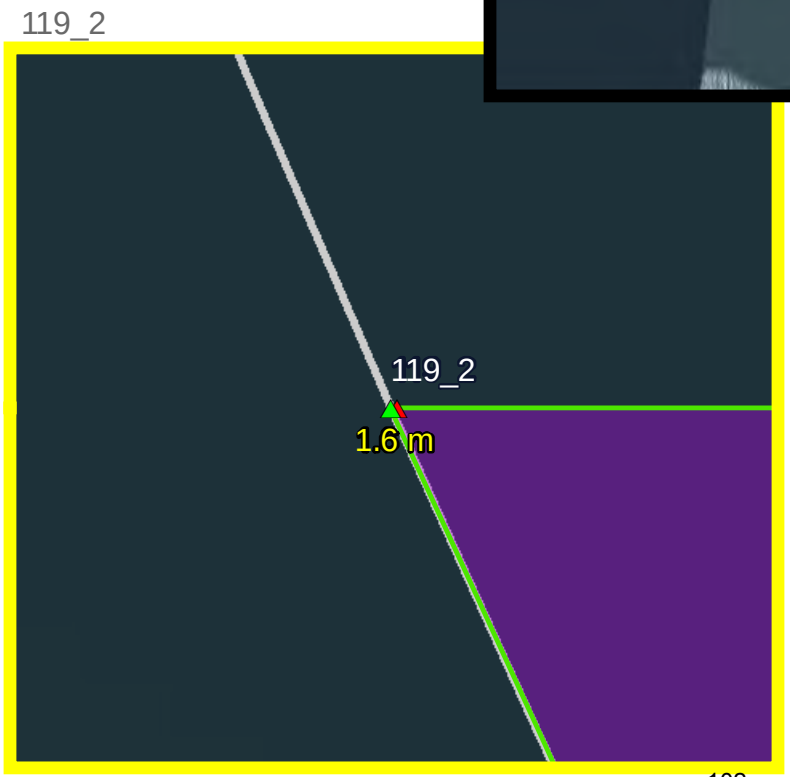
- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements





0 3,600 Meters



0 90 Meters

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May 8, 2015

Point Vicente SMCA and Abalone Cove SMCA

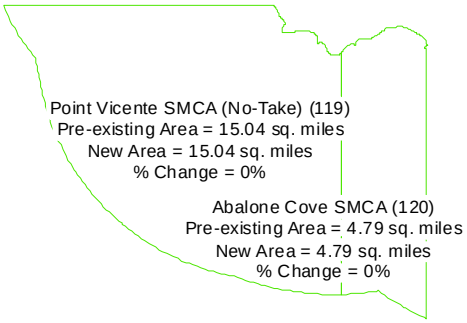
Legend

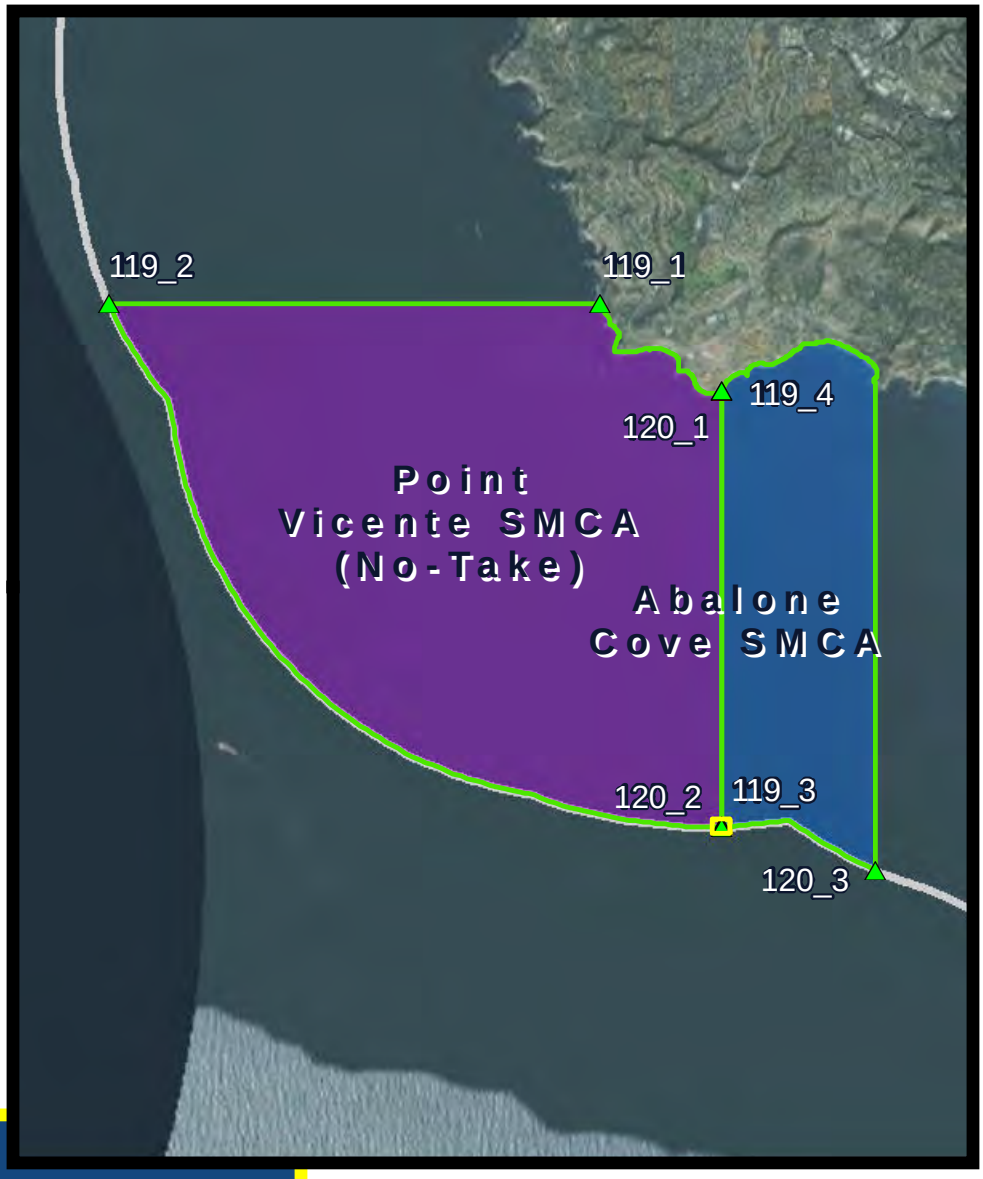
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

Current MPA Boundaries

- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

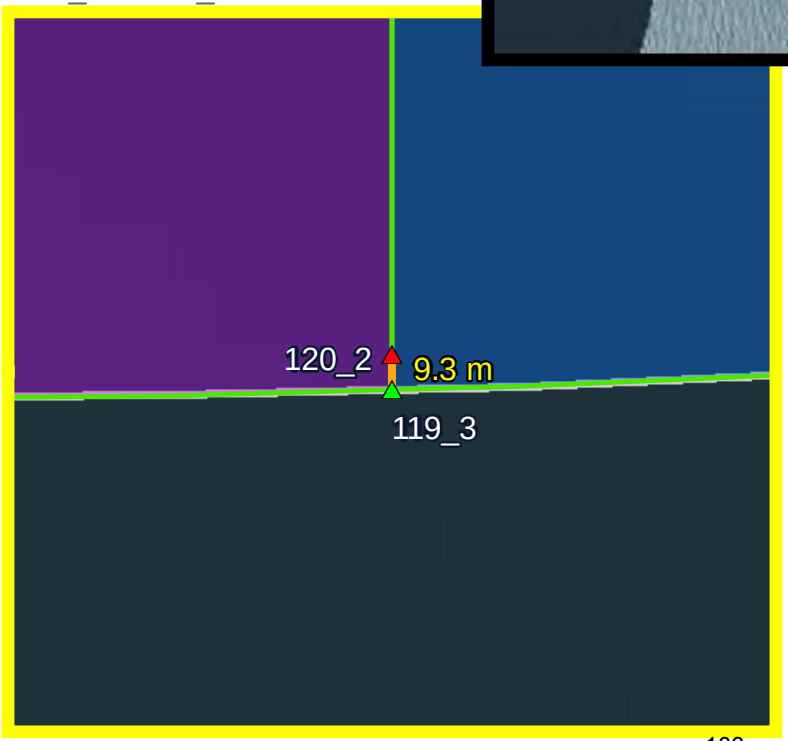
Summary of Proposed Refinements





0 4,500 Meters

119_3 & 120_2



0 90 Meters

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May 8, 2015

Point Vicente SMCA and Abalone Cove SMCA

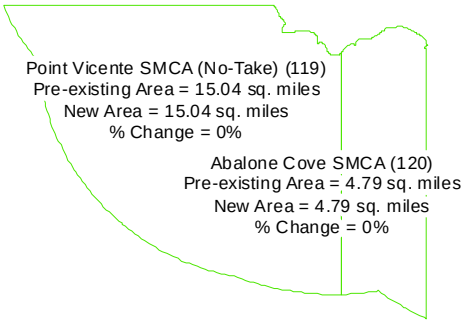
Legend

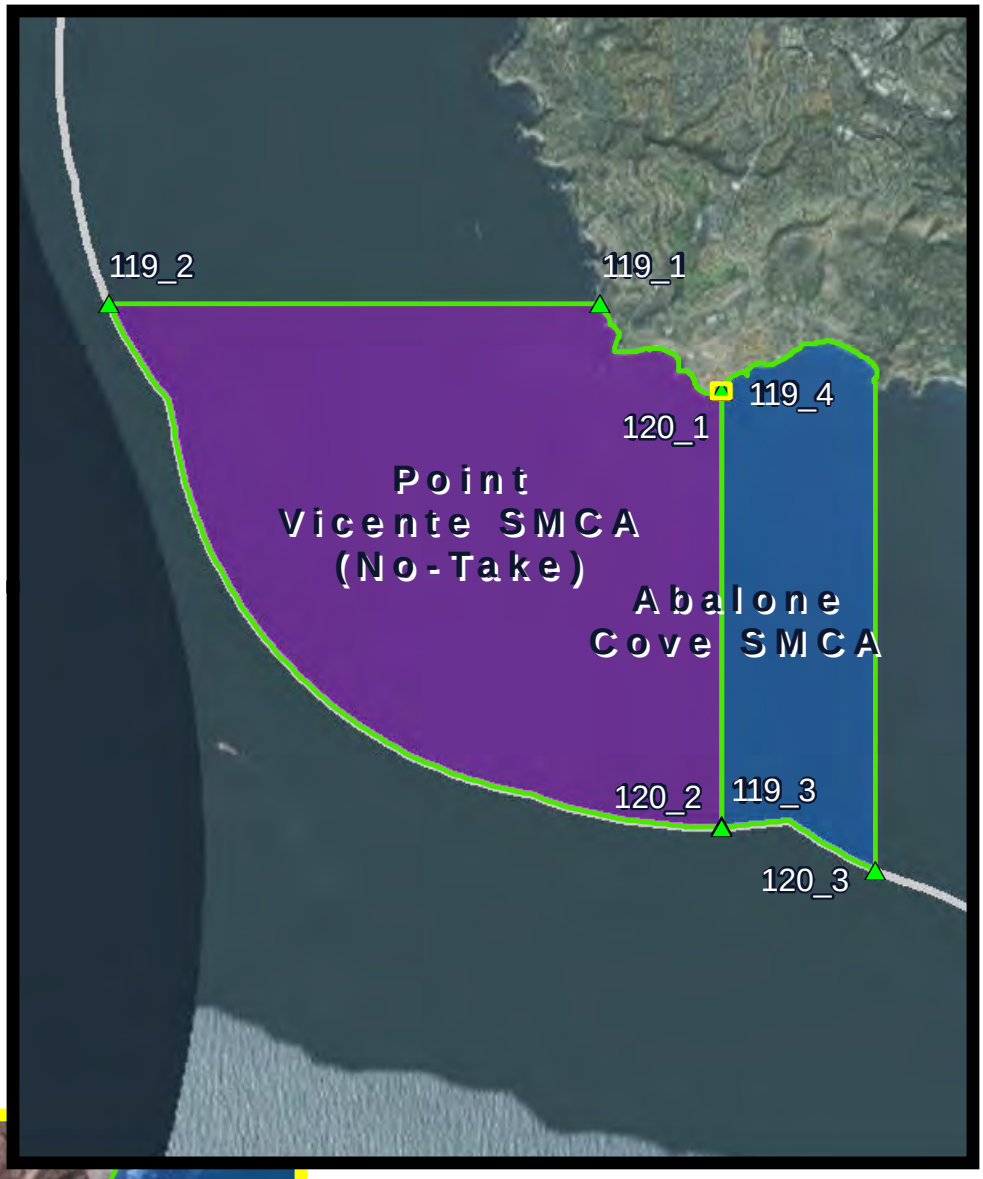
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

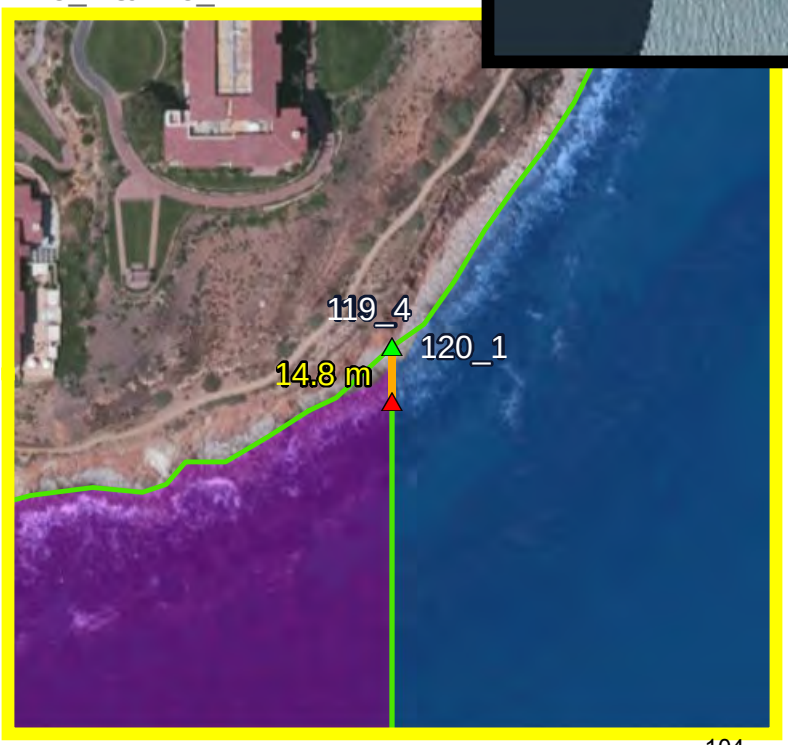
Summary of Proposed Refinements





0 4,500 Meters

119_4 & 120_1



0 90 Meters

104

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Abalone Cove SMCA

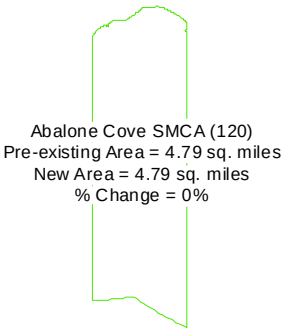
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

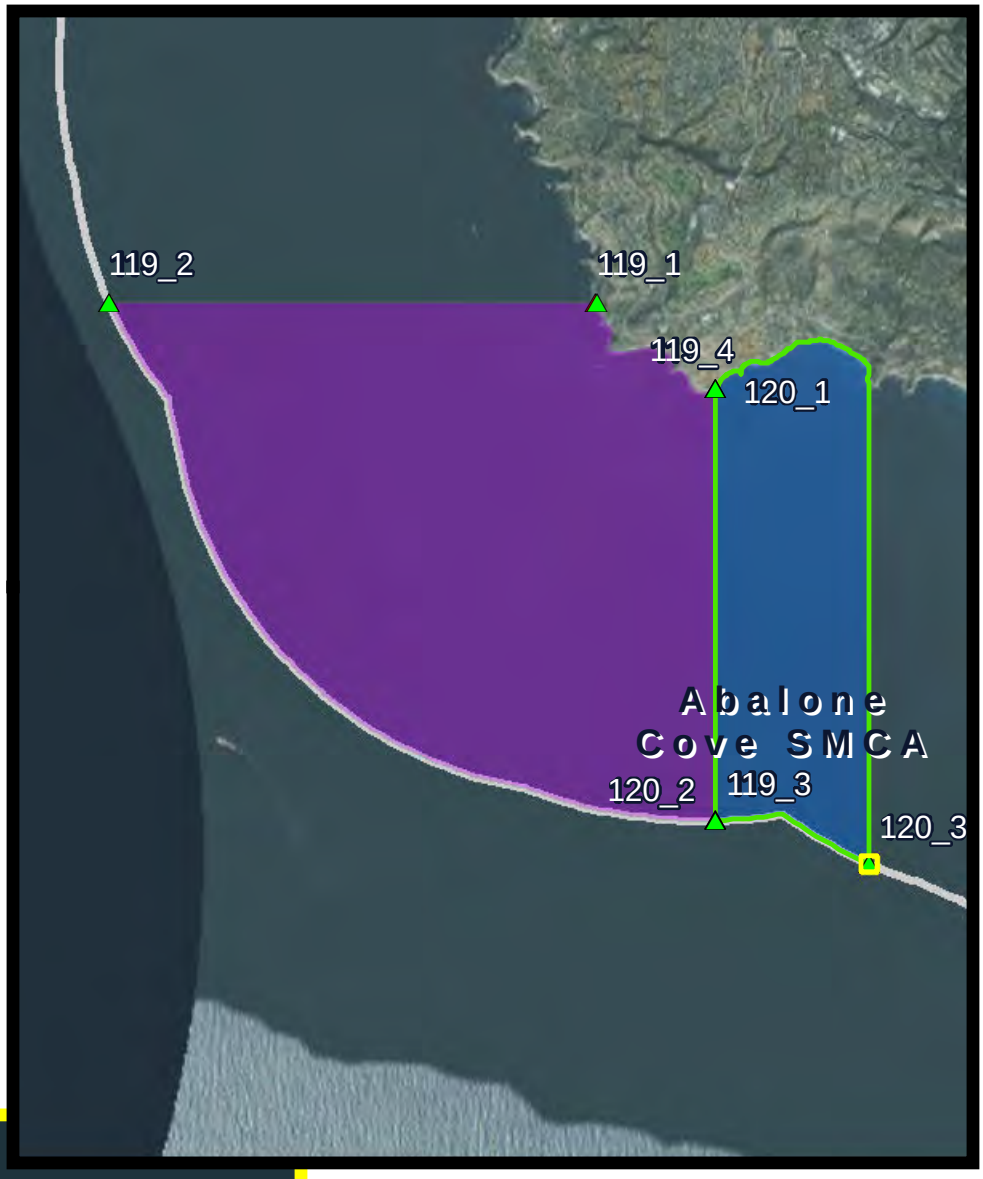
Current MPA Boundaries

- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

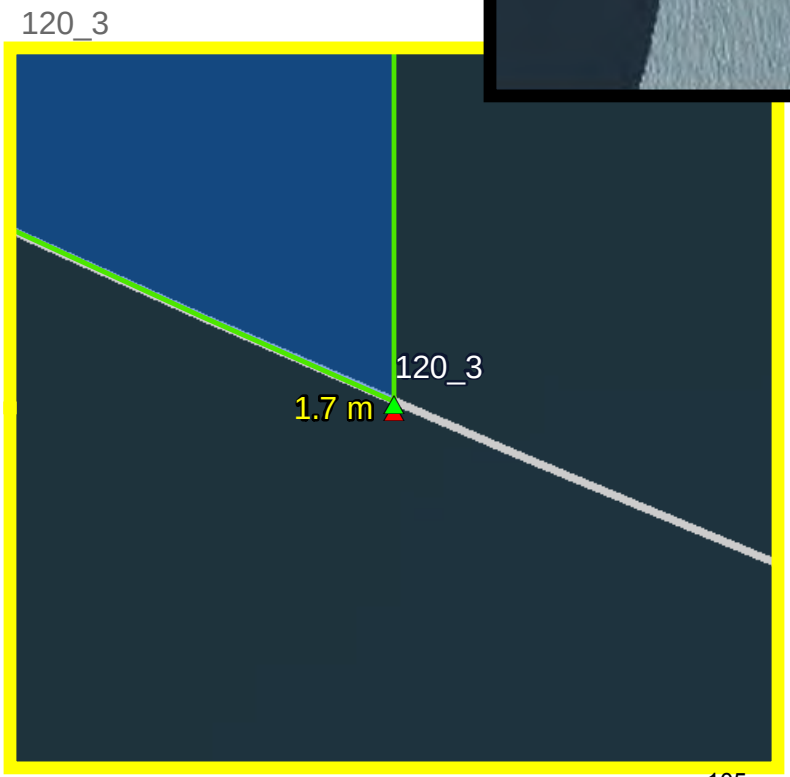
Summary of Proposed Refinements



Abalone Cove SMCA (120)
Pre-existing Area = 4.79 sq. miles
New Area = 4.79 sq. miles
% Change = 0%



0 4,500 Meters



0 90 Meters

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Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Bolsa Bay SMCA

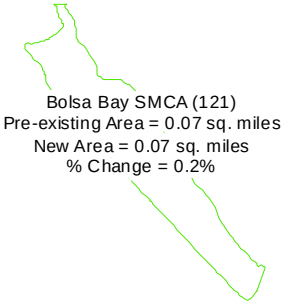
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Bolsa Bay SMCA (121)
Pre-existing Area = 0.07 sq. miles
New Area = 0.07 sq. miles
% Change = 0.2%

0 1,200 Meters

121_1 & 121_2

0 90 Meters

106

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Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Bolsa Bay SMCA and Bolsa Chica Basin SMCA

Legend

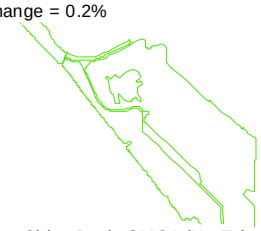
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Bolsa Bay SMCA (121)
Pre-existing Area = 0.07 sq. miles
New Area = 0.07 sq. miles
% Change = 0.2%



Bolsa Chica Basin SMCA (No-Take) (122)
Pre-existing Area = 0.7 sq. miles
New Area = 0.7 sq. miles
% Change = 0%

0 1,200 Meters

121_3, 121_4, 122_3 & 122_4

0 90 Meters

107

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Bolsa Chica Basin SMCA

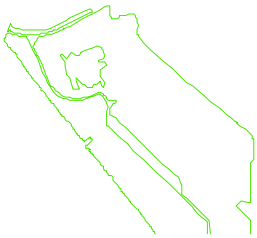
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Bolsa Chica Basin SMCA (No-Take) (122)
Pre-existing Area = 0.7 sq. miles
New Area = 0.7 sq. miles
% Change = 0%

0 940 Meters

122_1 & 122_2

0 90 Meters

108

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Arrow Point to Lion Head Point SMCA

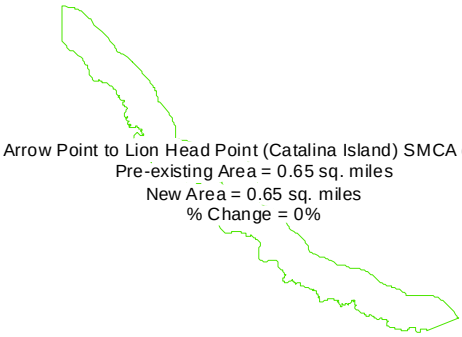
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

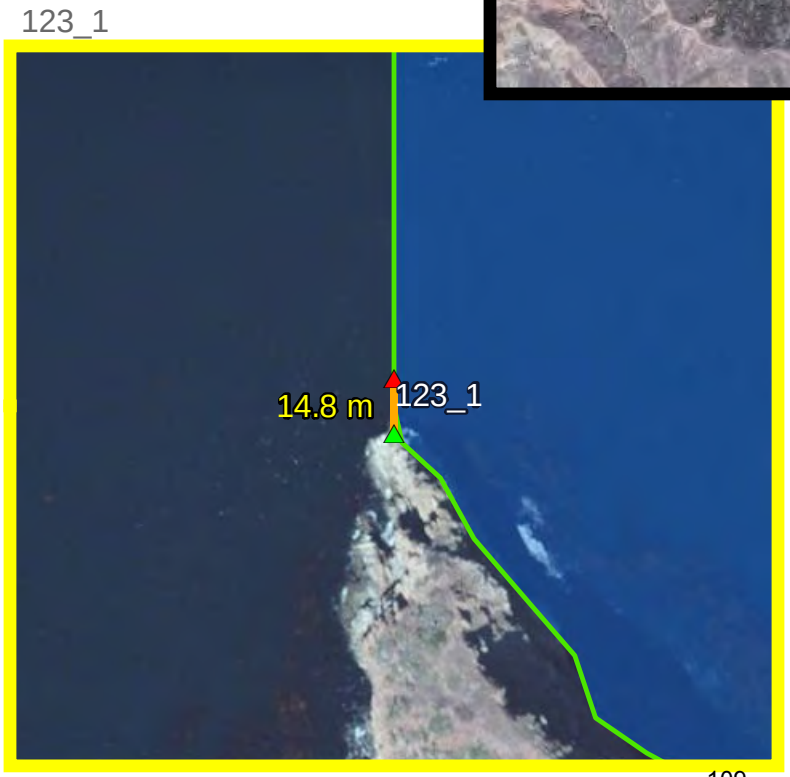
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Arrow Point to Lion Head Point (Catalina Island) SMCA (123)
Pre-existing Area = 0.65 sq. miles
New Area = 0.65 sq. miles
% Change = 0%

0 1,700 Meters



0 90 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Arrow Point to Lion Head Point SMCA

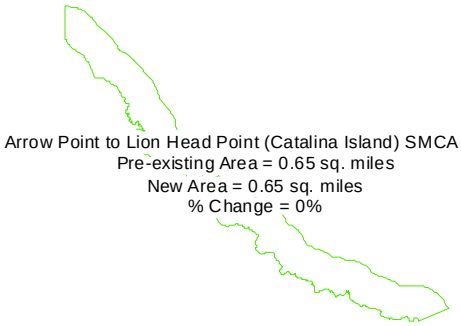
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Arrow Point to Lion Head Point (Catalina Island) SMCA (123)
Pre-existing Area = 0.65 sq. miles
New Area = 0.65 sq. miles
% Change = 0%

0 1,600 Meters

123_4

0 90 110 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Long Point SMR

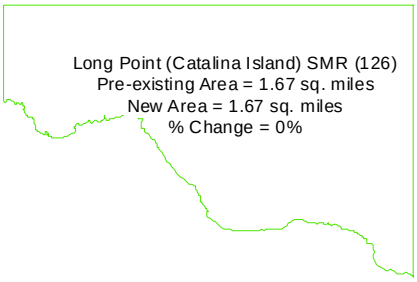
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

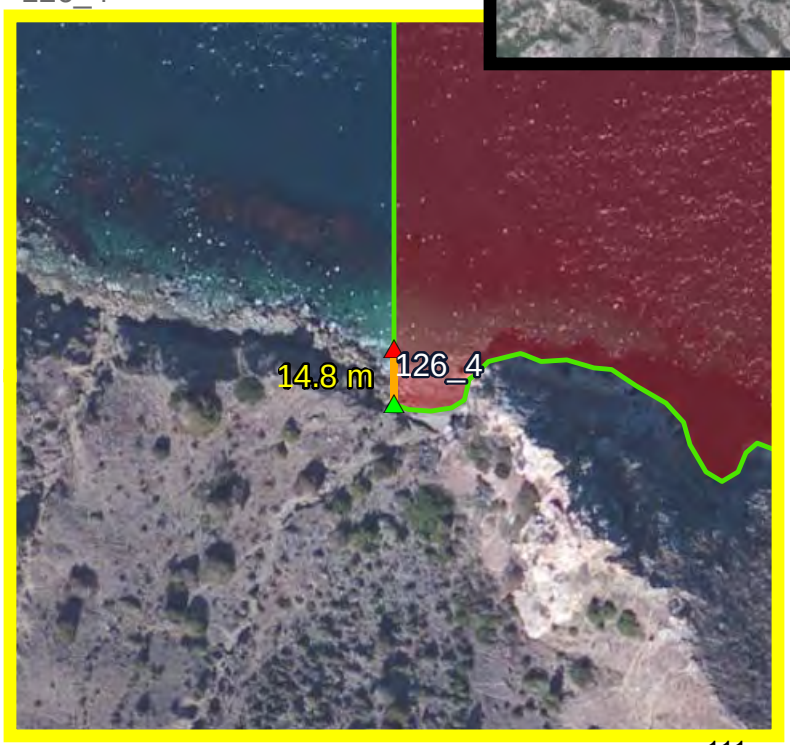
State Marine Reserve (SMR)

Summary of Proposed Refinements



0 1,400 Meters

126_4



0 90 Meters

111

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Farnsworth Offshore SMCA

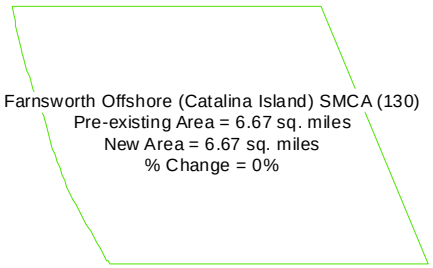
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

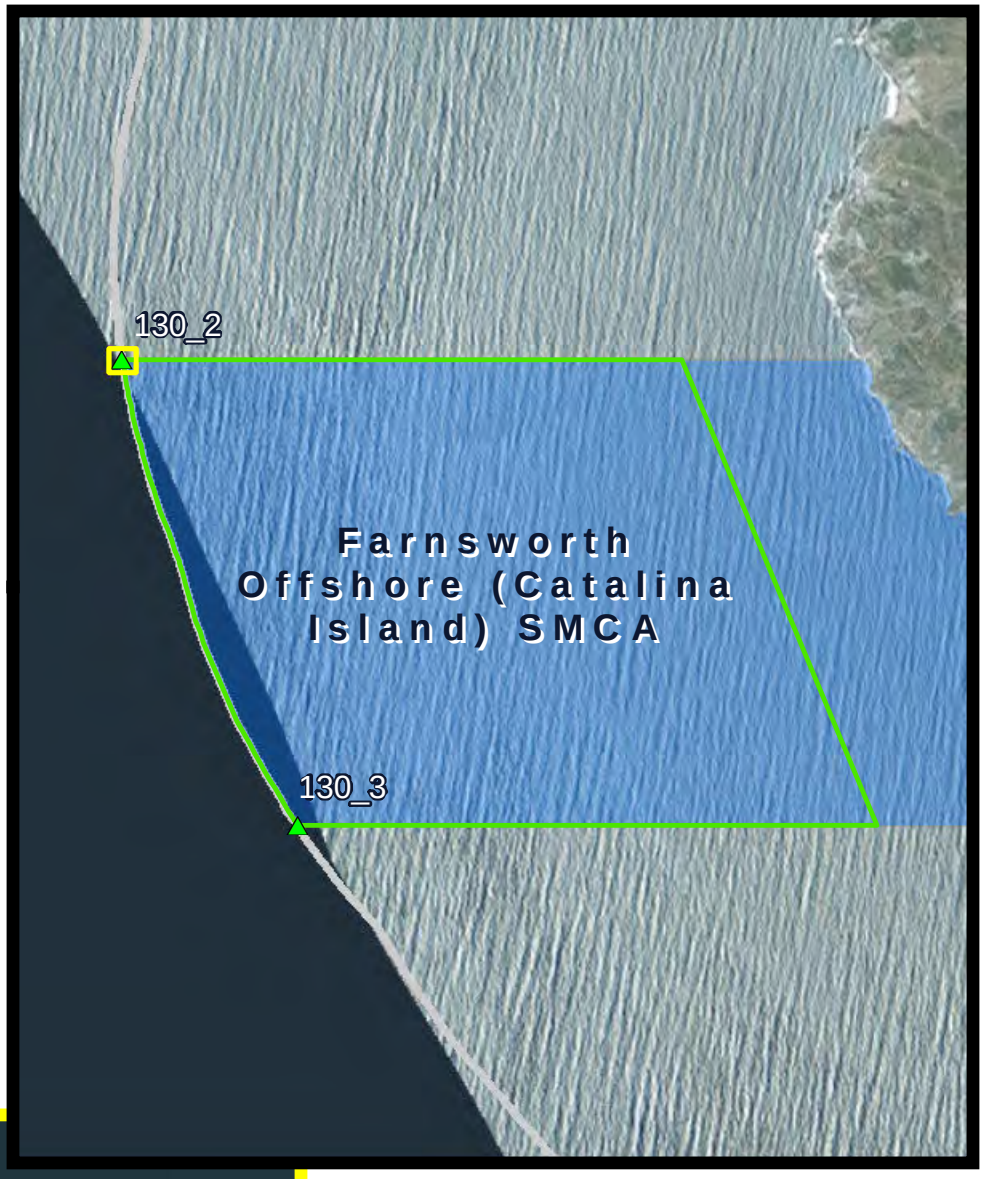
Current MPA Boundaries

- State Marine Conservation Area (SMCA)

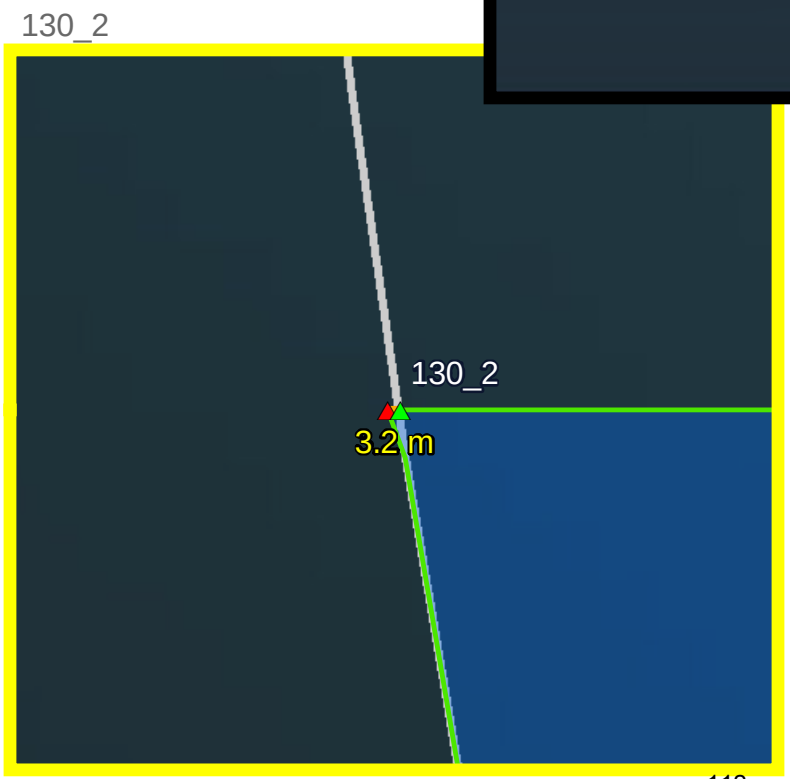
Summary of Proposed Refinements



Farnsworth Offshore (Catalina Island) SMCA (130)
Pre-existing Area = 6.67 sq. miles
New Area = 6.67 sq. miles
% Change = 0%



0 2,750 Meters



0 90 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Farnsworth Offshore SMCA

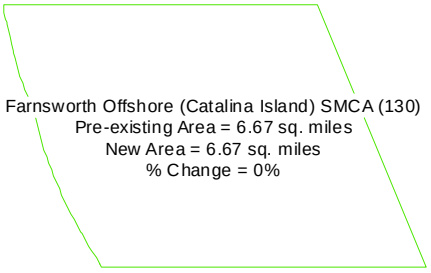
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements
- State Line

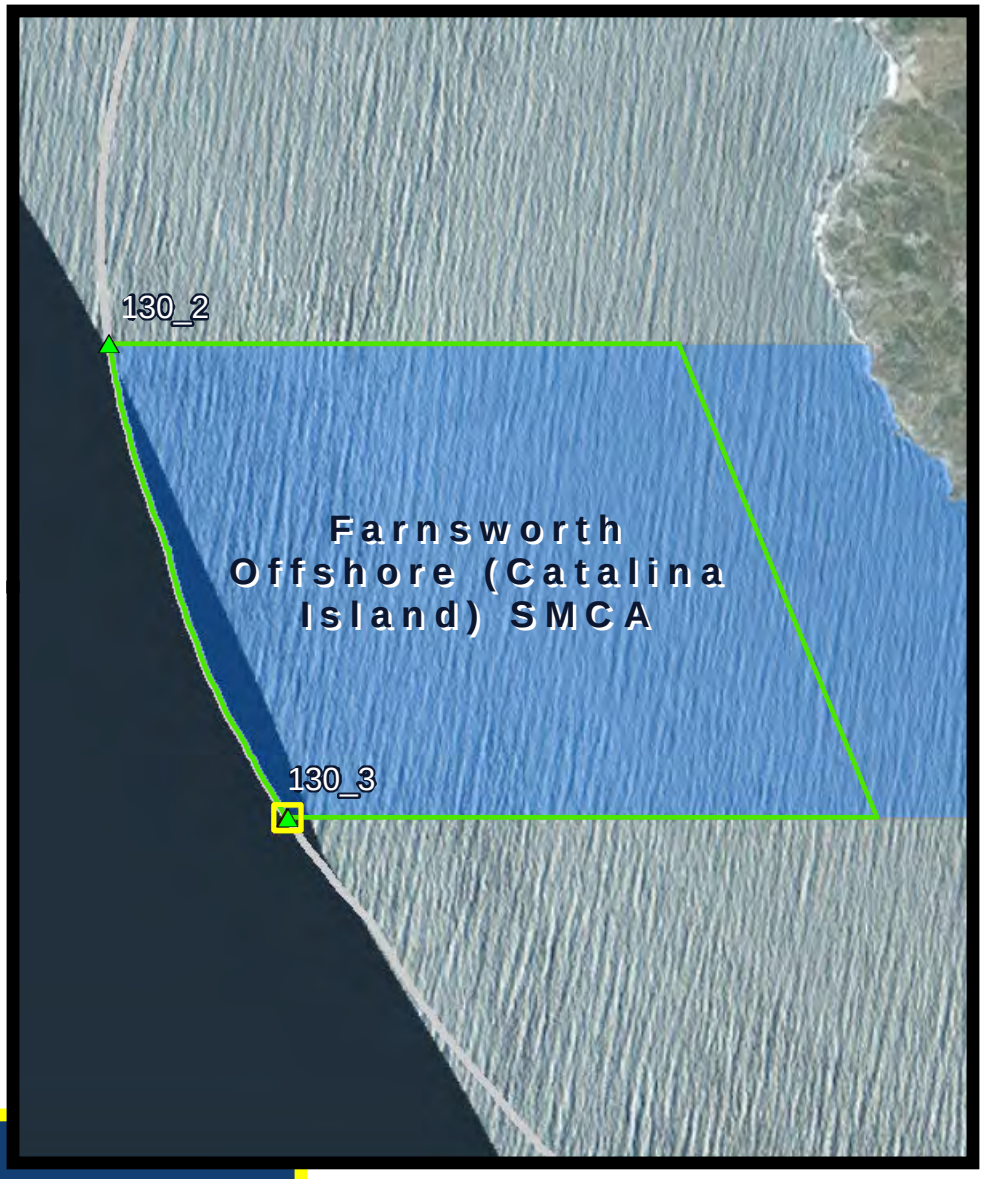
Current MPA Boundaries

State Marine Conservation Area (SMCA)

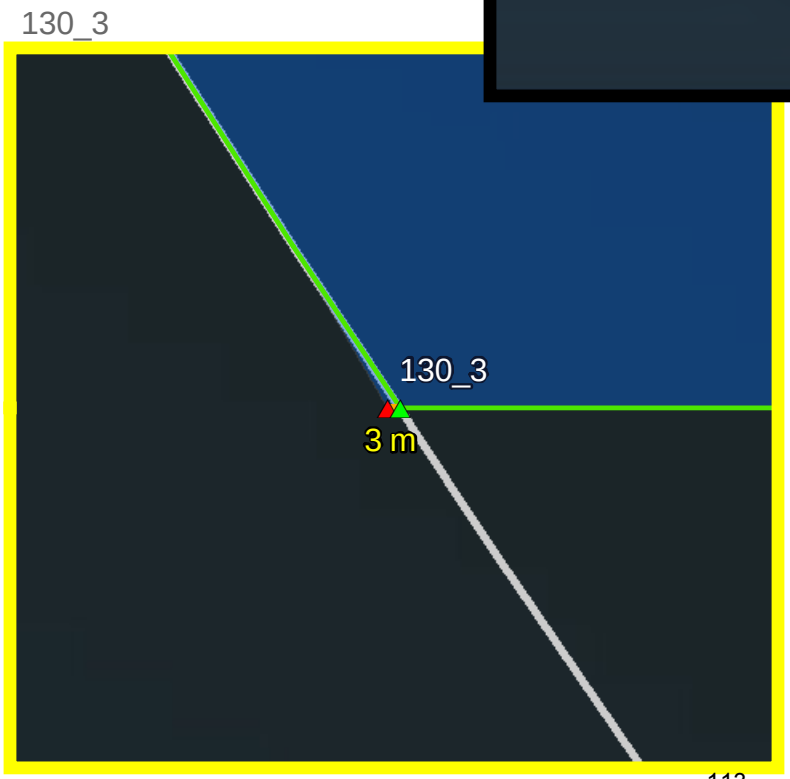
Summary of Proposed Refinements



Farnsworth Offshore (Catalina Island) SMCA (130)
Pre-existing Area = 6.67 sq. miles
New Area = 6.67 sq. miles
% Change = 0%



0 2,700 Meters



0 90 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Cat Harbor SMCA

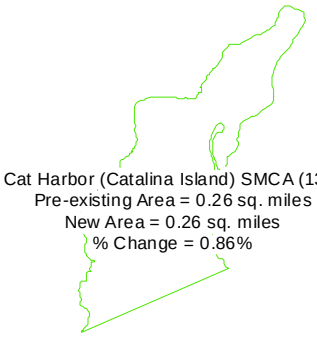
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Cat Harbor (Catalina Island) SMCA (131)
Pre-existing Area = 0.26 sq. miles
New Area = 0.26 sq. miles
% Change = 0.86%

0 590 Meters

131_1

0 90 Meters

114

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Upper Newport Bay SMCA

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Upper Newport Bay SMCA (132)
Pre-existing Area = 1.24 sq. miles
New Area = 1.24 sq. miles
% Change = 0.04%

0 1,600 Meters

132_1 & 132_2

0 150 Meters

115

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Upper Newport Bay SMCA

Legend

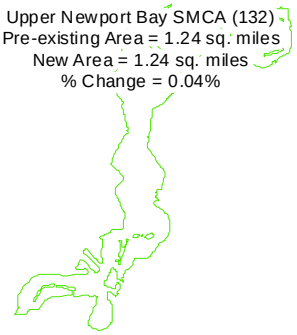
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Upper Newport Bay SMCA (132)
Pre-existing Area = 1.24 sq. miles
New Area = 1.24 sq. miles
% Change = 0.04%



0 1,600 Meters

132_3 & 132_4

0 90 Meters

116

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Crystal Cove SMCA

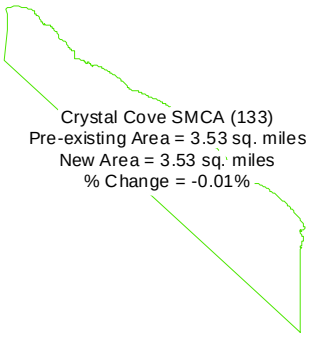
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Crystal Cove SMCA (133)
Pre-existing Area = 3.53 sq. miles
New Area = 3.53 sq. miles
% Change = -0.01%

0 2,500 Meters

133_1

0 90 117 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Crystal Cove SMCA and Laguna Beach SMR

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

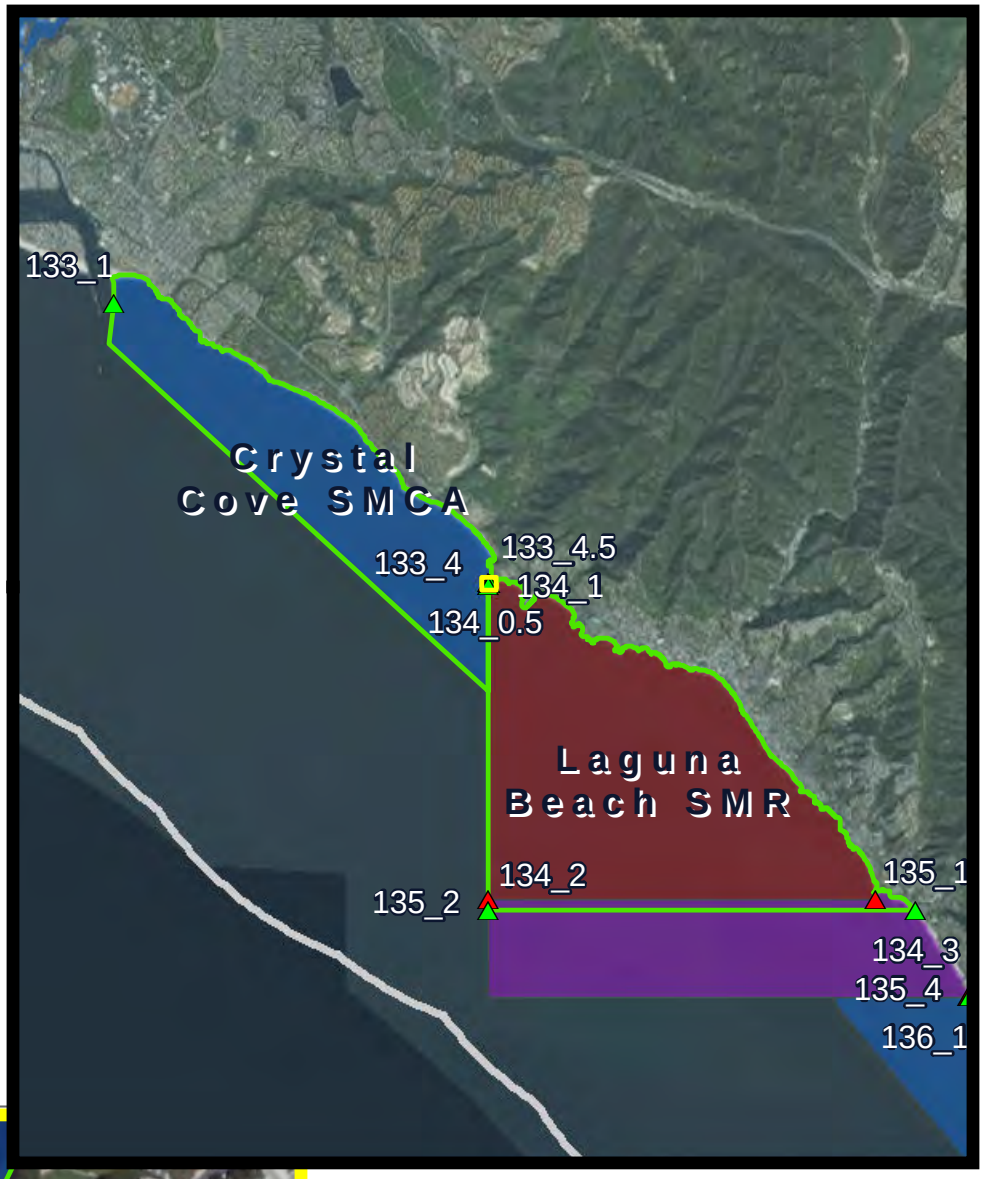
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

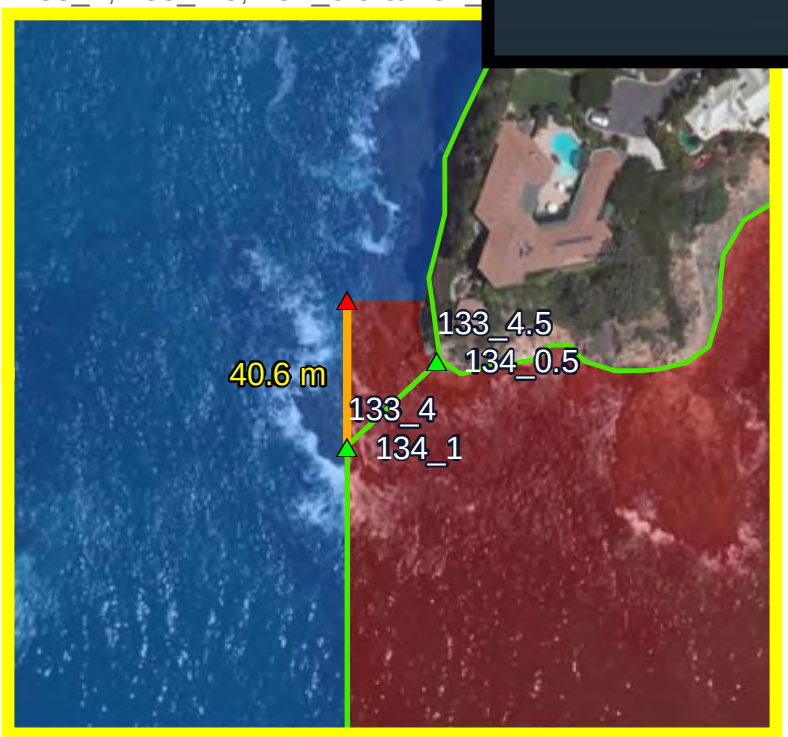
Crystal Cove SMCA (133)
Pre-existing Area = 3.53 sq. miles
New Area = 3.53 sq. miles
% Change = -0.01%

Laguna Beach SMR (134)
Pre-existing Area = 6.33 sq. miles
New Area = 6.72 sq. miles
% Change = 6.08%



0 4,900 Meters

133_4, 133_4.5, 134_0.5 & 134_



0 90 Meters

118

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Laguna Beach SMR and SMCA

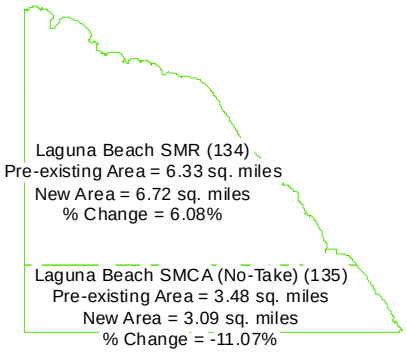
Legend

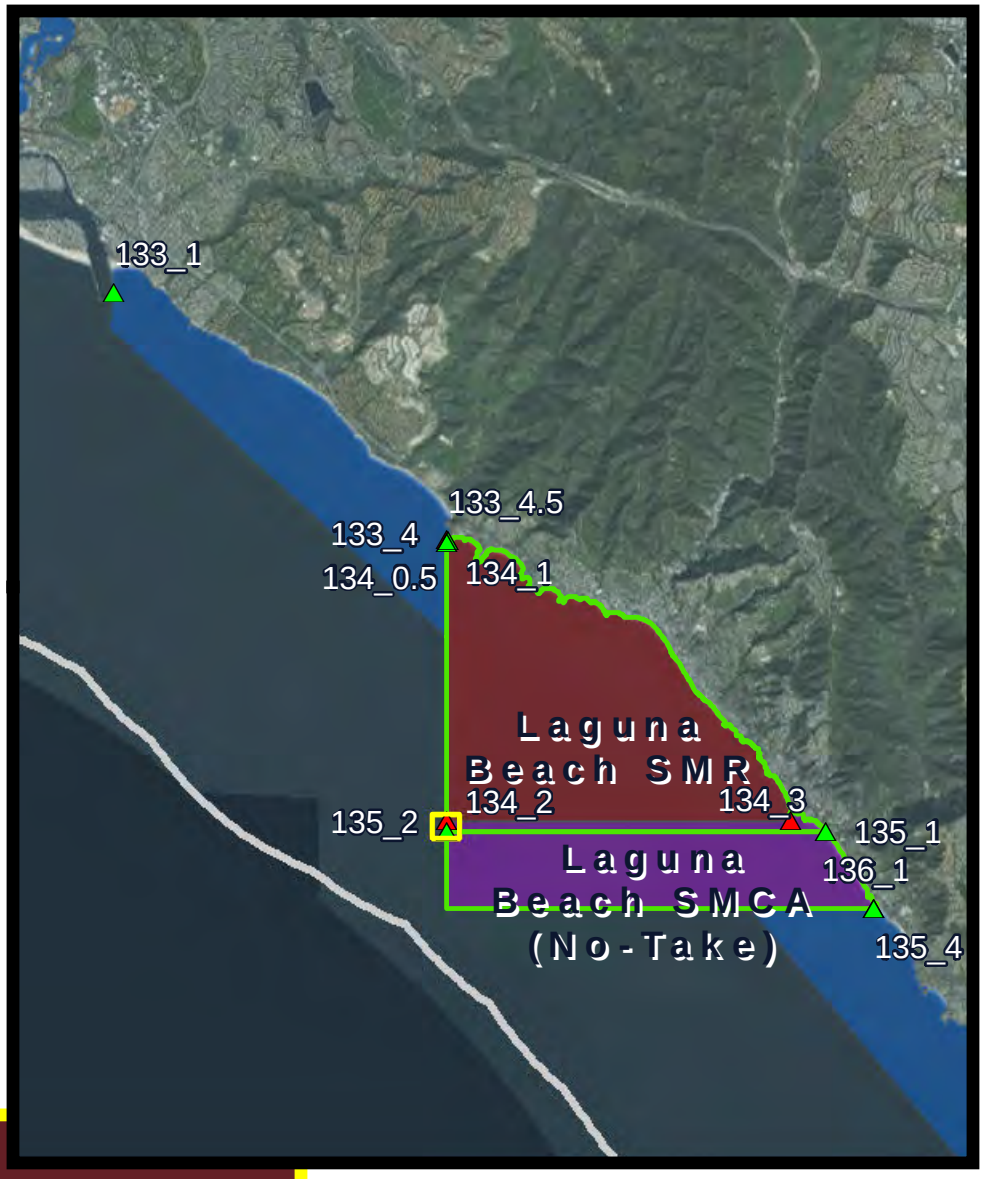
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

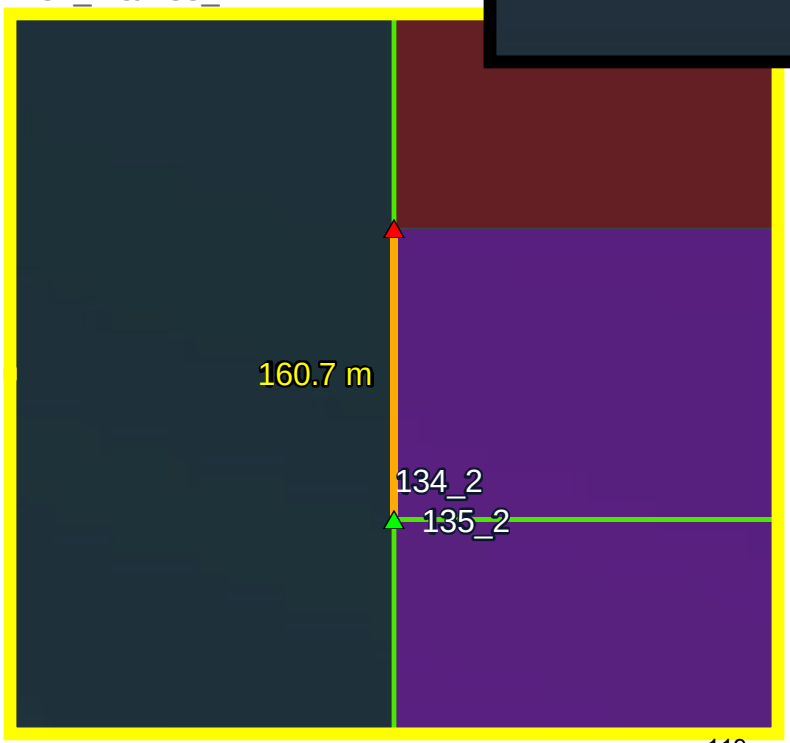
- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements





134_2 & 135_2



California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Laguna Beach SMR and SMCA

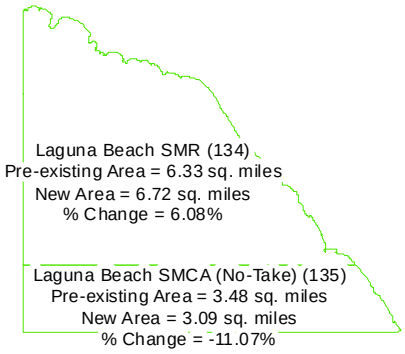
Legend

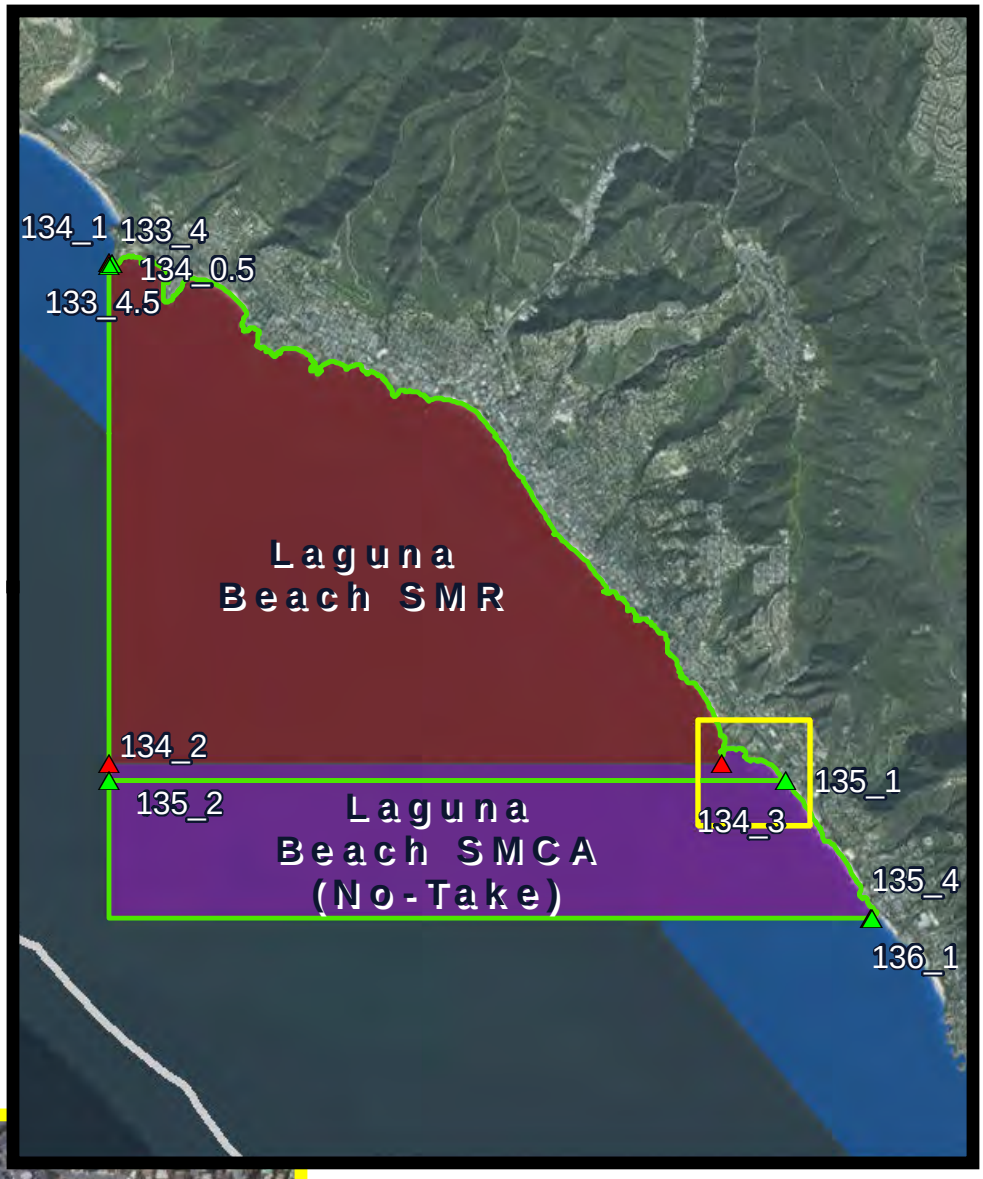
- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements





0 3,100 Meters

134_3 & 135_1

0 460 Meters

120

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Laguna Beach SMCA and Dana Point SMCA

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

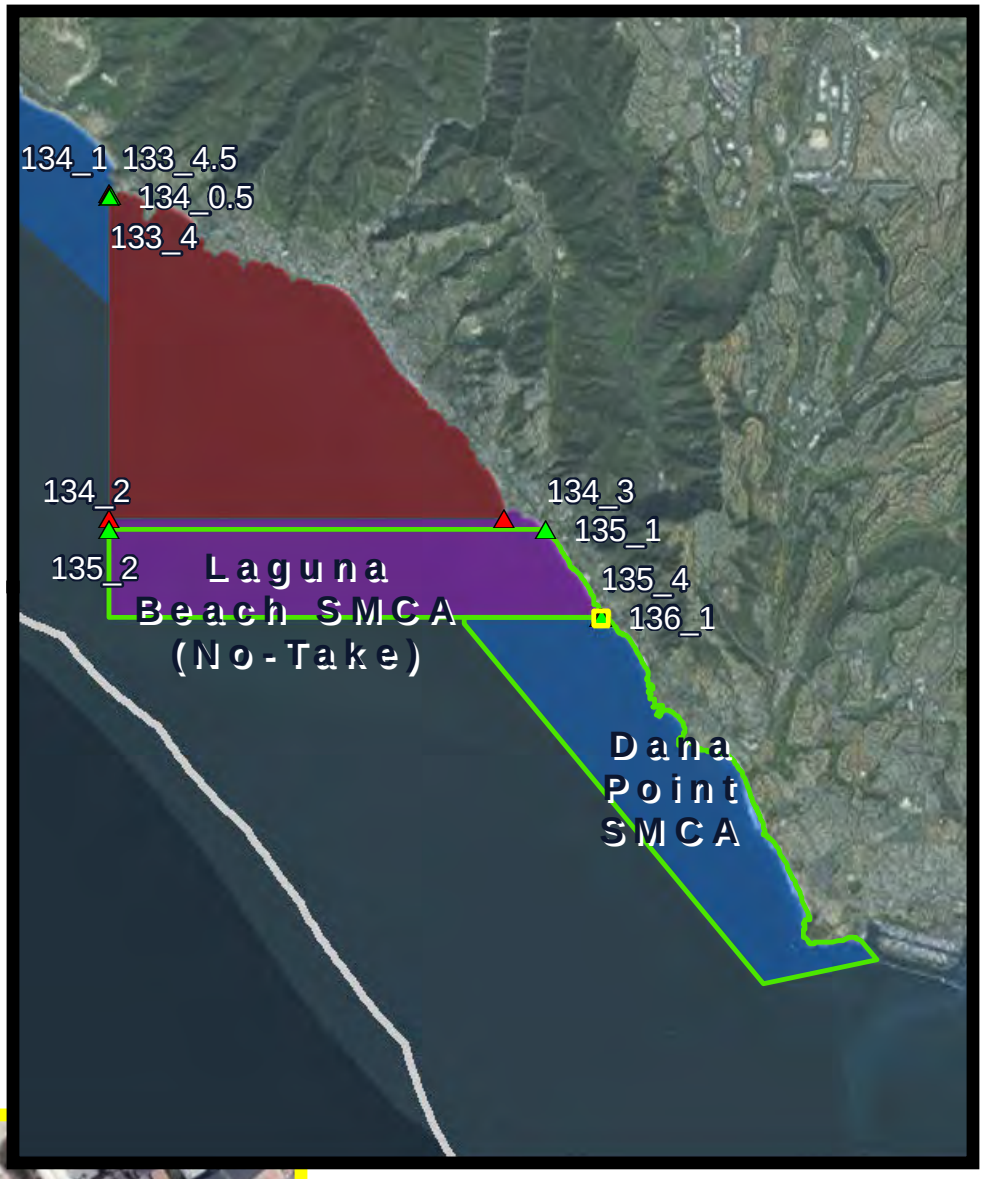
Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA No-Take)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

Laguna Beach SMCA (No-Take) (135)
Pre-existing Area = 3.48 sq. miles
New Area = 3.09 sq. miles
% Change = -11.07%

Dana Point SMCA (136)
Pre-existing Area = 3.47 sq. miles
New Area = 3.47 sq. miles
% Change = 0%



0 4,800 Meters

135_4 & 136_1

0 90 121 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

San Diego-Scripps Coast SMCA and Matlahuayl SMR

Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

- State Marine Reserve (SMR)
- State Marine Conservation Area (SMCA)

Summary of Proposed Refinements

San Diego-Scripps Coastal SMCA (141)
Pre-existing Area = 1.46 sq. miles
New Area = 1.46 sq. miles
% Change = 0%

Matlahuayl SMR (142)
Pre-existing Area = 1.04 sq. miles
New Area = 1.04 sq. miles
% Change = 0%

0 1,400 Meters

141_4 & 142_1

0 90 122 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

Tijuana River Mouth SMCA

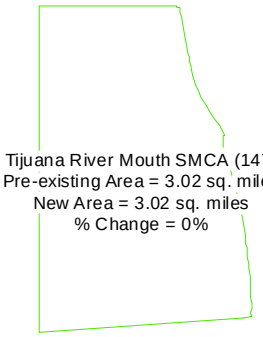
Legend

- Existing Position
- Proposed New Position
- Distance Between Positions
- Proposed Refinements

Current MPA Boundaries

State Marine Conservation Area (SMCA)

Summary of Proposed Refinements



Tijuana River Mouth SMCA (147)
Pre-existing Area = 3.02 sq. miles
New Area = 3.02 sq. miles
% Change = 0%

0 1,400 Meters

147_4

0 90 123 Meters

California Department of Fish and Wildlife
Marine Region GIS
mr_gis@wildlife.ca.gov
May 8, 2015

FGC

From: Barrow, Scott@Wildlife
Sent: Monday, November 23, 2015 11:00 AM
To: Mastrup, Sonke@FGC
Cc: Shuman, Craig@Wildlife; Yparraguirre, Dan@Wildlife; Van Diggelen, Amanda@Wildlife; Woodson, Caren@FGC; Snellstrom, Jon@FGC; Miller-Henson, Melissa@FGC; Tiemann, Sheri@FGC; Fonbuena, Sherrie@FGC; Alminas, Ona@Wildlife; Martz, Craig@Wildlife; Duncan, Margaret@Wildlife; Randall, Mike@Wildlife
Subject: December MPA PreAdopt Assessement

Hi Sonke:

There are no significant comments or any additional changes for the December adoption of the proposed amendments to Section 632, Marine Protected Areas.

This e-mail is instead of a Preadopt statement or memo pursuant to RU procedures.

Scott

Scott Barrow
CDFW Regulations Unit
Scott.Barrow@wildlife.ca.gov
(916) 653-1902 office
(916) 208-7252 cell

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Table of Proposed Regulation Amendments for Marine Managed Areas

	Marine Managed Area	No Change	Boundary Amendment				Language Amendment				
			1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Add Coordinate	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Name Change
NORTH COAST	(1) Pyramid Point SMCA						X				
	(2) Point St George Reef Offshore SMCA						X			X	
	(3) Southwest Seal Rock SC	X									
	(4) Castle Rock SC	X									
	(5) False Klamath Rock SC	X									
	(6) Reading Rock SMCA			X			X			X	
	(7) Reading Rock SMR						X				
	(8) Samoa SMCA						X			X	
	(9) South Humboldt Bay SMRMA						X				
	(10) Sugarloaf Island SC	X									
	(11) South Cape Mendocino SMR			X			X				
	(12) Steamboat Rock SC	X									
	(13) Mattole Canyon SMR						X				
	(14) Sea Lion Gulch SMR						X				
	(15) Big Flat SMCA						X			X	
	(16) Double Cone Rock SMCA						X			X	
	(17) Rockport Rocks SC	X									
	(18) Vizcaino Rock SC	X									
	(19) Ten Mile SMR						X				
	(20) Ten Mile Beach SMCA			X			X				
	(21) Ten Mile Estuary SMCA						X				

Abbreviations: State Marine Reserve (SMR); State Marine Conservation Area (SMCA); State Marine Park (SMP); State Marine Recreational Management Area (SMRMA); Special Closure (SC)

Table of Proposed Regulation Amendments for Marine Managed Areas

	Marine Managed Area	No Change	Boundary Amendment				Language Amendment				
			1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Add Coordinate	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Name Change
NORTH COAST	(22) MacKerricher SMCA			X			X	X			
	(23) Point Cabrillo SMCA						X				
	(24) Russian Gulch SMCA						X	X			
	(25) Big River Estuary SMCA			X			X				
	(26) Van Damme SMCA						X	X			
	(27) Navarro River Estuary SMCA			X			X				
NORTH CENTRAL COAST	(28) Point Arena SMR		X				X				
	(29) Point Arena SMCA		X	X			X			X	
	(30) Sea Lion Cove SMCA		X				X	X			
	(31) Saunders Reef SMCA		X				X			X	
	(32) Del Mar Landing SMR		X	X			X				
	(33) Stewarts Point SMCA			X			X				
	(34) Stewarts Point SMR		X	X		X	X				
	(35) Salt Point SMCA		X				X	X			
	(36) Gerstle Cove SMR		X				X				
	(37) Russian River SMRMA		X				X				
	(38) Russian River SMCA		X				X	X			
	(39) Bodega Head SMR		X	X			X	X			
	(40) Bodega Head SMCA		X	X			X			X	
	(41) Estero Americano SMRMA		X				X				
	(42) Estero de San Antonio SMRMA		X				X				

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Table of Proposed Regulation Amendments for Marine Managed Areas

	Marine Managed Area	No Change	Boundary Amendment				Language Amendment				
			1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Add Coordinate	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Name Change
NORTH CENTRAL COAST	(43) Point Reyes SMR		X	X			X				
	(44) Point Reyes SMCA		X	X			X			X	
	(45) Point Reyes Headlands SC		X								
	(46) Estero de Limantour SMR		X	X			X				
	(47) Drakes Estero SMCA		X	X			X	X	X		
	(48) Point Resistance Rock SC		X	X							
	(49) Double Point/Stormy Stack Rock SC		X								
	(50) Duxbury Reef SMCA		X	X			X	X			
	(51) North Farallon Islands SMR		X	X			X				
	(52) North Farallon Islands SC		X	X							
	(53) Southeast Farallon Island SMR		X				X				
	(54) Southeast Farallon Island SMCA		X	X			X			X	
	(55) Southeast Farallon Island SC		X								
	(56) Fagan Marsh SMP						X	X			
	(57) Peytonia Slough SMP						X	X			
	(58) Corte Madera Marsh SMP						X	X			
	(59) Marin Islands SMP						X	X			
	(60) Albany Mudflats SMP						X	X			
	(61) Robert W. Crown SMCA		X				X	X			
	(62) Redwood Shores SMP						X	X			
	(63) Bair Island SMP						X	X			

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Table of Proposed Regulation Amendments for Marine Managed Areas

	Marine Managed Area	No Change	Boundary Amendment				Language Amendment				
			1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Add Coordinate	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Name Change
NCC	(64) Egg (Devil's Slide) Rock to Devil's Slide SC		X								
	(65) Montara SMR		X	X			X				
	(66) Pillar Point SMCA		X	X		X	X				
CENTRAL COAST	(67) Año Nuevo SMR ~~SMCA~~		X	X		X	X				
	(68) Greyhound Rock SMCA		X	X		X	X	X			
	(69) Natural Bridges SMR		X	X			X				
	(70) Elkhorn Slough SMR		X				X				
	(71) Elkhorn Slough SMCA		X				X	X			
	(72) Moro Cojo Slough SMR						X				
	(73) Soquel Canyon SMCA		X	X			X				
	(74) Portuguese Ledge SMCA		X	X			X				
	(75) Edward F. Ricketts SMCA		X	X			X				
	(76) Lovers Point - Julia Platt SMR		X	X			X				
	(77) Pacific Grove Marine Gardens SMCA		X	X		X	X				
	(78) Asilomar SMR		X	X		X	X				
	(79) Carmel Pinnacles SMR		X		X		X				
	(80) Carmel Bay SMCA		X	X			X				
	(81) Point Lobos SMR		X	X			X				
	(82) Point Lobos SMCA		X	X			X	X			
	(83) Point Sur SMR		X	X			X				
	(84) Point Sur SMCA		X	X	X		X	X			

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Table of Proposed Regulation Amendments for Marine Managed Areas

	Marine Managed Area	No Change	Boundary Amendment				Language Amendment				
			1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Add Coordinate	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Name Change
CENTRAL COAST	(85) Big Creek SMR		X	X			X				
	(86) Big Creek SMCA		X	X			X	X			
	(87) Piedras Blancas SMR		X	X			X				
	(88) Piedras Blancas SMCA		X	X	X		X	X			
	(89) Cambria SMCA		X	X			X				
	(90) White Rock ~~(Cambria)~~ SMCA		X	X			X	X			X
	(91) Morro Bay SMRMA		X				X		X		
	(92) Morro Bay SMR		X				X				
	(93) Point Buchon SMR		X	X			X				
	(94) Point Buchon SMCA		X	X			X	X			
	(95) Vandenberg SMR		X	X			X	X			
SOUTH COAST	(96) Point Conception SMR		X	X			X				
	(97) Kashtayit SMCA		X				X	X			
	(98) Naples SMCA		X	X			X				
	(99) Campus Point SMCA		X	X			X	X			
	(100) Goleta Slough SMCA				X		X	X			
	(101) Richardson Rock ~~(San Miguel Island)~~ SMR						X				X
	(102) San Miguel Island SC		X								
	(103) Harris Point ~~(San Miguel Island)~~ SMR						X				X
	(104) Judith Rock ~~(San Miguel Island)~~ SMR			X			X				X
	(105) Carrington Point ~~(Santa Rosa Island)~~ SMR			X			X				X

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Table of Proposed Regulation Amendments for Marine Managed Areas

	Marine Managed Area	No Change	Boundary Amendment: 1/100th to 1/1000th	Boundary Amendment: Point of Reference	Boundary Amendment: Mean High Tide Line	Boundary Amendment: Add Coordinate	Language Amendment: Allowable Activities	Language Amendment: Clarify Take	Language Amendment: Aquaculture	Language Amendment: Troll Gear	Language Amendment: Name Change
SOUTH COAST	(106) Skunk Point ~~(Santa Rosa Island)~~ SMR			X			X				X
	(107) South Point ~~(Santa Rosa Island)~~ SMR						X				X
	(108) Painted Cave ~~(Santa Cruz Island)~~ SMCA						X	X			X
	(109) Gull Island ~~(Santa Cruz Island)~~ SMR			X			X				X
	(110) Scorpion ~~(Santa Cruz Island)~~ SMR						X				X
	(111) Anacapa Island SC		X	X							
	(112) Anacapa Island SMCA			X			X	X			
	(113) Anacapa Island SMR			X			X				
	(114) Footprint ~~(Anacapa Channel)~~ SMR						X				X
	(115) Begg Rock ~~(San Nicolas Island Quad)~~ SMR		X	X			X				X
	(116) Santa Barbara Island SMR			X			X				
	(117) Point Dume SMCA		X	X			X				
	(118) Point Dume SMR		X	X			X				
	(119) Point Vicente SMCA		X	X			X	X			
	(120) Abalone Cove SMCA		X	X			X				
	(121) Bolsa Bay SMCA		X	X			X	X			
	(122) Bolsa Chica Basin SMCA		X	X			X	X			
	(123) Arrow Point to Lion Head Point ~~(Catalina Island)~~ SMCA			X			X	X			X
	(124) Blue Cavern ~~(Catalina Island)~~ Onshore SMCA		X				X	X			X
	(125) Blue Cavern ~~(Catalina Island)~~ Offshore SMCA		X				X				X
	(126) Long Point ~~(Catalina Island)~~ SMR		X	X			X				X

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Table of Proposed Regulation Amendments for Marine Managed Areas

	Marine Managed Area	No Change	Boundary Amendment				Language Amendment				
			1/100th to 1/1000th	Point of Reference	Mean High Tide Line	Add Coordinate	Allowable Activities	Clarify Take	Aquaculture	Troll Gear	Name Change
SOUTH COAST	(127) Casino Point ~~(Catalina Island)~~ SMCA		X				X	X			X
	(128) Lover's Cove ~~(Catalina Island)~~ SMCA						X	X			X
	(129) Farnsworth ~~(Catalina Island)~~ Onshore SMCA		X				X				X
	(130) Farnsworth ~~(Catalina Island)~~ Offshore SMCA		X	X			X				X
	(131) Cat Harbor ~~(Catalina Island)~~ SMCA		X	X			X				X
	(132) Upper Newport Bay SMCA		X	X			X	X			
	(133) Crystal Cove SMCA			X		X	X				
	(134) Laguna Beach SMR			X		X	X				
	(135) Laguna Beach SMCA			X			X	X			
	(136) Dana Point SMCA			X			X				
	(137) Batiquitos Lagoon SMCA		X				X	X			
	(138) Swami's SMCA						X				
	(139) San Elijo Lagoon SMCA						X	X			
	(140) San Dieguito Lagoon SMCA						X	X			
	(141) San Diego-Scripps Coastal SMCA			X			X	X			
	(142) Matlahuayl SMR			X			X				
	(143) South La Jolla SMR						X				
	(144) South La Jolla SMCA						X				
	(145) Famosa Slough SMCA		X				X	X			
	(146) Cabrillo SMR		X				X				
	(147) Tijuana River Mouth SMCA		X	X			X				

Abbreviations: State Marine Reserve (SMR); State Marine Conservation Area (SMCA); State Marine Park (SMP); State Marine Recreational Management Area (SMRMA); Special Closure (SC)

Proposed Regulation Amendments for Marine Managed Areas Update

California Fish and Game Commission

December 9, 2015 • Los Angeles, CA

Amanda Van Diggelen
California Department of Fish and Wildlife

Regulatory Timeline

- February, 2015: Contacted California Tribal Governments
- March 4, 2015: Update to Marine Resources Committee
- April 8, 2015: Presentation of Proposed Changes to Fish and Game Commission
- August 4, 2015: Notice Hearing
- October 7, 2015: Discussion Hearing

- **December, 2015: Adoption Hearing**

Summary of Proposed Amendments

- One overarching amendment to identify the origin of MMA allowable activities
- One general provision amendment addressing allowed activities for all MMAs
  - ➢45 MMAs will have their activities clarified to maintain their original intent
- Amending aquaculture regulations for Drakes Estero and Morro Bay

Summary of Proposed Amendments Continued

- Amending outdated troll gear references
- Changing designation of Año Nuevo from state marine conservation area to state marine reserve
- Changing the names of 21 MMAs
- Refining 106 MMA boundaries

Thank You ◈ Questions

Photo Credit: Amanda Van Diggelen

Photo Credit: Paulo Serpa

Amanda Van Diggelen

Environmental Scientist, Marine Region

(562) 342-7176

State of California
Department of Fish and Wildlife

Memorandum

Date: October 7, 2015

To: Sonke Mastrup
Executive Director
Fish and Wildlife Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for the December 9-10, 2015 Fish and Game Commission Meeting, Request to Publish Notice of the Commission's Intent to Amend Section 28.20, Title 14, California Code of Regulations, Re: Pacific Halibut**

The Department of Fish and Wildlife (Department) requests that the Fish and Game Commission (Commission) authorize publication of notice of its intent to consider amending existing regulations for the recreational Pacific halibut (*Hippoglossus stenolepis*) fishery (Section 28.20, Title 14, CCR).

An Initial Statement of Reasons (ISOR) is attached, which proposes regulatory changes needed to align state regulations with federal regulations. This will allow for discussion and adoption at the February 10, 2016 and April 18, 2016 Commission meetings, respectively.

If you have any questions regarding this item, please contact Dr. Craig Shuman, Regional Manager, Marine Region, at (805) 568-1246. The public notice for this rulemaking should identify Environmental Scientist, Melanie Parker as the Department's point of contact. Ms. Parker can be reached at (831) 649-2814 or Melanie.Parker@wildlife.ca.gov.

Attachments

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STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Section 28.20
Title 14, California Code of Regulations
Re: Pacific Halibut

I. Date of Initial Statement of Reasons: October 13, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 9, 2015
Location: San Diego

(b) Discussion Hearing: Date: February 10, 2016
Location: Sacramento

(c) Adoption Hearing: Date: April 13, 2016
Location: Santa Rosa

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Pacific halibut is internationally managed under the authority of the Northern Pacific Halibut Act of 1982 (the "Act"; Title 16, Chapter 10, Subchapter IV, Sections 773 to 773k, U.S. Code) pursuant to the Convention between the United States of America and Canada for the Preservation of the [Pacific] Halibut Fishery of the Northern Pacific Ocean and Bering Sea (Convention). Provisions of the Convention establish the International Pacific Halibut Commission (IPHC) and outline general administrative and enforcement requirements.

Convention waters as defined include "… the waters off the west coasts of the United States and Canada … within the respective maritime areas in which either Party exercises exclusive fisheries jurisdiction. For the purposes of this Convention, the "maritime area" in which a Party exercises exclusive fisheries jurisdiction includes without distinction areas within and seaward of the territorial sea or internal waters of the Party" (Article I).

The IPHC was established to conduct research and coordinate management activities in the waters of the parties to the Act. Pacific halibut along the United States west coast is jointly managed through authorities of the IPHC, Pacific Fishery Management Council (PFMC), and the National Marine Fisheries Service (NMFS), in conjunction with west coast state agencies. The IPHC sets the annual Total Allowable Catch (TAC) for each of the Pacific halibut management areas (including the west coast – Area 2A) using stock assessment and research survey results.

The PFMC coordinates west coast management of all recreational and commercial Pacific halibut fisheries in United States waters through the Area 2A Pacific Halibut Catch Sharing Plan (CSP), which constitutes a framework for recommending annual management measures to NMFS. The CSP framework also establishes the sharing formula used for allocating the Area 2A TAC among west coast fisheries, including the California recreational fishery. NMFS is responsible for specifying the final CSP language and management measures in federal regulation (50 CFR Part 300, Subpart E and Federal Register) and reporting season specifications on its halibut telephone hotline.

For species managed under federal fishery management plans or regulations, the Fish and Game Commission (Commission) has usually taken concurrent action to conform State recreational regulations to federal regulations. This is done in recognition of federal jurisdiction and to ensure consistency and ease of use for constituents who are subject to both State and federal laws while fishing for or in possession of sport fish. Pacific halibut federal regulations are applicable in federal waters (three to 200 miles offshore) off Washington, Oregon and California. Each state adjacent to federal waters adopts corresponding fishery regulations for their own waters (zero to three miles off shore).

PFMC Action Re: Pacific Halibut Fishing Off California

At its November 2015 meeting, the PFMC will recommend changes to the 2016 CSP and recreational Pacific halibut fishery in California. Federal regulations are expected to become effective prior to May 1, 2016.

Pacific Halibut Quota Management

The established quota management system for the Pacific halibut recreational fishery ensures catches stay within the allowable quota.

Following the determination of the 2016 Area 2A TAC by the IPHC (in late January 2016), the Department may conduct additional public outreach to

gather input to inform the NMFS decision on a preferred 2016 fishing season expected to keep catches within the allowable quota. After consideration of the input received, the Department will recommend a preferred 2016 season structure to NMFS for approval. The approved season will be included in the final federal regulations and on the NMFS halibut hotline prior to the start of the season.

During the 2016 fishing season, the Department will actively monitor the fishery and coordinate with NMFS and the IPHC weekly on the status of catches relative to the Pacific halibut quota. If catches are projected to meet and/or exceed the California quota, NMFS and the IPHC could take action to close or modify the fishery following consultation with the Department. The NMFS will provide notice of any inseason action to close the season in California via its halibut hotline; this is similar to the process used for recreational fisheries in Oregon and Washington.

The Department shall also inform the Commission and the public via a press release of any inseason changes in regulations triggered by achieving or expecting to exceed the quota. The latest fishing rules will be posted on the Department's website, the Recreational Groundfish Fishing Regulations Hotline, the NMFS Area 2A halibut hotline, and made available by contacting a Department office.

Present Regulations
Current regulations for Pacific halibut authorize recreational fishing in waters off California from May 1 through 15, June 1 through 15, July 1 through 15, August 1 through 15, and September 1 through October 31 or until the quota is reached, whichever comes first. The 2015 quota amount was 25,220 pounds. The State and federal daily bag limit is one fish per angler and there is no minimum size limit.

Present regulations also establish methods of take and include the use of hook and line, harpoons, spears, and bow and arrow gear.

Proposed Amendments
The Department is proposing the following regulatory changes to be consistent with PFMC recommendations and the CSP for Pacific halibut regulations in 2016. This approach will allow the Commission to adopt State recreational Pacific halibut regulations to conform in a timely manner to those taking effect in federal ocean waters on or before May 1, 2016.

The proposed regulatory changes to Section 28.20 would modify the season to include a range from May 1 to October 31 which may include periodic closures, and replace the text regarding the 2015 quota with a reference to the Federal Register specifying the 2016 federal quota

amount. The final regulation will conform to the season, established by federal regulations, which begins in May 2016.

It is the policy of the State to encourage the conservation, maintenance, and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the State for the benefit of all the citizens of the State. In addition, it is the policy of the State to promote the development of local fisheries and distant-water fisheries based in California in harmony with international law respecting fishing and the conservation of the living resources of the ocean and other waters under the jurisdiction and influence of the State. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use, taking into consideration the necessity of regulating individual sport fishery bag limits to the quantity that is sufficient to provide a satisfying sport. Adoption of scientifically-based seasons and other regulations provides for the maintenance of sufficient populations of Pacific halibut to ensure their continued existence.

The benefits of the proposed regulations are consistency with international and federal regulations and the sustainable management of California's Pacific halibut resources.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 205, 219, 220, 240 and 316, Fish and Game Code

Reference: Sections 200, 202, 203.1, 205, 207, 215, 219, 220, and 316, Fish and Game Code, 50 CFR Part 300, Subpart E; and 50 CFR 300.66.

(c) Specific Technology or Equipment Required by Regulatory Change:

None.

(d) Identification of Reports or Documents Supporting Regulation Change:

Convention between the United States of America and Canada for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea.

Northern Pacific Halibut Act of 1982:
http://www.gpo.gov/fdsys/pkg/USCODE-2010-title16/html/USCODE-2010-title16-chap10-subchapIV.htm

Environmental Assessment and Regulatory Impact Review for Continuing Implementation of the Catch Sharing Plan for Pacific Halibut in Area 2A, 2014-2016:
http://www.westcoast.fisheries.noaa.gov/publications/nepa/halibut/ea-halibut-2014.pdf

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

- September 16, 2015 PFMC meeting in Sacramento, CA.
- November 19, 2015 PFMC meeting in Garden Grove, CA.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified by or brought to the attention of Commission staff that would have the same desired regulatory effect.

(b) No Change Alternative:

Under the No-Change Alternative, status quo management of the Pacific halibut resource would continue for 2016. This would result in misalignment between federal and State regulations when NMFS establishes new regulations for the California fishery for 2016 or if NMFS takes inseason action to modify or close the fishery. Inconsistency in regulations will create confusion among the public and may result in laws that are difficult to enforce.

It is critical to have consistent State and federal regulations establishing season dates, depth constraints and other management measures, and also critical that the State and federal regulations be effective concurrently. Consistency with federal regulations is also necessary to maintain State authority over its recreational Pacific halibut fisheries and avoid federal or international preemption.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which

the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states because the regulatory action does not substantially alter existing conditions.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate any impacts on the creation or elimination of jobs in California.

The Commission does not anticipate any impacts on the creation of new businesses, the elimination of existing businesses, or the expansion of businesses in California because the regulatory action does not substantially alter existing conditions.

The Commission anticipates benefits to the health and welfare of California residents. Providing opportunities to participate in sport fisheries fosters conservation through education and appreciation of fish and wildlife.

The Commission anticipates benefits to the environment by the sustainable management of California's Pacific halibut resources.

The Commission does not anticipate any benefits to worker safety.

Additional benefits of the proposed regulations are consistency with federal regulations and promotion of businesses that rely on recreational Pacific halibut fishing.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VII. Economic Impact Assessment:

Recreational fisheries are broadly sub-divided between private anglers and commercial passenger fishing vessels. The economic impact of regulatory changes for recreational fisheries may be estimated by tracking the resulting changes in fishing effort, angler trips and length of stay in the

fishery areas. Distance traveled affects gas and other travel expenditures. Daytrips and overnight trips involve different levels of spending for gas, food and accommodations at area businesses as well as different levels of sales tax impacts. Direct expenditures ripple through the economy, as receiving businesses buy intermediate goods from suppliers who then spend that revenue again. Business spending on wages is received by workers who then spend that income, some of which goes to local businesses. Spending associated with recreational fisheries thus multiplies throughout the economy with the indirect and induced effects of the initial direct expenditure.

In the aftermath of a one-month Pacific halibut fishing closure in 2014, surveys[a] of anglers and businesses were conducted to gauge the importance of the Pacific halibut fishery to anglers and local communities. Of 265 angler respondents, about 20 percent of Pacific halibut anglers traveled from outside of coastal northern California, while the majority of survey respondents were from California's north coast. The Department's 2014 surveys similarly found that 70 percent of anglers reported residing within California's three north coast counties (Mendocino, Humboldt, and Del Norte). Of the total reported trips (6,589), the respondent anglers each took on average more than 30 trips in the 2013/2014 seasons, and 34 percent included Pacific halibut as a primary target. Results indicated an even higher number (89 percent) pursued Pacific halibut as one of their primary target species, and 70 percent also pursued other species on trips for Pacific halibut. The average angler traveled 119 miles on land and 23 miles on water on their most recent Pacific halibut trip. Overall, angler expenditures averaged about $250 per angler trip and both surveys concluded that recreational fishing for Pacific halibut is economically important to charter boat businesses, tackle and marine supply businesses, lodging establishments near fishing access points, and businesses that provide traveler services such as: gas stations, markets, convenience stores, and restaurants.

The adoption of scientifically-based regulations provides for the maintenance of sufficient populations of sport fish to ensure their continued existence and future sport fishing opportunities that in turn support local and regional economies. In a 2012 Fisheries Economics Report by the NMFS, trip-related and equipment expenditures for all

[a] Hesselgrave, T., N. Enelow, and K. Sheeran, 2014. The Estimated Economic Impact of the Northern California Pacific Halibut Closure of August 2014 (recreational and charter boats), conducted by Ecotrust, funded by Humboldt Area Saltwater Anglers.

Takada, M., 2014. Analysis of the Economic Effects of the August Pacific Halibut Closure on California's North Coast Businesses, conducted by Humboldt State University, funded by California Department of Fish and Wildlife.

marine recreational anglers sum to approximately $1.7 billion in California. Coupled with the indirect and induced effects of this $1.7 billion direct revenue contribution, the total realized economic benefit to California is estimated at $2.7 billion in annual total economic output. This corresponds with about $630 million in total wages to Californians, which affects about 13,000 jobs in the State, annually. The portion of this benefit derived from or related to the Pacific halibut fishery is unknown.

The proposed regulations will modify State recreational Pacific halibut regulations to conform to federal rules. Currently, State regulations for Pacific halibut provide for an annual quota, season length, authorized methods of take, and bag limit.

In adopting these conforming regulations, the State relies on information provided in the federal Draft Environmental Impact Statement which includes analysis of impacts to California. (Environmental Assessment and Regulatory Impact Review for Continuing Implementation of the Catch Sharing Plan for Pacific Halibut in Area 2A, 2014-2016) http://www.westcoast.fisheries.noaa.gov/publications/nepa/halibut/ea-halibut-2014.pdf.

For public notice purposes to facilitate Commission discussion, the Department is proposing regulatory changes to encompass the range of federal Pacific halibut regulations that are expected to be in effect for 2016. The proposed regulatory changes may modify season length and replace the text regarding the 2015 quota with a reference to the Federal Register specifying the 2016 federal quota amount.

The estimated impacts on angler trips are anticipated to be close to status quo. Economic impacts are not expected to change compared to 2015 because the 2016 fishery season is expected to be similar to the previous year.

(a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State:

The cumulative effects of the changes statewide are estimated to be neutral to job elimination and potentially positive to job creation in California. No significant changes in fishing effort and recreational fishing expenditures to businesses are expected as a direct result of the proposed regulation changes.

(b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State:

The cumulative effects of the changes statewide are expected to be neutral to business elimination and have potentially positive impacts to the creation of businesses in California. No significant changes in fishing effort and recreational fishing expenditures to businesses are expected as a direct result of the proposed regulation changes.

(c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State:

The cumulative effects of the changes statewide are expected to be neutral to positive to the expansion of businesses currently doing business in California. No significant changes in fishing effort and recreational fishing expenditures to businesses are expected as a direct result of the proposed regulation changes.

(d) Benefits of the Regulation to the Health and Welfare of California Residents:

The Commission anticipates benefits to the health and welfare of California residents. Providing opportunities to participate in sport fisheries fosters conservation through education and appreciation of California's wildlife.

(e) Benefits of the Regulation to Worker Safety:

The proposed regulations are not anticipated to impact worker safety conditions.

(f) Benefits of the Regulation to the State's Environment:

It is the policy of this State to encourage the conservation, maintenance, and utilization of living marine resources under the jurisdiction and influence of the State for the benefit of all citizens (Section 1700, Fish and Game Code). Benefits of the proposed regulations include continuation of fishing opportunity, along with the continuation of the reasonable and sustainable management of recreational finfish resources. Adoption of scientifically-based seasons provides for the maintenance of sufficient populations of Pacific halibut to ensure their continued existence and recreational use.

(g) Other Benefits of the Regulation:

<u>Concurrence with Federal Law:</u>

Pacific halibut along the United States west coast is jointly managed through authorities of the IPHC, PFMC, and the NMFS, in conjunction with west coast state agencies. The PFMC annually reviews the status of Pacific halibut regulations. As part of that process, it recommends regulations aimed at meeting biological and fishery allocation goals specified in law or established in the Pacific Halibut CSP. These recommendations coordinate management of recreational Pacific halibut in State (zero to three miles) and federal waters (three to 200 miles offshore) off the coasts of Washington, Oregon, and California. These recommendations are subsequently implemented as ocean fishing regulations by the NMFS.

California's sport fishing regulations need to conform to federal regulations to ensure that biological and fishery allocation goals are not exceeded and to provide uniformity in management and enforcement activities across jurisdictions.

Informative Digest/Policy Statement Overview

Pacific halibut is internationally managed under the authority of the Northern Pacific Halibut Act of 1982 between the United States of America and Canada. Pacific halibut along the United States west coast is jointly managed through authorities of the International Pacific Halibut Commission (IPHC), Pacific Fishery Management Council (PFMC), and the National Marine Fisheries Service (NMFS), in conjunction with the west coast state agencies. The PFMC coordinates west coast management of all recreational and commercial Pacific halibut fisheries in United States waters through the Pacific Halibut Catch Sharing Plan (CSP), which constitutes a framework for recommending annual management measures. The NFMS is responsible for specifying the final CSP language and management measures in federal regulations (50 CFR Part 300, Subpart E and the Federal Register) and noticing them on their halibut telephone hotline. Federal regulations for Pacific halibut are applicable in federal waters (three to 200 miles offshore) off Washington, Oregon, and California. Each state adjacent to federal waters adopts corresponding fishery regulations for their own waters (zero to three miles off shore).

For consistency, the California Fish and Game Commission (Commission) routinely adopts regulations to bring State law into conformance with federal and international law for Pacific halibut.

The November PFMC regulatory recommendation and NMFS final rule will be considered by the Commission when it takes its own regulatory action to establish the State's recreational Pacific halibut fishery regulations for 2016.

Summary of Proposed Amendments

The Department is proposing the following regulatory changes to be consistent with PFMC recommendations and the CSP for Pacific halibut regulations in 2016. This approach will allow the Commission to adopt State recreational Pacific halibut regulations to conform in a timely manner to those taking effect in federal ocean waters on or before May 1, 2016.

The proposed regulatory changes modify Pacific halibut regulations to allow for timely conformance to federal fisheries regulations and inseason changes. The proposed regulatory changes would modify the seasons to include a range from May 1 to October 31 which may include periodic closures, and replace the text regarding the 2015 quota with a reference to the Federal Register specifying the 2016 federal quota amount. The final regulation will conform to the season established by federal regulations in May 2016.

The benefits of the proposed regulations are: consistency with federal regulations, the sustainable management of California's Pacific halibut resources, and health and

welfare of California residents.

The proposed regulations are neither inconsistent nor incompatible with commercial fishing regulations (Chapter 6, Title 14 CCR), State Coastal Conservancy regulations for experimental fishing gear loan programs (Section 13862, Title 14, CCR), and State Board of Equalization tax regulations (Section 1602, Title 18, CCR). The Legislature has delegated authority to the Commission to adopt sport fishing regulations (Fish and Game Code, Sections 200, 202, and 205) and Pacific halibut fishing regulations specifically (Fish and Game Code, Section 316). The proposed regulations are consistent with regulations for sport fishing in marine protected areas (Section 632, Title 14, CCR) and with general sport fishing regulations in Chapters 1 and 4 of Subdivision 1 of Division 1, Title 14, CCR. Commission staff has searched the California Code of Regulations and has found no other State regulations related to the recreational take of Pacific halibut.

Regulatory Language

Section 28.20, Title 14, CCR, is Amended to Read:

§28.20. Halibut, Pacific.
(a) Season:
(1) Pacific halibut may be taken only from [varied dates within the range from May 1 to October 31, and may include periodic closures]~~May 1 through 15, June 1 through 15, July 1 through 15, August 1 through 15, and September 1 through October 31~~, or until the quota is reached , whichever is earlier. Pacific halibut take is regulated by a quota that is closely monitored each year in alignment with federal regulations.
(2) The ~~2015~~ Pacific halibut quota is ~~25,220 pounds~~published in the Federal Register [Volume and Date to be inserted by OAL]. The department shall inform the commission, and the public via a press release, prior to any implementation of restrictions triggered by achieving or expecting to exceed the quota. Anglers and divers are advised to check the current rules before fishing. The latest fishing rules may be found on the department's website at: wildlife.ca.gov/Fishing/Ocean, or by calling the Recreational Groundfish Fishing Regulations Hotline (831) 649-2801 or the National Marine Fisheries Service Area 2A Halibut Hotline (800) 662-9825 for recorded information, or by contacting a department office.
(b) Limit: One.
(c) Minimum size: None.
(d) Methods of Take:
(1) When angling, no more than one line with two hooks attached may be used.
(2) A harpoon, gaff, or net may be used to assist in taking a Pacific halibut that has been legally caught by angling. See Section 28.95 of these regulations for additional restrictions on the use of harpoons.
(3) Take by spearfishing is allowed pursuant to Section 28.90 of these regulations.

Note: Authority cited: Sections 200, 202, 205, 219, 220, 240 and 316, Fish and Game Code. Reference: Sections 200, ~~201,~~ 202, 203.1, 205, 207, ~~210,~~ 215, 219, 220 and 316, Fish and Game Code, 50 CFR Part 300, Subpart E; and 50 CFR 300.66.

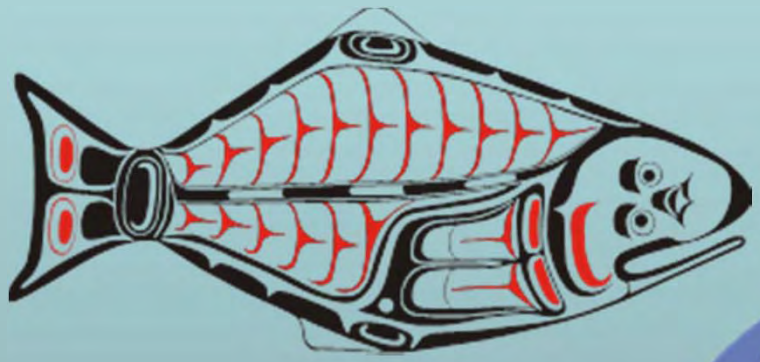
Proposed Amendments to §28.20, Title 14, CCR

Fish and Game Commission Meeting
December 9, 2015
Marine Region

Summary

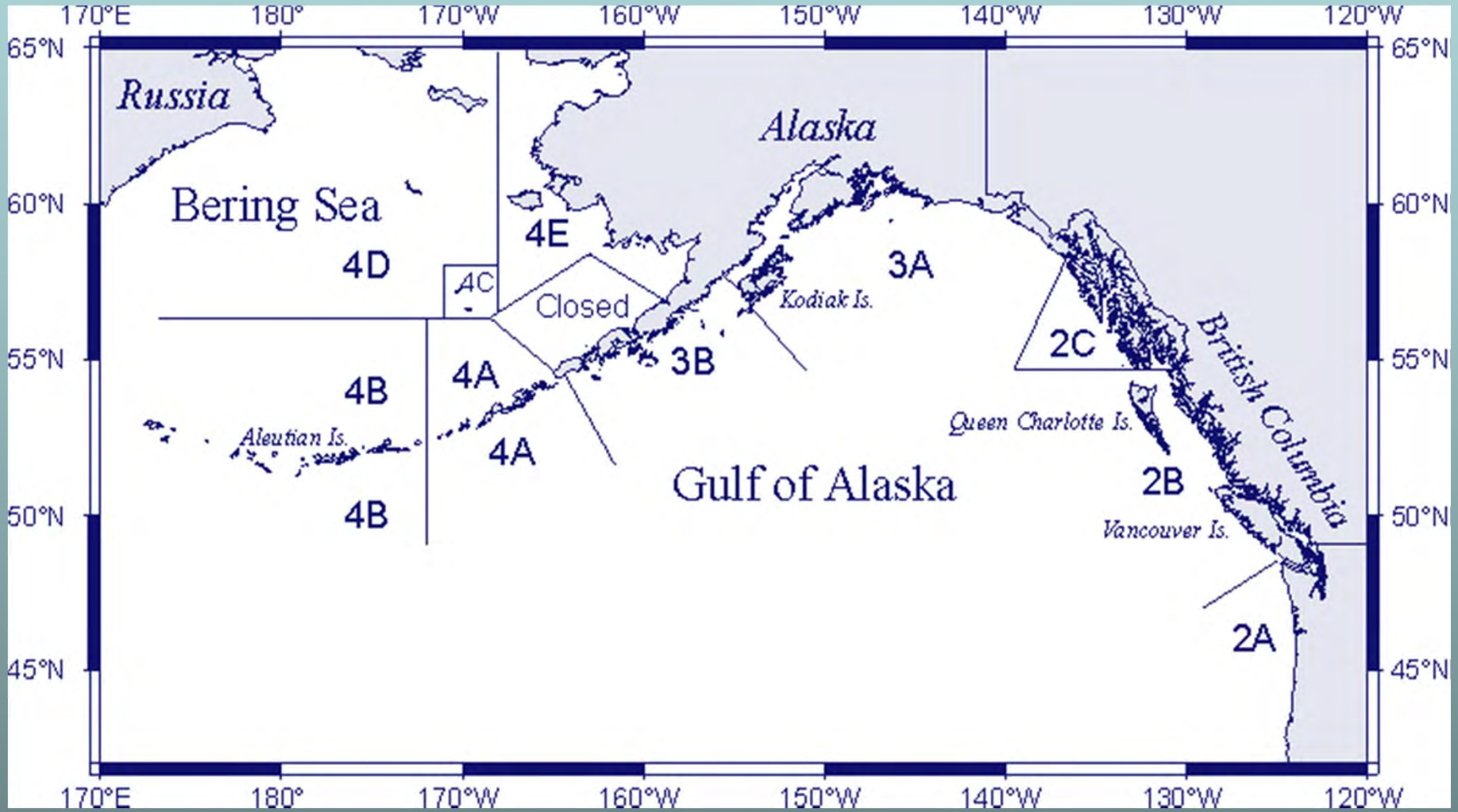
- Management of Pacific halibut
- 2015 season summary
- Proposed amendments to §28.20, Title 14, CCR

Management Entities



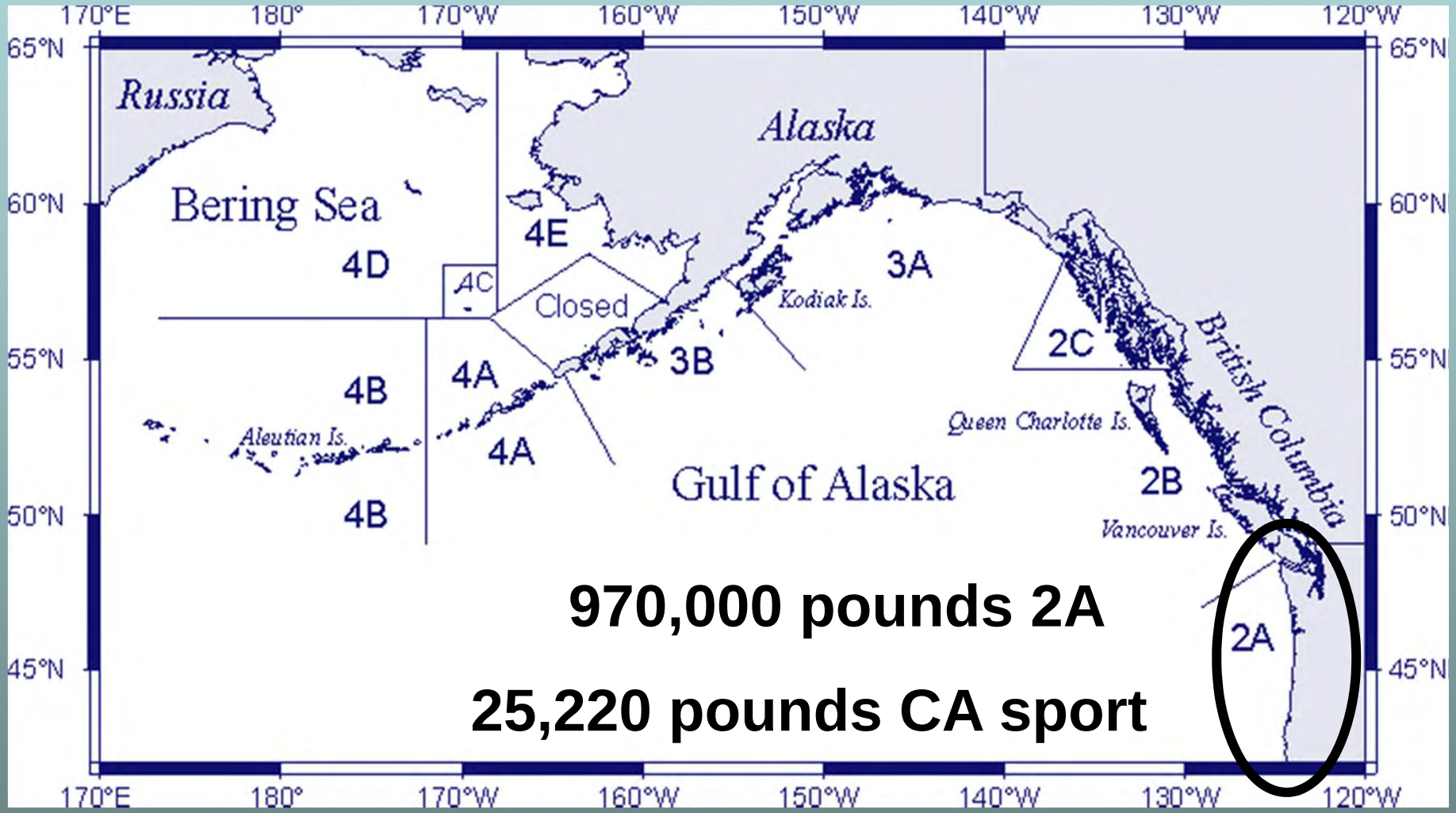
Management Areas

29.2 million pounds for 2015

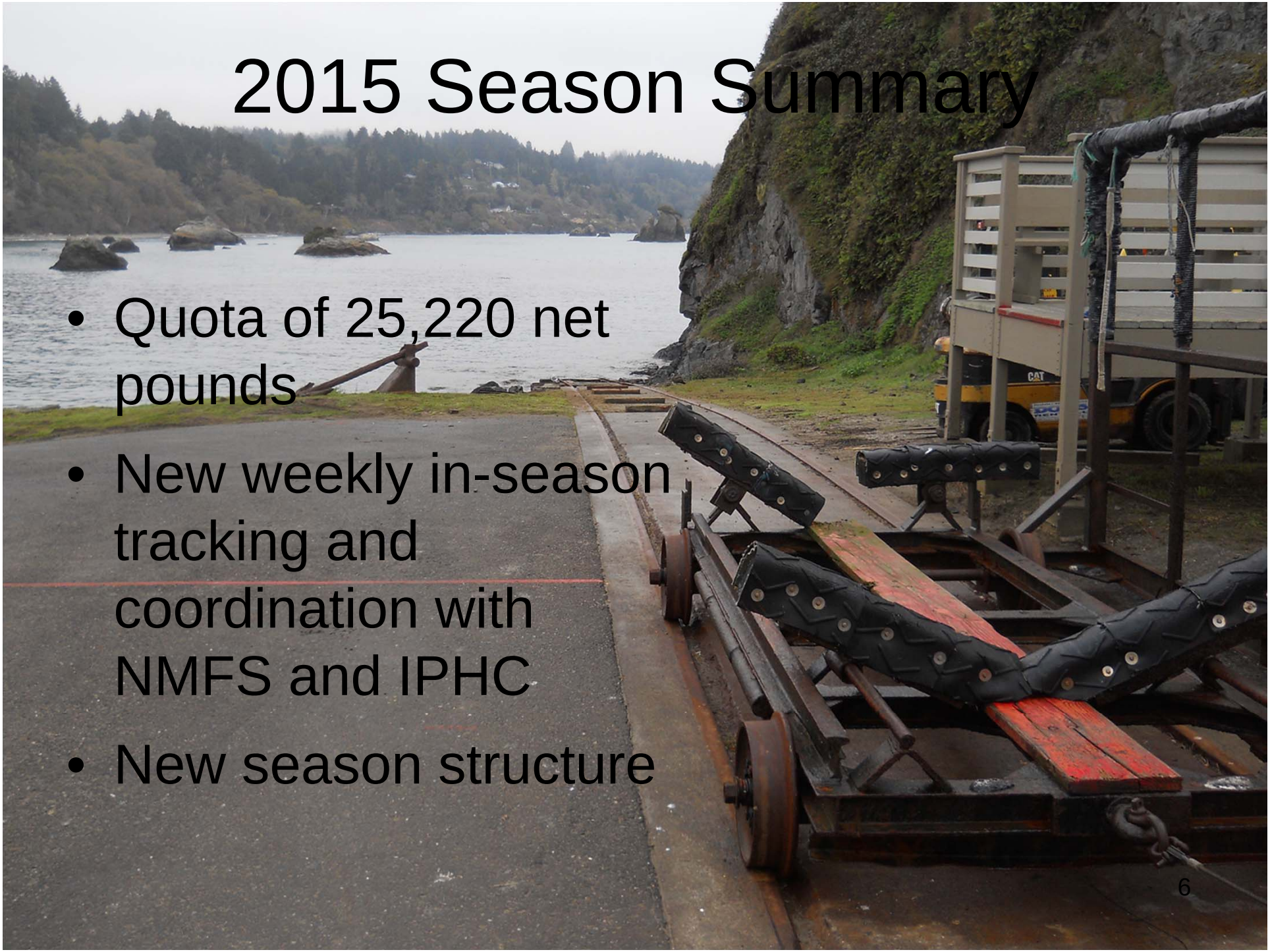


Management Areas

29.2 million pounds for 2015

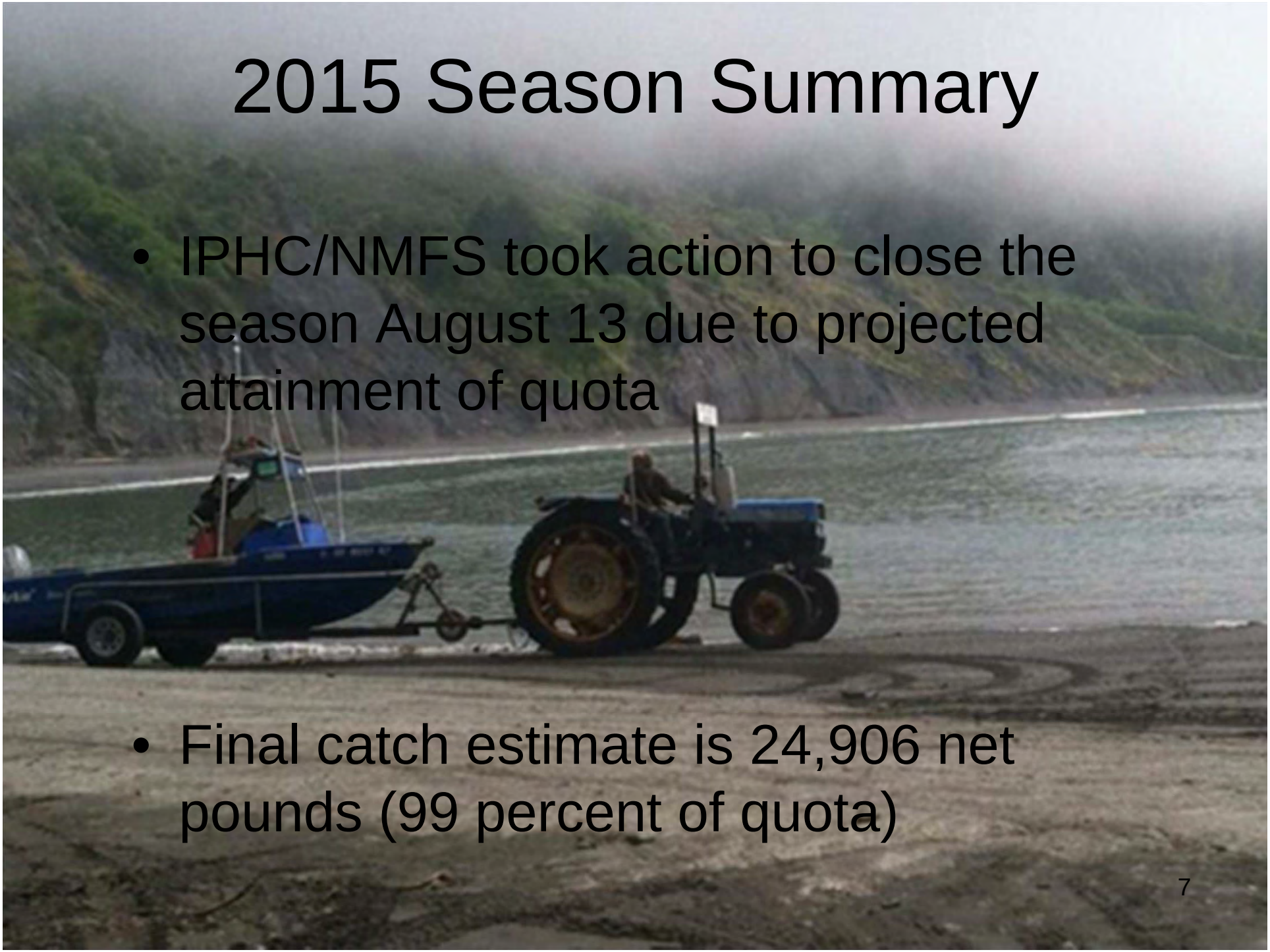


2015 Season Summary



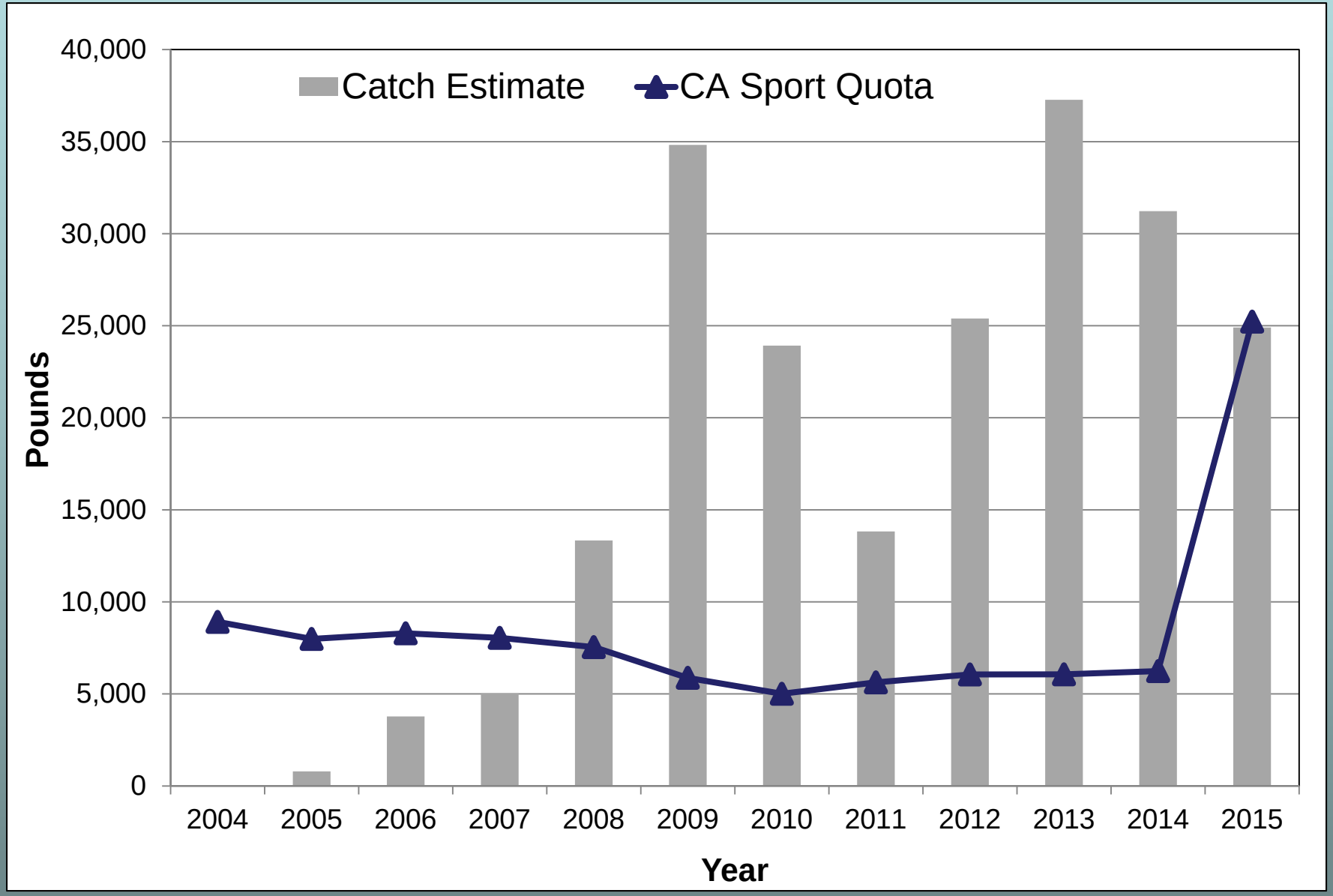
- Quota of 25,220 net pounds
- New weekly in-season tracking and coordination with NMFS and IPHC
- New season structure

2015 Season Summary



- IPHC/NMFS took action to close the season August 13 due to projected attainment of quota
- Final catch estimate is 24,906 net pounds (99 percent of quota)

Recreational Catch Estimates



Proposed Amendments to §28.20, Title 14, CCR

- Possible modifications to season dates, dependent upon final quota amount
  - Quota will be known last week of January 2016
  - If quota substantially different from that in 2015 then season dates may need to be adjusted
- Removal of year and quota amount in regulatory text
  - Replace with reference to Code of Federal Regulations and Federal Register

Timeline

- December 9, 2015 (today) – Notice meeting
- January 2016 – IPHC meeting - Area 2A quota determined (of which CA will receive 4 percent of the non-tribal share)
- February 2016 – FGC Discussion meeting
- April 2016 – FGC Adoption meeting
- May 1, 2016 – Start of fishing season (amended regulations need to be effective)

Thank You and Questions

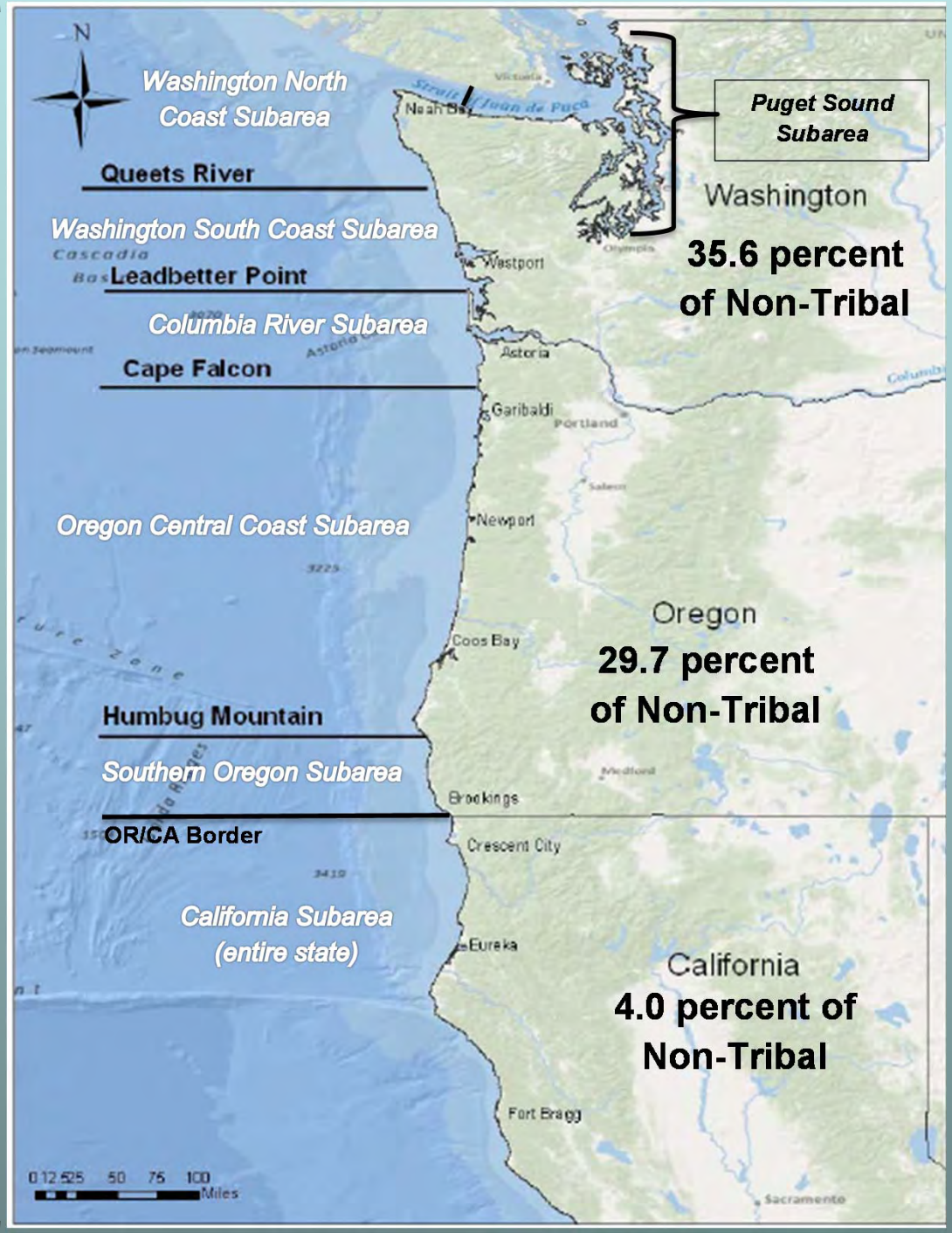
2A Total Allowable Catch (TAC)

Tribal Allocation:
35 percent

Non-Tribal Allocation:
65 percent

Commercial:
30.7 percent of non-Tribal

WA/OR/CA Sport:



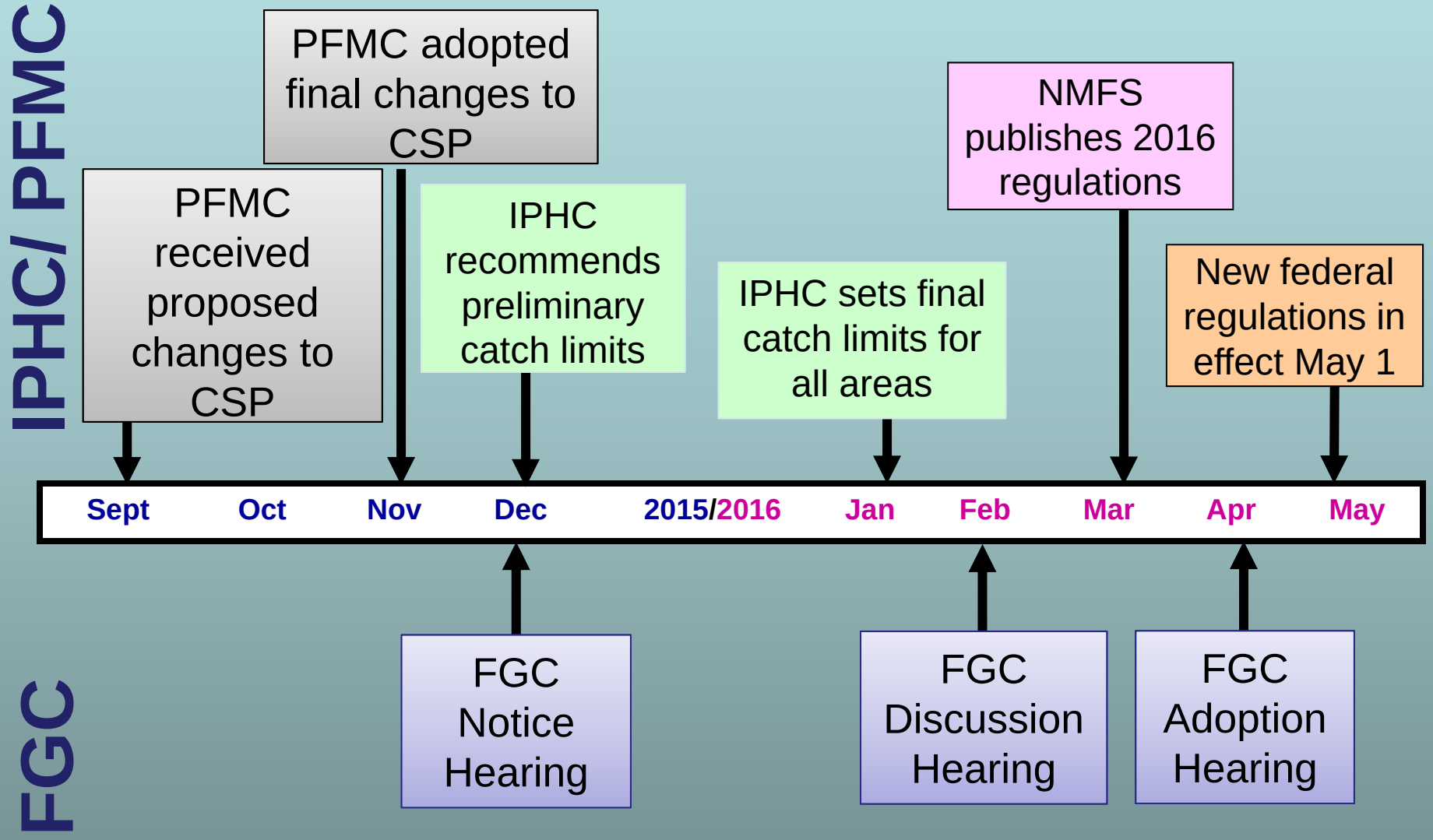
California Allocation History Per PFMC's Catch Sharing Plan

- **2001 through 2013** – California and Southern Oregon combined allocation of approximately 6,000 pounds per year
- **2014** – California given own subarea and is allocated 6,240 pounds
- **2015** – California allocation percentage to increase from one to four percent which resulted in quota of 25,220 pounds

Department Involvement

- Increased involvement at PFMC
- Heightened constituent and community involvement
- Engagement at IPHC
- Department collaboration with Humboldt Area Saltwater Anglers
- 2015 - New weekly catch reporting and inseason management coordination with NMFS
- Redirected staff resources

Timeline for 2016 Regs



State of California
Department of Fish and Wildlife

Memorandum

Date: November 20, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for the December 9-10, 2015 Fish and Game Commission Meeting Re: Receipt of the Draft California Spiny Lobster Fishery Management Plan**

The Department of Fish and Wildlife (Department) is pleased to transmit the Draft California Spiny Lobster Fishery Management Plan (CA lobster FMP) to the Commission for receipt at its December meeting. It is anticipated the Commission will discuss this document at its February meeting and potentially consider its adoption in April 2016.

The Marine Life Management Act (MLMA) requires that FMPs form the primary basis for managing California's marine fisheries. Pursuant to the mandates of the MLMA, the draft CA lobster FMP is designed to guide future management of the fishery in a way that ensures sustainability of the CA spiny lobster resource.

The CA lobster FMP is the culmination of over three and a half years of work and represents the recommendations from the Lobster Advisory Committee (LAC), a constituent group made up of stakeholders from various sectors. The CA lobster FMP has undergone independent, external peer review and has benefitted from the input of the Commission, MRC, California Tribes and Tribal Communities, and stakeholders.

If you have any questions regarding this item, please contact Dr. Craig Shuman, Regional Manager, Marine Region at (805) 568-1246.

Attachment:
Draft California Spiny Lobster Fishery Management Plan

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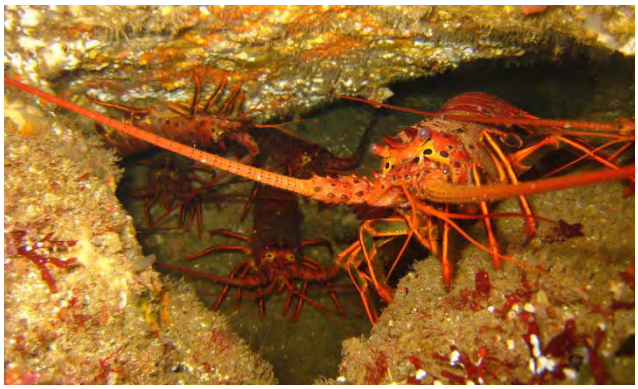
CALIFONIA SPINY LOBSTER FISHERY MANAGEMENT PLAN



November 10, 2015

DRAFT

California Department of Fish and Wildlife

Marine Region

Executive Summary

The California Spiny Lobster (CA lobster) is an important natural resource managed by the state of California for over 100 years. The species supports a valuable commercial fishery and a significant recreational fishery. CA lobsters also act as important keystone predators within the southern California nearshore ecosystem. The commercial fishery in California extends from Point Conception south to the U.S.-Mexico border, and accounted for approximately 430.9 metric tons (mt) (950,000 pounds) in ex-vessel landings and $18.2 million in ex-vessel value during the 2014-15 fishing season. The California recreational fishery ranges from Central San Luis Obispo County south to the U.S.-Mexico border, and is estimated to contribute between $33-$40 million in consumer spending to the California economy each year.

The 2011 California Department of Fish and Wildlife (CDFW) stock assessment indicates that the CA lobster stock is stable under the current management measures. The current minimum size limit allows many lobsters to reproduce for one to two years before reaching the legal size limit. The seasonal closure (March-October) protects individuals from harvest during the sensitive spawning period of the species. The limited-entry nature of the commercial fishery restricts the number of commercial participants.

A substantial increase in average landing price ($/pound) has occurred within the commercial fishery during recent years. Around the same time, overall commercial trap effort as measured by the amount of trap pulls recorded on CDFW-issued daily lobster fishing logs has also increased. The increase in commercial fishing effort has raised questions about the long-term sustainability of the fishery, the negative consequences on the fishing grounds and associated ecosystems from increased gear usage, and the economic health of the commercial fishery.

The recent rise in commercial effort is also accompanied by changes in the dynamics of the recreational fishery. The recreational sector has traditionally been dominated by divers, but in the early 2000s, the popularity of boat-based hoop nets began to rise. Starting in 2008, recreational lobster fishermen were required by CDFW to record their daily fishing activity and catch on standardized report cards.

Report card sales have increased over the last seven years, suggesting that participation has increased. However, card sales do not necessarily reflect actual fishing effort or catch. Report card return rates have steadily increased since the program was first implemented due to proactive CDFW effort to educate the public and the establishment of a non-reporting fee in 2013. Based on the returned cards, CDFW estimates that recreational fishermen harvested 31% of the total catch (commercial + recreational) during 2014-15 fishing season. As return rate continues to improve from new public outreach and reporting requirements, CDFW will be better able to estimate recreational effort and catch.

In 2012, the state implemented a set of new marine protected areas (MPAs) under the **Marine Life Protection Act** (MLPA) in southern California. The 50 MPAs and two special closures in this region are designed to serve a myriad of objectives including conservation of valuable fishery resources. These MPAs create safe zones for species such as CA lobsters to reproduce without fishing pressure, but at the same time shift and compress fishing effort to the remaining non-MPA areas.

Marine Life Protection Act (MLPA) - The MLPA, enacted in 1999, required the California Department of Fish and Wildlife to develop a Marine Life Protection Program, including a Master Plan for a network of Marine Protected Areas (MPAs) within state waters. The network of MPAs includes an improved State Marine Reserve (complete no-take areas) component and other classifications of MPAs (State Marine Parks and State Marine Conservation Areas). The goals of the MLPA are varied and include protecting portions of ecosystems in a variety of habitats, preserving biodiversity, and helping to sustain and protect populations of fished species.

In light of the dynamic nature of the fisheries, it is important for CDFW to adopt a cohesive management strategy for CA lobster. Accordingly, a key provision of this Fishery Management Plan (FMP) is a harvest control rule (HCR) for CA lobster. The HCR serves as the foundation for managing the fishery in the future as well as the primary mechanism to prevent, detect, and recover from overfishing as required by the **Marine Life Management Act** (MLMA). The HCR is a type of adaptive management framework that identifies potential conservation problems and prescribes appropriate management responses. It consists of three parts: 1) reference points, 2) a control rule toolbox, and 3) a control rule matrix. Reference points are the metrics used to gauge the status of the fishery. The three CA lobster reference points are: 1) Catch, 2) **Catch Per Unit Effort** (CPUE), and 3) **Spawning Potential Ratio** (SPR):

REFERENCE POINT	THRESHOLD	RATIONALE
Catch	$\frac{average\ catch\ for\ 3\ most\ recent\ seasons}{average\ catch\ for\ 10\ most\ recent\ seasons} \leq 0.9$	Identifies possible change in stock stability, particularly growth overfishing
CPUE	$\frac{CPUE\ for\ 3\ most\ recent\ seasons}{CPUE\ for\ 10\ most\ recent\ seasons} \leq 0.9$	Identifies potential adverse changes in the fishery, mainly economic overfishing
SPR	$SPR_{CURRENT} \leq SPR(Average\ 2000\text{-}2008)$	Detects biological sustainability, particularly recruitment overfishing

The reference points incorporate important information regarding the fisheries such as the effects of fishing and MPAs. New information is interpreted in relation to prescribed reference point thresholds that signal when changes within the fishery may warrant management responses. Once these changes are detected within the fishery, resource managers have flexibility to choose the appropriate management response from a toolbox of eight management tools. These consist of: 1) Change commercial trap limit, 2) Change recreational bag limit, 3) Establish a Total Allowable Catch (TAC), 4) Implement district closures, 5) Change season length, 6) Change minimum size limit, 7) Implement a maximum size, and 8) Establish a sex selective fishery (Male-only fishery or female-specific size restrictions). The control rule matrix links specific reference point results to the appropriate management response.

Marine Life Management Act (MLMA)- The Marine Life Management Act (MLMA), which became California law January 1, 1999, established goals of conserving entire ecosystems, recognizing non-consumptive values, sustainability, habitat conservation, restoring depressed fisheries, limiting bycatch, and recognizing fishing communities.

Catch Per Unit Effort (CPUE) - The rate at which fish are caught; typically a number or weight of fish captured per unit of effort. Units of effort can be assigned many ways, including the time spent fishing (hours or days), the amount of fishing gear deployed (number of vessels, traps, nets, etc.), the number of times that fishing gear is deployed and retrieved (e.g., net hauls, trap pulls), or a combination of these estimates. Because it is difficult and expensive to scientifically measure the number of fish in an area (abundance), CPUE is often used as an index for the relative abundance of organisms across time or space. For CA lobster, CPUE is typically defined as the number of legal (or sublegal-sized) lobsters per trap pull for the commercial fishery, and number of legal lobsters retained per fishing trip for the recreational fishery. Effort is most often described in terms of trap pulls, total traps, and number of active permits for the commercial fishery, and number of fishing trips for the recreational fishery.

Spawning potential ratio (SPR) – A ratio of the number of eggs produced during the lifetime of an average female in a fished population to the number of eggs produced during the lifetime of an average female in an unfished population; used to characterize the amount of impact fishing has on a population's ability to reproduce.

Lobster Advisory Committee – A committee composed of representatives from the recreational fishery, the commercial fishery, environmental interest groups, scientific experts, non-consumptive recreational interest groups, and federal resource managers. The committee was responsible for providing crucial constituent inputs during the drafting process of this FMP, in part through a consensus recommendation.

The scientific foundation for the HCR underwent an independent, external peer review (see Appendix VII and VII). In particular, reviewers focused on the choice of reference points, the model used to calculate SPR, and the decision to manage CA lobster as a single stock. The primary changes to the previous draft of this FMP in response to peer review include:

- A von Bertalanffy growth model was used to describe lobster age at a given size within the model used to calculate SPR.
- Catch and CPUE reference points were made more sensitive by setting the threshold levels at 0.9 rather than 0.8.
- Expanded discussion of possible reference points and associated models was added to the FMP along with increased explanation of the selected approach.
- Information on regional differences within the stock was added and better understanding of these differences was highlighted as an information need.

This FMP also describes various management tools considered during the stakeholder **Lobster Advisory Committee** (LAC) process. The LAC reached consensus on several regulatory recommendations that will assist future fishery management. These recommendations include, but are not limited to: 1) Commercial permit-based trap limit, 2) Tail clipping or hole punching of recreationally caught CA lobsters, 3) An additional grace period for commercial fishermen to deploy traps before the season and an additional period to retrieve traps after the season, 4) Changing the opening time for the recreational season, 5) Restrictions on mechanical pullers for the recreational fishery, 6) Allowance to carry SCUBA gear on commercial vessels, 7) Requirement to mark recreational hoop net floats, 8) Clarifying regulatory language on the take of lobster by hand, and 9) Increased soak time for commercial traps.

CDFW currently collects substantial fishery-dependent data on CA lobster through commercial logbooks, landing receipts, recreational lobster report cards, creel sampling, and at-sea sampling. However, better information on the species stock distribution, ecological role, and life history (e.g., movement, **recruitment**, reproduction, mortality) would allow CDFW to improve its future management activities. Pursuant to the MLMA mandates, CDFW will continue to work with its constituents to improve research and monitoring efforts in order to better maintain sustainable CA lobster populations and associated fisheries.

Recruitment - The process, event, or rate by which individuals enter new life stages or segments of a population. *Larval recruitment* refers to the process or event by which larvae of marine species exit the planktonic life stage. *Fishery recruitment* (or, recruitment to the fishery) refers to the moment that an animal becomes vulnerable to capture in a fishery – usually because it has attained some minimum size or age for harvest.

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Acknowledgements

The California spiny lobster FMP is the result of collaboration among many individuals and organizations. We would first like to thank all the Lobster Advisory Committee (LAC) members and particularly the constituent representatives for their many contributions and cooperative attitude throughout the process. The LAC volunteered a great deal of time and provided input that helped the FMP to represent the varied knowledge, interests, and values of its members. We thank Dr. Richard Parrish, Dr. Matthew Kay, and Dr. Yong Chen for providing modeling expertise that was critical for the development of sound reference points for assessing the status of the stock. We thank the Sea Grant Collaborative at-Sea Sampling Program (CAPS) and in particular Dr. Carrie Culver for openly sharing their data which was valuable in many ways throughout the writing of the FMP. Retired Marine Region staff members who dedicated many years to the lobster resource and fishery participants include Kristine Barsky, Dr. Douglas Nielson, and Kai Lampson. Finally independent peer review greatly improved the FMP and we thank the organizers of that effort, Ocean Science Trust, and the scientific experts including Dr. John Field, Dr. Michelle Comeau, Dr. Robert Muller and Dr. Pete Raimondi.

Acronyms

CA lobster – California spiny lobster, *Panulirus interruptus*
CalCOFI – California Cooperative Oceanic Fisheries Investigations
CASP – Sea Grant Collaborative At-Sea Sampling Program
CC – Climate Change
CCR – California Code of Regulations
CDFW – California Department of Fish and Wildlife
CL – Carapace length
CFR – Collaborative Fisheries Research
CPUE – Catch per Unit Effort
EFI – Essential Fishery Information
FGC – California Fish and Game Code
FMP – Fishery Management Plan
GHG – Green House Gas
HCR – Harvest Control Rules
ITQ – Individual Transferrable Quota
LAC – Lobster Advisory Committee
LFMP – California Spiny Lobster Fishery Management Plan
Max LS – Maximum Legal Size
MEY – Maximum Economic Yield
Min LS – Minimum Legal Size
MLMA – Marine Life Management Act
MLPA – Marine Life Protection Act
MPA – Marine Protected Areas
MSE – Management Strategy Evaluation Model
MSY – Maximum Sustainable Yield
SAM – Size at Maturity
SCB – Southern California Bight
SPR – Spawning Potential Ratio
SST – Sea Surface Temperature
TAC – Total Allowable Catch
YPR – Yield per Recruit

1. Introduction

The Marine Life Management Act (MLMA) establishes a policy for the State to ensure the conservation and **sustainable** use of California's living marine resources (FGC § 7050(b)). The MLMA states that Fishery Management Plans (FMP) "shall form the primary basis for managing California's sport and commercial marine fisheries" (FGC § 7072). FMPs are documents that consolidate available information under the statutorily prescribed frameworks (FGC §§ 7072, 7075, 7080-7088); their contents and any subsequent amendments form the basis for all **fishery** management decisions. The California Department of Fish and Wildlife (CDFW) is responsible for drafting FMPs and presenting them to the California Fish and Game Commission (Commission). FMPs become effective upon adoption by the Commission through a public process. Implementation is done through a separate Commission rulemaking process, and the implementing regulations are codified in Title 14 of the California Code of Regulations. This FMP is developed for the California spiny lobster (*Panulirus interruptus*; CA lobster) in U.S. waters.

1.1 The Goal of the Spiny Lobster FMP

The goal of this FMP is to formalize a management strategy that can respond effectively to changes in the CA lobster fisheries pursuant to the tenets of the MLMA. CA lobsters have long supported major **commercial** and **recreational fisheries**, and the species plays a key role in maintaining the health of the southern California kelp forest **ecosystem**. This ecosystem is important to a number of non-consumptive users such as divers, eco-tourists, researchers, educators, and the conservation community.

To achieve responsive and effective management, this fishery must be adaptable and sustainable. This FMP uses an **adaptive management** framework (Holling et al., 1978; Walters and Hilborn, 1978) based on a harvest control rule (Section 4.3). Section 90.1 of the Fish and Game Code (FGC) defines adaptive management as "a policy that seeks to improve management of biological resources, particularly in areas of scientific uncertainty, by viewing program actions as tools for learning."

Sustainable, Sustainable use, and Sustainability - With regard to a marine fishery, means both of the following: 1) continuous replenishment of resources, taking into account fluctuations; and 2) securing the highest possible present and long-term social and economic benefits, maintaining biological diversity, and managing fisheries in a way that does not exceed **optimum yield**. See also FGC § 7050(b).
Fishery - Fishing for, harvesting, or catching one or more populations of marine fish or marine plants that may be treated as a unit for purposes of conservation and management that are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics.
Commercial fishery - Describes a group of enterprises and individuals as well as their actions associated with fishing for certain species with the intent of selling the catch.
Recreational fishery - Describes a fishery associated with taking of any fish for any purpose other than profit.
Ecosystem - The physical and climatic features and all the living and dead organisms in an area that are interrelated in the transfer of matter and energy, which together produce and maintain a characteristic type of biological community. Ecosystems can range in size.

1.2 Efforts Leading Up to the Spiny Lobster FMP – The Lobster Advisory Committee

This FMP incorporates input from the Lobster Advisory Committee (LAC). The LAC was formed in early 2012 following a call by CDFW for volunteers to represent various public stakeholder groups. The purpose of the LAC is to involve constituent representatives with the development of this FMP. The LAC provided guidance on FMP objectives and end-products as well as ideas for management options that addressed the key issues put forth by members of the public. The LAC consists of representatives from the marine science community, the recreational fishing sector, commercial fishing sector, the non-consumptive recreational sector, the environmental

community, and the federal government.

A total of nine LAC meetings occurred between June 2012 and September 2013. All meetings were open to the public, and public input was encouraged. Meeting announcements were posted on the CDFW website, and the public was encouraged to sign up for the Lobster FMP news email service. Meeting summaries as well as various background documents are available on the CDFW website (www.wildlife.ca.gov/Conservation/Marine/Lobster-FMP). The LAC reached consensus on several management recommendations for CDFW and the Commission (Section 4.5, Appendix II, and Appendix IX).

2. Background of the California Spiny Lobster Fishery

CA lobsters have been fished since the 1800s. U.S. fishermen target CA lobsters primarily from Point Conception south to the U.S. – Mexico border, and off southern California islands and banks (Barsky, 2001; Figure 1-1). Some fishing takes place north of Point Conception, but as of 2013 effort has not been significant. The commercial and recreational fisheries run from early October to mid-March, with the recreational fishery starting 4 days earlier than the commercial fishery (FGC § 8251; 14 CCR § 29.90). This results in a 24 week commercial fishing season and a 24.5 week recreational fishing season.

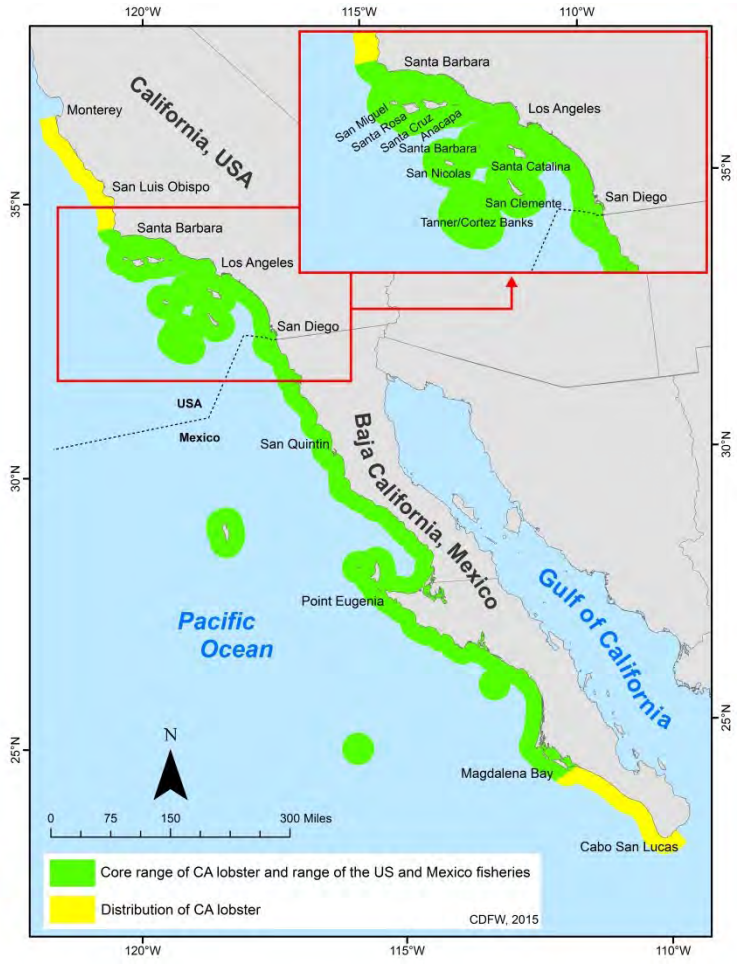

Figure 1-1: Geographic range of CA lobster (*P. interruptus*).
***A 20mi buffer from the coast was used to indicate the approximate range of the species, and does not represent fine-scale distribution**

A 2011 **stock assessment** suggested that the post-2000 CA lobster **population** is at a sustainable level where surplus production provides the majority of the harvestable CA lobster each season (Neilson, 2011). This conclusion was based mostly on consistency in the size of captured lobsters, **harvest rates**, catch totals, and level of fishing effort since 2000.

Stock assessment - An evaluation of the status of a stock, including past and current stock levels and information to help guide future harvest. Assessments may integrate many different biological data, including growth rates of fish, mortality rates, age at first reproduction, fecundity, size classes present in the catch, and selectivity of fishing gear.
Population – All the individuals of a species that live in the same geographic area. A population may contain several discrete breeding groups or stocks.
Harvest rate (u) - The percentage of legally harvestable individuals in a population that are removed each year due to fishing.
Stock - A group of fish of the same species in a given management area. A single stock may be comprised of multiple populations or be a portion of a single larger population.

Biological sustainability of the **stock** is attributed to multiple factors. Chief among them is likely the minimum legal size for the CA lobster fisheries, which is larger than the size at which individuals reach sexual maturity (Section 3.3). The number of sublegal-size lobsters caught by commercial fishermen has increased in recent years, which suggests that the current size limit is effective, and that a sizable number of sublegal-size lobsters are present in the wild and contributing to reproduction (Neilson, 2011).

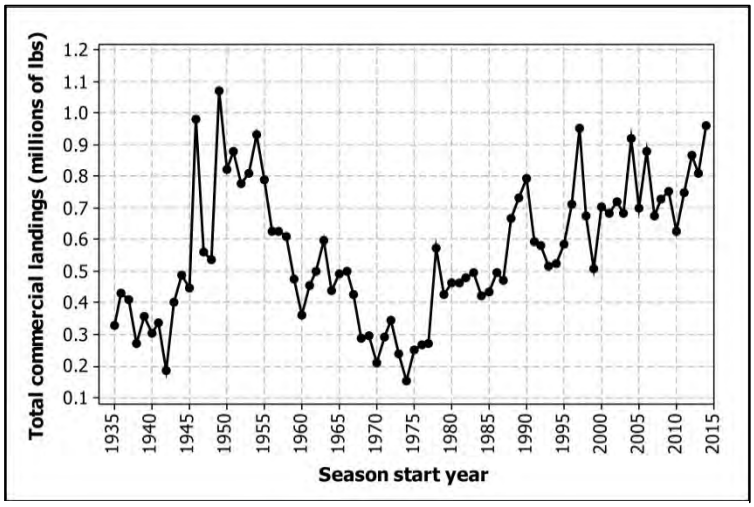

Figure 2-1: Commercial CA lobster (*P. interruptus*) landings from the 1936-37 to 2014-15 fishing seasons.

2.1 Commercial Fishery History and Description

The commercial CA lobster fishery can be characterized by several distinct periods. Commercial landings peaked at an all-time high of 485 mt (1.07 million pounds) during the 1949-50 fishing season, and declined to a record low of 69 mt (152,000 pounds) during the 1974-75 fishing season (Figure 2-1). The reason for this decline was thought to have been the illegal take of sublegal-size adults, and was corrected by the introduction of escape ports in 1976, which allowed sublegal-size individuals to exit

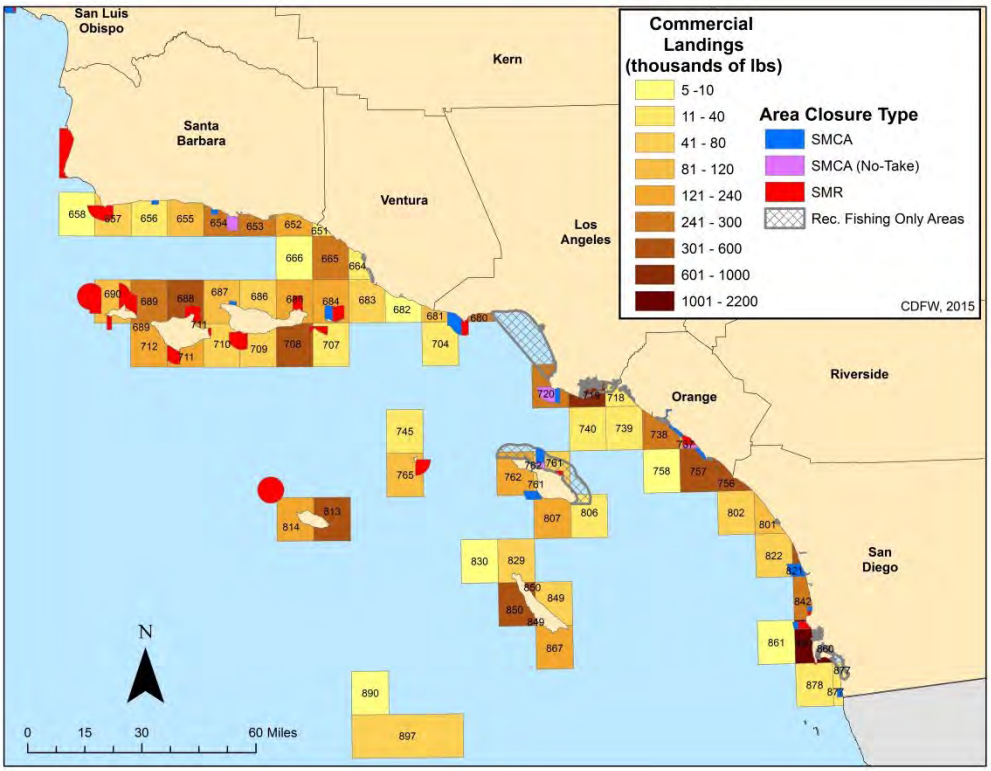

Figure 2-2: Commercial CA lobster (*P. interruptus*) landings by CDFW commercial fishing block between 2000-2014 fishing seasons overlayed with MPAs and recreational-only fishing areas.
***SMCA = State Marine Conservation Area**
****SMR = State Marine Reserve**

traps (Barsky, 2001). After 1976, the harvest increased and was stable for approximately a decade. Landings then showed further increases but volatility until the 2000-01 fishing season, when 319 mt (702,000 pounds) were landed. Since 2000, **landings** have fluctuated within a relatively narrow range, exceeding 300 mt (661,000 pounds) each season. Figure 2-2 provides a snap shot of CA lobster landings based on commercial fishing blocks between 2000 and 2013 along with marine protected areas (some of which prohibit the take of CA lobster). Since 2000, the number of active commercial participants has remained relatively consistent between 145 and 160.

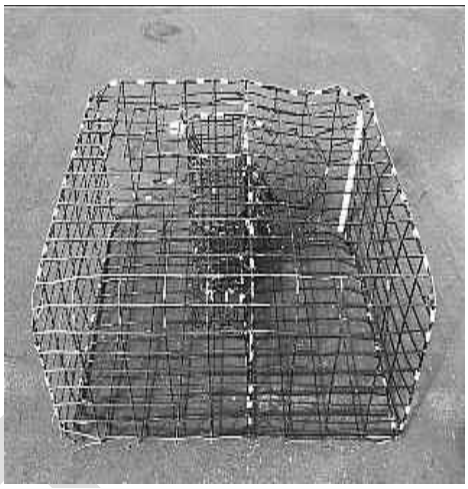

Figure 2-3: CA lobster (*P. interruptus*) commercial fishing trap.

Commercial fishermen use wire box-like traps deployed from boats to catch CA lobsters (Figure 2-3). Properly placed and serviced traps do not generally cause significant physical disturbance to the environment (Eno et al., 2001). Traps are usually deployed in less than 31 m (100 ft) of water, but some are deployed as deep as approximately 93 m (300 ft). According to a 2013 CDFW commercial fishery survey, fishermen generally operate 75 to 1,000 traps each season, with a median of 300 traps. California law requires fishermen to service (pull and clean) each deployed trap at least once every 96 hours, weather conditions permitting (FGC § 9004).

Traps - Generally, a wire basket or cage used for trapping certain types of organisms.
Landings - The number or poundage of fish unloaded at a dock by commercial fishermen or brought to shore by recreational fishermen for personal use. Landings are reported at the points where fish are brought to shore. Note that landings, catch, and harvest define different things.

Commercial landings tend to be distributed evenly between San Diego County, Los Angeles/Orange Counties, and Santa Barbara/ Ventura Counties. However habitat area and fishing effort are not equally distributed. For example, in the last 10 years 20-30% of all trap pulls and a similar proportion of the total catch can be attributed to the single fishing block at Point Loma, San Diego. In general, 80% of a season's catch is landed within the first half of the commercial season by mid-January. The majority of CA lobsters caught by the commercial fishery have reached legal size within the last year, although larger lobsters are still landed (Neilson, 2011).

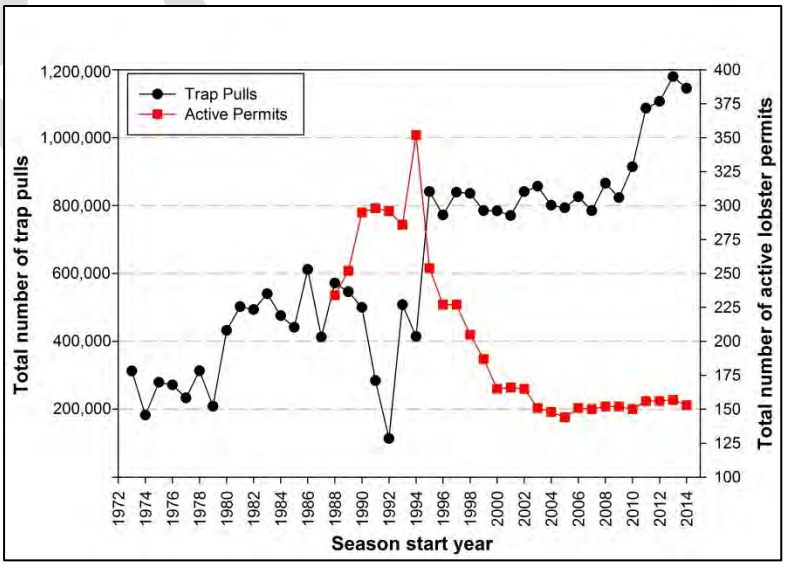

Figure 2-4: Total commercial trap pulls for CA lobster *(P. interruptus)* by year (black) compared to total number of active fishermen by year (red).

***Active Permits defined as individuals who made at least one landing during a particular fishing season**

Commercial fishing effort (i.e., number of trap pulls) has been increasing in recent years despite an overall decrease in the number of active fishermen since the late

1990s (Figure 2-4). Between 1995 and 2009, the annual total trap pulls of the commercial fleet hovered near 800,000 pulls. In 2012, the number increased to just over 1.1 million pulls, despite the number of active fishermen remaining stable at about 150 individuals since 2003. This effort increase could be driven by several factors. Permit transferability adopted in 2005 can create considerable debt for new entrants into the fishery. Transferable lobster operator permits sold for approximately $75-100K in the 2010s on the private market. This estimate is based on online permit exchange (e.g., http://www.permitmaster.com) and is consistent with testimonies from commercial fishermen during the Commission's Marine Resources Committee meetings. It is reasonable to expect the owners of this debt would have incentive to fish harder than unindebted permit holders.

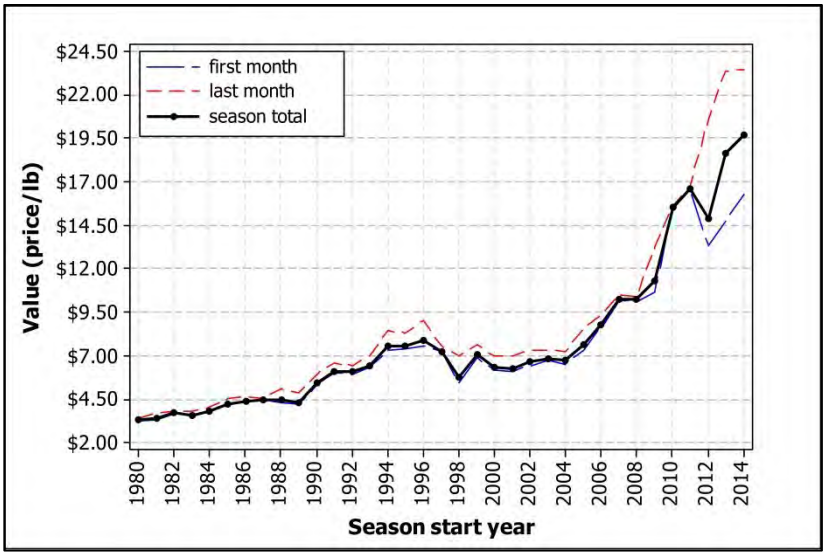

Figure 2-5: Mean commercial CA lobster (*P. interruptus*) landings value (price/pound (lb)) by fishing season. Lines indicate the total season, beginning (Sept+Oct) and ending (Feb+Mar) average value.

Ex-vessel price/Ex-vessel value - The value of fish at first sale by fishermen at the dock, distinguished from wholesale or retail value.
Yield per recruit (YPR) - A theoretical value that describes the yield to a fishery that is contributed by a given number of recruits (usually a single recruit).

Furthermore, some longtime permit holders who formerly contributed little effort to the fishery are becoming increasingly active because of the rapidly rising ex-vessel price of CA lobster in recent years. The average landing price of CA lobster has consistently increased over each season since the early 1990s (Figure 2-5). In the 2014-15 fishing season the fishery hit a record average seasonal landing price of $19.67/pound. The average landing price ($/pound) of CA lobster increased by approximately $8/pound between the 1980-81 and 2009-10 fishing seasons as domestic demand slowly grew. However, the average price increased by the same amount in just 5 years between the 2009-10 fishing season and the 2014-15 fishing season, as foreign markets expanded and export demand grew (Figure 2-5). Total **ex-vessel value** increased gradually between the late 1960s and 1990s, after which the value increased at a much faster rate and reached a record high of $18.7 million in the 2014-15 fishing season (Figure 2-6).

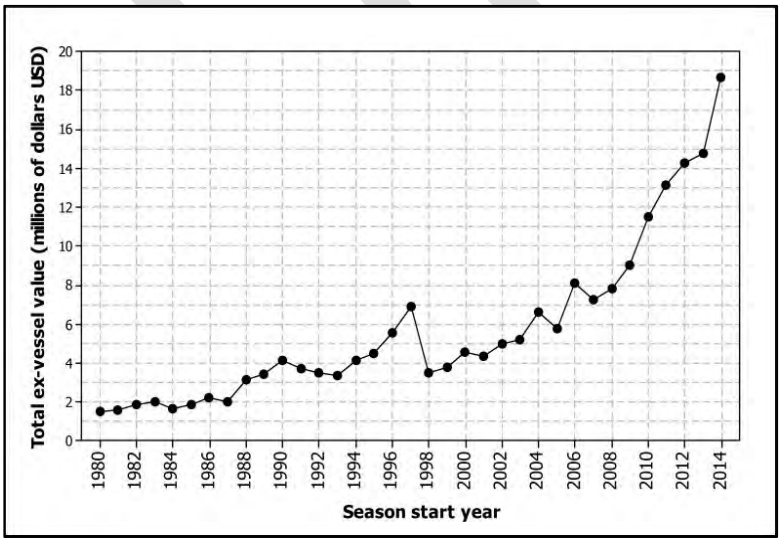

Figure 2-6: Total ex-vessel value of the CA lobster (*P. interruptus*) fishery from 1980 to 2014.

Figure 2-7 shows the cumulative percentage contribution of fishermen, ranked from highest to lowest catch, to the total catch of the fishery in the 2013-14 fishing season. If all fishermen land similar levels of catch, the cumulative catch will be a straight line. Here the slope is curved, which means that differences exist with some fishermen landing more than others. Furthermore, the curve is very gradual with no significant break, suggesting there is high competition within the fishery, and a fisherman can easily trade place with those immediately before or after him/her from one season to the next. However, this graph does not show the difference in operational costs between fishermen; a more efficient fisherman (e.g., loses less traps or running a more efficient boat) may generate more profit than a more highly ranked competitor.

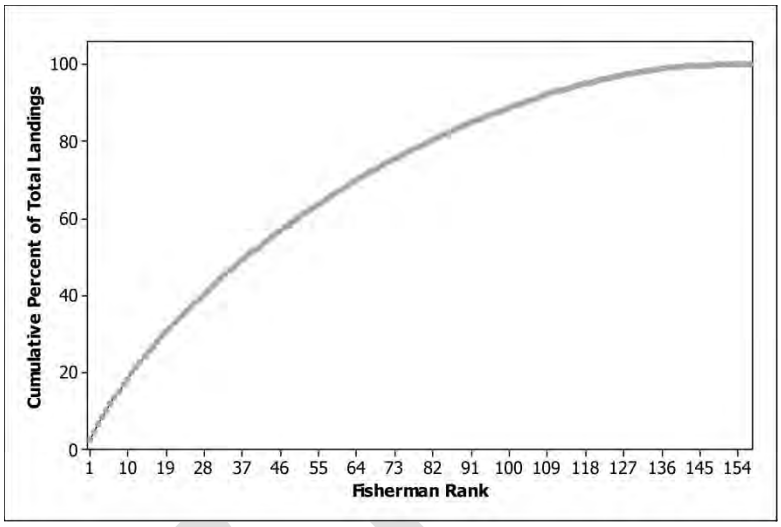

Figure 2-7: The cumulative percent contribution of fishermen to the 2013-14 CA lobster (*P. interruptus*) fishing season landings.
***The graph starts with the fisherman with the highest landings and incrementally adds the landings of the next highest-landing fisherman until all active fishermen are accounted for.**

High effort in the commercial fishery may present challenges to sustainability when it results in a high harvest rate. Instantaneous harvest rate (Section 4.1) in the San Diego region is estimated to be higher than Santa Barbara. For CA lobster, however, **yield per recruit** (YPR) increases very little when harvest rates are increased beyond a certain point, leading to **economic overfishing** (Kay, 2011; Section 4.1). This scenario is nearly universal among the world's lobster fisheries (Gardner et al., 2013). The economic inefficiency of high harvest rates is accompanied by other challenges to California's MLMA objectives (Section 4.1). These include a lower spawning potential, diminished non-consumptive user experiences, and greater risk of undesired ecological interactions (e.g., bycatch, lost gear, ghost fishing).

2.2 Recreational Fishery History and Description

The recreational fishery targets CA lobster using **hoop nets** (Figure 2-8) or by hand when diving (**SCUBA** or skin diving). Historically, diving has been more prevalent than hoop netting. Eighty percent of the interviewees in a 1992 CDFW recreational **creel survey** were composed of divers, with hoop netters accounting for 20%. This pattern has since changed with 80% of the recreational interviewees hoop netting in the more recent 2007 CDFW recreational creel survey.

CDFW was not able to quantify recreational catch until recent years through the recreational lobster **report card** (Section 5.1.1; Table 2-1). Low report card return rates cause uncertainty in recreational catch estimates, because returned cards may not reflect unreturned cards, and sample size is reduced for stratification. However, return rates have been improving and a non-reporting

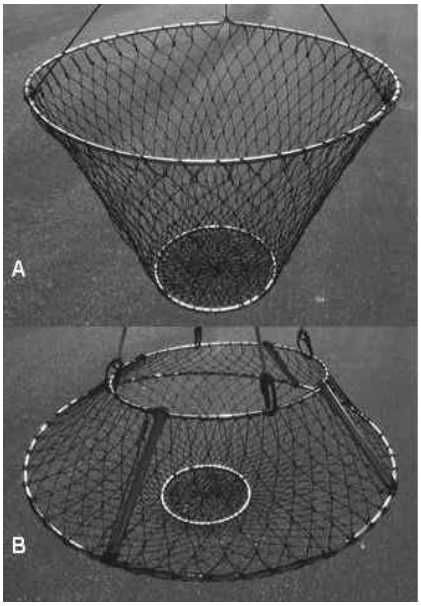

Figure 2-8: Traditional hoop net (A) and rigid conical hoop net (B).

fee of $20 was implemented to cover costs of CA lobster management in 2014. An anticipated effect of that fee is an improvement in return rates. Estimates for recreational catch range from 292,442 pounds in 2013 to 527,357 pounds in 2009 representing 27 to 43% of the total recreational and commercial catch. While the estimated 95% confidence intervals for recreational catch are narrow, they do not incorporate uncertainty due to poaching or the potential that catch on returned report cards is not representative of catch on un-returned report cards.

CDFW allows two types of hoop nets: traditional hoop nets and rigid **conical hoop nets** (14 CCR § 29.80). The traditional hoop nets lie flat on the seafloor and only take their three-dimensional shape when pulled to the surface. A slow or jerky pull can allow lobster to escape out the top or sides. Conical hoop nets, introduced in 2006, have rigid sides and do not lie flat on the seafloor. The lobster must climb up and into the net to reach the bait. When disturbed, lobsters fleeing sideways are blocked by the net regardless of how the hoop net is pulled. A 2009 CDFW study found that conical nets catch about 57% more lobster than traditional style nets over time (Neilson et al., 2009). Additionally, Miller (2014) found that the size of lobsters entrapped within a power plant cooling system significantly decreased following the introduction of conical hoop nets and the increased use of hoop nets in the recreational fishery. The power plant is located within Santa Monica Bay where only recreational fishing is allowed. This suggests the recreational fishery may be having an impact on the local population and continued monitoring is warranted.

Statistical comparison between hoop net fishermen and divers has been particularly problematic. For example, in 2009, only 50.9% of all report cards returned were from hoop net fishermen, even though both the creel survey and the recreational industry representatives indicated that a large majority of the recreational fishermen at that point were hoop net fishermen. The most recent set of report card returns (2014-15 fishing season) was composed of 60% hoop net fishermen. However, this result may still be underrepresenting the overall fraction of hoop net fishermen. When the report card requirement was first implemented, report cards tracked the calendar years. Starting in 2013, CDFW adjusted report cards to track individual lobster fishing seasons which cross consecutive calendar years, following input from various constituent representatives. Data from the 2014-15 fishing season lobster report cards estimated the recreational catch to be 199.2 mt (439,151 pounds), or about 31% of the total (i.e., recreational plus commercial) catch. The report cards also indicate that most CA lobsters captured by the recreational fishery are caught in areas where the commercial fishery is prohibited (Figure 2-9; FGC § 8258). It is unclear whether this pattern is caused by ease of access from ports or better fishing conditions. Communication with hoop net retailer representatives suggests that public interest in hoop nets may have plateaued. (J. Salazar, pers. comm.), but future recreational effort increases may be inevitable due to human population growth in California. CDFW will continue to improve its data collection on the recreational sector and remain adaptive towards any change.

Economic overfishing - Fishing levels that exceed maximum economic yield.
Hoop net - A round net used to catch lobster by the recreational lobster fishing sector in California; it traditionally lies flat on the seafloor and assumes a basket shape upon retrieval to the surface.
SCUBA - "Self-Contained Underwater Breathing Apparatus" utilized to catch lobster by hand by the recreational lobster fishing sector in California; proposed here as a way for commercial fishermen to retrieve lost traps or cut out of entanglement.
Creel survey - Catch information gathered from recreational fishermen.
Conical hoop net - A modified style of hoop net used to catch lobster by the recreational lobster fishing sector in California; it is basket shaped, does not collapse, and does not lie flat on the seafloor.
Report card - A means of collecting fishery-dependent data on the recreational lobster fishery in California. Lobster report cards collect information on the number of people recreationally fishing for lobster each year, the gear they use, and their harvest and success rates. Required since 2008 to be filled out by all persons fishing recreationally for lobster in California.

Table 2-1: Estimate of Total Recreational CA Lobster (*P. interruptus*) Fishing Effort and Catch from 2008 to 2015 based on recreational report card data.

Estimates of Total Recreational Lobster Fishing Effort and Catch

Calendar Year	Number of Cards Sold	Return Rate	Estimated Number of Active Lobster Cards (Cards that recorded at least one trip)	Estimated Number of Fishing Trips	Average CPUE (# of Lobsters Kept Per Trip)	Estimated Weight of Landings in Metric Tons (mt) (pounds (lb))	Percent of Total (Recreational + Commercial) Landings	± 95% Confidence Intervals
2008*	27,472	22%	24,038	104,085	2.1	160.93 mt (354,792 lb)	32%	6.73 mt (14,837 lb)
2009	32,343	14%	27,847	147,868	2.2	239.21 mt (527,357 lb)	43%	13.02 mt (28,715 lb)
2010	29,108	12%	25,033	127,168	2.1	197.24 mt (434,848 lb)	38%	12.96 mt (28,570 lb)
2011	33,376	16%	28,870	154,743	2.0	195.02 mt (429,953 lb)	36%	9.85 mt (21,722 lb)
2012	37,193	33%	28,527	127,801	2.0	185.97 mt (409,984 lb)	32%	6.14 mt (13,532 lb)
2013	14,514**	49%	11,437	71,024	2.1	163.26 mt** (359,928 lb)	32%***	*****
2013-14	33,668	48%	26,295	88,351	1.6	174.53 mt*** (384,781 lb)	32%****	*****
2014-15	36,414	54%	28,530	111,552	1.9	155.39 mt (342,583 lb)	26%	3.24 mt (7,136 lb)

*Lobster report card was implemented in the fall of 2008; CDFW only has estimates for the latter half of calendar year 2008

**Season-length report card was implemented for the 2013-14 fishing season. While some recreational fishermen still purchased 2013 calendar year lobster report cards along with 2013-14 season-length report cards, other fishermen only purchased 2013-14 season-length report cards.

*** 2013 "Estimated Weight of Landings in Tons" and "Percent of Total Landings" includes landings from 2013 calendar year cards, PLUS landings from September, October, November, and December on 2013-2014 full season cards.

**** 2013-2014 "Estimated Weight of Landings in Tons" and "Percent of Total Landings" includes landings from 2013-2014 full season cards, PLUS landings from September, October, November, and December on 2013 calendar year cards.

*****Unable to calculate due to calendar to seasonal switch.

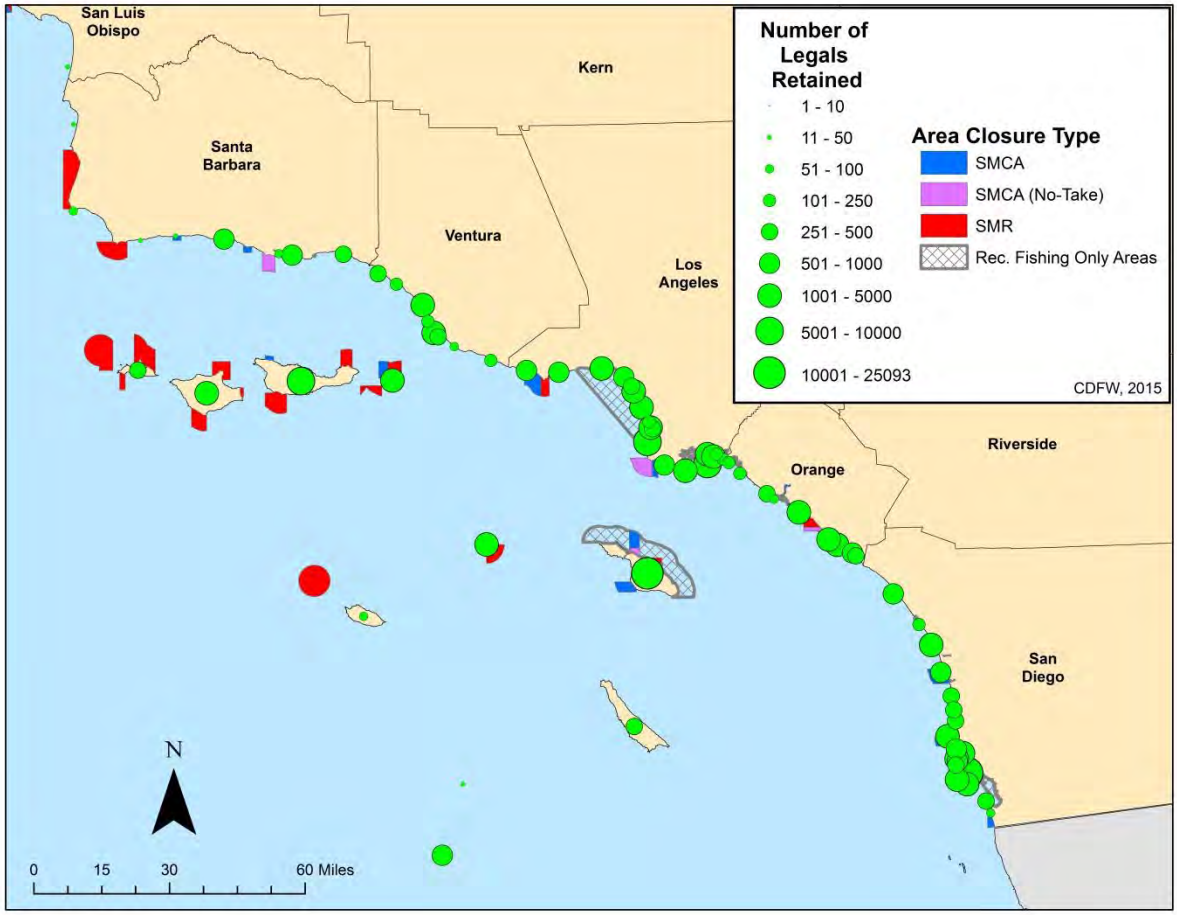

Figure 2-9: Number of legal CA lobsters (*P. interruptus*) reported retained from recreational lobster report cards in 2013 overlayed with area closures (MPAs and recreational-only fishing areas).
***SMCA = State Marine Conservation Area (may allow some commercial and/or recreational take)**
****SMR = State Marine Reserve (no take areas)**
*****Northern-most dot denotes total catch between San Luis Obispo up to CA-OR border**

2.3 Bycatch within the Fishery

Bycatch occurs in both the recreational and commercial CA lobster fisheries. There are generally two types of bycatch (FGC § 90.5) in the fisheries: 1) sublegal-size lobster; and 2) other non-targeted marine life. The MLMA calls for the minimization of bycatch when the amount or type is "unacceptable" (FGC § 7085(c)). Based on available data, CDFW concludes that there is no indication of unacceptable bycatch levels in either the commercial or recreational fisheries.

2.3.1 Commercial Fishing Bycatch

Trap fisheries generally have minimal bycatch of species other than invertebrates (Morgan and Chuenpagdee, 2003; Matthews et al., 2005). These traps are required to have both destruct devices (destruct clips/rings) to avoid ghost fishing as well as escape ports to minimize the catch of sublegal-size lobster. Traps are set on the bottom in rocky areas between approximately 3.05 to 91 m (10 to 300 ft) and are baited with whole or cut fish (CDFG, 2001). However, unattended traps can impact the marine ecosystem (e.g., increased chance of gear loss), and fishermen are required to raise and service them at intervals not exceeding 96 hours, weather permitting (FGC § 9004).

A Collaborative At-Sea Sampling Program made possible by Collaborative Fisheries Research West, California Sea Grant, and California Ocean Protection Council was initiated during the 2012-13 CA lobster fishing season. This program did not specifically focus on bycatch, however bycatch information was collected. Sampling was performed by fishermen throughout the **Southern California Bight** (SCB) with a total of 2,520 traps sampled. These data are reported in Table 2-2.

Table 2-2: Bycatch found in 2,520 commercial CA lobster (*P. interruptus*) fishing traps (Source: CASP unpublished data, Culver, 2013).

Common species name	Scientific name	% of total animals caught (5,284)
sublegal-sized CA Lobster	*Panulirus interruptus*	83.29%
Kellet's Whelk*	*Kelletia kelletii*	5.98%
Rock Crab*	*Cancer* spp.	4.20%
Wavy Top Snail	*Megastraea undosa*	0.47%
Sheep Crab*	*Loxorhynchus grandis*	1.29%
Cabezon	*Scorpaenichthys marmoratus*	0.45%
Lingcod	*Ophiodon elongates*	0.28%
CA. Scorpionfish (Sculpin)	*Scorpaena guttata*	0.04%
Swell Shark	*Cephaloscyllium ventriosum*	0.11%
Rockfish (Unidentified)	*Sebastes* spp.	0.02%
Goby (Unidentified)	Gobiidae spp.	0.02%
CA Sheephead	*Semicossyphus pulcher*	0.02%
Ocean Whitefish	*Caulolatilus princeps*	0.02%
Horn Shark	*Heterodontus francisci*	0.04%
Perch (Unidentified)	Embiotocidae spp.	0.04%
Skate (Unidentified)	Rajidae spp.	0.04%
Crab (Unidentified)	Decapoda spp.	0.02%
Sea Hare (Unidentified)	*Aplysia* spp.	0.09%
Sea Star (Unidentified)	Asteroidea spp.	2.44%
Kelp Crab (Unidentified)*	*Taliepus nuttallii / Pugettia producta*	0.09%
Octopus (Unidentified)*	Octopodidae spp.	0.23%
Urchin (Unidentified)	Echinoidea spp.	0.74%
Barred Sand Bass	*Paralabrax nebulifer*	0.02%
Snail (Unidentified)	Gastropoda spp.	0.06%

*Species that are legal to sell

Available information shows that a majority of CA lobster commercial fishing bycatch consists of invertebrates, with sublegal-size lobsters making up a great majority of the total bycatch. The other most common bycatch in the CA lobster commercial fishery are Kellet's whelk, rock crabs, starfish, sheep crabs, urchins, and wavy top snails (Culver unpublished data, 2013). Data from CDFW commercial fishing logs suggest that the amount of sublegal-size lobster bycatch has increased in recent years.

Fishermen may unintentionally damage (break legs or antennae) sublegal-size lobsters when removing them from traps. One Australian study found that spiny

Southern California Bight (SCB) – The coastal and its immediate offshore areas between Point Conception to the north and the U.S. – Mexico border to the south. The curvature of the coastline and the relatively shallow depth of the area lead to oceanographic and biological characteristics that are clearly distinguishable from the central California coast.

Fecundity - The reproductive capacity of an individual female animal during a reproductive event or breeding season, generally expressed as the number of eggs or larvae per unit weight or per individual.

lobsters with broken appendages become less fecund due to extra energy being exerted for healing and repairing the broken appendages (Melville-Smith and de Lestang, 2007). Any similar impact on the **fecundity** of CA lobster and the survival rates of returned sublegal lobsters is currently unknown.

Commercial CA lobster fishermen can legally retain certain crabs, Kellet's whelks, and octopi (FGC § 8250.5). These bycatch are reported and included in the calculation of the total annual landings of each species. Since most bycatch that are not legally retained by fishermen can be returned to the ocean alive with proper handling, the ecosystem impact through bycatch for this fishery is limited (Hovel & Neilson, 2011; Miller, 1996). Data from Mexico reflect similar patterns in bycatch. While a 2004 study suggests that bycatch is practically non-existent in the Mexican lobster fishery (SCS, 2004), a more recent study found the weight of the bycatch in that fishery to be 15% of the total catch (Shester and Micheli, 2011). Most of the Mexican bycatch, excluding sublegal lobster, consists of crabs and other invertebrate species. Recent studies also observed sea bird (cormorant) bycatch in Mexico and Florida (Matthews et al., 2005; Shester and Micheli, 2011). However, there has not been any cormorant mortality attributed to lobster traps in California, which are all outfitted with escape ports.

2.3.2 Recreational Fishing Bycatch

Recreational fishing for CA lobster primarily occurs from Point Conception, CA to the U.S. – Mexico border, including **offshore** islands and reefs. Lobsters are caught by hand during dive trips, and divers are required to release sublegal-size individuals immediately after measuring. Certain other invertebrates may also be retained by divers targeting lobster. Hoop netters are primarily boat-based. They generally set the baited nets on the bottom in shallow waters < 30.5 m (100 ft), and raise them after a soak time of < 2 hours. Available information shows that most of the hoop net bycatch is invertebrates such as sublegal-size lobsters, rock crabs of the *Cancer* genus, and sheep crabs. Some **finfishes** are also caught, with round stingrays being the most common (Neilson et al., 2009). Live finfishes and invertebrates can usually be released from hoop nets safely (Hovel and Neilson, 2011). Survival is high when animals are quickly returned to the water (Miller, 1996).

Offshore - All oceanic waters outside state waters or deeper than 100 fathoms.
Finfish - Any species of bony fish or cartilaginous fish (sharks, skates and rays). Finfish do not include amphibians, invertebrates, plants or algae
Total allowable catch (TAC) - A specified numerical catch objective for each fishing season; the attainment (or expected attainment) of which may cause closure of the fishery.

Data on hoop net bycatch is limited, and no data on diving bycatch exists. An unknown number of crabs are retained by hoop netters every year. Available data come from a CDFW hoop net study at Zuniga Jetty near San Diego Bay, CDFW video observations of hoop netting at Indian Rock at Catalina Island, and recreational gear data from the California Lost Fishing Gear Recovery Project. CDFW also relies on information provided by its enforcement officers as well as anecdotal information provided through online fishing reports posted on recreational fishing websites.

2.3.3 Legality of Bycatch and Seabird and Marine Mammal Gear Interactions

Commercial and recreational fishermen are not allowed to retain sublegal-size lobsters under current California law (FGC § 8252; 14 CCR § 29.90). However, fishermen may retain legal-size crabs and octopi provided that they have the valid permits (14 CCR § 125; 14 CCR § 29.85; FGC § 8250). Commercial fishermen may also retain Kellet's whelk until the whelk's annual **total allowable catch** (TAC) is reached (14 CCR § 127; FGC § 8250).

Seabird and otter bycatch is not common within the CA lobster fisheries. Research conducted on sea otter entrapment and mortality in fish and shellfish traps suggests that the CA lobster fishery is not

expected to contribute to otter mortality if the current geographic extent of the fishery and the current otter range both remain unchanged (USGS, 2014). Of the 15 reported instances of trap-related sea otter mortalities during 1974-2007, 14 occurred in either Pacific cod or crab traps (Hatfield et al., 2011). One incidence of a sea otter mortality associated with lobster traps was recorded in 1987 (Carretta et al., 2014). The majority of California's southern sea otter mortalities on record were the result of shark attacks, boat strikes, mating trauma, diseases, parasites, infections, and biotoxins (CDFW-MWVCRC, 2013).

Marine mammal mortality as a result of entanglement in lobster fishing gear is rare in the CA lobster fishery. Lobster traps are generally deployed in less than 100 ft of water, a depth range where large marine mammals such as whales are not generally found. However, the number of whales observed entangled in trap gear on the California coast has been increasing in recent years (National Marine Fisheries Service stranding database). Since the year 2000, there have been four reported incidences of gray whales, one humpback whale, and one unidentified whale entangled in lobster gear (Carretta et al., 2014; National Marine Fisheries Service stranding database) and 1 recorded incidence of bottlenose dolphin entanglement in 2008 (Carretta et al., 2014). Mortality due to entanglement was confirmed for only the unidentified whale.

The National Marine Fisheries Service classifies fisheries based on their level of interaction with marine mammals and guides when incidental take permits under MMPA are required. Under MMPA, a fishery would require an incidental take permit if it is classified as "Category I" or "Category II" (50 CFR § 229.2). The CA lobster fishery was classified as "Category III" in 2014 (79 FR 77934). Such fisheries "have a remote likelihood of, or no known incidental mortality and serious injury of marine mammals" (50 CFR § 229.2). The fishery should continue to remain in Category III as long as its annual take of any marine mammals continues to remain less than 1% of a given stock's potential biological removal level or, in combination with other mortality sources, is responsible for less than 10% of the stock's potential biological removal level (50 CFR § 229.2).

2.4 History of Conservation and Management Measures Affecting the Fishery

California has regulated the CA lobster fishery for over a hundred years. Current management measures include commercial fishing permits, recreational harvest report cards, gear restrictions, **size limits**, time and area closures, and a recreational possession limit. The Commission has complete management authority over the recreational fishery (14 CCR § 29.90) and significant management authority over the commercial CA lobster fishery (Table 2-3) (14 CCR § 121-122; FGC §§ 8254, 8259).

California law controls the commercial fishery's overall **fishery effort** with a **limited entry program** (FGC § 8259; 14 CCR § 122). Since 2005, fishermen with transferable permits are allowed to sell their permits under strict conditions. Individuals wishing to enter the fishery have to purchase a permit from an existing permittee. The number of permittees actively fishing has been stable since 2008. During the 2013-14 fishing season, 141 transferable permits and 51 non-transferable permits were renewed; 157 of those permits were actually fished.

Size limit - The minimum size a fish or other organism must be for it to be possessed.
Fishing Effort - A measure of some expenditure in pursuing a fishing activity. The measure in lobster fishing effort is usually in terms of number trap pulls (in commercial fishery), number of fishing trips, or time spent fishing.
Limited entry program - Regulatory program that restricts the total number of permitted fishing licenses or vessels.

On the recreational side, all fishermen are required to purchase a CA lobster report card regardless of their age, and all fishermen 16 years or older must purchase a sport fishing license unless they are fishing during free fishing days or on public fishing piers. All recreational fishermen are restricted

by a daily bag and possession limit of 7 lobsters and a 3.25 inch (82.6 mm) minimum carapace size. Hoop nets are restricted to 5 hoop nets per person (2 if fishing from a public pier) and 10 hoop nets per vessel. Fishermen are also required to pull and inspect the contents of their hoop nets every 2 hours.

In 1998, the MLMA was passed and required the state to manage all fisheries sustainably, in part through the use of FMPs. In 1999, the Marine Life Protection Act (MLPA) was passed in California, which led to the establishment of a statewide network of **marine protected areas** (MPAs) (Section 4.7).

2.5 Economic and Social Factors of the CA Lobster Fisheries

The economic status of the CA lobster fishery was evaluated by an independent panel of experts in April 2013. The report (Appendix VI) analyzes the expenditures of the commercial fishery and recreational fishery, as well as the economic significance of the commercial fishery based on the 2009-10 to the 2011-12 fishing seasons. The report provides a statewide perspective on the economic significance of the fishery and establishes a foundation for future economic analysis.

Ten commercial lobster fishermen were surveyed with questions relating to the cost of participating in the fishery based on methodologies established in a 2009 study (Hackett et al., 2009). The commercial lobster fishery's total 2011 operational cost was estimated at approximately $10.5 million. Of this, over half (> $6 million) comes from a combination of bait (~$1.6 million), fuel (~$1.3 million), crew wages

Table 2-3: Regulatory history of the CA lobster (*P. interruptus*) fishery.

Year	Regulatory Change Affecting the Commercial CA Lobster Fishery	Type of Change
1894	1 pound minimum size in Los Angeles, San Diego, and Ventura Counties	Size limit
1901	Berried Females Protected (repealed)	Management
1901	First minimum length implemented (9½" total length)	Size limit
1913	First slot limit introduced (9" – 13½")	Size limit
1917	Slot limit modified (10½" – 16")	Size limit
1955	3.25 inch carapace length minimum size implemented	Size limit
1957	2x4 inch wire mesh required or 2 inch high openings along two sides of traps to allow escape of undersized lobsters	Gear restriction
1961	Implementation of the modern day open season: The first Wednesday in October through the first Wednesday after March 15	Season
1961	Fish and Game Commission given authority to manage the fishery	Management
1961	Lobster permits required. New permits issued by lottery with a capacity goal of 225 fishermen	Management/ Permitting
1973	Logbooks required by law to record essential fishery information. Also, permit applications require estimate of number of traps to be fished	Reporting
1976	Escape ports are required for commercial traps	Gear restriction
1986	Fish and Game Commission given authority to limit the number of permits	Management/ Permitting
1992	The recreational season opener is moved to the Saturday preceding the first Wednesday in October to provide the sport fishery with four days of fishing prior to the commercial opener	Season
1994	Fish and Game Commission places a moratorium on new permits for 2 years in preparation for a switch to a limited entry permit fishery	Management/ Permitting
1996	Limited entry permit program begins	Management/ Permitting
2003	Lobster permit lottery repealed	Management/ Permitting
2011	CDFW initiates a spiny lobster Fishery Management Plan as mandated by the 1998 Marine Life Management Act	Management
2012	A network of new marine protected areas go into effect in Southern California as mandated by the 1999 Marine Life Protection Act	Fishing area restriction

(~$1.8 million), and federal taxes (~$1.1 million) (see Appendix VI).

The economic impacts (**total economic value added, total economic output)** of the commercial fishery were calculated based on factors such as expenditures (e.g., trap costs, fuel cost) and revenue (e.g., fishing income, export and domestic sales). The gross ex-vessel value of the fishery from the 2011-12 season was $12.9 million, and the statewide total economic output was over $22 million, contributing a total of 323 full-time equivalent jobs. The total economic value added to the economy during this same period was just under $12 million, with $695,893 contributing towards employee compensation (wages and salaries plus benefits for deckhands, crew members). Licensed CA lobster fishermen took in an estimated income of $3.8 million (see Appendix VI, Table 3).

The amount of economic impact the commercial fishery has on coastal communities differs across the southern California region, but the amount of added value is on a similar order of magnitude for each region. The fishery adds roughly $2.1 million dollars of net economic output to the economy of Santa Barbara County, $1.4 million to Ventura County, $2 million to Los Angeles County, $1.6 million to Orange County, and $3.5 million to San Diego County (see Appendix VI, Table 4).

Total economic value added – Total economic output less the goods and services used up to create that output; for lobster fishery, it means the net value of the lobsters after costs like trap purchases are accounted for. Also known as Net Economic Output.
Total economic output – The total amount of economic output that does not take into account the amount of intermediate goods consumed during the harvest/production process; for lobsters, this means the amount of money sales generate before costs such as trap cost are considered. Also known as Gross Economic Output.

The 2013 Economic Report represents the most recent attempt at quantifying the economic impact of the commercial lobster fishery. However, several areas of the report could be improved and revised. The total net income for the fishery was only estimated to be $11,188,354 which is unexpectedly low given 151 active permit holders in 2011. Communication with active commercial lobster fishermen suggests that the cost of commercial lobster fishing may have been overestimated in the report, which likely led to the low estimate for net income. Estimating the true cost of the commercial fishery is complicated by fluctuations in fuel price and competition dynamic within the fishery over time. In addition, the ex-vessel price of CA lobsters has continued to increase significantly since the report was produced, which likely has changed the magnitude of the total economic impact from the commercial fishery.

State-wide expenditures on recreational lobster fishing were calculated based on a telephone survey conducted by CDFW in 2012. The survey targeted a random sample from all individuals who returned a calendar year 2011 lobster report card. The survey found that Californians spent between $33 - $40 million dollars on recreational lobster fishing in 2011 (see Appendix VI). Of this, roughly $7 million is attributed to residents who live in zip codes that border the coastline, $20 million is attributed to other residents living in zip codes that are at least partially within 50 miles of the coastline, while roughly $10 million is attributed to residents living further inland. The largest sources of expenditures were non-coastal residents who live within 50 miles of the coast who fished CA lobster along the coast, and those who live more than 50 miles from the coast who dove for CA lobster offshore.

3. Natural History and Population Dynamics of the California Spiny Lobster

The California spiny lobster (*Panulirus interruptus*) is one of approximately 55 spiny lobster species found in tropical and temperate oceans worldwide, most of which are fished commercially and/or recreationally (Booth, 2011; Phillips and Kittaka, 2000). Spiny lobsters are named after the forward-pointing spiny projections that cover their bodies. The species lack the pincers found on clawed lobsters.

The body of *P. interruptus* has two readily identifiable parts: (1) a fused head and thorax (cephalothorax) enclosed in a carapace, and (2) the abdomen, or tail (Figure 3-1). The carapace protects most major organs and serves as the attachment point for the legs. In sexually mature males, the gonad pores (sperm ducts) are found at the base of the fifth pair of the legs. Females have enlarged swimmerettes, or pleopods, along each side of the tail and a small claw on the fifth legs.

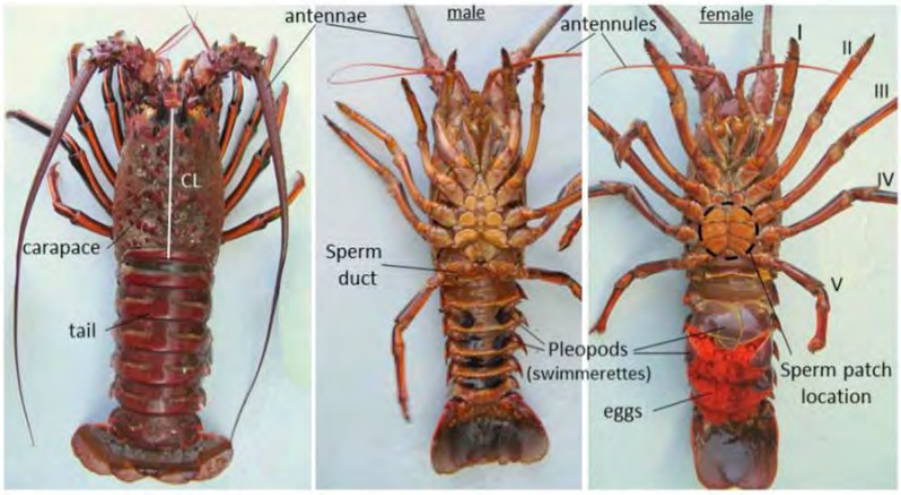

Figure 3-1: External anatomy of CA lobster (*P. interruptus*). CL = carapace length.

3.1 Critical Habitat and Known Threats to the Habitat

One of the primary objectives of the MLMA is to ensure that "the health of marine fishery habitat is maintained" (7056(b)). In order to accomplish this, an understanding of the spatial extent of habitats that support CA lobster throughout their **life history** is needed. The CA lobster is endemic to the North American west coast from Monterey, California southward to at least as far as Magdalena Bay, Baja California (Wilson, 1948; Schmitt, 1921). A small isolated population may have persisted in the northwestern corner of the Gulf of California (Kerstitch, 1989). Johnson and Snook (1927) reported its occurrence as far south as Manzanillo, Mexico. The core range, however, lies between Point Conception, CA and Magdalena Bay (Figure 1-1). The physical center of the range is within Mexico. Population density and fishery **productivity** within Mexico's border is the highest near Cedros Island and Vizcaino Peninsula in Baja California (Vega, 2003a).

Life history - The history of changes an organism passes through in its development from egg, spore, or other primary stage until its natural death.

Sub-adult and adult CA lobsters are commonly found on the seafloor at depths ranging from **intertidal** to 64 m (210 ft) (Mitchell et al., 1969; Robles et al., 1987; Allen, 1916; Lindberg, 1955), while the **planktonic** larvae have been found offshore as far as 530 km (329 mi.) and at depths to 137 m (449 ft) (Johnson, 1960a; CDFG, 2001). Rocky structures/reefs are important **habitat** for CA

Productivity - Describes the birth, growth, and death rates of a stock. A highly productive stock is characterized by high birth, growth and mortality rates, and as a consequence has a high turnover. Such stocks can usually sustain higher exploitation rates and, if depleted, could recover more rapidly than comparatively less productive stocks.
Settlement - In marine ecology, it means the process by which organisms change from an open ocean life history phase to assume a new mode of life as a member of a sea-floor community. In lobster, it is the stage at which juveniles move into the adult habitat where they become resident.
Substrate - The surface or medium on or in which an organism lives (i.e., mud, sand, rocks)

lobster, and high quality rocky habitat is often characterized by the presence of brown algae such as giant kelp (*Macrocystis pyrifera*), feather boa kelp (*Egregia menzesii*), and stalked kelp (*Pterygophora californica*), as well as surfgrass (*Phyllospadix* spp.) (Lindberg, 1955; Engle, 1979). CA lobster habitats are generally described in relation to their juvenile (approx. < 3 years old) and adult (approx. > 3 years old) life stages.

Juveniles range from individuals that have recently settled from the planktonic stage (carapace length (CL) 7-8 mm) to individuals in the range of 44-56 mm CL (Mitchell et al., 1969; Parker, 1972; Serfling, 1972; Engle, 1979). CA lobster larvae prefer to settle on common surfgrass and red algae that are abundant in rubble habitats (Parker 1972, Engle 1979, Castañeda-Fernández de Lara et al., 2005). These shallow rubble habitats are crucial for the CA lobster (Winget, 1968; Blecha, 1972; Parker, 1972; Serfling, 1972; Engle, 1979, Castañeda-Fernández de Lara et al., 2005). These structurally complex habitats also protect and conceal juveniles from predators (Parker, 1972; Engle, 1979). CA lobsters typically remain in these habitats for 2-3 years post-**settlement** until they become sub-adults (Parker, 1972; Engle, 1979; Castañeda-Fernández de Lara et al., 2005).

Adult and sub-adult CA lobster commonly occupy natural hollow spaces within rocky **substrate**. They may also occupy hollowed-out holdfasts of giant kelp created by sea urchin grazing (Mai and Hovel,2007) or burrows excavated (either by CA lobsters or sand scouring processes) near the base of colonies of the sandcastle tube worm (*Phragmatopoma californica*) (Zimmer-Faust and Spanier, 1987). Human structures such as pier pilings (Stull 1991), industrial debris (Lindberg, 1955), harbor jetties (Neilson et al., 2009), and artificial reefs (Barilotti et al., 2005; Reed et al., 2006) can also serve as habitats.

CDFW, working with outside researchers, has compiled all readily available data detailing the spatial coverage of surfgrass[1], eelgrass (*Zostera spp.*)[2], giant kelp[3], hard rocky reef (natural)[4], and artificial reefs[1]. For areas where the bottom substrate habitats have not been previously mapped, aerial multispectral survey data were used to estimate the locations of hard substrate based on the presence of giant kelp coverage recorded in 1989, 1999, 2002-2006, and 2008-2009. Since kelp requires hard rocky substrate to settle and establish, the presence of kelp was determined to serve as an appropriate proxy to estimate reef areas that may act as lobster habitat. Figure 3-2 provides a snap-shot of known area that each of these habitats occupies within the historical range of the CA lobster fishery. For a detailed, known account of these habitats at a regional level, see Appendix III. It is important to note that any artificial or natural hard substrate associated with the sea floor can serve as CA lobster habitat, not all of which are depicted on the map.

Activities such as beach nourishment and urban runoff can adversely affect these habitats (Peterson and Bishop, 2005). Coastal development can also pose a threat to estuarine habitats (Kennish, 2002). Lastly, global climate change will lead to sea level rise and may intensify the impact of El Niño and its associated storm events (Shaughnessy et al., 2012; Section 3.11). Rising sea level coupled with more intense storms can further erode and destroy existing seagrass beds and kelp beds.

[1] Collected by Minerals Management Service and compiled by Tenera Environmental

[2] ERMA. 2015. Web Application: Southwest Environmental Response Management Application, National Oceanic and Atmospheric Administration. http://erma.noaa.gov/southwest

[3] Aerial surveys conducted by CDFW

[4] Collected by Seafloor Mapping Lab at California State University Monterey Bay, United States Geological Survey, Ocean Imaging, and the San Diego Association of Governments

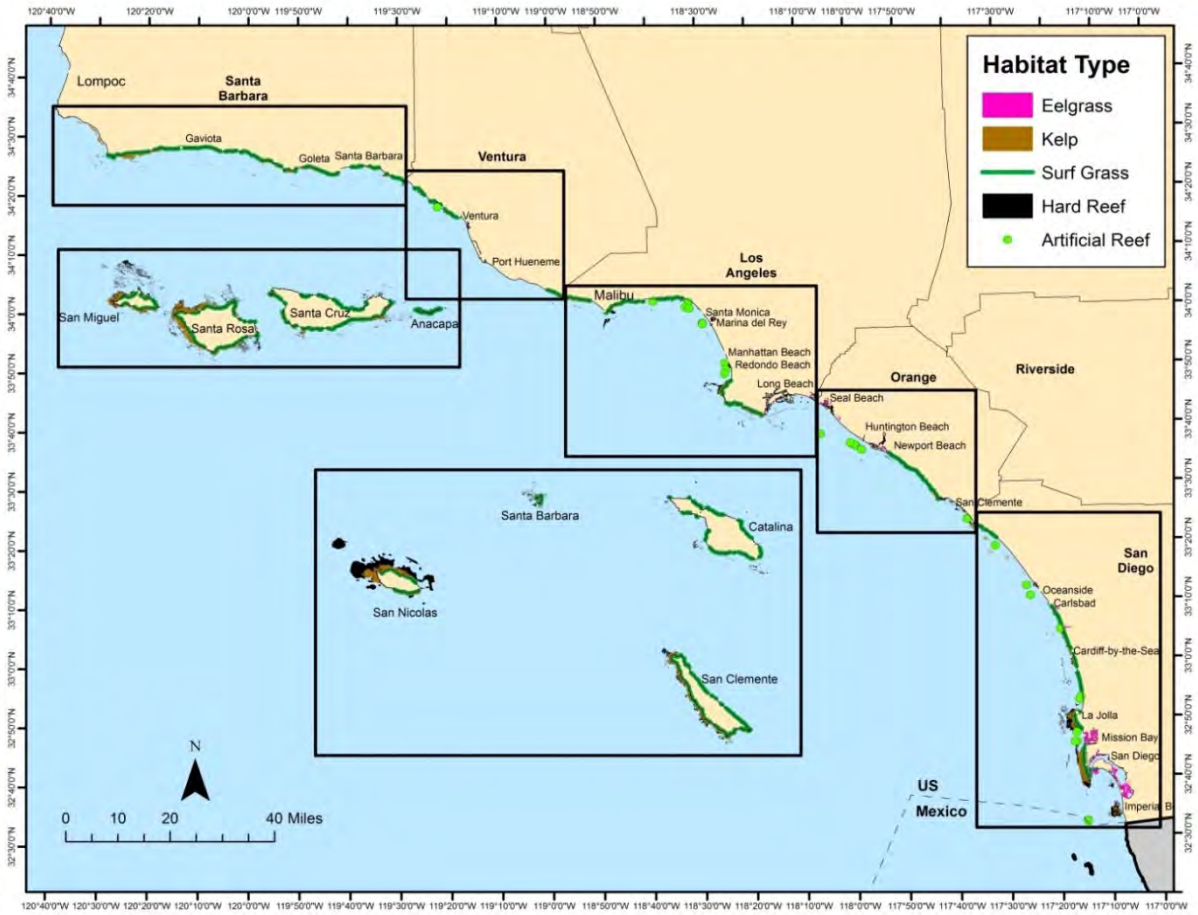

Figure 3-2: Locations of critical CA lobster (*P. interruptus*) habitat in the southern California Bight. Black boxes indicate insets provided in Appendix III: Habitat Maps by Area.

3.2 Growth

Like all crustaceans, CA lobsters have a rigid exoskeleton that covers the outer surface of their bodies. Once formed, this exoskeleton does not shrink or expand. In order to increase its body size, a CA lobster must shed its exoskeleton and replace it with a larger one (Mykles, 1980). The molt frequency and molt increment (size increase during each molt) of a CA lobster determines its growth rate. Rapidly growing young lobsters molt many times per year, but molt frequency decreases with age (Engle, 1979). Existing studies suggest that *P. interruptus* can usually reach a sexually mature size before reaching the minimum legal size of 82.5 mm CL (Table 3-1). However, how quickly or at what age individual CA lobsters can reach the **size at maturity** (SAM) is a complex scientific question. While a variety of modeling approaches allow estimation of growth rates and thus age at a given size, the von Bertalanffy growth equation may be most common (Chang et al., 2012). Currently CDFW uses the von Bertalanffy growth equation, which written as:

Size at maturity (SAM) - The size at which 50% of animals in a population have reached sexual maturity and are capable of reproduction.

$$l_t = L\infty\left(1 - e^{-K(t-t_0)}\right). \qquad \textit{(Equation 3.1)}$$

Where l_t is the size at time t, $L\infty$ equals the average maximum achievable size, K is a growth constant that represents a rate, t is the time step, and t_0 is the size at age zero. Observations of maximum and minimum sizes of individuals can be used to estimate $L\infty$ and t_0 and then K can be calculated. The K

parameter may also be borrowed from comparable species. Parameters can also be derived by fitting the equation to annual growth increment data acquired from tag and recapture studies. Estimates for a CA lobster's lifespan, which is crucial for the calculation of the growth constant K (Chavez and Gorosteita, 2010), range from 30-50 years (Neilson, 2011). A species' asymptotic (maximum) size, $L\infty$, can also vary based on the methodology adopted (Mathews and Samuel, 1990). Choosing the appropriate parameters is important for the management of the fisheries, since the resulting growth curve will directly inform CDFW of the ability of the stock to replenish itself (Section 4.3). CDFW currently uses parameters derived by Vega (2003a) but is continuing to explore other methods for estimation of von Bertalanffy parameters as well as other types of growth models (see Appendix X).

Table 3-1: Size at which 50% of female of CA lobsters (*P. interruptus*) in various population samples were sexually mature (size at maturity: SAM).

♀ SAM (mm CL)	Location	Source	Method*
72.5	Baja (Sebastian Vizcaino bay	Ayala 1983	Ovary
72.6	Baja (Vizcaino Peninsula)	Vega 2003a	Sperm/Egg
70.0	California (Palos Verdes)	Lindberg 1955 (in Engle 1979. Converted using CL=0.31*TL)	Ovary
66.6 (215 mm TL)**	California (Palos Verdes)	Lindberg 1955 (215 mm TL converted to CL using: CL=0.31*TL)	Ovary
78.2 (215 mm TL)**	California (Palos Verdes)	Lindberg 1955 (215 mm TL converted to CL using: CL=0.3798*TL-0.342)	Ovary
63.5 (205 mm TL)**	California (La Jolla)	Fry 1928 (in Wilson 1948) (205 mm TL converted to CL using: CL=0.31*TL)	Not specified
74.4 (205 mm TL)**	California (La Jolla)	Fry 1928 (in Wilson 1948) (205 mm TL converted to CL using: CL=0.3798*TL-0.342)	Not specified
77.2	California (Palos Verdes, La Jolla)	Kay 2011 (Kay converted TL data of Fry 1928 and Lindberg 1955 using: CL=0.3798*TL-0.342)	Egg

Legal Size in California: 82.5 mm CL

***Methods used to measure SAM include analysis of dissected ovaries ("Ovary"), or the proportion of females with a spermatophore and/or eggs ("Sperm/Egg" or "Egg").**

**** SAM reported as total length (TL) by original researchers; TL's were converted to CL in preparation of this document or in other reports, as indicated in the "Source" column. Estimates 3a vs 3b and 4a vs 4b are from same data and differ only in the conversion factor from TL to CL. Although the large range of values for California (63.6-78.3 mm CL) may reflect some degree of natural variation, it may also be caused by differences in how total lengths (TL) were measured in early studies (i.e, Wilson 1948, Lindberg 1955, Backus 1960) and different methods used to convert these total lengths to carapace length (CL) by Engle (1979) and Kay (2011). Due to these inconsistencies, and the time elapsed since initial SAM observations, renewed estimates of SAM in California may be prudent. (Note: 3 ¼ inch legal size = 82.5 mm).**

3.3 Reproduction

Mating in *P. interruptus* occurs when a male places a putty-like spermatophore on the sternum of a female (Figure 3-1). These females are termed "plastered." The spermatophore is durable and can remain in place for months, which allows females to store sperm until eggs in their gonads are fully developed and ready to be fertilized (Ayala, 1983). Plastered females are common from January-May, but are most abundant from February-April (Figure 3-3; Mitchell et al., 1969; Bodkin and Browne, 1992). Females use their hind walking legs to scratch open the spermatophore, which fertilizes eggs as they are extruded. These females then attach the eggs under the pleopods.

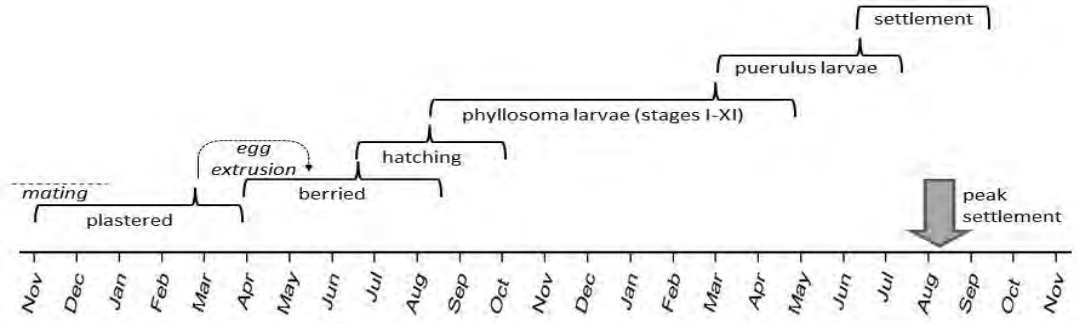

Figure 3-3: Timing of reproduction, larval development, and settlement for CA lobster (*P. interruptus*).

Females with eggs on their tails are referred to as "berried", and are commonly found in California from late April-August and are most abundant June-July (Figure 3-3, Mitchell et al., 1969; Bodkin and Browne, 1992). The time of year at which CA lobster can be found berried depends on factors such as latitude (Pineda-Barrera et al., 1981) and temperature (Vega, 2003b). Females produce one brood of eggs per year (Mitchell et al., 1969; Ayala, 1983; George, 2005).

Pelagic - Of or relating to aquatic organisms that live in the ocean without direct dependence on the shore or bottom.
Plankton - Very small organisms that passively drift with tide and current.
Nearshore - All oceanic state waters within 0-3 miles from shore or less than 100 fathoms deep, whichever is greater.

The total number of eggs carried by individual females (fecundity) increases with female carapace length (Figure 3-4). Lobsters in California carry fewer eggs than individuals in Baja, and this north-south increase in the number of eggs carried was also observed within Baja (Pineda-Barrera et al., 1981). The size at which 50% of female *P. interruptus* in a population are capable of reproduction has been estimated at a number of sites throughout Baja and California. In California, SAM estimates range from 63.5 – 78.2 mm CL, and Baja range from 72.5 mm - 72.6 mm (Figure 3-4; Table 3-1; Table 3-2). Egg- bearing females in the 55 – 60 mm CL size range have been encountered (although not common) during the current CDFW MPA Baseline study in southern California, with the smallest observed size being 53mm CL (Hovel et al., 2015).

3.4 Larval Biology and Dispersal

After an incubation period of approximately 8-9 weeks, developing embryos hatch from the eggs on the female's tail and enter the water column as free swimming (**pelagic**) larvae called phyllosoma (Johnson, 1956). Phyllosoma are flattened, transparent, and 1-2 mm long (4-5 mm including appendages) when they hatch. They then pass through 11 different stages of development and attain a body length of 26-32 mm (Johnson, 1956; Mitchell, 1971). Phyllosoma spend 7-8

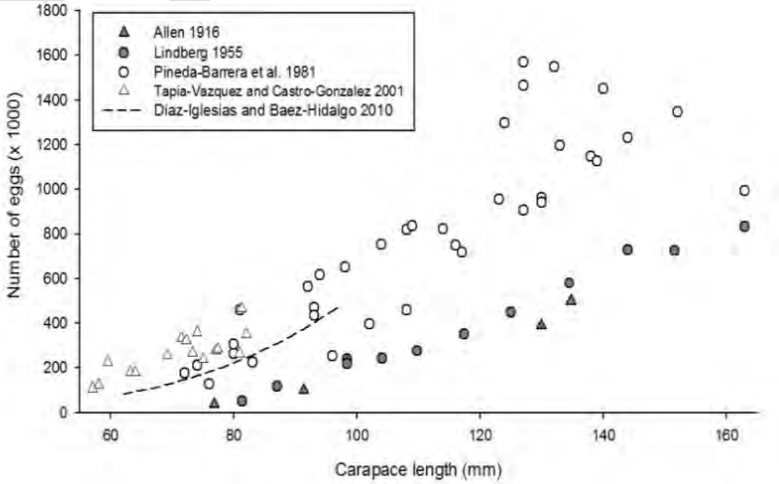

Figure 3-4: Fecundity of CA lobster (*P. interruptus*) from a number of studies throughout its range. Taken from Kay, 2011. *Observations of Lindberg (1955) and Allen (1916) are from California. Pineda-Barrera et al. (1981) and Tapia-Vazquez and Castro-Gonzalez (2001) sampled in Baja. Diaz-Iglesias and Baez-Hidalgo (2010) report an equation (but no raw data) of the relative fecundity, which is the number of eggs that produce healthy swimming larvae, for ovigerous females collected from multiple sites in Baja. (note: legal size = 82.5 mm CL)

months drifting with ocean currents and feeding on **plankton** (Mitchell, 1971; Dexter, 1972) then transform into a puerulus stage that closely resembles adults (Johnson, 1960a). The pueruli settle on **nearshore** reefs then molt into juvenile lobsters (Parker, 1972). The duration of the puerulus stage is estimated at 2-3 months, and settlement in California occurs from June-October with a strong peak in August (Figure 3-3; Parker, 1972; Serfling, 1972; Serfling and Ford, 1975a). The same general timing has been observed in Baja (Guzman del Proo et al., 1996). The arrival and "landing" of pueruli upon a potential habitat surface is referred to as settlement. Because peak hatching and settlement in California both occur in August, newly settled lobsters are assumed to be 1 year old upon settlement (Parker, 1972; Engle, 1979).

Table 3-2: Age at sexual maturity and legal size for CA lobster (*P. interruptus*).

Age at maturity*		Age at legal size		Source	Region	Method
M	F	M	F			
4-5	5-6	7-8		Lindberg 1955	California	lab, LF, molt
5	7	11	10	Mitchell et al. 1969	California	LF
3-4	5-6			Serfling 1972	California	lab, LF
5-6	8-9	11	13	Odemar et al. 1975	California	Tag
		8		Ford and Ferris 1977	California	lab, tag
		8-10		Bodkin and Browne 1992	California	Molt
3	5	4	7	Ayala 1976	Baja	unknown
4.5	6	6.5	8.5	Guzman del Proo and Pineda 1992	Baja	unknown

As reported from previous studies and adapted from Engle (1979). Methods used to determine ages include: laboratory study of captive individuals (lab), analysis of length-frequency data (LF), tag-recapture studies (tag), and molting frequency x molt increment (molt).
***sexual maturity for CA studies = 58 mm CL (M), and 70 mm CL (F); (Lindberg 1955, in Engel 1979); sexual maturity for Ayala (1976) = 65 mm CL**

While the center of the geographic distribution of the CA lobster is located around central Baja California, the SCB population is currently managed as an independent stock. The strong southward California Current usually prevents a large number of larvae from being transported north of Point Conception (Pringle, 1986). Other features within the SCB such as the Southern California Eddy and the deep Davidson current can help retain the larvae within the U.S. border (Johnson, 1960a; Mitarai et al., 2009; Figure 3-5). Features such as the Ensenada Front and the Baja California upwelling maximum tend to block the northward transport of larvae from the geographic center of CA lobster's distribution (Parrish et al., 1981; Selkoe et al., 2007).

Studies of CA lobster genetic population structure generally find high gene flow suggesting well mixed larvae. Iacchei et al. (2009) sampled the mitochondrial DNA of CA lobsters in California and Baja Mexico and found high gene flow and some significant structure but with little relationship to spatial pattern. Their results suggest a well-mixed population with the potential for some areas to self-recruit and they propose that the California lobster population is less reliant on larvae from Mexico than previously thought. Later Iacchei et al. (2013) used microsatellite markers and again found high gene flow and significant population structure but no correlation with distance among sample locations. However, higher kinship rates within sample sites than among sample sites suggested that larvae are not always mixed and may either self-recruit or remain in cohesive groups during the pelagic phase, particularly where currents are driven by high upwelling intensity. While this study provides evidence of some potential for self-recruitment, the frequency with which cohorts of larvae remain in cohesive groups until settlement and whether source and sink sites are consistent through time is unclear. Sites with the highest levels of kinship were within Baja.

Another study examined recruitment dynamics and genetics of two fish species (kelp bass (*Paralabrax clathratus*) and California sheephead (*Semicossyphus pulcher*)) that also have core ranges located within Baja California. Recruitment did not improve significantly in the SCB even when northward current flowing from Baja was particularly strong (Selkoe et al., 2007). The same study concluded that the genetic makeups of the SCB subpopulations of the two species suggest that they are not a sink population of the core Baja population (Selkoe et al., 2007). This information, coupled with records of phyllasoma being found hundreds of kilometers offshore (Koslow et al., 2012), suggest that recruits are kept within the SCB and are well-mixed between different parts of the SCB. While mixing across the US-Mexico border certainly occurs, it likely does not dominate CA population dynamics.

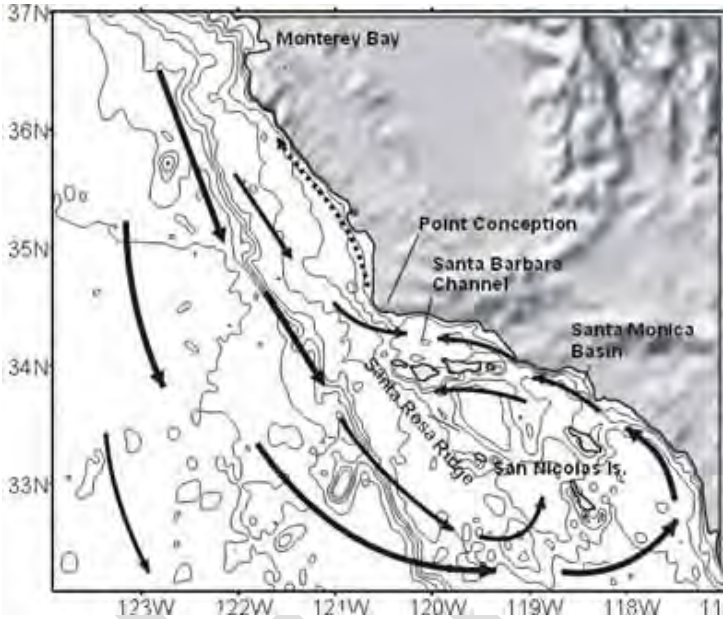

Figure 3-5: A simplified diagram of the North-South California Current, the South-North Seasonal Counter Current, and the resulting Southern California Eddy that help retain planktonic larvae of various marine species within the SCB. Credit: UCLA Nazlin lab.

3.5 Pathology

Spiny lobsters in the family Palinuridae do not harbor many naturally occurring diseases (Shields, 2011). However, a large diversity of disease-causing agents have been isolated from tissues of spiny lobsters held at artificially high densities (e.g., market pens) or from individuals subject to excessive handling or poor environmental conditions (Evans, 2000). Causative agents of these diseases include bacteria, viruses, fungi, and protozoans (Evans, 2000; Shields, 2011). The *Panulirus argus* virus 1 (PaV1) is one notable disease that is lethal to juvenile *P. argus* throughout the Caribbean (Behringer et al., 2010). Presently no disease epidemic, such as the withering foot syndrome found in abalones, is known to affect wild CA lobster.

Lobsters are known to accumulate the toxin domoic acid, which is produced by the diatom *Pseudo-nitzschia*. This microscopic alga is common and seasonally abundant in coastal waters. Domoic acid accumulates in the bodies of animals that filter diatoms and other food particles from seawater (e.g., mussels, scallops, etc.); these animals are preyed upon by CA lobster. Domoic acid can be concentrated in lobster and crab organs, but is typically less concentrated in the muscle tissue (e.g., meat of the tail, legs, and antennae). For this reason, it may at times be safe to eat lobster tails and not viscera when Pseudo-nitzschia blooms are present but consumers should check with authorities (https://www.cdph.ca.gov/healthinfo/environhealth/water/Pages/Shellfish.aspx).

3.6 Movement

CA lobsters exhibit two general types of movement: **nocturnal** foraging and seasonal inshore-offshore movements. Foraging involves nightly movements across spatial scales that range from 1-1,000 m (3.3 – 3,281 ft), with the average distances being closer to 10-250 m (33-820 ft) (Stull, 1991;

Nocturnal - Relating to, or occurring at night.
Physiological - Of or relating to the normal functioning of an organism.

Hovel and Lowe, 2007; Withy-Allen and Hovel, 2013). One study recorded an average nightly forage distance (±1 SE) of 143 ± 10 m (469 ± 32 ft) for an individual, with a maximum distance of 475 m (1,558 ft) and a minimum distance of 48 m (157 ft) per night (Withy-Allen & Hovel, 2013). Many recreational divers, hoop netters, and commercial fishermen target CA lobster during these nightly forays because they are often easier to find and capture.

The cumulative distances moved by CA lobsters making relatively short distance foraging movements could result in longer displacements across MPA boundaries with important implications for MPA effectiveness for CA lobster conservation. Measurement of CA lobster home ranges helps to indicate whether nightly movements are additive, resulting in long distance dispersal, or if lobsters move in a more circular pattern returning to a place of origin on subsequent nights. In the La Jolla Ecological Reserve, individuals were found to maintain small home ranges of between 651 m^2 (0.16 ac) and 5,912 m^2 (1.46 ac) per week, based on the area in which an individual had 50% and 95% chance of being found, respectively (Hovel & Lowe, 2007). Furthermore, individuals tend to retain site-fidelity after each forage trip, often returning to the same general geographic feature (i.e., a particular rock formation or kelp bed) as opposed to the same exact shelter (Hovel & Lowe, 2007). These results indicate that MPAs may result in increased survival rates for CA lobsters within their boundaries.

Seasonal inshore-offshore movement is characterized by occupancy of shallow reefs in summer and fall months, when surface waters are relatively warm and storm activity is low, followed by movement into deeper water with the arrival of winter swells, storms, or colder surface waters (Mitchell et al, 1969). The **physiological** advantages of moving into warm shallow water include faster growth (Engle, 1979) and accelerated egg development (Mitchell, 1971). The timing and intensity of cues that initiate movement out of shallow water have not been rigorously studied. Studies suggest that female CA lobsters tend to exhibit more seasonal movements, potentially due to the need to seek optimal spawning locations (Withy-Allen and Hovel, 2013; Kelly,2001).

3.7 Predation and Defense

Many predators prey on juvenile CA lobster (Table 3-3), the most common of which are California sheephead, cabezon (*Scorpaenichthys marmoratus*), rockfishes (*Sebastes* spp.), kelp bass, giant sea bass (*Stereolepis gigas*), and octopus (especially the two-spot octopus, *Octopus bimaculata*). Fish predators of adult lobsters tend to be the larger individuals such as male California sheephead and giant sea bass. Southern sea otter (*Enhydra lutris nereis*) may also become an important predator in the future, and continued range expansion of sea otters could have serious effects on the CA lobster fisheries (Odemar et al., 1975; USFW, 2005). As of 2014, the southern limit of the otter range has not expanded, and the most recent survey suggests that the southern boundary of the species' range may have retracted slightly (USGS, 2014).

Lobsters encountered in open areas (e.g., while feeding at night) often attempt to flee by repeatedly flapping their tails, which propels them backward and away from perceived threats (Nauen and Shadwick, 1999; Nauen and Shadwick, 2001). Spiny lobsters encountered in their shelters often withdraw to the interior of the shelter, or flee through exit holes at the rear of shelters. If escape is not possible, spiny lobsters may attempt to defend themselves by orienting their bodies and antennae directly towards the predator (Herrnkind et al., 1975; Zimmer-Faust and Spanier, 1987; Spanier and Zimmer-Faust, 1988, Loflen and Hovel, 2010; Figure 3-6). This is especially common at the entrance of shelters, where many individuals can block the entrance by forming a phalanx with this posture. Right after a molting event, a lobster's antennae and exoskeleton remain soft for about one week. During this time lobsters are especially susceptible to predation and tend to limit movements that increase the risk of being eaten (Mitchell et al., 1969).

Figure 3-6: CA lobsters (*P. interruptus*) inhabiting dens in the natural environment, displaying typical posture with antennae directed outwards and in gregarious groupings (left panel).

3.8 Prey

CA lobsters typically forage at night, when they exit the relative safety of their shelters and actively search for food (Allen, 1916; Lindberg, 1955; Roth, 1972; Engle, 1979; Zimmer-Faust et al., 1985; Stull, 1991). CA lobsters are often described as **scavengers**, but they also function as predators and grazers (Table 3-4). CA lobsters routinely attack live prey such as mussels (Robles 1987, 1997), snails (Engle, 1979; Schmitt, 1982; Schmitt, 1987), and sea urchins (Tegner and Dayton, 1981, Tegner and Levin, 1983, Eurich et al., 2014). Common food items routinely observed during field observations and laboratory experiments in gut and fecal contents include bivalves, echinoderms, small crustaceans, gastropods, and corraline algae (Table 3-4).

CA lobster diets vary with age and size. Juveniles spend their early years in surfgrass while adults frequent habitats associated with hard-bottom. Habitats and food types can vary by locations, even for

Table 3-3: Predators of CA lobster (*P. interruptus*).

Predator	Predation event observed/studied	CA lobster in gut contents of predator	Anecdotal
CA Sheephead	1^{T}, 4	1, 4,6*	3, 4, 5, 6
Moray eel	1^{T}	4*	1, 4, 3, 6
Giant (black) sea bass		1*	3, 4
Octopus	2, 6, 7^{T}		1, 3, 4, 6
CA lobster			3
Southern sea otter			8, 9
Horned shark			5
Leopard shark		4*	4
Cabezon	6^{j}, 7*	4, 7*	4, 6
Rock fish (Sebastes)		4, $6^{j,}$*	4
CA scorpion fish (sculpin)	6^{j}	4	4
Kelp bass		4, 6*	6
Black surfperch		6^{p}	
Spotted kelpfish	6^{j}		
Smoothhound shark	7*		

Studies are divided into three categories: those in which predation was observed or studied in the field ("Predation event observed/studied"), those in which stomach contents of predators were examined ("*P. interruptus* in gut contents of predator"), and studies in which predation was mentioned from second-hand or anecdotal accounts ("Anecdotal").
X*= observations reported but were not first-hand
X^{T} = lobsters in traps mutilated when these predators co-occur in trap
6^{j} = very small juvenile lobsters preyed upon
6^{p} = newly settled pueruli preyed upon
([1]Allen 1916; [2]Maddox 1933; [3]Wilson 1948; [4]Lindberg 1955; [5]Mitchell et al. 1969; [6]Engle 1979; [7]Winget 1968; [8]Odemar 1975; [9]USFW 2005)

sites that are close to each other (Winget, 1968). Foraging distance increases as an individual grows (Tegner and Levin, 1983; Ling and Johnson, 2009) and therefore can also affect what prey items are available to a given lobster. A CA lobster's size is itself a limitation of what it can eat. For example, Eurich et al. (2014) found that smaller individuals had difficulty breaking through the test (external shell) of large urchins, whereas larger CA lobsters are more capable of consuming these prey. The interaction further depends on the population density (CA lobster and urchin) and the prey quality, as CA lobsters prefer healthy urchins from kelp-beds over urchins with limited gonad tissue found in urchin barrens (Tegner and Levin 1983, Ling and Johnson 2009, Eurich et al. 2014).

Table 3-4: Prey items of CA lobster (*P. interruptus*), categorized by three study types.

Prey Item	Gut/Fecal			Field			Lab		
Mollusca	C[4,5]								
Bivalves	C[7,8]								
mussels (*Mytilus)*	C[3,9]			C[2,9-12,14]		E[13]			E[20]
Gastropods	C[3,7,8,9]			C[6,14]		E[13]			E[17,18]
Echinoderms	C[4]	R[5,7]							
Sea urchins	C[3]			C[15]		E[13]	C[16]		E[21]
Sea cucumber									E[19]
Crustaceans	C[4,5,7,8,9]								
P. interruptus	C[3]		E[1]						
Crabs	C[3,9]								
Bryozoans		R[3,4,5,7,8]							
Polychaetes	C[3]	R[5,7,8]				E[13]			
Hydroids		R[3]							
Sponges		R[3,4,5,7]	E[1]						
Eggs	C[4,5]								
Fish	C[4,8]	R[3,4]	E[1]						
Squid									E[20]
Foraminiferans		R[5,8]							
Coralline algae	C[3,4,5,7]	R[8]							
Surf grass	C[4,7,8]	R[4,5]							
Other algae	C[4,9]	R[3,4,7,8]	E[1]						

("Gut/Fecal" = gut and/or fecal content analysis; "Field" = field observations; "Lab" = lab observations). For Gut/Fecal studies, prey are reported as common (C) or rare (R) in samples. For field observations, prey were indicated as commonly attacked (C) or rarely attacked (R). For lab experiments, prey that were preferred in choice experiments are noted as commonly (C) preferred or rarely eaten (R). Also reported are prey that were observed to be eaten (E) in situations for which there was no measure of preference or frequency.

([1]Allen 1916; [3]Lindberg 1955; [4]Winget 1968; [5]Engle 1979; [7]Castaneda-Fernandez de Lara et al. 2005; [8]Diaz-Arredondo and Guzman del Proo 1995; [2]Fry 1928 (in Wilson 1948); [6]MacGinite and MacGinite 1949; [9]Robles 1987, 1997; [10]Robles and Robb 1993; [11]Robles et al. 1990;[12]Robles et al. 2001; [13]Zimmer-Faust and Case 1982; [14]Schmitt 1982, 1987; [15]Tegner and Dayton 1981; [16]Tegner and Levin 1983; [17]Shabani et al. 2007; [18]Kicklighter et al. 2005; [19]Eckert 2007; [20]Diaz-Iglesias et al. 2011; [21]Eurich et al. 2014)

3.9 Ecosystem Role of CA Lobster

The interactions between CA lobsters and their prey are considered direct effects because the action of one species (i.e., predator) directly affects another species (i.e., prey). Through direct predation, CA lobsters have been found to limit the **abundance** of the top snails (*Tegula aureotincta* and *T. eisinia*) in cobble and rocky reef habitats (Schmitt, 1982; Schmitt, 1987). CA lobsters have also been found to limit the density and size of mussels (*Mytilus californianus*, *M. galloprovincialis, Septifer bifurcatus*) and gastropods (snails) in rocky intertidal habitats at Catalina Island (Robles, 1987; Robles et al., 1990;

Robles, 1997; Robles et al., 2001). In addition, CA lobsters are thought to limit the local abundance of red and purple sea urchins (*Strongylocentrotus franciscanus* and *S. purpuratus*) on reefs in southern California (Lafferty, 2004; Tegner and Levin, 1983).

CA lobster predation can also trigger indirect effects in marine ecosystems. The most clearly demonstrated indirect effect of lobster predation in marine ecosystems involved predation upon intertidal mussels. Robles and Robb (1993) observed that as CA lobsters preyed upon intertidal mussels, red algae were able to colonize and grow in the empty spaces previously occupied by the mussels. In this case, CA lobster predation upon mussels indirectly influenced the abundance of algae.

Abundance - The total number of animals in a population. This is rarely known, but usually estimated from relative abundance although other methods may be used.
Biomass (B) - The total weight of organisms at a given point in time in a defined stock, area, population, or catch.

As previously stated, CA lobsters are thought to limit the local abundance of red and purple sea urchins on reefs in southern California. Urchins are herbivores that consume algae and kelp. In southern California, the **biomass** of giant kelp (*M. pyrifera*) can be inversely related to urchin abundance (Ebeling et al., 1985; Arkema et al., 2009) or the intensity of urchin grazing (Harrold and Reed, 1985). Therefore, CA lobster can impact giant kelp indirectly by releasing it from urchin grazing and thus enhancing the persistence and extent of kelp forests (Dayton and Tegner 1998; Jackson et al., 2001; Dayton, 2003; Graham, 2004; Lafferty, 2004; Halpern et al., 2006; Eurich et al., 2014).

3.10 Regional differences in lobster biology and ecology

Both commercial log data and the collaborative at-sea sampling program (CASP) (Yaeger et al., in prep.) demonstrate that the average size of CA lobsters increases along a south to north gradient within the SCB. There are likely multiple reasons for this relating to both fishery dynamics and biology. As noted in Section 2.1, fishing effort is not equally distributed. The particularly high fishing effort and catch off Point Loma in San Diego likely contributes to reduced average lobster size. Mean CPUE for legal-sized CA lobster across whole fishing seasons has generally not been significantly different among regions of the SCB during the last three fishing seasons (Yaeger et al., in prep.). This suggests that fishing effort may be well matched to abundance. However, CPUE for legal-size lobsters declines more sharply across the season in the southern region of the SCB. Additionally, the northern Channel Islands are relatively difficult to access and local MPAs had been in place for almost 10 years at the time of CASP sampling, possibly contributing to lower fishing pressure and greater average size in the region.

Biological explanations for differences in average size include temperature, habitat quality, and recruitment patterns. Higher temperatures are known to increase lobster growth rates elsewhere (Pecl et al., 2009). This does not explain larger lobster sizes in the northern region of the SCB where temperatures are typically colder. However higher temperatures are known to increase lobster activity and catchability (Ziegler et al., 2003, 2004). Therefore larger sizes in the north may relate to decreased vulnerability to harvest, giving lobsters more time to grow before eventually being captured. Hovel et al. (2011) also observed generally increasing CA lobster sizes at southern sites within the SCB and measured a significantly higher growth rate at Laguna, CA where average size was highest. These findings suggest complex interactions between fishing effort and several environmental factors influencing growth and vulnerability. Abundance of sub-legal CA lobsters is greater in the southern regions (Yeager et al., in prep.) indicating higher recruitment, as might be expected due to proximity to the center of the species geographic range.

There are potentially regional differences in reproductive dynamics across the SCB although differences are not well understood. Several aspects of CA lobster reproductive biology were found to correlate

with environmental factors in Baja California, Mexico (Vega 2003b). Rates of spermatophore deposition on females were found to be correlated with low SST and strong upwelling while egg laying and hatching were accelerated in response to increasing summer temperatures. Variation in these environmental characteristics is likely to similarly influence reproduction in the SCB. SAM may also vary with latitudinal temperature gradients. Differences in sex ratio and/or trap vulnerability among regions may also affect regional reproductive output. CASP data did not find consistent differences among regions in the sex ratio of legal-size individuals in traps. However, significantly more female sub-legal CA lobsters were captured in all regions and all sampling years (Yaeger et al., in prep.). This greater vulnerability of females to traps has important implications for the effects of fishing on reproduction. Areas with high fishing effort and thus repeated capture and release of sub-legal females will induce relatively more stress on those females. Melville-Smith and de Lestang (2007) demonstrated a reduction in Australian western rock lobster fecundity due to handling stress.

3.11 Climate Change Impacts on CA Lobsters

Climate Change (CC) is a shift in global climate pattern characterized by increasing global air and ocean temperatures in most regions, widespread melting of snow and ice, and rising global average sea level (IPCC, 2013). These widespread environmental changes have been attributed to the emission of greenhouse gases (GHG), such as carbon dioxide (CO_2), methane, and nitrous oxide brought on by industrialization. While atmospheric methane and nitrous oxide are significant contributors to climate change, CO_2 is currently considered to be the primary contributor. A more detailed discussion on CC background mechanisms are presented in Appendix V.

Various CC effects will likely impact the CA lobster fishery. Sea surface temperature (SST) in the SCB is predicted to rise (NOAA, 2012). Warmer atmospheric temperature may also change the **upwelling** and circulation pattern of the region (Bakun, 1990; Bakun et al., 2010; Rykaczewski and Dunne, 2010; Pisias et al., 2001; Snyder et al., 2003). CC can also lead to more intense storms and increased runoff along the southern California coast (IPCC, 2013). Lastly, it is widely believed that increasing atmospheric CO_2 concentration will continue to acidify the ocean (Caldeira and Wickett, 2003; Royal Society, 2005; Pecl et al, 2009). Figure 3-7 illustrates the various factors (A-F) and pathways that CC can impact the CA lobster fishery. It is important to note that CC is an incredibly complex phenomenon. While scientists can make reasonably accurate predictions on big picture changes, predicting on a smaller geographic scale (e.g., SCB) is still challenging (IPCC, 2013) (See also Appendix V).

Upwelling - On the California coast, upwelling is the upward movement of deep waters into the nearshore ecosystem due to springtime winds moving the topmost layers of water away from land.
El Niño - A periodic warming of the ocean surface waters in the eastern Pacific Ocean. It is characterized by a lack of upwelling of cold, nutrient-rich waters nearshore.

Warmer SST in the pelagic environment may lead to better survivorship, and growth in the SCB. As for fishery effects of CC, warmer coastal environments may make adult CA lobsters more active and easier to capture (Pringle, 1986; Koslow et al., 2012). Furthermore, since California is at the northern edge of the lobster's current domain range, higher SST could extend the population northward. Conditions such as **El Niño** (see Appendix V), which leads to warmer water along the California coast, could provide episodic transport of larvae north from Mexico which could also increase harvest (Pringle, 1986).

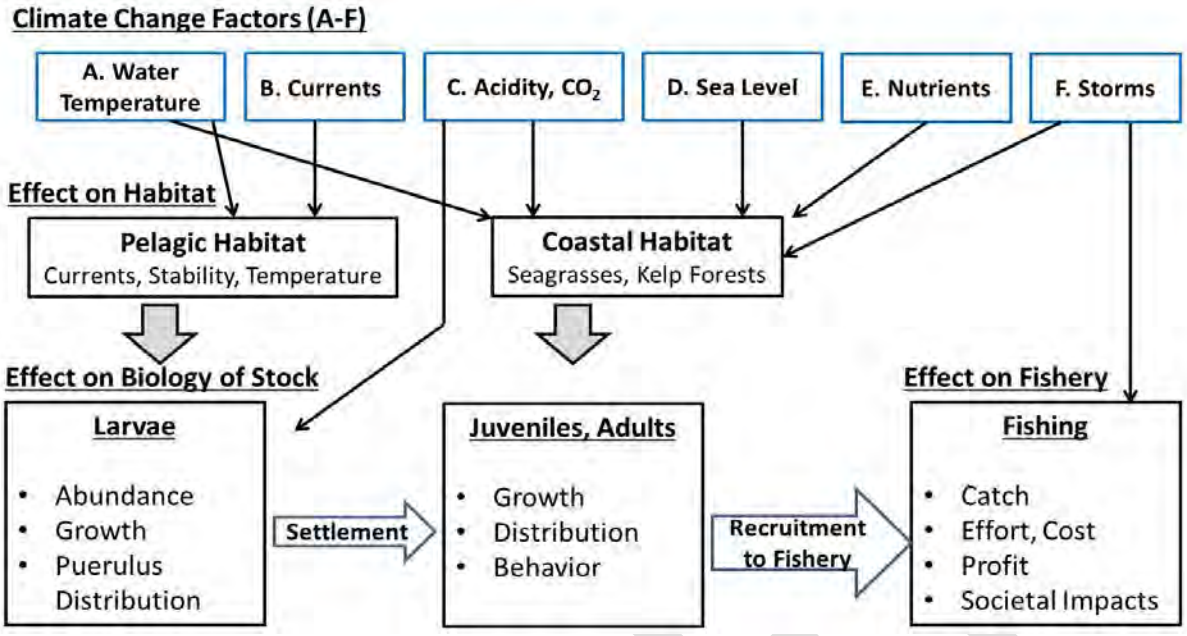

Figure 3-7: Schematic showing relationships between Climate Change variables (labeled A-F), habitat, lobster biology, and the fishery. Further topics listed within the individual boxes are specific variables that are expected to change under CC. Credit: Dr. K. Hovel, San Diego State University

As SST increases, species typically found off Baja California could begin to occur with greater frequency within the southern California kelp forests. Such changes have already been observed in some kelp forests (Field et al., 1999). Kelp itself may be impacted by increasing SST and reduced nutrients. It is unclear at this point exactly how kelp forests will respond to warming SST, but the effect is likely negative (Steneck et al., 2002). Likewise, CA lobster, being more subtropical, may or may not be directly (i.e., physiologically) affected by increasing SST. However, there may be an increased likelihood of disease with higher water temperatures. For example, the bacterial epizootic shell disease found in east coast lobster stocks has been linked to higher water temperature (Glenn and Pugh, 2006).

Whether CC would intensify upwelling in southern California or suppress it is still subject to ongoing scientific debate (B and E, Figure 3-7) (Bakun et al., 2010; Rykaczewski and Dunne, 2010). Weaker upwelling leads to declines in **zooplankton** abundance (Roemmich and McGowan, 1995) and a decrease in CA lobster larvae food sources. Stronger upwelling can increase the CA lobster larvae food sources, but it can also change the dispersal and recruitment pattern of the stock in the open ocean (Gaylord and Gaines, 2000; Connolly et al., 2001) (B, Figure 3-7). Harley et al. (2006) suggested that increased upwelling may decrease the populations of some **benthic** species such as lobsters by moving potential recruits offshore and away from suitable habitats. This is probably more applicable to regions north of Point Conception and would thus act to inhibit northward settlement of the lobster. Sea level rise will lead to coastal inundation and increased coastal erosion, especially during more intense storms and high tidal periods (D, Figure 3-7). Coastal erosion can lead to silting of coastal habitats, in particular seagrass beds used for settlement and adult foraging. Even in areas that will not experience intense silting, seagrass beds would still be sensitive to changing light wavelengths brought about by increased turbidity and changing water depth (Moore et al., 1997).

Zooplankton - Small animals passively carried along with water currents and other water movement.
Benthic - On or relating to the region at the bottom of a sea or ocean.

More intense storms combined with increased nutrient runoff (E and F, Figure 3-7) can also damage or completely destroy seagrass beds. This would reduce the amount of suitable habitat for lobster puerulus settlement, resulting in fewer successful recruits. Similarly, kelp beds could be damaged or destroyed at more frequent intervals, thereby disrupting adult lobster habitat and its immediate ecosystems (Pecl et al., 2009). In addition, more intense storms could also hinder fishing activities and damage deployed lobster traps.

Lastly, CC may also lead to a more acidic ocean (C, Figure 3-7). Water corrosive enough to dissolve seashells has been observed off California and is expected to become more frequent (Feely, 2008). The types of organisms potentially affected include snails and mussels, corals, and many phytoplankton species. It is unclear if there will be any direct adverse effects on lobster (Pecl et al., 2009). Many crustaceans, including the American Lobsters on the east coast, are able to resist acidifying ocean water (Ries et al., 2009). However, even if CA lobsters can maintain their protective shells in a more acidic environment, there would still be adverse impacts. Compensating for the corrosive effect of carbonates requires significant energy that would otherwise be used for reproduction and growth (Long, 2013). Additionally, calcified CA lobster prey such as urchins and bivalves could be impacted leading to cascading effects on CA lobster growth and survival.

4. Measures for Conservation and Management of the CA Lobster Fishery

The primary goal of fishery management under the MLMA is sustainability (FGC § 7050(b), § 7056). The MLMA and the Master Plan define sustainability as:

a) Continuous replacement of resources, taking into account fluctuations in abundance and environmental variability.

b) Securing the fullest possible range of present and long-term economic, social, and ecological benefits, maintaining biological diversity, and, in the case of fishery management based on maximum sustainable yield, taking in a fishery that does not exceed optimum yield (FGC § 99.5).

CDFW aims to sustainably manage the CA lobster fishery through a **harvest control rule** (HCR) that consists of 3 reference points, an HCR matrix, and a toolbox of 8 regulatory options.

4.1 Overfishing, Sustainable Yield, and Overfished

The MLMA's mandates for sustainability are closely tied to the concept of **overfishing** as defined by the Fish and Game Code. Fish and Game Code section 98 defines overfishing as "a rate or level of taking that the best available scientific information, and other relevant information that the commission or department possess or receives, indicates is not *sustainable* or that jeopardize the capacity of a marine fishery to produce the maximum sustainable yield on a continuing basis [emphasis added]." Other types of overfishing refer to economic and ecosystem effects of harvest in addition to more specific effects on a stock. These include:

Harvest control rules (HCR) -Harvest control rules are plans of action that prescribe adjustments in harvest regulations (e.g. fishing effort, total allowable catch, minimum legal size) and are activated ("triggered") when the calculated amount of a resource that can be taken (the defined upper limit, also known as "threshold reference point") is reached or surpassed.
Yield per recruit (YPR) - A theoretical value that describes the yield to a fishery that is contributed by a given number of recruits (usually a single recruit).

Recruitment overfishing: Fishing that depletes the mature adult population (spawning stock) to a level at which reproduction is inadequate to replenish the population (Sissenwine et al., 1987).

Growth overfishing: Fishing in which **yield per recruit** is lower than theoretical maximum values due to the harvesting of small and rapidly growing fish (Diekert, 2012).

Economic overfishing: Level of fishing effort that exceeds **maximum economic yield (MEY)** (Flaaten, 2010).

Ecosystem overfishing: Level of fishing that creates significant adverse impact to the species diversity, trophic composition, and productivity of an ecosystem (Murawski, 2000).

These different types of overfishing each present their own threats to sustainability. **Recruitment overfishing** is a threat to the biological sustainability of a fishery; this type of fishing activity is most commonly linked to collapse of fish stocks. In contrast, economic and **growth overfishing** can be biologically sustainable, but reduce the economic and social sustainability of a fishery. Finally, ecosystem overfishing threatens the integrity of the larger ecosystem, which is ultimately essential for the conservation of the stock as well.

Each type of overfishing is associated with a particular harvest rate. Fishery scientists usually describe the rates at which fish are removed from a stock with two types of measurements. The first and more intuitive measurement is the *harvest rate* (*u*), which is the proportion of all legally harvestable fish that are taken in a fishing season. Values for harvest rates can range from 0-1. For example, harvest rates of 0, 0.5, and 1 indicate that none, half, and all of the harvestable fish are taken every season, respectively. The second measurement is the **instantaneous fishing mortality rate** (*F*), which can be calculated directly from the harvest rates (and vice-versa). Unlike *u*, *F* is described in the less intuitive log space and comports better with complex scientific calculations used in fisheries models.

The total harvest from each season is considered the fishery yield, and together with harvest rates and sustainability objectives form interrelated metrics for evaluating the fishery (Figure 4-1). An extremely low harvest rate will result in a low

Maximum economic yield (MEY) - The maximum possible revenue after accounting for the costs of fishing that may be achieved in a fishery. MEY typically is reached at smaller catches than MSY.
Instantaneous Fishing mortality (F) - The rate at which organisms are harvested or killed due to fishing; F is an instantaneous rate that reflects the rate at which a proportion of a population is being lost, whereas the harvest rate (*u*) is an annual rate that reflects the rate at which a number of fish from a population is being lost.
Maximum sustainable yield (MSY) - In a marine fishery, means the largest catch that can be taken from a stock continuously over time that does not result in a continuing reduction in stock abundance, assuming constant environmental conditions. MSY is generally presented as a maximum annual catch that can be maintained indefinitely; however, MSY can change with fluctuations in abundance and environmental variability (e.g. shifts in ocean regimes), requiring adjustments in allowable harvest.

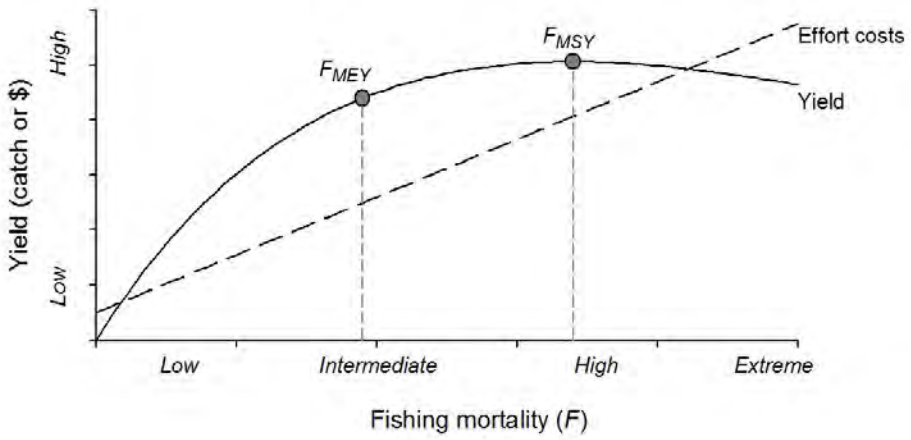

Figure 4-1: The general relationship between fishing mortality (or harvest rate) and fishery yield (solid curved line). Also shown is hypothetical effort cost (diagonal dashed line). The fishing mortality that produces maximum economic yield (F_{MEY}) can be visualized as the fishing mortality at which the distance between the yield curve and the effort cost line is greatest.

fishery yield which may not satisfy the economic and social sustainability objectives of the fishery. As harvest rates increase, fishery yield also increases. But once the harvest rates increase beyond a stock's ability to regenerate itself, growth and recruitment overfishing may occur which would drive down the yield of the fishery. For a fishery under equilibrium conditions, the total harvest that equals the stock's ability to regenerate is called the **maximum sustainable yield** (MSY), and the fishing mortality rate associated with this yield is referred to as F_{MSY}.

Any fishery would also have an MEY. Any amount of fishing effort (e.g., # of traps fished, days at sea) has costs associated with a number of factors (e.g., additional fishing gear, bait, fuel, crew days). Consequently, the cost of fishing increases as effort and harvest rate increase (diagonal dashed line in Figure 4-1). Due to this increase and the dome-shaped relationship between harvest rate and fishery yield, there is usually a mortality rate (F) at which a fishery achieves MEY, or F_{MEY}. A fishing mortality rate that exceeds F_{MEY} represents economic overfishing. F_{MEY} is almost always lower than F_{MSY} (Flaaten, 2010). Thus, a harvest rate that is biologically sustainable may still lead to economic overfishing and undermine the economic objectives of a fishery.

A high harvest rate can also undermine the environmental objectives set forth by MLMA if fishing leads to habitat damage, unacceptable bycatch levels, and/or trophic disturbance. For example, if CA lobsters are fished to an extent that they are no longer able to control the urchin population, overgrazing of kelp forests by the urchins may occur. The loss of kelp may then negatively impact the resilience of the CA lobster stock (Section 3.9). Academic researchers have begun to tackle the task of quantifying ecosystem overfishing over the past several years (Murawski, 2000; Methot et al., 2013).

In addition to overfishing, the MLMA also requires CDFW to define the criteria for when a fishery is considered "**overfished**" (FGC § 7086). Under the MLMA, "[if] a fish population is depressed, and the principle means for rebuilding the population is reduction of take, then the fishery is to be classified as overfished" (FGC §97.5). A fishery is "**depressed**" when "a declining population trend has occurred over a period of time appropriate to that fishery" (FGC § 90.7).

Overfished - A stock that is at unacceptably low levels because it has experienced overfishing and has not been rebuilt.
Depressed fisheries - The condition of a fishery for which the best available scientific information and other relevant information that the Commission or Department possesses or receives, indicates that a declining population trend has occurred over a period of time appropriate to that fishery. With regard to fisheries for which management is based on maximum sustainable yield, or in which a natural mortality rate is available, "depressed" means the condition of a fishery that exhibits declining fish population abundance levels below those consistent with maximum sustainable yield.
Stock Size – Total estimated number or biomass of fish within a stock.

It is important to note that the term overfished refers to the status of a fish stock, while overfishing refers to the activity of fishing and describes fishing practices in which too many fish are removed. When only a relatively small proportion of an available stock is being harvested (low harvest rates), overfishing is unlikely and **stock size** typically remains high (not overfished). When a relatively high proportion of an available stock is being harvested (high harvest rates), the risk of overfishing increases, and the stock is more likely to drop below a level that would classify it as being overfished.

Furthermore, an overfished stock is not always being subjected to overfishing, and vice-versa. Consider, for example, a **depleted** stock that is closed to fishing. After fishing stops, the harvest rate falls to zero, but until stock biomass rebuilds, the stock remains overfished. This condition would be represented by the lower left-hand region of Figure 4-2 (low harvest rate and low biomass). Paradoxically, during the period when a newly emerging fishery is fished down to levels associated with the MSY the fishing rate appears to be unsustainable, because there is no surplus production in an unfished stock. However, surplus production increases as biomass approaches MSY, and sustainability is achieved if the harvest rate matches surplus production, despite that same harvest rate being responsible for fishing the stock down from unfished biomass. A stock would not be considered "overfished" until the stock size suffers a dramatic decline (upper right-hand portion of Figure 4-2), to levels significantly below the biomass associated with MSY. The designations of overfishing and overfished ultimately depend on the sustainability objectives of the society.

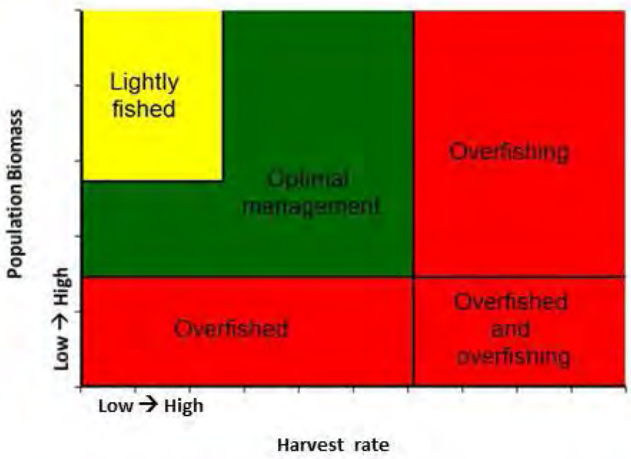

Figure 4-2: The general relationship between harvest rate and stock size.

4.2 Introduction to Harvest Control Rules

Many fishery managers around the world are moving towards adopting dynamic HCRs as their means of achieving MEY and MSY as well as avoiding overfishing and facing overfished stocks. HCRs are a type of management framework that "formulate[s] a procedure for making harvest policy decision[s]." It does so by "identify[ing] a pre-agreed course of management action as a function of identified stock status and other economic environmental conditions" (WCPFC, 2012). The HCR framework here is comprised of five fundamental components (Figure 4-3):

1) Harvest regulations
2) Data collection
3) Data Analysis
4) Reference point(s)
5) HCR matrix

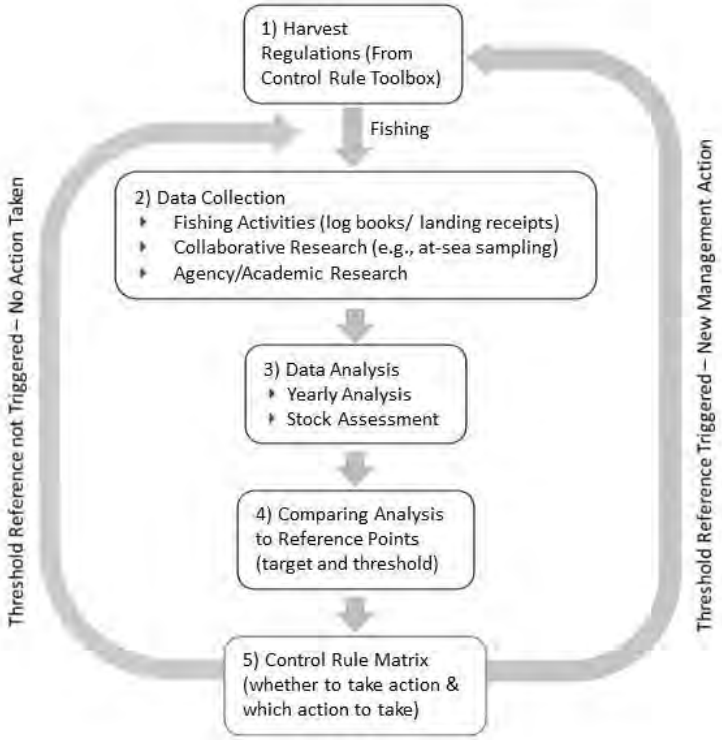

Figure 4-3: The relationship among the five elements of a general fishery management framework.

4.2.1 Harvest regulations

Harvest regulations are the rules that define how fishermen are allowed to harvest fish. These regulations typically take one of three specific approaches for ensuring sustainability: (I) managed escapement (used exclusively in salmon fisheries); (II) use of a dynamic time scenario (e.g., common when a stock is tied to extremely variable environmental conditions or when high bycatch is a problem), and; (III) manage for a sustainable harvest rate (Figure 4-4, modified from NRC 1998). The goals of these approaches are the same: to ensure fishery sustainability by avoiding overfishing and to achieve recovery when a stock is overfished.

For most fisheries, management with escapement goals or a dynamic time scenario is inappropriate or logistically impossible (NRC, 1998). The more practical alternative is to manage for a harvest rate that maintains relatively high fishery yield without causing overfishing. Broadly speaking, there are three types of harvest regulations: biological regulations, effort-based harvest regulations, and catch-based harvest regulations (items IIIa-c in Figure 4-4).

Harvest regulations - The rules that define how fishermen are allowed to harvest fish. Harvest regulations are diverse and include restrictions on size of animals harvested, effort, total catch, gear types, season, or location where fishing is permitted.

4.2.1.1 Biological harvest regulations

Biological harvest regulations directly protect some portion of a stock and buffer it against recruitment overfishing and growth overfishing. Common biological regulations include legal size limits (minimum and maximum), sex-based regulations, seasonal closures, and spatial restrictions (e.g., MPAs) (Figure 4-4, item IIIa).

Minimum legal size (Min LS) protects rapidly growing young fish, some of which may be reproductive. A Min LS can prevent recruitment overfishing only if it is larger than the size at which fish first start reproducing. A Min LS can prevent growth overfishing only if it protects rapidly growing young animals.

Maximum legal size (Max LS) is intended to protect large animals that have high fecundity and buffers against recruitment overfishing. Max LS may also have ecological and/or market benefits. A management framework that employs both a Min LS and Max LS is often referred to as having a "slot" or "over/under" size limit.

Sex-based regulations are designed to safeguard the reproductive output of females with the assumption that remaining males present in a fished population can successfully fertilize all the available eggs. Fishermen may only be allowed to harvest male animals (male only fishery) larger than the size at sexual maturity, as is the case for the US west coast Dungeness crab fishery.

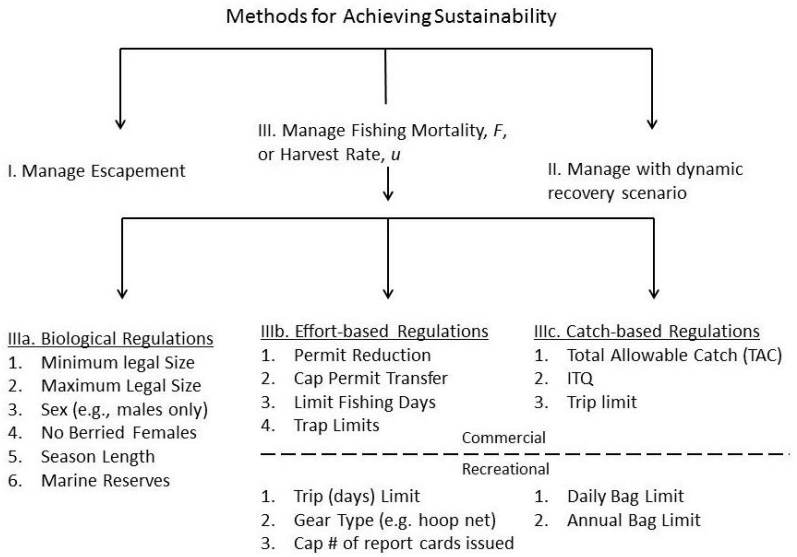

Figure 4-4: Methods for achieving fishery sustainability, including the three types of harvest regulations for harvest rates.

Alternatively, a fishery can prohibit the landing of berried females (females that are carrying eggs), as in the Atlantic USA/Canada fishery for American lobster *Homarus americanus*. These two examples serve to mitigate the impact of fishing on the **spawning potential** of the stock.

Area closures prohibit all or some fishing activities in prescribed areas. Heavily fished lobster populations around the world tend to show rapid increases in biomass, average size of individuals, and abundance inside closed areas (Diaz et al., 2011; Moland et al., 2013.

Spawning Potential – The reproductive output (# of eggs) that may be produced during the lifetime of an average female.

Seasonal closures act as biological regulations when they protect animals during the reproductive phase of their life cycle – such as the closure of the CA lobster fishery during summer in California. Seasonal closures also reduce total annual effort (see *Effort-based regulations*).

4.2.1.2 Effort-based harvest regulations

Whereas biological regulations serve to lessen the impact of fishing on the population dynamics of a stock, effort-based regulations protect the portion of the stock that is vulnerable to harvest (legally harvestable). This can help prevent recruitment overfishing and growth overfishing, but can also prevent economic overfishing when increases in effort (and harvest rate) begin to provide diminishing return in terms of yield (i.e., the flattened part of a yield curve, Figure 4-1).

Limited Entry programs limit the total number of participants in a fishery.

Capping permit transfers (e.g., an annual limit) can limit the activation of latent **capacity** in a fishery, thereby avoiding abrupt increases in effort.

Seasonal closure does not have to correspond to a targeted species' life cycle; instead, it can serve to only control fishing effort by defining a maximum number of days per year that an individual can fish.

Gear limits define a maximum amount of gear (i.e., traps or hoop nets) a fisherman can use.

Gear type regulations generally restrict the use of gears that destroy habitat or catch portions of the stock protected with biological harvest regulations. They may also protect immature individuals (i.e., escape ports) or reduce bycatch mortality (i.e., excluder devices in trawls, or barbless hooks for salmon). These regulations can also control the harvest rate by prohibiting new gear types that increase harvest efficiency. However, it is important to note that gear type restriction can impose economic inefficiency on fishermen.

Capacity - The potential ability of a vessel or a fleet of vessels to capture organisms. This ability is based on the number of fishing vessels in the fleet, the size and technical efficiency of each vessel, time spent fishing, and management regulations.
Bag limits - The total amount of fish or other species that may be captured per person per day by law.
Individual transferable quota (ITQ) - A program which limits the catch allowed per license or individual as well as the number of individuals who participate.

4.2.1.3 Catch-based regulations

As with effort-based regulations, catch-based harvest regulations serve to protect the portion of the stock that is vulnerable to harvest (legally harvestable).

Daily **bag limit** is a daily limit on the number or weight of fish that a recreational fisherman may legally retain.

Annual bag limit is an annual limit on the number or weight of fish that a recreational fisherman may legally retain.

Total allowable catch (TAC) is the total catch that can be taken during each fishing season. A TAC works by protecting a fraction of the stock

that is large enough to ensure sustainable reproduction, which stabilizes catches and associated economic output of the fishery from year to year. In TAC fisheries, catch is often monitored during the season, and managers usually close the fishery once the TAC is reached, although in-season catch projections may allow the use of less disruptive regulatory measures if taken before reaching the TAC. In some fisheries, the TAC for an upcoming season is adjusted in response to recent trends in some reference indicator such as catch per unit effort (CPUE) or recruitment. Adjustment can also occur in response to going over or under the TAC in the previous season. Federal fishery management plans are required to establish a mechanism for specifying an annual catch limit, which is a form of a TAC (16 USC § 1853(a)(15)). Federal managers are required to take actions whenever an annual catch limit is exceeded (50 CFR §§ 600.310(f)(2)(iv), (g)(3)).

One limitation of TAC is that it does not prevent the "race to fish", a dynamic in which fishermen competitively attempt to catch fish before other fishermen catch them. In fact, a TAC can accelerate the race to fish because it shrinks the portion of fish available for harvest. In response, fishermen often invest in tools that provide a competitive advantage such as faster boats, more traps, and better technology – an effect known as "capital stuffing" (Copes, 1986).

Individual transferrable quota (ITQ) is a dedicated portion of a TAC. In TAC fisheries, the race to fish and capital stuffing can be addressed with a quota system like ITQ (Costello et al., 2008). Quotas grant fishermen exclusive access to some fraction of a TAC. A quota system can also lead to additional economic benefits by allowing fishermen to focus fishing during periods of peak market price or spread fishing activities out over a longer period of time to avoid market gluts. The key incentive with quota management is that fishermen can wait to harvest their "share" of the catch. Individual transferable quotas (ITQs) are a common form of quota that may be transferred among fishermen. Transferable quota systems are designed to balance fleet dynamics by allowing for more flexible fishing operations. ITQs require focused monitoring and enforcement, which can add to management costs.

4.2.2 Data collection

Data collection gathers information that directly informs the stock assessments and management decisions (Figure 4-3). The MLMA stipulates that FMPs employ the best available scientific information (FGC § 7050(b)(5)). This is referred to as **essential fishery information** (EFI), which includes information about species life history, habitat requirements, status and trend of the population, fishing effort, catch level, fishery's effect on the fish population, and "any other information related to the biology of a fish species […] in the fishery that is necessary to permit fisheries to be managed [sustainably]" (FGC § 93; Section 5.2, 5.3).

EFI is gathered by CDFW from a number of fishery-dependent (e.g., commercial logbooks and recreational report cards) and fishery independent sources (e.g., research programs conducted by agency staff, academic staff, or NGOs). Information from logbooks, landing receipts, and report cards are confidential (FGC §§ 1050.6, 8022(a)). CDFW is increasingly interested in developing collaborative programs bringing fishermen together with scientists associated with academic institutions or NGOs to increase the quality and quantity of data collected (NRC, 2004; Section 5.3).

Essential fishery information (EFI) - With regard to a marine fishery, means information about fish life history and habitat requirements; the status and trends of fish populations, fishing effort, and catch levels; fishery effects on fish age structure and on other marine living resources and users; and any other information related to the biology of a fish species or fishery that is necessary to inform management.
Thresholds (threshold reference points) – For the purpose of this FMP, the levels of stock size or reproductive potential, or fishing mortality rates that are not sustainable.

4.2.3 Data Analysis

Raw data have limited management value until they are analyzed, which may be a formal stock assessment or a less formal analysis. A stock assessment integrates a diverse range of EFI to evaluate the status of a fish stock, including past and current stock levels, and includes information to help guide future harvest rate. A stock assessment can provide a clear picture of the present condition of a stock (i.e., is it *overfished*?) and the impacts of current harvest practices (i.e., is *overfishing* occurring?). CDFW will determine how often, or when, to perform stock assessments for the CA lobster based on availability of new data or updates, and response time of the stock to changes in the environment or the fishery.

4.2.4 Fishery Management Reference Points

Analyzed data must be placed into the context of policy/value judgment. For example, a drop in catch level should trigger management actions only if a relevant statutory/regulatory mandate or a manager deems it important. This is where a **threshold reference point** comes in. Threshold reference points signal when a stock would require management attention. Many HCRs used for other fisheries use a single reference point (e.g. biomass) but distinguish three levels or threshold types termed target, trigger and limit reference points. These divide the range in stock status into healthy, overfishing, and overfished zones. This "precautionary approach" was outlined by the United Nations Fish Stock Agreement of 1999 and was adopted by the Canadian government (DFO, 2006) among others.

Frequently reference points are based on the concept of MSY. They are specified relative to the fishing mortality level that produces MSY (F_{MSY}) or the stock biomass level at MSY (B_{MSY}). MSY may be calculated using dynamic models with detailed stock-recruitment information when it is known. Examples include the non-parametric production model developed by Sissenwine and Shepherd (1987) and dynamic pool models used by Shepherd (1982) and Mace (1994). Many fisheries do not have the data resources required for these models and therefore MSY proxies are used. For example, the Canadian precautionary approach suggests that B_{MSY} may be replaced with the average biomass (or index of biomass such as catch or CPUE) over a productive period. This may be considered a B_{MSY} proxy or simply an alternative fishery indicator as suggested by Sainsbury (2008).

Alternatively, "empirical reference points" are not model based and are based on directly observable properties of a stock (Sainsbury 2008). Unconventional empirical reference points that need not be based on MSY include a desirable recruitment level (Shepherd et al. 2001), particular size or weight distributions (Punt et al. 2001), or presence/absence within portions of the stock's range (Hobday et al. 2004). While these measures do not require a model for their derivation, it may be advisable to use complex modeling for identification of appropriate targets and limits (Sainsbury et al. 2000). This will be an ideal use for the CA lobster Management Strategy Evaluation (MSE) model once fully developed (see Section 4.6).

Whenever a stock reaches a reference point threshold, resource managers must investigate the cause and potentially provide a response. A number of specific reference points are used in spiny lobster fisheries around the world and are described below: i) stock size; ii) total catch each season; iii) CPUE; iv) harvest rate (fishing mortality); v) YPR/SPR; and vi) recruitment indices.

i) Stock size

Estimates of stock size measure how a stock has been impacted through fishing and whether or not the stock is overfished or is at risk of becoming overfished. A common metric for stock size is B/B_0, which is the current biomass (B) divided by the virgin stock biomass (B_0). Other measures of stock

size may refer to the number of fish present, the total spawning biomass, or the biomass that is available to the fishery.

ii) Catch (total catch per season)

Since stock assessments are costly to conduct, catch trend over time can instead serve as a tentative proxy for relative stock size. A significant change in catch can always be susceptible to multiple interpretations. However, the fact that a significant change in catch appears is itself a clear indicator that, at a minimum, an impact at a biological, ecological, or anthropogenic level is occurring.

Using total catch as a proxy for stock size can be misleading when factors other than stock size influence the number of fish captured. For example, changes in water temperature in southern California may influence the activity level of lobsters on the seafloor, and in turn alter their catchability (the probability that an individual will be captured in fishing gear). Such behavioral changes are not necessarily accompanied by changes in stock size, but they may influence total catch and therefore the perception of stock size. Regulatory changes that alter the access or efficiency of fishermen (and therefore catch rates) can similarly impact total catch.

iii) Catch per unit effort (CPUE)

CPUE is used by fishery managers in two important ways. First, it serves as a proxy for the relative abundance of fish in an area. This proxy assumes that there is a relationship, though not necessarily a linear one, between the condition of a stock and the rate at which they are captured under any given unit of effort (e.g., time spent fishing, amount of gear deployed). As with total catch, long-term trends in CPUE can provide insight into changes in the stock, which will influence management decisions.

In addition, CPUE is also very useful for tracking the optimal effort level and detecting economic overfishing. An example of this is found in management zone "CRA8" of the New Zealand fishery for *J. edwarsii* (Bentley et al., 2005). The lobster stock in this zone was classified as overfished, and a CPUE-based rebuilding plan was proposed. The objectives of this CPUE-based plan were (among others) the restoration of spawning biomass as well as the maintenance of high catch rates that ensure economic viability (Bentley et al., 2005).

CPUE data are relatively inexpensive and easy to collect, but they can be influenced by factors other than fish abundance (e.g., new regulations, environmental variability, catchability, and selectivity). CPUE-based reference points can also be misleading when advances in technology (e.g., gear construction, vessel electronics) make the fishermen more efficient and the gain in efficiency is not reflected by adjusting the reported unit of effort (e.g., trap pulls, number of traps fished). In such a scenario, fishermen may be perceived to have maintained the same level of effort while in reality their effective effort may have increased substantially. This phenomenon is known as **effort creep**, and is thought to have been an important contributor to the catch/stock declines in fisheries for *Panulirus cygnus* in Western Australia and *J. edwarsii* in South Australia (Bentley et al. 2005; Section 4.4).

Effort Creep - A phenomenon where technology advancements in a fishery are able to mask the declining efficiency of a fishery caused by stock declines

iv) Harvest rate/ fishing mortality

Estimates of current harvest rates (or, fishing mortality) provide information that helps managers maintain fishery yield while avoiding recruitment overfishing and economic overfishing (Figure 4-1).

v) Yield per recruit (YPR)

The yield that a fishery can achieve (i.e., pounds of fish caught; monetary value of fish sold) changes as a function of the harvest rate, and is often expressed in terms of YPR. YPR is the theoretical yield that is produced from a single recruit (or some fixed number of recruits) that is subjected to different harvest rates.

vi) Spawning potential ratio (SPR)

In addition to yield, harvest rate also affects the ability of a stock to replace itself. Because fishing tends to reduce the number and the size of individuals, it has the potential to negatively impact the reproductive output of a population, or spawning potential. The SPR is usually a ratio of the number of eggs produced by a fished population divided by the number of eggs produced by an unfished population. SPR values range from 1-0. For example, SPR values of 1, 0.5, and 0 correspond to harvest rates at which a population can produce all, half, or none of the eggs produced when the stock is unfished, respectively (Figure 4-5). At low harvest rates, SPR values are high because many large animals remain in the population (Figure 4-5). At higher harvest rates, SPR declines and may ultimately reach zero if no size limit is in place to protect at least some portion of the breeding stock. It is important to note that SPR assumes that an unfished population would produce a relatively constant amount of eggs or maintain a relatively constant spawning stock biomass (Rochet, 2000).

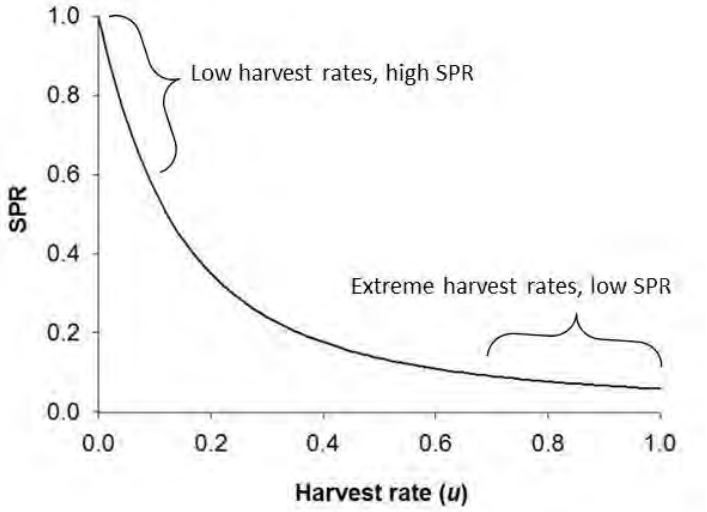

Figure 4-5: The general relationship between fishing mortality (or, harvest rate) and spawning potential ratio (SPR).

Depending on the amount of scientific information available to resource managers, various methods can be used to calculate a stock's current spawning potential, the unfished spawning potential, and an SPR level that is sustainable (Table 4-1). A model is required for calculation of spawning potential, but complexity can range from the simplest methods that scale up from an average weight (as the Cable-CDFW model does), to more complex models utilizing size frequency data, stochasticity and stock-recruitment data. Methods for calculating the egg production or yield of an unfished population in particular vary greatly. For example, the SPR of a hypothetically unfished stock for the Cuban spiny lobster fishery was calculated based on egg production of a theoretical unfished population with the assumption that growth rate and fecundity would be the same whether the individual is in a fished or unfished population (Puga et al., 2005). On the other hand, the SPR of a theoretical unfished Western Australia lobster stock was calculated based on spawning stock biomass with density dependent variables (Hall and Chubb, 2001). Others have empirically measured the egg production of current unfished stocks existing within marine reserves. Although the methods for calculating SPR can vary among different fisheries, the underlying purpose is generally the same: to gauge a fished stock's ability to replenish itself.

vii) Abundance of larvae or recruits

When measured over many years, trends in the abundance of larvae (or very young recruits) returning to a fishing ground can provide indirect evidence of a stock's relative spawning biomass. The abundance of larvae/recruits often varies year-to-year due to environmental conditions, and

therefore may not be related to fishing mortality. However, long term trends (e.g., increasing, decreasing, or stable abundance) can inform managers about the reproductive potential of a stock. In some cases, levels of recruitment can be used to forecast future catches (Phillips, 1986) or estimate spawning stock biomass (Lasker, 1985).

Table 4-1: Spawning potential ratio (SPR) used around the world.

Species	Location	$SPR_{THRESHOLD}$	Source	Rationale / derivation
Panulirus argus	Cuba	0.143	Puga et al. 2005	Replacement line analysis
	USA: Atlantic and Gulf of Mexico	0.20	FMP	Theoretical (Goodyear 1993); empirical (Mace and Sissenwine 1993)
	USA: Atlantic and Gulf of Mexico	0.05	Addison 1997	Not specified; proposed for use in conjunction with recruitment (to the fishery) observations
	USA: Florida	0.05	Bohnsack et al. 1990	Historical levels associated with catch: proposed in FMP
	USA: Caribbean	0.20	Bohnsack et al. 1990	Theoretical (Goodyear 1993)
	USA: Caribbean	0.20	FMP	Not specified, "committee recommendation"
Panulirus cygnus	Western Australia	0.20	Hall and Chubb 2001	Historical performance of fishery
Jasus edwardsii	Victoria, Australia	0.20	FMP	Not specified
	New Zealand	0.20	NRLMG Report 2010	Not specified
Homarus americanus	USA – NE Atlantic	0.10	Addison 1997 Rosenberg et al. 1994	Historical performance of fishery

4.2.5 Harvest Control Rule Matrix

An HCR prescribes management actions (e.g., continue monitoring or implement regulatory changes to the fishery) when a certain reference point is triggered. Responses are required when reference points thresholds are reached or surpassed (Section 4.3). An HCR can consist of a simple relationship between one reference point threshold and one response (e.g., fishery closes when catch drops below a certain level). The precautionary approach prescribes three types of response to three different threshold levels of a reference point. Drastic measures would be taken when the reference point drops below the limit level, more measured responses would be implemented when below the upper stock reference point, and management might be reduced when above the target level. A single regulatory response option might be used such as changes to a TAC. Another HCR approach uses multiple reference points (e.g., Catch, CPUE, SPR, YPR, Fishing Mortality). One form of this approach, termed "traffic light", monitors multiple reference points and the number above or below thresholds leads to different levels of management response (Caddy 2002). The benefits of approaches using multiple reference points and/or a blend of model-based and empirical reference points have been noted by several researchers (Fogarty 2004, Hilborn 2002, Halliday 2001 Caddy 2004). Additionally, multiple harvest regulatory options (e.g., Seasonal Closure, Size Limit, Gear Restriction, TAC) can provide the necessary management flexibility to address specific fishery issues. In these types of HCRs, the relationship between triggers and responses (i.e., Harvest Regulations) is complex and interconnected.

A clearly detailed decision matrix is a formal mechanism that guides the appropriate management responses based on the triggering of different reference points. This mechanism provides managers

with a pre-determined and transparent decision-making process that preserves scientific and policy decision-making prerogatives.

4.3 HCR for the California Spiny Lobster Fishery

An HCR was developed by CDFW with substantial input from the LAC and independent scientific experts. The associated reference points were also peer reviewed by an external committee of scientific experts (Appendix VII). The CA lobster HCR applies adaptive management by gauging the status of the fishery with specific reference points and tailoring responses when management actions are needed to ensure sustainability and prevent overfishing. It also fulfills the MLMA mandate that requires "each fishery management plan or plan amendment prepared by CDFW shall specify criteria for identifying when the fishery is overfished" (e.g. FGC § 7086(a)).

The HCR is composed of three components. Three specific reference points serve as the metrics to assess the state of the fishery and the CA lobster stock. A Control Rule Matrix details how the reference points will work together to identify an emerging issue within the fishery and its underlying causes. Lastly, a tool box of eight regulatory options gives CDFW and the Commission flexibility to address emerging and ongoing issues. The HCR is not guaranteed to capture every possible issue the fishery will face, and like any other management tool, resource managers will need to exercise independent judgment when using the HCR. In the future, CDFW will explore ways to improve the HCR, such as modifying reference points, or methods for their calculation, to more accurately reflect the status of the fishery and meet the MLMA management objectives. Future improvements may or may not (depending on the type of change) be subject to an amendment process (Section 6.2.2).

Landing receipt - A document provided by the Department to commercial fish markets for recording landing information. Information required includes date, port of landing, species or market category of fish, pounds landed, and price paid.

4.3.1 Reference Points for CA Lobster Fishery

The three reference points chosen for the CA lobster HCR are based upon:

1) Catch (the total catch in a single season)
2) CPUE (the number of legal lobsters caught per trap pull)
3) SPR (# eggs produced by current fished population / # eggs produced by unfished population)

These make use of both model-based and empirical data streams. Total catch ($CATCH_{CURRENT}$) and CPUE ($CPUE_{CURRENT}$) can be calculated directly from landing receipts and commercial logbooks without any change to current CDFW data collection. SPR can be calculated by inputting data from landing receipts and logbooks through computer models such as the Cable-CDFW Model. A single limit threshold separates desirable and undesirable states for each reference point. Designation of the threshold levels for each of the reference points uses an empirical (not model-based) approach by referencing a stable and productive period for the stock. Different combinations of position relative to these reference points can develop a nuanced picture of stock status. For example, decline in catch alone can be caused by decline in stock size, but can also be caused by unrelated factors (e.g., policy change, lower catchability of animals). However, an increase in catch accompanied by a decrease in CPUE may suggest that economic overfishing is occurring. This multiple reference point approach is similar in function to the traffic light fisheries management approach and can result in multiple divisions of stock state (overfished, overfishing, healthy) akin to the precautionary approach. Moreover, the varied information content of the three reference points allows for more tailored management responses than could be justified by a single reference point with multiple levels.

4.3.1.1 Catch-based reference point

The catch-based reference point for a particular season is calculated as follows:

$$CATCH_{CURRENT} = \frac{average\ catch\ for\ 3\ most\ recent\ seasons}{average\ catch\ for\ 10\ most\ recent\ seasons} \qquad (Equation\ 4.1)$$

The catch-based threshold reference point is any value for $CATCH_{CURRENT}$ that is equal to or less than **0.9:** $\boldsymbol{CATCH_{THRESHOLD} = CATCH_{CURRENT} \leq 0.9}$**, (*Equation 4.2*)**

It is important to note that this reference point is primarily designed to detect trend. Catch can fluctuate drastically from year to year due to socioeconomic, environmental, and biological factors. These annual fluctuations often do not reflect problems that warrant management responses (Figure 4-6). Averaging the catch from the three most recent seasons for the reference point numerator serves to smooth those fluctuations. The 10-year running average in the denominator of the reference point was chosen because long-term environmental changes might alter our expectations for sustainable catch levels (upwards or downwards). The CA lobster stock status is influenced by warm and cold water regimes driven by the Pacific Decadal Oscillation and this has been observed using fisheries-dependent (Neilson, 2011) and fisheries-independent (Miller, 2014) data sources.

In addition to detecting noteworthy trends, initiation of the moving average in the present implicitly values the healthy stock status within the last 10 years. A $CATCH_{CURRENT}$ value of 1.0 would indicate that catches are stable, i.e. catches over the last three years are similar to the last 10 years. Setting the reference point threshold at 1.0 would indicate that the fishery does not want to tolerate any reduction in catch from the current state. However, ideal catch rates will fluctuate from year to year with recruitment variation and catches within 80% of an apparently high stable point (i.e., MSY) are a reasonable expectation for sound management (Hilborn 2010). Based on the independent science review committee recommendations to make the catch threshold more sensitive and responsive and

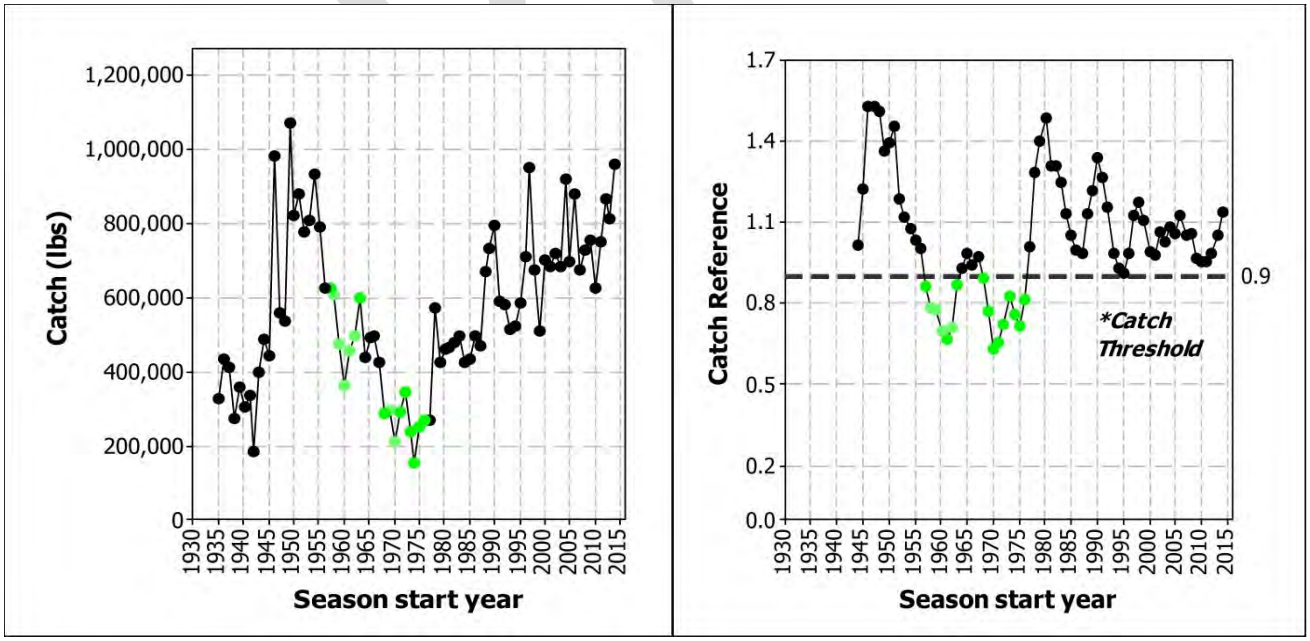

Figure 4-6: Annual catch (left panel) and catch reference values based upon *Equation 4.1*. With a threshold reference point ($CATCH_{THRESHOLD}$) of $CATCH_{CURRENT}$ = 0.9, $CATCH_{THRESHOLD}$ is exceeded (i.e., catch is conisdered to be low and triggers management consideration) in years where values the right-hand panel fall below the 0.9 value line (represented by green dots). Values at or near 1.0 in the right-hand panel indicate stable catches. Individual years listed (x-axis) are the year in which an individual lobster season began (e.g., 1935 = 1935-36 season).

CDFW analyses, the $CATCH_{CURRENT}$ value was modified from 0.8 to 0.9 resulting in a more sensitive threshold. Reaching this threshold would indicate that catches for the three most recent seasons are less than 90% of the average catch from the 10 most recent seasons, suggesting both a declining trend that warrants consideration and a separation from the high, stable catches of the last 10 years. However, because a reference point based on a moving average may not detect small gradual changes, CDFW will initiate further analysis whenever $CATCH_{CURRENT}$ drops for 6 seasons in a row. $CATCH_{CURRENT}$ declined for 10 seasons in a row during the steep decline of the 1950s and 60s. While the $CATCH_{THRESHOLD}$ of 0.9 would have already been triggered after 6 seasons of that period, future stock dynamics may show slower declines that warrant management action but would not otherwise be detected. CDFW developed the moving average approach through consultation with several lobster fishery experts during the LAC process (Dr. Ray Hilborn, Dr. Matthew Kay, Dr. Hunter Lenihan, Dr. Richard Parrish, and Dr. Jeremy Prince). An examination of California's catch history also indicates that a $CATCH_{THRESHOLD}$ of 0.9 would have provided warning of major declines in catch performance in the modern era of this fishery and appropriately, would not trigger management during rebuilding phases or catch levels likely reduced by environmental regime (Figure 4-6). The most recent $CATCH_{CURRENT}$ value for the 2014/15 season is above the 0.9 threshold.

4.3.1.2 CPUE-based reference point

The CPUE-based reference point for any season ($CPUE_{CURRENT}$) is calculated in the same manner as $CATCH_{CURRENT}$:

$$CPUE_{CURRENT} = \frac{average\ CPUE\ for\ 3\ most\ recent\ seasons}{average\ CPUE\ for\ 10\ most\ recent\ seasons} = 0.9 \qquad (Equation\ 4.3)$$

The CPUE-based threshold reference point is any value for $CPUE_{CURRENT}$ that is equal to or less than 0.9:

$$CPUE_{THRESHOLD} = CPUE_{CURRENT} \leq 0.9 \qquad (Equation\ 4.4)$$

The rationale for using the value of 0.9 (originally proposed at 0.8) is based on recommendations from the independent science review committee to make the CPUE threshold more sensitive. Using a moving average is based on input from experts and stakeholders through the collaborative LAC process, which determined that a moving average of CPUE would signal important adverse change (e.g., economic overfishing) within the fishery that may warrant management consideration. CPUE data has only been available since 1973 (Figure 4-7), but retrospective analysis of $CPUE_{CURRENT}$ (Figure 4-7) since that time indicates that this threshold is able to detect important changes in the fishery. $CPUE_{THRESHOLD}$ would have been crossed seven times; three sequential seasons in the mid-1990s and the last four fishing seasons on record. Both catch and the number of trap pulls dipped sharply in 1991 and remained depressed for a series of years leading to the $CPUE_{THRESHOLD}$ being crossed. Alternatively, low CPUE and $CPUE_{CURRENT}$ values since 2010 have been the result of a sharp increase in the number of trap pulls while catch has maintained consistently high levels. Effort increase in the 2010/11 season was likely driven by an increase in the price/pound for CA lobster and both have remained high. These instances below $CPUE_{THRESHOLD}$ point to verifiable changes in the dynamics of this fishery relating to fisherman behavior and economics. Different years are below the $CPUE_{THRESHOLD}$ than those that are below the $CATCH_{THRESHOLD}$, suggesting that these two reference points are complementary and not redundant. As is the case with the catch reference point, CDFW will initiate an investigation if the $CPUE_{CURRENT}$ drops for 6 years in a row even if the $CPUE_{THRESHOLD}$ is not crossed.

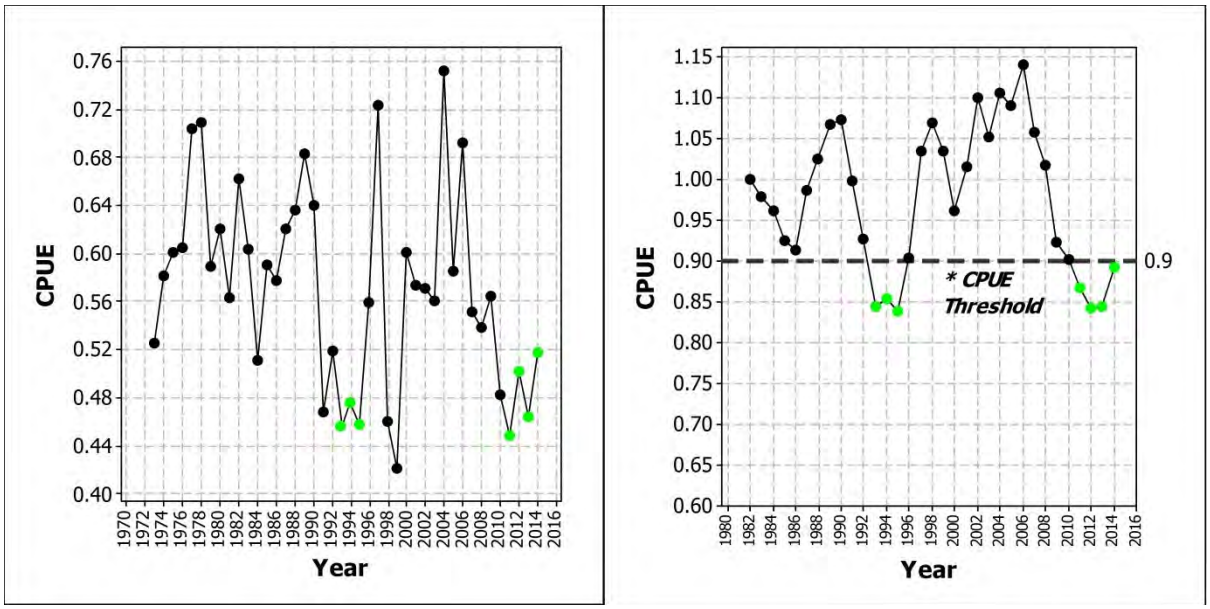

Figure 4-7: Annual CPUE (left panel) and CPUE reference values based upon *Equation 4.3*. With a threshold reference point ($CPUE_{THRESHOLD}$) of $CPUE_{CURRENT}$ = 0.9, $CPUE_{THRESHOLD}$ is exceeded (i.e., catch is conisdered to be low and triggers management consideration) in years where values the right-hand panel fall below the 0.9 value line. Values at or near 1.0 in the right-hand panel indicate stable catches. Individual years listed (x-axis) are the year in which an individual season began (e.g., 1970 = 1970-71 season).

4.3.1.3 SPR Reference Point

The SPR reference point has the most biological information content of the three reference points and thus is the best indicator of the potential for recruitment overfishing. SPR can be calculated in several ways. The method currently employed by CDFW utilizes data from commercial logbooks and commercial landing receipts to calculate the average weight of lobsters caught in a given year. CDFW then relates average weight to a corresponding fishing mortality (*F*) which allows estimation of SPR. This calculation is currently accomplished using the Cable-CDFW Model (Appendix X). SPR is a model **output** based on 46 user-specified inputs, each responsible for the calculation of various biological, economical, and operational characteristics of the fishery. The age-length relationship, for example, incorporates three inputs: $L\infty$, K, and t_0 (the maximum length a CA lobster can biologically attain, the growth rate, and a number that adjusts the initial size of a lobster for the calculation, respectively; Section 3.2). Average weight can be used to estimate the reproductive potential of a stock because it 1) expresses the age of lobsters when removed from the population and thus their number of reproductive seasons before death, and 2) the female size at reproduction dictates fecundity. Methods for calculating the spawning potential of an unfished stock (the denominator of the SPR ratio) vary, as described in Section 4.2.4. The Cable-CDFW uses a theoretical unfished stock without density dependence.

The threshold for the SPR reference point is any current value of SPR that is less than the average SPR calculated for the fishing seasons from 2000/01 to 2007/08. These years were deemed stable and productive by the 2011 CDFW stock assessment and are considered here as "reference" years for calculation of the threshold.

$SPR_{THRESHOLD} = SPR_{CURRENT} < SPR_{REFERENCE}$, (*Equation 4.5)*

A distinction should be made between the calculation of $SPR_{CURRENT}$ and $SPR_{THRESHOLD}$ values in this and other management contexts. Several types of models that allow calculation of $SPR_{CURRENT}$, like the Cable-CDFW model, do not require stock-recruitment data or model-based estimates of MSY. However,

analysis of sustainable SPR levels and thus appropriate placement of an $SPR_{THRESHOLD}$ does require stock-recruitment relationship information. In the absence of this data, frequently fisheries managers set $SPR_{THRESHOLD}$ levels by looking to comparable taxa (Mace & Sissenwine 1993). For example, SPR thresholds used for many other lobster fisheries are based on the calculated value of 0.20 (i.e., 20% of unfished spawning biomass or egg production) commonly used for finfish fisheries (Table 4-1; Mace and Sissenwine, 1993; DiNardo, 1999; SAFMC, 1998; CFMC, 1990). Crustaceans such as lobster are thought to be able to persist at lower levels than many finfish and the calculations of $SPR_{THRESHOLD}$ for some lobster fisheries with the necessary stock-recruitment data are lower than for most finfish. For example, the $SPR_{THRESHOLD}$ values have been estimated to be 10% for the American lobster fishery off the northeast coast of the United States (Zhang et al., 2012), 14% for Caribbean spiny lobster in Cuba (Puga et al., 2005), and 2.5% for a Newfoundland stock of American lobster (Ennis and Fogarty, 1997).

The approach taken by this FMP is that the $SPR_{THRESHOLD}$ should not be based on calculations for other species or value judgements of other jurisdictions. In the absence of stock-recruitment information and associated production modeling, the reference years for the CA lobster fishery serve to set a threshold that is conservative, empirically based, and specific to a period when the stock and fishery were stable and productive (Neilson, 2011). While the $SPR_{CURRENT}$ and $SPR_{REFERENCE}$ values are model-based, the Cable-CDFW model is a non-dynamic equilibrium model, meaning it does not incorporate environmental variability or a stock-recruitment relationship. It assumes constant recruitment under any exploitation scenario and therefore that any level of exploitation is sustainable and will not lead to recruitment overfishing. Steneck and Wahle (2013) describe why equilibrium modeling was inappropriate for the American lobster fishery and may be inappropriate for other lobster fisheries as well. This draw-back is related to the fact that while the Cable-CDFW model does estimate F, it cannot incorporate stock-recruitment replacement information to estimate F_{MSY}. Therefore the $SPR_{THRESHOLD}$ in this FMP is $SPR_{REFERENCE}$ rather than SPR_{MSY}.

Other methods for calculation of F (and thus SPR) exist and some are capable of incorporating environmental stochasticity and/or variable recruitment including catch curve analysis (Kay and Wilson 2012, Groeneveld 2000, Sparre and Venema 1998), Leslie-Delury depletion models (Leslie and Davis 1939, Delury 1947, Restrepo 2001, Gonzalez-Yanez 2006) and length-based mortality estimators (Beverton and Holt 1956, Ault et al. 2005). Those that incorporate the distribution of individual lobster sizes, rather than an overall average size, add additional value and ability to distinguish processes effecting lobster life stages differentially (Puga 2013, Muller 1997). However annual length frequency data are not available for CA lobster. It should be noted that current genetic evidence (reviewed in Section 3.3) suggests that CA lobster are well mixed during the larval phase. This suggests that stock-recruitment relationships at sub-regions of the SCB are likely to be weak due to mixing among regions. If mixing between the California and Baja Mexico stocks also weakens the California stock-recruitment relationship, the SPR reference point described here will only serve to describe the effect of fishing on the adult stock and not its potential replenishment. Because of these larval dynamics and their consequences, the Cable-CDFW model equilibrium assumption of constant recruitment may be more reasonable for this stock than for many other invertebrate fisheries.

SPR is also the component in the HCR where the effects of MPAs are factored into the management of CA lobster fisheries. Through the Cable-CDFW Model, CDFW accounts for MPA effects on SPR through six different inputs. These are: 1) the total fraction of the species' habitat covered by the MPA, 2) migration rate into the MPAs, 3) migration rate out of the MPAs, 4) a reduced fishing mortality rate experienced by individuals that cross the MPA boundaries, 5) average length of MPAs, and 6) average distance between MPAs. The model treats all MPAs as if they have reached full maturity and therefore increased survival within simulated MPAs has allowed for the number and size of lobsters inside to

reach equilibrium. Only areas that prohibit both recreational and commercial take are considered MPAs. Although recreational-only areas do protect lobster from commerical traps, they receive disproportionately higher fishing effort from the recreational sector (Figure 2-9). Lobster report card data indicates that the majority of recreational fishing effort for lobster is taking place in recreational only areas.

CDFW currently estimates the percentage of lobster habitat protected by MPAs to be 14.6% based on mapped areas and proxies for hard bottom habitats and MPA area. Other habitats used by CA lobster were not included because 1) hard bottom is the CA lobster primary habitat, and 2) other habitat types were not mapped with equal reliability across the SCB. For example, surfgrass habitat mapping only delineates linear segments of coastline with and without surfgrass. The width in the offshore direction is unknown and will vary according to shoreline slope and patterns of water turbidity. Even the relatively well mapped hard bottom habitat is not equally available in all regions of the SCB, so proxy information must be used. Kelp canopy was used as an indication of hard bottom in unmapped areas. However, coverage of the canopy can be different from the extent of the reefs on which kelps are attached. Furthermore, the lack of kelp canopy in an area does not necessarily indicate the absence of reefs. Table 4-2 provides the habitat area known to be hard or soft substrate, the proportion of rocky habitat estimated using kelp as a proxy, and the area that is unknown. During the early 2000s there were only a small number of no-take MPAs (e.g., northern Channel Islands, La Jolla) and using the best available information, CDFW estimates approximately 4.5% of CA lobster habitat at that time was closed to both commercial and recreational fishing. CDFW will continue to incorporate better habitat information as they become available.

Table 4-2: Percentage of bottom area by region from shore to 300 m depth covered by hard, soft, or unknown habitat types and their data sources. North and south mainland regions are delineated by Dana Point.

Region	Substrate	Source	Percent Area
Mainland North	Hard	Coarse	0.2
	Hard	High Resolution	1.3
	Hard	Kelp	1.5
	Soft	Coarse	2.7
	Soft	High Resolution	54.2
	Unknown	N/A	40.2
Mainland South	Hard	High Resolution	9.0
	Hard	Kelp	0.2
	Soft	High Resolution	60.1
	Unknown	N/A	30.7
Northern Channel Islands	Hard	High Resolution	3.9
	Hard	Kelp	3.6
	Soft	High Resolution	43.9
	Unknown	N/A	48.9
Southern Channel Islands	Hard	Coarse	12.7
	Hard	High Resolution	2.6
	Hard	Kelp	4.5
	Soft	Coarse	25.1
	Soft	High Resolution	22.0
	Unknown	N/A	33.0

Because $SPR_{THRESHOLD}$ is calculated as the average of the reference years, annual SPR values fluctuated above and below that average during those years and to the present. The highest SPR value was associated with the highest average weight observed during the 2001-02 season. Average weight was at

a minimum during the 2005-06 season but has since been rising and reached a value higher than 2001-02 during the most recent 2014-15 season. SPR has been rising, in part because of rising average weight, but also because of model simulated MPA benefits applied to the 2012-13 season and those that follow. Under current conditions with 14.6% MPA coverage the model provides an SPR enhancement of four to five percentage points over the SPR calculation at the same average weight with 4.5% MPA coverage (Figure 4-8). This improvement reflects the importance of the MPAs to the reproductive potential of the species as well as the insurance they provide against recruitment overfishing. The metric used to measure a stock's reproductive potential should reflect the effects of a management tool designed in part to protect that very stock's reproductive potential. However, it is unlikely that the MPAs, implemented in 2012 as a result of the south coast MLPA process, have actually achieved equilibrium and their full potential. Given that the average weight during the 2014-15 fishing season was above the average of the reference years, $SPR_{CURRENT}$ for 2014-15 was also above $SPR_{THRESHOLD}$ with or without the model benefit from MPAs. CDFW will monitor average weight and SPR closely until further research illustrates substantial benefit of MPAs to CA lobster and that the model-simulated enhancement to reproductive potential is warranted.

A current limitation of the Cable-CDFW model is its decreasing sensitivity in estimation of F and SPR as average weight decreases (see Appendix X). Figure 4-9 illustrates an aspect of this issue with the flattening of the curves with increasing F. As average weight declines and F increases, SPR changes little and cannot extend to zero. With MPAs in place, SPR asymptotes at a higher level. The current average weight corresponds to an F estimate where the SPR curve bends and accuracy of SPR estimation is good. The average weight where model accuracy declines depends on input parameters, particularly growth. Collection of age and growth information is a high priority and CDFW will seek to augment and validate existing information and improve the growth parameters and/or update the equations describing growth within the Cable-CDFW model. These refinements will not require amendments to the FMP as they represent improvements in accuracy and not a shift in the Cable-CDFW Model approach (see Section 6.2.2). Additionally, model refinements apply to calculation of both $SPR_{CURRENT}$ and $SPR_{THRESHOLD}$ and therefore represent concurrent improvements to both estimates (see Appendix X).

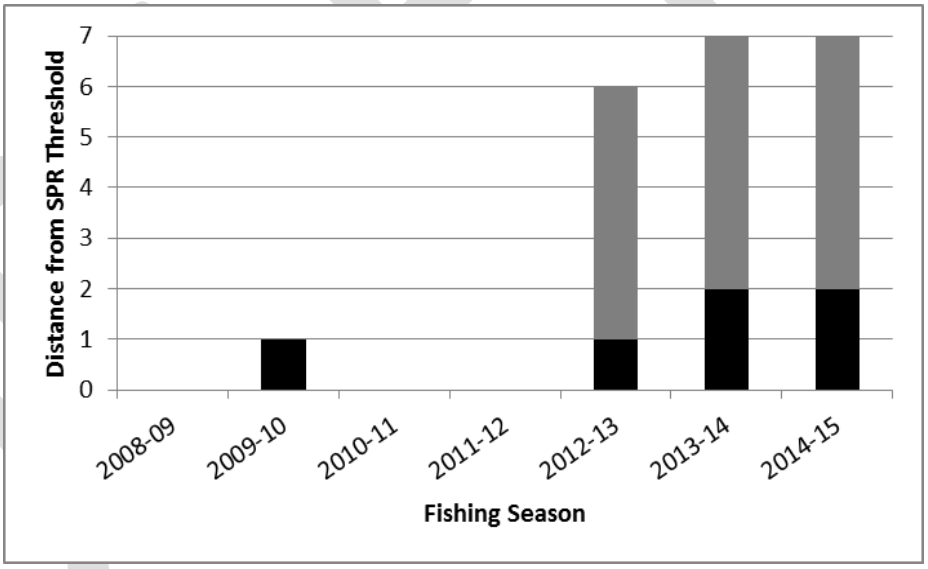

Figure 4-8: Percentage points above SPR threshold with 4.5% (black) and 14.6% (gray) CA lobster habitat within MPAs. Seasons with no bars are equal to SPR threshold.

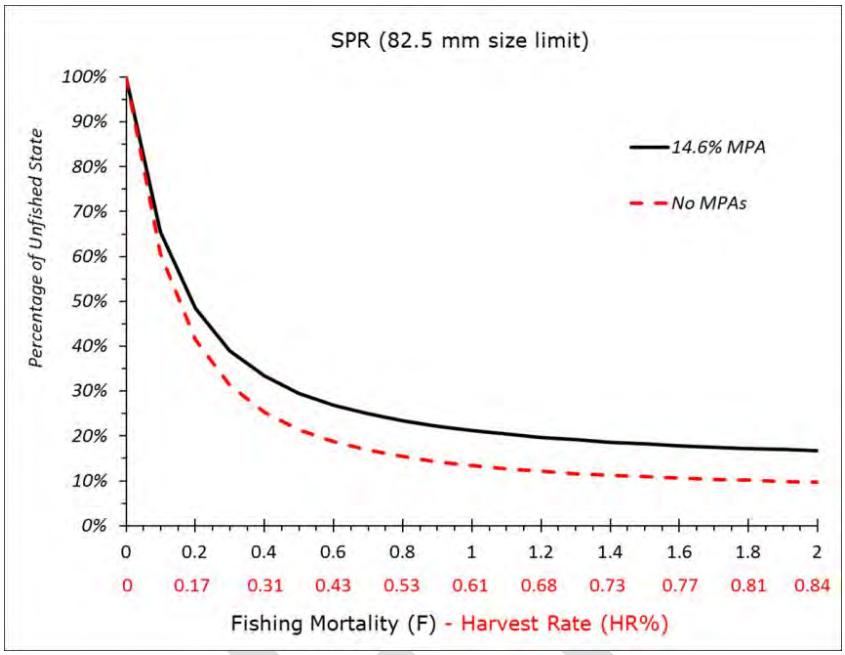

Figure 4-9: Relationship between spawning potential ratio (SPR) and fishing mortality (F) CDFW-Cable Model outputs under conditions with no MPA coverage and 14.6% MPA coverage.

Available CDFW data from logs and landing receipts show that individuals in the northern Channel Islands are notably larger than the minimum legal size, while lobsters in the south are generally caught very close to the legal size. Given equal fecundity and growth and recruitment rates the Cable-CDFW model indicates higher F in the south and lower SPR because southern CA lobsters would participate in fewer spawning seasons before capture. However higher abundance of small CA lobsters in the south may be due in part to higher recruitment and not only a product of higher F. Additionally, CA lobsters in the south may be sexually mature at a younger age and smaller size. Larger numbers of sub-legal CA lobster reproducing at a smaller size may increase SPR in the south and these dynamics would not be reflected in the Cable-CDFW model. Analysis of CAPS data indicates higher reproductive capacity in the south despite smaller average size due to the far greater abundance of sub-legal individuals (Yaeger et al., in prep.). This highlights that the Cable-CDFW model should not be used to compare regionally specific model outputs based on regionally specific average weight without also incorporating regionally specific growth, recruitment rates and reproductive characteristics. Considering that model parameters cannot currently be estimated at local scales and information on population mixing due to the species' protracted larval phase, treating the entire CA lobster stock within the U.S. border with one SPR value is appropriate. Information related to regional differences in the species' biological parameters and in fishery dynamics will need to be improved to better assess the adequacy of using a single SCB-wide SPR value (Section 5.2).

4.3.2 Implementation: HCR Matrix

The three reference points selected to monitor and manage the CA lobster fishery (Catch, CPUE, and SPR) are incorporated into an HCR Matrix. This matrix provides a "dashboard" approach to assist managers in interpreting the status of Catch, CPUE, and SPR reference points in relation to their respective thresholds (Table 4-3). Based on these interpretations, the matrix would prescribe particular courses of action to address the current condition of the fishery. Depending on the respective trend and status of each measurement (i.e., have any of the threshold reference points been exceeded?), the matrix identifies various management strategies ranging from easing harvest regulations, to no regulatory action, to further restricting the fishery.

The HCR is discretionary and not every triggering event will necessarily lead to an immediate regulatory response. Additional evaluation is needed before taking action to determine if external factors (i.e. new regulations, market dynamics, or environmental changes) have caused or contributed to the reference point(s) being exceeded. This process will include consultations with the fishing communities and other

Table 4-3: Harvest Control Rule (HCR) Matrix. Interpretation of different scenarios in which threshold reference points are exceeded, and recommended management responses. Symbols for each reference point are: ↑("safe", does not exceed threshold), and ↓ (exceeds threshold). Note that once $CATCH_{THRESHOLD}$ or $CPUE_{THRESHOLD}$ are exceeded, monitoring CPUE and Catch trends provides valuable information that managers can use to "fine tune" the fishery or to detect overfishing early (i.e., before the stock becomes overfished).

Scenario	Reference Point			Interpretation/possible causes	Suggested management response sequence
	CATCH	*CPUE*	*SPR*		
1	↑	↑	↑	o Stock productivity and fishery performance stable and/or increasing	a) Monitor reference point trends b) Make no change (if reference points are stable or just above thresholds) c) Ease effort regulations (if reference point trends are increasing)
2	↓	↑	↑	o Fishery under-harvested (i.e., fishing effort and harvest rates are low, could be caused by drop in price or other economic factors)	a) Monitor reference point trends b) Make no change (if CPUE/SPR trends stable/just above threshold) c) Ease effort regulations (if explanations for decreasing catch are not biological and CPUE/SPR trends increasing)
3	↑	↓	↑	o Catchability down o Potential economic overfishing o Potential early warning of recruitment overfishing	a) Monitor reference point trends b) No change (if SPR trends are stable/above threshold) c) Effort reduction (if SPR trends declining) d) No change, or ease catch restriction (if catchability is proven to be lower than usual and is causing CPUE decline)
4	↓	↓	↑	o Catchability down o Potential economic overfishing o Potential early warning of recruitment overfishing (fewer recruits surviving to adulthood)	a) Monitor reference point trends b) Investigate underlying causes c) Confirm SPR trends and model inputs d) If action is needed, implement one or more of the eight regulatory options in the control rule toolbox as appropriate e) Effort reduction (if SPR trends declining)

Table 4-3 Continued: Harvest Control Rule (HCR) Matrix.					
Scenario	**Reference Point**			**Interpretation/possible causes**	**Suggested management response sequence**
	CATCH	*CPUE*	*SPR*		
5	↑	↑	↓	o Stock overfished o Recruitment largely provided from Mexican stock	a) Investigate underlying causes b) Confirm SPR trends and model inputs c) If action is needed, implement one or more of the eight regulatory options in the control rule toolbox as appropriate
6	↓	↑	↓	o Stock overfished, and o Possible catchability increase (effort creep due to technology, etc.)	a) Investigate underlying causes b) Confirm/monitor CPUE (misreporting?) c) Confirm SPR trends and model inputs d) If action is needed, implement one or more of the eight regulatory options in the control rule toolbox as appropriate
7	↑	↓	↓	o Stock overfished o Overfishing indicated	a) Investigate underlying causes b) Confirm SPR trends and model inputs c) If action is needed, implement one or more of the eight regulatory options in the control rule toolbox as appropriate
8	↓	↓	↓	o Stock overfished o Overfishing indicated o Disease	a) Investigate underlying causes b) Confirm SPR trends and model inputs c) If action is needed, implement one or more of the eight regulatory options in the control rule toolbox as appropriate

stakeholders. For example, if the triggering of the catch-based reference point coincides with a new effort-based regulation, the first task would be to determine if the triggering event is caused by the new regulation. If it is determined that the triggering event is caused by the new regulation and not biological processes, no further management action may be necessary. In the event that management actions are warranted, the HCR calls for the implementation of one or more of the eight regulatory options provided in the control rule toolbox (Section 4.3.3).

4.3.3 Regulatory options linked to the control rule

This FMP prescribes a control rule toolbox of eight regulatory options (not in order of rank) that are available to decision makers (Table 4-4) when threshold reference points are triggered, and there is reason to either restrict or ease fishing opportunity. The specific actions in the toolbox are:

1) Change in commercial **trap limit**
2) Change in recreational bag limit
3) TAC
4) District Closures
5) Change in season length
6) Change minimum size limit
7) Impose a maximum size limit
8) Sex selective fishery (Male-only fishery or female-specific size restriction)

Trap limit – A type of regulatory measure that restricts the number of traps a fisherman may fish at any one time within a given season.
Allocation - In the LFMP allocation means a certain amount of lobster set aside for recreational, commercial, and ecosystem needs.

Each of the eight regulatory options in the control rule toolbox carries specific benefits and limitations (Table 4-4) that managers will need to carefully evaluate, including impacts to constituents, level of regulatory change, and duration of regulatory change (i.e., how long it will remain in place). CDFW will consult with the fishing communities and other stakeholders in order to better inform any management recommendation to the Commission on the proper regulatory response.

<u>1) Implementation and subsequent adjustments to commercial trap limit</u>

Relative to fisheries for finfish and other invertebrates, crustacean (crab and lobster) fisheries can sustain more intense harvest rates without rapidly collapsing (Zhang et al., 2012; Ennis and Fogarty, 1997). This resilience against fishing pressure often allows commercial lobster fisheries to remain at high effort levels that can be economically inefficient and unnecessary for maintaining high yield. Over time, such effort level can lead to economic overfishing, and if left unregulated, can lead to recruitment overfishing. Therefore, reducing effort when fishery performance (e.g., CPUE) or stock status (e.g., SPR) is in decline would likely address the root cause of such declines. As specified in Table 4-4, effort adjustment also allows for increases when reference indicators (e.g., Catch, CPUE, SPR) indicate that the fishery is underutilized. A trap limit would directly reduce the number of traps fishermen put in the water.

The CA lobster fishery is not currently regulated by a trap limit. However, recent rise in fishing effort has contributed to recent $CPUE_{CURRENT}$ values below the $CPUE_{THRESHOLD}$ (Section 4.3.1.2) and has led to possible economic inefficiency within the fishing sector (Sections 2.1). Furthermore, an excess of lost traps may create further environmental and social concerns. CDFW has worked closely with its constituents to resolve these issues, and as part of the implementing regulations for this FMP, the CDFW will propose a formal trap limit program that allows the Commission to adjust commercial sector fishing effort (Section 4.5). Once the limit is in place the Commission will be able to adjust it as needed based on the HCR.

2) Change in recreational bag limit

An adjustment to the recreational bag limit would serve to control effort in the recreational sector. Adjustment options may consist of daily, weekly, monthly, or annual limits. A bag limit would change the amount of lobsters a recreational fisherman can keep. The MLMA requires any type of **allocation** within an FMP to be equitably shared between the recreational and commercial sectors (FGC § 7072(c)). Any proposed change to the recreational bag limit is allocative by nature, and should be considered in conjunction with possible adjustments for the commercial sector.

3) TAC

A TAC or a TAC/ITQ management framework can prevent a stock from being overfished. However, management challenges in quota fisheries include, but are not limited to, allocation of catch among fishermen, consolidation of capacity when quota is transferable, accounting for natural fluctuations in stock size that may render the TAC too restrictive or aggressive from year to year (e.g., Johnston and Butterworth, 2005), access to the fishery if/when quota shares increase in price, and increased administrative and enforcement costs to regulatory agencies. Advocates of quota systems argue that the high cost of transferring quota shares should lead to increased stewardship among current fishermen because they have an incentive to protect their asset. This and other aspects of TAC/quota management are complex (e.g., Branch, 2009) and often contentious. While some studies emphasize the successes of TAC and quota approaches to management (Costello et al., 2008; Bonzon et al., 2010), others suggest that they should be considered cautiously on a per-case basis (del Valle and Astorkiza, 2007; Bromley, 2009; Ecotrust, 2009; Gardner et al., 2013).

If the SPR-based threshold reference point is exceeded, a TAC could be established for California. Approaches for determining a TAC for California include, but are not limited to: (a) accurately estimate the biomass of the stock, and then determine what fraction of the stock the fishery is allowed to harvest; (b) determine a conservative catch level (i.e., one that is historically low/modest) that is clearly sustainable and set that as the TAC, or; (c) identify a target CPUE and adjust the TAC through time until CPUE falls to within some range of the target value (e.g., New Zealand zone CRA8, see Bentley et al. 2005). Equitable distribution of the TAC between the commercial and recreational sectors will be necessary (FGC § 7072(c)). If a quota system is adopted, allocation between and within sectors (commercial and recreational) will need to be considered. Quota allocation is likely to be highly contentious.

4) District Closures

Some areas may be closed only to certain types of fishing, and areas closed to fishing tend to experience very low fishing mortality (although some fishing mortality can occur due to spillover and poaching). Population increase inside closed areas can increase the spawning output of the entire stock. However, closing areas off to fishing can also displace fishing effort to other areas, placing more pressure on the unprotected portion of the stock (Section 4.2.1.1). Furthermore, existing CDFW records show that most of the recreational take in the state occurs in locations where commercial fishing is prohibited (Santa Monica Bay, Long Beach Harbor, San Diego Bay, and the front side of Catalina; Figure 2-9).

A number of areas (Districts) are presently closed to commercial harvest. Prominent examples include the north side of Catalina Island, Santa Monica Bay, and harbor jetties. If the SPR-based reference point threshold is exceeded, these areas could be additionally closed to recreational harvest. Doing so would enhance the spawning output of populations in these areas. The FMP only accounts for the effect of

areas closed to both commercial and recreational fishing on SPR using the Cable-CDFW Model (Section 4.3.1.3).

5) Change in season length

Seasonal closures reduce fishing mortality by reducing the number of days that fishing is allowed each year. Closed seasons can protect stocks during important life events, such as spawning. A longer closed season could also improve survival of individuals that would have succumbed to fishing, which in turn increases SPR. The current closed season in California protects reproduction, and any extension of current seasonal closures is unlikely to provide substantial protection for reproductive behaviors or activities. However, it is possible that climate change may lead to a shift in the timing of reproduction or a change in the length of the reproductive season. Such changes could prompt a change in season length. If the SPR-based threshold reference point is exceeded, fishing season length could be shortened, either by delaying the opening date or by closing the season early. That said, most catch occurs during the first part of each season, therefore reducing the duration of the season would have a disproportionately small effect on fishing mortality.

6) Change minimum legal size

Increasing the Min LS would ensure that animals will, on average, reproduce more times before they are caught. Furthermore, females will be slightly larger and produce more eggs. Increasing the Min LS is a simple, effective, and direct way to increase SPR. However, it will lead to extra cost for the fishermen as they make adjustments to their gears (e.g., enlarge escape ports). If the SPR-based threshold reference point is exceeded, the Min LS could be increased to a size that ensures a target SPR within a specified time frame. A reduction in Min LS would have the opposite effect, if future conditions suggest that SPR could be reduced.

7) Establish maximum legal size

If the SPR-based threshold reference point is exceeded, a Max LS could be implemented to protect larger spawning females. As the communities inside MPAs mature, they will likely comprise more of these adults with higher fecundity, and a Max LS would be expected to protect these important spawners as they move outside of the boundaries of the MPAs. Trophy animals would not be available to the recreational community.

8) Sex selective fishery

A sex selective restriction allowing the harvesting of male lobsters (and consequently not allowing the harvesting of female lobsters) could be implemented for the CA lobster fishery. If the SPR-based threshold reference point is exceeded, changing sex regulation for females could be an efficient mean to increase SPR. As stated in Table 4-4, there are advantages and disadvantages to this system that should be carefully considered. Prohibition on the take of berried females is another sex selective provision that could be considered.

Table 4-4: Control rule toolbox: The eight regulatory options available to decision makers if threshold reference points are triggered and their relative benefits vs. limitations

Regulatory options	Benefits	Challenges/Limitations
1) Change commercial trap limit	• Restores economic performance (CPUE) and stock status (SPR) • Directly addresses most common management problem in lobster fisheries (high harvest rates due to high effort) • Applicable when performance/stock increases (i.e., harvest rates can be scaled upwards in absence of crisis, or after recovery) • Accentuates the multiple benefits of trap limit for other MLMA objectives (i.e., Table 5.1)	• Mechanisms only applicable to commercial • Requires implementing a trap limit program • May disrupt established business/fishing practices
2) Change recreational bag limit	• Restores stock status (SPR) • Directly addresses most common management problem in lobster fisheries (high harvest rates due to high effort) • Applicable when performance/stock increases (i.e., harvest rates can be scaled upwards in absence of crisis, or after recovery)	• Mechanism only applicable to recreational
3) TAC	Without individual quota system (e.g., ITQ) • Can provide long term stability to catch and prevent overfishing • Adjustments and rebuilding measures are simple and efficient With individual quota system (e.g., ITQ) • Can provide long term stability to catch and prevent overfishing • Can ease "race to fish" • Can encourage fishing during high market value periods (unless cost of fishing is higher then), this is often later in the season for CA lobster – can have economic benefits • Can lead to effort reduction (but not guaranteed) • TAC/ITQ can be tuned to other fishery performance measures (e.g., CPUE); maximize efficiency	Without individual quota system (e.g., ITQ) • Encourages "derby" fishery, exacerbates high effort level, and compromise safety ("race to fish") • Allocation across sectors difficult (commercial vs. recreational) • Difficult to monitor recreational catch against a TAC (current system is not sufficient) • Recruitment/stock size variability problematic for setting optimal/appropriate TAC • Data-intensive; usually based upon stock assessment • Increased administrative and enforcement costs With individual quota system (e.g., ITQ) • Difficult to monitor recreational catch against a TAC (current system is not sufficient) • Allocation both across and within sectors difficult • Recruitment/stock size variability problematic for setting optimal/appropriate TAC/quota • Data-intensive; usually based upon stock assessment • Increased administrative and enforcement costs

Table 4-4 Continued: Control rule toolbox.

Regulatory options	Benefits	Challenges/Limitations
4) District closures (e.g., Santa Monica Bay, jetties, Catalina)	• Directly protects stock and increases SPR • Protected areas can be directly incorporated into stock assessment • Streamlining management by prohibiting all lobster fishing in certain CDFW fishing districts • Can directly target localized issues	• If implemented alone, does not reduce high effort in fished areas (potential root of problem), thus does not improve economic performance • Increased congestion in open areas • Likely to reduce yield, reduce public access • May disrupt established business/fishing practices
5) Change season length	• Ease and immediacy of implementation and enforcement (applies both sectors in same manner) • Can estimate benefits from historical catch records	• If implemented alone, does not reduce high effort (potential root of problem) unless large change is made, thus does not improve economic performance • The timing of catches made within season varies regionally (high early season in south, more prolonged in north), thus impact will bear regional disadvantages. Not likely to be uniformly effective throughout range of fishery • Shortens and temporally eliminates access to market
6) Change minimum size limit	• Ease and immediacy of implementation and enforcement (applies to both sectors in same manner) • Directly protects stock and increases SPR • Easily incorporated into stock assessment	• Disproportional economic impacts in southern portions of range where most animals in catch are close to legal size • High cost to commercial fishermen needing to adjust trap openings • If implemented alone, does not reduce high effort, thus does not improve economic performance • Initial season could have major catch reduction
7) Impose a Maximum Size Limit	• Ease and immediacy of implementation and enforcement (applies to both sectors in same manner) • Directly protects stock and increases SPR • Impact easily incorporated into stock assessment • Enhances other MLMA objectives: (1) Ecological benefits of large animals in food chain, (2) non consumptive users	• Benefits (increases in SPR) are minimal at high harvest rates because few animals survive to large size • If implemented alone, does not reduce high effort (potential root of problem), thus does not improve economic performance • May disproportionally impact recreational sector
8) Sex Selective Fishery (male only or female-specific size restriction or condition)	• Ease and immediacy of implementation and enforcement (applies to both sectors in same manner) • Directly protects stock and increases SPR; similar method works in *H. americanus* fishery (V-notch program) and crab fisheries (i.e., Dungeness) • Enhances other MLMA objectives: (1) Ecological benefits of large animals in food chain, (2) non consumptive users	• If implemented alone, does not reduce high effort (potential root of problem), thus does not improve economic performance • Reduced yield to fishery, likely large effect • Mating dynamics unknown, small males might not fertilize eggs of larger protected females due to (1) sperm limitation and (2) antagonistic interaction between large females and small males during mating

4.4 Management of Other Lobster Fisheries

Commercial lobster fisheries exist in many parts of the world. The lessons learned from these global lobster fisheries have played an important role in shaping this FMP. The following review of four select lobster fisheries from other parts of the world highlights the various tools used in lobster fishery management. A comprehensive list of fisheries is listed at the end of this section (Table 4-5).

4.4.1 Baja Mexico *Panulirus interruptus* Fishery

The Mexican lobster fishery operates through fishing cooperatives which are regional groups of fishermen with rights that were first allocated by the government in 1936 (SCS, 2011). Concessions granted to each cooperative define the allowable species, fishing zone boundaries, and effort levels for each cooperative. Adherence to these concessions and prevention of poaching is largely ensured by the cooperatives themselves. Lobster is harvested by 26 cooperatives from the border with the US to Margarita Island but only 10 of those cooperatives, located in the region from Punta Abreojos to Isla Cedros, catch approximately 80% of the catch. Nine of those cooperatives are jointly certified by the Marine Stewardship Council. Federal government control over stock assessment and management is held by the National Institute of Fisheries (Instituto Nacional de Pesca (INAPESCA)) and instituted through the Regional Center of Fisheries Research (CRIP) in La Paz and Ensenada. Co-management and collaboration (e.g. data collection) is required by law as a part of concessions and cooperatives are included in discussions of research results and management recommendations through workshops. Landings data on logs is collected by CRIP and compared to landings data recorded on receipts of sale submitted to the national aquaculture and fishing commission (CONAPESCA).

The fishery is managed using a combination of a minimum legal size (82.5 mm CL), a closed season, a prohibition on taking berried females, trap design requirements, and particular fishing areas and trap limits for each cooperative (SCS, 2011). Commercial landings in Mexico during 2000-10 were approximately 4 times those in CA. Very little lobster is taken recreationally. During the 2010-11 fishing season, approximately 1,250 fishermen operated 564 boats and 28,296 traps (Vega, pers. comm.). The stock has been assessed using a variety of models (Chavez and Gorostieta, 2010; SCS, 2011). INAPESCA used the results of a biomass dynamic model (Hilborn and Walters, 1992) applied by Vega et al. (2000) to set the biomass at maximum sustainable yield (BMSY) as a reference point. The stock is considered below optimum when B/BMSY is <1 and above optimum when the ratio is >1. Specific management responses to a ratio <1 are not prescribed. Investigations in 2014 found that B/BMSY is approximately 1.58 and therefore above optimum, but increased effort was not recommended due to a desire to avoid economic overfishing (SCS, 2014).

4.4.2 South Australia *Jasus edwarsii* Fishery

The South Australian lobster fishery has been regulated with limited entry, seasonal closure, minimum harvestable size, trap limit, trap design restrictions, and a prohibition against keeping berried females (SAFMR, 2006; SAFMR, 2007). A trap limitation was implemented in the 1980s when fishing capacity began to expand due to technological advances (Sloan and Crosthwaite, 2007). Each fishing license is restricted to fishing between 20-100 traps (SAFMR, 2006), but a fisherman or a holding company may own more than 1 fishing license (FAO, 2001). The recreational part of the fishery accounts for less than 5% of the fishery's annual harvest, and is further managed through daily limits and gear restrictions. In addition, recreational fishermen are required to clip the tails of each lobster they catch; the clipping helps identify recreationally caught lobsters and prevent them from entering the commercial markets.

In the early 2000s, landing and CPUE for the fishery dropped due to unfavorable environmental conditions (Linnane et al., 2013a). State managers then implemented a TAC of 625 mt (1.38 million

pounds) for the fishery in 2003 and a system of limited permit entry in 2007 (Sloan and Crosthwaite, 2007; Linnane et al., 2013a). The stock has since improved but has not fully recovered (Linnane et al., 2013a). The improvement may have been due to a more stringent TAC of 470 mt (1 million pounds) that was implemented in 2008 (Linnane et al., 2013a; Linnane et al, 2013b). The lower TAC may have prevented growth overfishing, but it could take years before recruitment improves (Phillips and McWilliam, 2009; McGarvey et al., 1999).

The fishery currently uses a formal HCR based on CPUE, measured as the weight of legal-sized lobster per trap lift, and recruitment abundance, measured as the number of sublegal-sized lobster per trap lift (Sloan and Crosthwaite, 2007). When both CPUE and recruitment decrease below specific reference points, managers must either decrease the TAC by 10%, introduce spatial management measures, or both. When CPUE and recruitment increase beyond specific reference points, managers are required to increase the TAC by 10%.

4.4.3 Florida *Panulirus argus* Fishery

The Florida lobster fishery contains a large recreational component (Sharp et al., 2005). The recreational fishery was estimated to account for 24% of the total lobster landings in the state during the 2009-10 fishing season (SAFMC, 2012). The fishery is managed in part through seasonal closure, minimum size restriction, trap/bag limit, trap design restrictions, TAC, and prohibition against keeping berried females for both recreational and commercial fishermen (Florida Administrative Code (FAC) § 68B-24.001 *et seq.*).

The fishery first experienced decline in the early 1990s in part from overfishing (Milon, 1999; Matthews, 2004). The state then implemented a tag-based trap limitation during the 1993-94 season, which would decrease the number of traps within the state through attrition until a target goal of 400,000 traps is reached (FAC § 68B-24.009). Fishermen may transfer their trap limits to immediate family or other lobster permitted fishermen, but transfer outside family would incur a fee of $2 per transferred trap as well as a 10% reduction on the number of tags transferred (FAC § 68B-24.009; Florida Statutes Annotated (FSA) § 379.3671(2)(a)1.). The trap limitation and other conservation measures have likely improved both the health of the stock and the efficiency of the fishery (Milon et al., 1999).

4.4.4 Western Australia *Panulirus cygnus* Fishery

The Western Australia lobster fishery has maintained a high sustainable yield for decades. Management measures for the commercial fishery include management by zones, seasonal closure, minimum size, limited entry, trap limit, trap design restrictions, TAC, a maximum size for females, and prohibition on keeping berried females (GWADF, 2014). Recreational fishermen are allowed to use traps or to dive for lobsters, but they are subject to daily bag limit, and may take lobsters only during the day (GWADF, 2013). The recreational fishery is small, accounting for only 2.6% of the total fishery landing in the 2010/2011 season (GWADF, 2012).

Harvest from this fishery increased substantially in the 1980s and 1990s due to technological advances which resulted in depressed recruitment, but was relieved through the implementation of biological (e.g., maximum female size limit) and effort-based measures (e.g., trap limit) (Hall, 2001). Recruitment dropped again in the mid-2000s. This recent decline was most likely caused by unfavorable oceanographic conditions (Brown, 2009). In response to the drop in recruitment, the fishery managers decided to implement a fishery-wide TAC (GWADF, 2014). The managers are currently implementing an ITQ system to divide the TAC into transferable components (Fletcher and Santoro, 2012).

Table 4-5: Global Lobster Fishery Overview.

Lobster Species (Jurisdiction)	Biology-based Management Tools							Catch-based Tools			Effort-based Management Tools							Co-Management by Regions	Main Source of Reference
	Minimum Size	Maximum size	Taking of Berried Females Restricted	Taking of Molting Lobsters Restricted	MPAs and Other Area Closures	Seasonal /Temporary Closure	Minimum Trap Service Interval	Bag/ Daily Limit	TAC	ITQ	Limited Entry	TAE (Total Allowable Effort)	Trap Limit	Gear Design Restrictions	Gear Type Restrictions	Tail Clipping for Recreational Fishery	No Fishing at Night		
Panulirus interruptus (California)	C R				C R	C R	C	R			C			C	C R				
Panulirus interruptus (Baja California, Mexico)	C		C		C	C					C			C	C			C	SCS, 2004
Panulirus argus (Cuba)[1]									C	C[2]					C			C	Muñoz-Núñez, 2009
Panulirus argus (Florida)	C R		C R			C R		C R	C				C	C	C[3] R				FAC § 68B-24.001
Panulirus cygnus (Western Australia)	C R	C R	C R		R	C R		R	C	C			C R	C R		R	R	C	GWADF, 2012
Panulirus japonicus (Japan)													C[4]	C	C			C	Nonaka et al., 2000; Phillips et al., 2000
Palinurus elephas (Spain)	C		C			C							C	C	C				Quetglas et al., 2004; Goñi and Latrouite, 2005
Palinurus gilchristi (South Africa)			C						C			C[5]							Reg. in Terms of the Marine Living Resources Act, 1998 C. 44
Jasus edwarsii (New Zealand)	C R		C R	C R	R			R	C	C			R	R				C	NZMPI, 2009; NZMPI, 2014
Jasus edwarsii (South Australia)	C R		C R			C		R	C		C		C	C		R		C	SAFMR, 2006; SAFMR, 2007
Jasus lalandii (South Africa)	C R		C		C	C			C	C				C	C R		R		Reg. in Terms of the Marine Living Resources Act, 1998 C. 44
Homarus americanus (Maine, USA)	C R	C R	C[6] R[7]					R			C[8] R[9]		C	C				C	13-188 CMR §§ 25.01 *et seq.*; 12 MRS §§ 6446 *et seq.*

1 Recreational fishery introduced in 1996, but no creational sector exists (Regulaciones Pesqueras de Cuba 164/1996d; but see Phillips et al., 2000)
2 Total catch quota shared between 10 management regions
3 Fishermen may dive or trap for lobsters, but not both
4 Fishery uses nets instead of traps; number of nets limited per boat
5 Days at sea limited
6 A V-shaped notch is fixed on a female before release
7 A V-shaped notch is fixed on a female before release
8 Not all management areas are limited entry, but Maine residency always required for license
9 Maine residency always required for license
C = Commercial and R = Recreational

4.4.5 Maine *Homarus americanus* Fishery

In Maine, a combination of good management practice and favorable environmental conditions has resulted in historically high landings (Steneck, 2006). Both commercial and recreational fishermen are regulated with minimum and maximum size, trap limit, trap design restriction, and prohibition against taking of berried females (13-188 CMR §§ 25.01 *et seq.*). The commercial sector is further restricted with an area-based limited entry program (12 MRS §§ 6446-6447). Each management area may also further reduce the 800-per-fisherman trap limit required by the state through a voting process within the fishing community (12 MRS §§ 6446, 6447(5)(A); 13-188 CMR 25.10(2)). The stock is not considered to be overexploited, but concerns related to suboptimal economic performance, increases in territorial conflicts, trap entanglements (i.e. excess gear in the water), and harbor congestion have surfaced (Acheson and Acheson, 2010).

4.5 The LAC Process and the Resulting Regulatory proposals

CDFW convened the LAC to facilitate communication and build consensus between various constituent groups and CDFW. The LAC is composed of representatives for the recreational fishermen, commercial fishermen, non-consumptive recreational users, conservation interests, and the various levels of government. The process included nine regular meetings between June 2012 and September 2013. The process also involved specific communications such as the 2013 Commercial Trap Survey, which allowed members of the commercial fishing community to provide input detailing the fishing practices and perspectives on the fishery.

During the LAC process, constituent representatives were able to reach consensus on a number of items pertaining to the CA lobster fisheries, such as recognizing the current distribution of catch between the commercial and recreational fisheries to be acceptable. The LAC also reached consensus on five objectives to guide future allocation considerations for the lobster fishery:

1. Identify current effort levels for each sector and establish controls to prevent unrestricted growth.
2. Identify the proportion of overall catch and/or effort from each sector, and if necessary, take corrective action to maintain those proportions if the percent of total catch and/or effort by sector deviates significantly from a pre-determined base period.
3. Recognize the current differences between sectors in traditional fishing grounds and time-of-day fished, and seek to maintain those differences.
4. If increases or decreases to the fishery are required due to application of the control rule, those changes should seek to maintain equitability and not give an advantage to either sector unless biological triggers require a change to allocation.
5. End illegal commercialization.

Most importantly, the LAC also formed consensus on several regulatory recommendations that would benefit the fisheries and/or the natural resources. These proposals were compiled into a finalized consensus recommendation on September 11, 2013. The LAC recommendations (described below) were submitted to the Commission for its consideration at the June 2015 Commission meeting along with Department recommendations.

<u>Commercial trap limit recommendation</u>

In 2013 CDFW mailed a focused commercial lobster trap survey to all lobster operator permit holders (141 transferable and 53 non-transferable permit holders). The survey asked specific questions regarding individual trap fishing effort and sought to assess the level of support for a commercial trap limit. A total of 111 permit holders responded; the majority of survey responses (62%) were submitted by fishermen who target lobster south of Santa Monica Bay (including Santa Barbara Island, Santa Catalina Island, San Clemente Island, and Cortez Bank). Over 76% of all respondents replied “yes” to the question “do you think

there needs to be a trap limit?" Of the respondents who favored a trap limit, 48% wanted a trap limit of 300 traps or less, and 34% wanted a trap limit of 350-400 traps. Other notable responses include a 78% "no" for regional trap limits (northern vs. southern parts of the fishery), 52% responding "yes" to being able to stack two permits to increase their trap numbers under a trap limit, and 67% responded "no" to stacking more than two permits.

The result of this survey was presented to the LAC during the development of the LAC Commercial Trap Limit Proposal. Through consensus, the LAC recommended a trap limit of 300 attached to each fishing permit. The LAC formalized this proposal in part to cap and potentially reduce current effort level. However, the proposal also aims to eventually cap the long-term effort capacity of the commercial fishing fleet at 42,300 traps (141 permits x 300 traps each). Furthermore, each fisherman may stack a maximum of 2 permits. The proposed mechanism will give fishermen the flexibility to fish up to 600 traps each. Fishermen may receive more tags during a season to replace tags lost during rare and unforeseen catastrophes. The LAC also proposed a phase-in trap limit approach to allow each fisherman to purchase a one-year temporary permit for 300 more traps when for the first three years after the trap limit goes into effect. The phase-in permits were proposed to give fishermen time to adjust their fishing practices during the initial implementation of the trap limit.

The LAC process acknowledged that even with the ability to hold two permits, some existing fishermen, especially those fishing between 600-1,200 traps, may need to extensively modify their fishing practices. However, the interest of these fishermen must be balanced with: the risk of pollution due to lost gears if trap intensity continues to escalate; the externalized economic inefficiency impacting the rest of the commercial fleet; and the desire of other fishermen and other stakeholders wishing to see fewer traps in the water. The CDFW considers the LAC trap limit proposal as an appropriate balance and will recommend it as part of the implementing regulations for this FMP. CDFW also considers the trap limit as an important substantive regulatory proposal from the FMP/LAC process. Unlike the other regulatory proposals listed in this section, the commercial trap limit is an integral part of the HCR. It is a pro-active initiative aimed to improve the biological, social, and economic sustainability of the CA lobster fisheries.

<u>Permission to carry SCUBA gear on commercial vessels</u>
Existing regulations do not explicitly prohibit SCUBA equipment on commercial lobster vessels. However, regulations do prohibit commercial fishermen from using SCBUA equipment "to assist in the take of lobsters" (14 CCR 122(g)). SCUBA gear is an important tool for recovery of lost traps that otherwise might remain in the marine environment. It can also be used for disentanglement in instances when trap lines are caught on a vessel's propeller. This proposal will clarify that commercial fishermen may use SCUBA for the purpose of securing traps, retrieving lost gear, or to unfoul a line from a vessel; it will remain illegal to use it for the take of lobster.

<u>More than one permittee may operate from the same vessel</u>
Neither the FGC nor the CCR prohibits two or more holders of lobster operator permits from operating from the same vessel. However, how liabilities are shared between these fishermen in the event of a violation is unclear. As such, the LAC proposes joint liability for operator permit holders operating from the same vessel in the event of a violation.

<u>Extend the trap service interval</u>
Federal regulations require fixed gear (includes traps) in federal waters to be serviced at least every seven days (50 CFR § 660.230(b)(3)). The desire to conform to federal regulation and to provide lobster fishermen with more flexibility in servicing their gear led the LAC to propose a longer soak time for lobster traps, extending it from four to seven days. This extended service requirement would only apply to lobster traps.

Formalize the use of notes in the commercial fishery

Lobster fishermen are allowed to authorize another lobster operator permit holder to pull his or her trap by assigning that permit holder a note. This system was designed to allow one permit holder to pull the traps of another in the event of an emergency, such as sudden illness or vessel breakdown. The LAC proposes to formalize the note system with more CDFW oversight through the submission of a waiver for CDFW approval in order to minimize potential abuse.

Additional grace period for deploying and retrieving traps

The LAC also proposes to extend the grace period for trap deployment before the commercial season opens and the grace period for trap retrieval after the commercial season closes. Commercial fishermen are currently allowed to deploy traps in the water 6 days before the season opens. They are also given 6 days to remove their traps from the water after the season closes. However, all traps left in the water during the grace periods must be unbaited with doors wired open. Fishermen may not bait the traps until 24 hours prior to the season opening, and traps must still be emptied of baits and wired open when season closes.

The LAC considers the current grace period length to be too short. Commercial fishermen tend to over-stack their decks with traps and create hazardous conditions. To decrease the chance of accidents and navigational hazards, the LAC proposes to extend the grace period for deploying and retrieving traps to 9 days. Fishermen are still prohibited from baiting the traps until 24 hours before the season opens, and traps must still be emptied and wired open when the season closes.

Branding of commercial buoys

Existing regulation requires lobster fishermen to have their respective fishing license numbers on their buoys in contrasting colors (14 CCR § 122(k)). Feedback from commercial representatives suggests that numbers that are branded onto the buoys are just as legible as the ones that are painted. Furthermore, branding does not erode as quickly as paint, which translates to less effort on the part of the fishermen to maintain legibility. For these reasons, LAC is proposing to explicitly allow fishermen to paint their license numbers in contrasting colors or to brand the numbers in a clearly legible form.

Tail clipping/hole-punching of retained recreational lobster

Tail-clipping/hole-punching is practiced in other recreational lobster fisheries. For example, Australia requires marking retained recreationally-caught lobsters, where enforcement officers can use clipping or hole-punching to distinguish recreationally-caught lobsters from commercially-caught lobsters. The same can be accomplished in California. This tool is relatively simple to implement and enforce and can help prevent recreationally-caught lobsters from entering the black market.

Prohibition on mechanical hoop net pullers

A prohibition on mechanical hoop net pullers has been proposed to deter poachers from using the pullers to poach commercial traps. The LAC has also proposed to incorporate an exemption for fishermen with disabilities.

Changing the opening time for recreational season

The midnight opening time for the recreational season has led to confusion amongst the recreational fishing community. Concerns over safety were also discussed by the LAC, due to fatalities routinely occurring on opening nights. Furthermore, a midnight opening is more difficult for CDFW to enforce than a day time opening. Due to the safety and enforcement issues associated with a midnight opener, the LAC proposes to move the recreational season opener to an alternate time. However, the LAC has expressed concerns over potential economic impacts to the Commercial Passenger Fishing Vessels and dive charter boats if the

opener is moved to after midnight compared to before midnight, as this could result in one less night of fishing.

Marking recreational hoop net floats

The LAC has also reached a consensus on supporting a rule requiring the marking of all hoop net floats with the operator's unique identifications (e.g., individual license numbers, GO ID numbers). This is intended to allow enforcement officers to better identify hoop net operators and lost gear.

Clarifying regulatory language on diving for lobsters

Current regulation prohibits the possession of "hooked devices" when diving for lobsters. This has led to different interpretations of the language as well as citation for spear fishermen who were in possession of spear guns while attempting to take lobsters by hand. The LAC proposes to clarify the language, remove the reference to "hooked device," and focus the regulatory language on how lobsters may only be taken by hand when diving. Merely carrying spearfishing gear while taking lobsters should be legal, while the use of such gear to aid in lobster fishing should remain illegal.

4.6 Management Strategy Evaluation Model (MSE)

An important step that CDFW is taking to further improve CA lobster fisheries management is the refinement of the **management strategy evaluation model** (MSE). MSE is a sophisticated model that integrates traditional fishery stock models with management measures to predict the effects of those measures. It is an individual-based simulation model. This means that each individual lobster is simulated as a unique agent and the fate of each lobster is dependent on its state-based probability of moving, reproducing, living, or dying in each time step. A lobster's state is described by features such as sex, reproductive stage, and size. The model incorporates the effects of both the recreational sector and the commercial sector and provides an estimate of future performance of the CA lobster stock under different sets of management activities.

Management strategy evaluation (MSE) – For the purposes of the spiny lobster FMP, the MSE is a computer model that simulates lobster population dynamics, designed by a team led by Dr. Yong Chen, University of Maine. The MSE was designed to allow CDFW to monitor and evaluate the effects of management measures and the lobster fisheries on the lobster population.

4.6.1 Capability of the MSE

The MSE includes: 1) an operating model for simulating the dynamics of the spiny lobster stock and fishery; 2) historical and simulated fishery-dependent, fishery-independent, and biological data; 3) a stock assessment model yielding estimates of the current stock biomass/abundance and fishing mortality; 4) a set of alternative management actions that are practical, enforceable, and can be simulated; 5) a set of performance measures for evaluating the performance of these management actions with respect to management objectives; and 6) a set of harvest control rules determining how the management regulations should be adjusted based on a set of defined biological reference points and stock assessment results. The model is very sophisticated, and it requires tremendous resources to run effectively. As in most fishery stock models, the MSE incorporates known characteristics of a fish population and its associated fisheries to simulate a virtual population. MSE can be used in that capacity to determine important population-level characteristics, such as abundance (i.e., perform a stock assessment). The MSE, for example uses total MPA coverage to calculate a probability of encounters between individual lobsters and lobster fishermen. The encounter rate is then used to determine the fishing mortality of the stock.

However, MSE's capability extends beyond the ability to conduct stock assessments. Once an MSE run produces a simulated CA lobster stock that is comparable in its key attributes to the actual stock, it could then apply different hypothetical HCRs to the virtual population and predict the performance of each HCR (e.g., comparing the 10-year yield of an HCR using a $CATCH_{THRESHOLD}$ of 0.9 with an HCR using a $CATCH_{THRESHOLD}$ of 0.8). The model would determine whether any threshold reference point has been reached during each

virtual fishing season and apply changes to the stock's fishing mortality accordingly to simulate management actions. The model then records the status of the stock, such as total yield, over multiple fishing seasons. CDFW would then be able to assess the merit of different management options using these results. The MSE currently does not take changing environmental trends into its calculation, though CDFW scientists are attempting to incorporate such considerations into the MSE model.

4.6.2 Incorporating the MSE

The core components of the model were completed in the fall of 2013. However, the model is not yet ready for deployment. Current model outputs exhibit unresolved patterns in residuals and questionable population trends for MPAs, suggesting that it requires further development. While the current version of MSE is able to incorporate all the management measures within the control rule toolbox (Section 4.3.3), it cannot incorporate CPUE and SPR as reference points. As in the refinement of $CATCH_{THRESHOLD}$, MSE can potentially use and refine $SPR_{THRESHOLD,}$ after the program code is modified to provide SPR estimates. In the meantime, CDFW will continue to improve these inputs with various monitoring efforts, including the effects of new management actions (e.g., at-sea sampling, lobster report cards, landing receipts; Section 5.1.1). If the MSE model is adapted to calculate SPR, CDFW would use the model as an alternate means of calculating $SPR_{THRESHOLD}$. Alternatively, if one of the reference points used by MSE is found to be a better indicator of the CA lobster stock's ability to replenish itself, the FMP will be amended appropriately to incorporate the new metric.

Eventually, the MSE has the potential to streamline future management actions for the CA lobster fisheries and reduce administrative uncertainties. More importantly, the model offers CDFW the potential to assimilate and analyze biological and regulatory information much more quickly, which would ultimately serve to enhance the fisheries. Once the model is fully developed, CDFW will make the appropriate recommendations to the Commission.

4.7 CA lobster and ecosystem management

This FMP adopts an ecosystem approach to management. In this context, consideration for factors such as population structure, habitat, trophic interactions, cumulative impacts of the fisheries, and climate change is crucial (COS, 2012). The first part of this FMP is dedicated to the incorporation of information on both the environmental impact of the fisheries (Chapter 2) as well as the ecosystem role of the CA lobster (Sections 3.7, 3.8, 3.9) into the FMP, in addition to the information related to the CA lobster's own natural history (Chapter 3). Next, management measures were considered in the context of other existing state regulatory structure. One of the most notable existing measures is the system of interconnected MPAs that have been established in the SCB since 2012.

On January 1, 2012, the south coast regional network of 50 MPAs, covering 355 square miles or about 15% of state waters, went into effect (including 13 previously established MPAs in 2003 at the northern Channel Islands that were retained without change) (https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Statistics). These MPAs were established to achieve a set of six ecosystem-based conservation goals, most of which are not strictly related to fisheries (FGC §§ 2851, 2853). However, properly managed MPAs have been shown to enhance fisheries under the right circumstances by protecting critical habitats (Grafton et al., 2006). The MPAs, especially the state marine reserves, make it unlawful to "injure, damage, take, or possess any living, geological, or cultural resource" unless the activities are part of a permitted research, restoration, or monitoring process (PRC § 36710(a)). Protection of critical habitat can, for the case of CA lobster, translate to increased spawning potential (Kay, 2011).

It is currently estimated that 14.6% of all known SCB CA lobster habitats are protected by MPAs (Section 4.3.1.3) assuming that CA lobster fisheries occur out to 100 m (~300 ft) depth). Refinement of the data, such as analyzing the difference between habitats inside MPAs and habitats outside MPAs, is an ongoing information need (MPA Monitoring Enterprise, 2014). CDFW incorporates this number as well as other MPA specific data (e.g., MPA size, adult spillover, fishing effort adjustment due to MPA) into the calculations of the SPR reference point through the Cable-CDFW Model.

A significant number of studies have been dedicated to the effects of MPAs over the past several decades (e.g., Grafton et al., 2006; Roberts et al., 2003). However, information detailing their effects on the CA lobster fishery has been sparse. It is known that MPAs can eliminate fishing mortality inside their boundaries, but displace fishing effort and intensify fishing in the non-MPA areas (Beverton and Holt 1957; Guenette et al., 1998; Goñi et al., 2010; Alcala et al., 2005; Shester, 2008). Existing research shows that under the right conditions, MPAs can allow lobsters to reach a larger reproductive size before being caught (Diaz et al., 2011). Past research on a related species of spiny lobster, *J. edwardsii*, further shows that larger females carry more eggs and produce stronger larvae (Smith and Ritar, 2007). If CA lobsters exhibit the same type of improvement in fecundity as they age, and if the southern California MPAs are allowing individuals to grow to a larger size before being caught, then the MPAs will contribute to the fisheries through enhanced recruitment.

MPAs have also been shown to contribute to lobster fishery yield in outside unprotected areas through movement (adult "**spillover**"). Whether MPAs will contribute to spillover of a fishery depends on a variety of factors, such as the location and size of the MPAs in relationship to the mobility of individual lobsters (Bevacqua et al., 2010; Moland et al., 2013). Furthermore, in an era of global climate change, MPAs are areas where CA lobsters would not be impacted simultaneously from climate change (Section 3.11) and fishing.

Spillover - The emigration of adults from a protected area to the fishing grounds, and/or larval export from the protected area to surrounding areas.

MPAs can also almost completely eliminate other ecosystem impacts from commercial and recreational fishing within their boundaries. These include bycatch and trap-habitat interactions. Moreover, the elimination of fishing pressure in certain areas can ensure that a portion of the CA lobster stock will grow to a size large enough to enable them to assist with controlling the local urchin population (Section 3.9).

In addition to the MPAs and the new HCR, measures that have been proven to be effective at keeping the CA lobster stocks at a biologically sustainable level (Section 2.4) will remain in place. Existing regulations for the recreational industry include the mandatory reporting requirement, minimum size limit, area closures, bag limit, gear restriction, and season restriction. Existing regulations for the commercial industry include the mandatory reporting requirement, minimum size limit, area closures, limited entry, gear restriction, trap specification, and season restriction. The CA lobster fisheries also adhere to the Marine Protected Areas (MPAs) regulations.

The management measures and strategies this FMP adopts are thus not designed to independently solve every ecosystem-related issue attributed to the CA lobster fisheries. Instead, the FMP management strategies, the MPAs, and existing management measures all have their respective strengths and weaknesses, and they are meant to complement each other. For instance, while the MPAs can eliminate fishing, and thus all bycatch, within their borders, they are not designed to curtail bycatch elsewhere. This is where existing rules such as trap design specifications and new rules like the proposed trap limit would complement the MPAs and reduce the overall ecosystem impact of the CA lobster fisheries. Additionally, the HCR, in conjunction with the proposed trap limit, will help control fishing effort and further buffer against unsustainable harvest of CA lobsters. The HCR will help maintain the role of CA lobster as an

important trophic link within the nearshore ecosystem as well as the integrity of the associated benthic habitat, and will also minimize impacts to non-targeted species.

While this FMP and existing management measures will go a long way towards protecting the CA lobster resource and its associated ecosystem, activities of other agencies with jurisdictions over coastal and nearshore areas may affect the lobster fishery. For example, the authority to manage coastal development of the state is vested in the California Coastal Commission (PRC §§ 30000 *et seq.*). The Coastal Commission can use the information within this FMP (Section 3.1) to inform its permitting and other regulatory functions to minimize impact to important lobster habitats. The information will also serve as a starting point for intergovernmental collaborations in important future developments.

5. Fishery Research Protocol – Essential Fishery Information

The MLMA requires CDFW to formulate FMPs with the best available science or other relevant information without delaying plan preparation (FGC § 7072(b)). Certain categories of EFI relate to the socio-economic aspect of a fishery while others relate to the natural history and biology of the fished species. CDFW must outline how it would obtain missing or outdated EFI within an FMP (FGC § 7081).

5.1 Research and Monitoring Needs for Essential Fishery Information

CDFW has primarily relied on its own **fishery-dependent data** to determine the status of the spiny lobster stock and associated fisheries. The need to improve existing data has shaped CDFW CA lobster-related research since 2007. Table 5-1 describes the future data needs for managing the CA lobster fishery, including the biological EFI category, their importance, current state of knowledge, and methods for improving them.

Fishery-dependent data - Information collected directly from or during the process of fishing, or from fishery landing data. May be collected from commercial and/or recreational sources, and may include catch/effort reported by fishermen, size and age composition of the catch, and biological samples collected at port.

5.1.1 Existing CDFW Research Methods

The following methods are currently employed by CDFW and its partners:

Logbooks

Commercial fishermen have been required to record specific information for each fishing trip in commercial logbooks since 1973. A logbook entry must contain the date, fisherman and crew ID, vessel ID, CDFW fishing block, a landmark (typically a shoreline feature or reef) corresponding to the area fished, the number of legal-size CA lobster retained, and the number of sublegal-size lobsters released. Effort is compiled based on the number of trap pulls or the length of the soak time. Associated landing receipt ID numbers can also be recorded. Each log has room to record 3 days of fishing with up to 5 sets of trap pulls per day. CDFW is working towards a transition from paper to electronic commercial fishing logs and plans for the CA lobster fishery to be the first to implement a voluntary electronic log by the 2019-20 fishing season.

Commercial landing receipts

Commercial landings have been recorded since the early 1900s via commercial landing receipts. Landing receipts record the date of sale, species(s) landed, port of landing, fisherman ID, vessel ID, CDFW fishing block from which the catch was taken, the price paid, and weight landed. Landing receipts are filled out by fish dealers or by fishermen permitted to sell their own catch.

Correlating commercial logbooks and landing receipts

Information such as the weight and number of lobsters landed by a fisherman on a given day is important for both the management and the enforcement of the CA lobster fisheries. CDFW uses this type of information to obtain the annual average size of a landed CA lobster, which is crucial for determining the SPR of the stock. To obtain such information, correlation between commercial logbooks and landing receipts is necessary.

In the mid-1990s, CDFW transitioned from daily logs to new logs that record up to three days of fishing. Unlike the daily logs, which recorded the weights landed on a daily basis, the new logs provide space for the number of legal-size lobsters retained, but not weight. Landing receipts between fishermen and buyers, on the other hand, only record weight and not number of lobsters sold (Appendix IV). In order to determine the weight of the lobsters caught on an individual fishing date, CDFW must first identify the landing receipt ID numbers recorded on the log of that particular date. CDFW must then retrieve the specific landing receipt with the corresponding ID.

This current system of correlating logs with receipts is a complex process. For fishermen that sell all of their catch from a single day to one buyer, correlation is straight-forward. However, CDFW will not be able to determine the precise weight of the lobster caught on a single day for fishermen that sell multiple days' worth of catches to a buyer. CDFW can locate the landing receipt in question, but there is no way of attributing different portions of the landed weight to different days of fishing.

CDFW currently bases its SPR calculation on data taken from only log entries that are tied to one landing receipt. More sophisticated computer programs can also analyze the correlation between catch totals and landed weights from logs with multiple landing receipts per fishing day, but the process is much more complicated. As part of the implementing regulations for this FMP, CDFW is proposing to amend the landing receipts to record the total number of lobster purchased as well as the ID number of the corresponding logs to address this issue.

Recreational lobster report cards

Report cards were introduced during the 2008-09 recreational season and must be purchased by every person fishing for lobster in California, including individuals who are not required to possess a valid sportfishing license (e.g., youths under 16, pier fisherman). Initially, the report cards were valid for a single calendar year and captured data for the last half of a given season and the first half of the subsequent season. Because of the mismatched timing, CDFW could not obtain results from a full season until approximately 15-17 months after the season ended. A new seasonal card introduced for the 2013-14 season can shorten the wait time to 3-5 months following season closure.

Report cards record the date, location, gear type, and number of lobster retained. The report cards provide 92 fishing location codes for fishermen to choose from as of the 2013-14 fishing season. The spatial resolution for coastal areas south of Point Conception is relatively high. However, the Channel Islands are each represented by a single location code, and CDFW's ability to analyze fine scale recreational catch patterns is limited. Furthermore, all take north of Surf Beach in Santa Barbara County (up to the California-Oregon border) is represented by a single code (Figure 2-9). CDFW may modify the spatial resolution of the report cards in the future based on management needs.

Recorded gear categories include conical hoop net, flat hoop net, skin diving, and SCUBA diving. However, the cards do not include the number of nets used nor the amount of time spent fishing. In addition, CDFW cannot practically compare the time recreational fishermen spent hoop net fishing directly with the time the

community spent diving. Consequently, CDFW uses 'trips', or a single line from the report cards, as the unit of effort. Due to this, as well as uneven report card return rates, only limited effort comparisons are possible between hoop netting and diving using the report card. Refined data collection of effort could be achieved with two additional columns on the card: the number of nets used (zero if diving) and the total time spent fishing.

At- sea fishery sampling

At-sea sampling refers to instances when fishermen gather data during normal fishing operation. Such a program was integrated with other data collection efforts (e.g., observers, **fishery-independent** surveys, tagging studies) to manage the New Zealand rock lobster fishery (Starr and Bentley, 2002; Starr, 2010).

California Sea Grant in collaboration with CDFW conducted a three-year project for CA lobster based on a framework developed for the southern California rock crab fishery (Culver et al., 2010) and an earlier effort by CDFW. The project collected the same general information as the lobster logs but included animal size, sex ratio, reproductive condition, shell condition, and trap density. This has provided important corroboration for CDFW's logbook data (and vice versa) and was used to help refine our estimates of average weight and subsequent calculations of SPR. At-sea sampling programs can also provide more accurate estimates of CPUE. The program required willing and capable fishery participants and employed financial incentives to offset reduced productivity for those participants. Because there is not continued, dedicated funding for the project, the program's successful adoption in the future will depend on fishermen who recognize the value of additional data and voluntarily continue the work or additional mandatory reporting requirements.

Fishery-independent data – Scientific research to collect information that is independent of commercial or recreational fishing operations. Surveys utilizing commercial fishing gear may provide unbiased estimates of abundance. Surveys may also use other methods (e.g., acoustics, SCUBA, video) to collect other biological or ecological information (e.g., movement, migration, growth rates, natural mortality) relevant to a fishery.

California Recreational Fisheries Survey (CRFS) - The California Recreational Fisheries Survey (CRFS) is the method for estimating total marine recreational finfish catch and effort in California. The CRFS is a coordinated sampling survey designed to gather catch and effort data from anglers in all modes of marine recreational finfish fishing.

Creel sampling

Two creel surveys were undertaken by CDFW targeting the recreational lobster fishery. The data collected included fishing mode (type of fishing platform), gear, number of hours fished, fishing location, number of CA lobster released, number kept, carapace length, weight, and sex. The surveys involved intercepting fishermen leaving a site after fishing. Survey sites include launch ramps, piers, jetties, and beach access points.

The first survey occurred in 1992 and targeted lobster fishing during the first two weekends of the CA lobster season at four sites. The 2007 survey encompassed the entire SCB and was done in preparation for the launch of the recreational lobster report card and sampled three of the four sites sampled in 1992. The 2007 survey also operated at night over the first 12 weeks. The 2007 sites were based on CDFW's long running finfish-oriented **California Recreational Fisheries Survey** (CRFS), which has since incorporated lobsters into its survey program. It is important to note that while most recreational lobster fishermen fish at night, CRFS sampling only occurs during daytime. CDFW has used the results from these creel surveys to compliment data from the recreational report cards as well as other assessment efforts.

Research trapping

Research trapping programs use lobster traps to sample populations. Research trapping is typically collaborative and takes place onboard commercial fishing vessels. In some instances, scientists trained to

use commercial fishing gear can work from research vessels, which can reduce scheduling conflicts among partners, especially when commercial vessels are unavailable (Kay et al., 2010).

Research trapping is a powerful tool because data are collected in a manner that matches fishery-dependent methods, which makes data directly comparable in statistical analyses and stock assessment. Furthermore, traps allow researchers to sample a relatively large number of lobsters not typically possible with traditional research approaches (e.g., SCUBA). These programs have been employed in California to support MPA monitoring efforts as well as lobster tag recovering efforts in the northern Channel Islands (Kay et al., 2011) and in San Diego (Hovel and Neilson, 2011).

Dive surveys

SCUBA diving is an essential method for directly observing CA lobster in their natural habitat. A large number of research groups use SCUBA to monitor reefs in southern California. CDFW scientists collaborated with other academic researchers on a baseline study for CA lobster within southern California MPAs. The study included a research trapping and tag/recapture component, SCUBA surveys, and a habitat mapping/lobster movement component. The SCUBA survey was used to determine abundance, density, den occupancy, habitat type, and other ecological information at key locations inside and outside select MPAs. While this method is uniquely able to estimate animal densities and their association with particular habitat features, it suffers from several drawbacks. SCUBA surveys are typically conducted during the day when lobsters are in dens and may be difficult to observe. Additionally, the patchy spatial distribution of lobsters necessitates that large areas be surveyed in order to count a sufficient number for statistical analysis.

5.1.2 Additional Research Methods

The following methods are not currently in use by CDFW to provide lobster EFI. However, CDFW is a research partner in a number of collaborative projects that include some of these methods led by other institutions.

Port sampling

Port sampling is a method by which samplers meet commercial vessels when they return from fishing and measure some fraction or all of the catch. This is a very efficient and cost-effective method for obtaining large sample sizes. During the 2008-09 fishing season, for example, a single researcher working with commercial lobstermen was able to sample 14 fishing trips from Santa Cruz Island and 17 trips from Santa Rosa Island. The catch sampled during these sampling sessions represented approximately 8.5% and 12.5% of the total 2008-09 catch from the CDFW fishing blocks encompassing Santa Cruz and Santa Rosa Islands, respectively (Kay et al., 2011). Port sampling is ideal for monitoring length frequencies, sex ratios, mean weight of animals in the catch, and condition of animals.

Larval collectors

Larval collectors are man-made devices upon which pueruli settle. They are typically constructed to resemble preferred settlement surface, and are usually deployed in nearshore waters. The effectiveness of two puerulus collector designs were tested by Miller (2014) in California and Arteaga-Rios et al. (2007) noted significant positive correlation between pueruli in collectors and commercial catch in Baja, Mexico five years subsequent. While these studies are encouraging, the utility of puerulus larval collection for CA lobster is still uncertain, and further research on sampling methodology is needed. The California Cooperative Oceanic Fisheries Investigations' (CalCOFI) zooplankton sampling time series has the potential to reveal more information regarding the abundance and distribution of earlier stage phyllosoma larvae across

several decades. Koslow et al. (2012) used this time series to identify a relationship between environmental conditions and phyllosoma abundance. The project is ongoing and may contribute to the management of the CA lobster fishery in the future. Abundance of earlier stage larvae may serve as an indicator of adult spawning potential while late stage larvae may help forecast changes in stock abundance, identify preferred settlement habitats, and differentiate source and sink areas. CDFW will seek to develop collaborations to model larval transport in the SCB and California Current, which can help determine the sources and the destinations of the lobster larvae across southern California.

Laboratory studies

Laboratory studies are useful for investigating aspects of lobster biology that cannot be studied in the field. Results of behavioral laboratory studies must be interpreted with caution because conditions in a controlled lab are inherently different from field conditions, though they are often designed to complement field studies.

Oceanography

Oceanography is a broad field within marine science that focuses on the physical properties and processes of the ocean (e.g., water temperature, salinity, depth, nutrient levels, storm activity, currents, and bottom types). This field of study can directly assess the effects of climate change, ocean acidification, and climate-driven hypoxia on future CA lobster population. Oceanography can also relate the physical characteristics of the ocean to biological processes such as productivity, trophic structure, population connectivity, distribution of larvae, growth rate and distribution of fish stocks, disease outbreak, and other management-relevant issues. Oceanographic data are typically collected with instruments deployed from boats and ships or with satellites; complex modeling is often the mainstay of data analysis.

Genetics

Genetics uses the hereditary material in an organism (e.g., genes coded for by DNA) to help understand a large number of biological processes. Because genes in DNA are passed from parents to offspring, and because certain genes are unique to individuals, populations, or species, they are a powerful tool for studying the relatedness of two or more organisms. This information can provide insight into topics like population connectivity, evolution, and disease susceptibility and resistance.

5.2 Biological EFI: Status, Application to Management, and Methods for Obtaining Data

Chapter 4 of the MLMA Master Plan designated this fishery as data rich for several EFI categories (e.g., growth rates and reproduction) and poor in others (e.g., stock distribution, recruitment). Even in areas where the population-wide characteristics are well understood, important details can still be missing or, regional differences have not been thoroughly explored (Table 5-1).

Age and growth

Accurate age and growth data are essential for CA lobster management. Growth rate can be used to determine the age of maturity or SAM and estimate of the number of spawning seasons a lobster would experience before reaching legal size when coupled with observations of SAM. Published growth rates for *P. interruptus* are highly variable (Section 3.2), and it is unknown whether, or by how much, growth rates might vary through time or from region-to-region in California. Furthermore, decades of fishing have resulted in a scarcity of older lobster that complicates determination of the species' maximum size.

CDFW currently estimates CA lobster growth rates, and subsequently age, using the commonly applied von Bertalanffy growth model with parameters derived by Vega (2003a) for the Mexican stock. Tag-recapture data exists for the CA stock from three studies representing different regions of the SCB and different lobster size classes (see Appendix X). The first of these studies provides information on the growth of juveniles from Santa Catalina Island (Engle, 1979). The second study conducted in the northern Channel Islands provides information on the growth of adults ranging up to relatively large sizes. Third, CDFW collaborated with academic researchers and fishermen to tag CA lobsters in San Diego Bay (Hovel and Nielson 2011) and South Coast Region MPAs (Hovel et al., 2015). These studies rely not only on research trapping to recover tags but also on recovery by recreational and commercial fishermen. Investigations by CDFW into the fit of the von Bertalanffy and other possible models to these data suggest that the von Bertalanffy model may not be the best choice for the CA lobster data. However, less conventional growth modeling options were ultimately rejected during peer review of this FMP, in part because these data contain a gap in information for lobsters in the 30 to 50 mm CL size range. Until that gap is addressed CDFW will continue to use parameters from Vega (2003a) but place a high priority on participating in tagging studies that address these critical knowledge gaps.

Estimating the age of crustaceans has historically been more difficult than aging finfish because crustaceans shed most of their hard structures that might be used for aging each time they molt. Tag-recapture studies only provide an indirect estimate of the age of individual lobsters. New advancements in crustacean aging have recently been made by counting rings in hard parts of the eye stalk and gastric mill that are not shed during molting (Kilada, 2012). Another method measures the concentration of a pigment called lipofuscin, and was found to be a suitable method for aging Caribbean spiny lobster *Panulirus argus* (Matthews et al., 2009). These methods provide a direct measurement of age and the potential for more accurate understanding of growth. CDFW will seek opportunities to investigate the application of these techniques to CA spiny lobster.

MPAs also provide researchers with an opportunity to correct for the maximum-size/age-related biases associated with fished populations. Due to the recent establishment of MPAs in southern California (established in 2012) it is unlikely that CA lobster populations inside the MPAs will show a dramatically different size structure than outside MPAs for many years (possibly 2-3 decades). CDFW is currently participating in the south coast region MPA Baseline Study in an effort to track the effects of MPAs on CA lobster populations. The current status of knowledge related to age and growth EFI ranges from poor to moderate. Obtaining better information related to age and growth is a high management priority (Table 5-1).

Stock distribution

The MLMA Master Plan defines a stock as “a population unit that is selected for management purposes” and its distribution as “where a stock is found.” It is necessary to define the stock distribution because of management implications related to potential biological differences between sub-populations and jurisdictional issues (CDFG, 2001). CDFW currently manages the entire population within the SCB as one population and one stock. The status of knowledge related to where CA lobster are found is currently well-known and genetic evidence generally points to CA lobster within US borders being well-mixed during the larval phase (Section 3). However there has been some recent genetic evidence of either self-recruitment and/or spatially cohesive larval cohorts. CDFW will continue to monitor advancements in genetic work and larval tracking as we seek to confirm CA lobster’s place in the spectrum between a single mixed population, a meta-population, or a group of separate sub-populations. The research priority for genetic structure is medium (Table 5-1). Regional differences in other aspects of CA lobster biology (e.g. fecundity, growth, reproductive timing) may also be indicators of sub-structure within the stock that may warrant

consideration of regional management in the future (Section 6.2.2). Collection of this information is of medium to high importance as noted throughout this section and Table 5-1.

Ecological interactions

The ecology of CA lobster is discussed in detail in Section 2.1. The species serves as an important scavenger and predator of the southern California kelp forest ecosystem. Predation on intertidal mussels by CA lobsters can relieve red algae from competition for space (Robles and Robb, 1993), and predation on urchins can relieve giant kelp from urchin grazing (Guenther et al., 2012 and references therein). CA lobster plays an important role in the ecology of rocky reefs, and it is associated with critical habitats such as surfgrass beds. Management should remain aware of information on the ecology and habitat preference of *P. interruptus*, and encourage related ecological research and monitoring.

A number of research programs both independently and in collaboration with CDFW are currently conducting long term monitoring of southern California reefs. These programs provide a valuable service monitoring the condition of CA lobster habitats, prey abundance, predators, water quality, and oceanography. The long list of research groups collecting such data include: the National Park Service Kelp Forest Monitoring Program, the Partnership for the Interdisciplinary Study of Coastal Oceans, Santa Barbara Coastal Long Term Ecological Research Program, the California Current – LTER, individual research laboratories, and Reef Check California. Research protocols and data collected for many of these organizations are available online. This FMP does not link ecological metrics directly to the reference points or the HCR, and future research and monitoring of ecological interactions are a medium level priority for CDFW at this time (Table 5-1).

Indices of Abundance - Measurements of the abundance of an organism made over time; used to make inferences about the abundance of an entire population.

Indices of abundance

Indices of abundance (catch and CPUE) are used as reference points that link directly to the HCR in this FMP. Indices of abundance are perhaps the most common reference points used in fisheries management, and they are described in detail in Section 4.2.4 and 4.3. CPUE and catch are currently tracked by CDFW data and will be available after each fishing season for the foreseeable future. CDFW is also interested in developing new types of data, making new control rules possible in the future. One example of this is CDFW collaboration on direct visual estimations of CA lobster density and abundance with various academic groups. The knowledge regarding catch and CPUE is rich. Their status as reference points means that the priority for continued monitoring of these parameters is high. CDFW has moderate information on visual surveys on the sea floor; this priority is low (Table 5-1). Larval abundance from CalCOFI as well as settlement studies offers prospective abundance indices that may be linked to spawning biomass and/or recruitment. Ongoing research in these areas is a medium priority.

Movement patterns

Lobster movements can be divided into two general categories: 1) seasonal movements related to biological or environmental cues, and 2) more frequent foraging excursions (Section 3.6). Both are important to this FMP because they are mechanisms by which lobsters exit MPAs or district closures and become vulnerable to fishing. The spatial scale and frequency of these two movement types require different research approaches.

Lobster movement over longer time periods (i.e., seasonal) can be studied using traditional tag-recapture studies that use individually identifiable tags. CDFW has been involved in such a movement study in San Diego Bay in collaboration with San Diego State University. CDFW was also involved in a study examining

spillover rates as part of the South Coast MPA Baseline Study in collaboration with fishermen, San Diego Oceans Foundation, and Scripps Institution of Oceanography.

Unlike seasonal movements, foraging excursions are best studied using "active" (signal-transmitting) tags that are applied to animals and tracked by researchers. CDFW undertook a multi-year tracking study with San Diego State University to look at CA lobster movement around San Diego Bay and the Point Loma kelp bed (Hovel & Neilson, 2011). The level of knowledge on movement patterns is moderate, and their priority is medium (Table 5-1). CDFW will continue to engage in independent and collaborative tagging studies.

Recruitment

Larval recruitment and fishery recruitment are two measures that can be useful in projecting the future trend of the fishery. Data that track larval abundance and recruitment can provide powerful information for fisheries management such as: 1) long term trends that provide direct evidence of a stock's ability to replenish itself, 2) the state of the spawning biomass that produces the observed larval abundance (Jacobson and MacCall, 1995), and 3) annual levels of recruitment to predict future catches (e.g., Phillips, 1986; Caputi et al., 1995; Shanks et al., 2010). Spatial pattern of larval abundance also helps define reef areas that are sources or sinks for reproduction of the stock, which can be invaluable for understanding the role of MPAs as conservation tools. For these reasons, many lobster fisheries have data collection programs that track the abundance of larvae using artificial collectors. California has no collector program for CA lobster larvae, but phyllosoma larvae are collected on annual CalCOFI cruises and have been used to explore patterns and processes related to CA lobster larval abundance and environmental conditions or stock abundance (e.g., Johnson, 1960a, b; Pringle, 1986; Koslow et al., 2012).

Implementation of a formal CA lobster larval monitoring program could provide valuable information regarding the current and future conditions of the CA lobster stock. Abundance of earlier stage larvae may serve as an indicator of adult spawning potential while late stage larvae may help forecast changes in stock abundance. However, puerulus settlement data did not predict stock fluctuations of Australian lobster (Linnane et al., 2013a). The workload associated with a later stage puerulus larval collection program would be significant because collectors must be sampled frequently (every 1-2 weeks) over the peak settlement period of 4+ months. This sampling includes recovery of the collecting devices and laboratory sorting of the contents to count larvae. Such programs are only valuable if they are run nearly every year and over long time spans. A recent study by Miller (2014) examined the relative effectiveness of two collector designs, but testing would need to continue to identify the most appropriate type(s) of collectors for CA lobster. Thus, a larval recruitment monitoring program represents a significant long-term investment, and CDFW would need to identify the resources necessary to conduct this monitoring. A larval monitoring program that has the resolution to define larval sources and sinks could aid management, but would require a large number of larval collectors throughout the SCB and the associated cost would be significant. Such an approach would ideally be coupled with genetic studies that help identify the origins of settling larvae. An alternative to larval collection is to use oceanographic models of currents to estimate the locations of the population sources and sinks. Such a model was used to evaluate MPA network designs during the MLPA process in southern California. Development, refinement, and application of such models have not occurred within the context of CA lobster fishery, but CDFW will continue to explore this tool.

Monitoring fishery recruitment (growth of sublegal-size lobsters to legal size) allows for predictions of fishery yield for upcoming seasons, and provides assurance that reproduction has been successful in previous years (i.e., during the year(s) that current fishery recruits hatched and settled). Trends in sublegal-size abundance are used as reference points in some lobster fisheries (e.g., ASFMC, 2009). Obtainment of these data is inexpensive when collected in logbooks, but often do not reveal how many times individual

lobsters are caught, released, and recaptured. Fisheries that use sublegal-size abundance to estimate fishery recruitment usually have dedicated survey programs for collecting these data. Current knowledge regarding recruitment ranges from poor to moderate. Obtaining better information on the stock's sublegal-size abundance is one of the highest priorities for management, while information regarding larvae has medium priority (Table 5-1).

Reproduction

Size and age at maturity are important parameters for both the Cable-CDFW model and the MSE model. Determining this parameter has primarily been based on observing berried females found in fishery harvests and research trapping. Recent CDFW measurements during tagging studies suggest that SAM is smaller than previously thought. How this parameter and the timing of reproduction vary regionally is unknown. Fecundity of large female lobsters such as those inside MPAs has also not been thoroughly sampled. For these reasons, determining variability across regions is a future goal. State of knowledge on CA lobster reproduction is moderate, and the priority for obtaining better information is high (Table 5-1).

Total Mortality

Total mortality - Natural mortality and fishing mortality combined.
Natural mortality (M) - The rate at which organisms in a population die due to natural causes.
Fishing mortality (F) - The rate at which organisms in a population die due to fishing.

Total mortality is the rate at which fish die, and it can be separated into two components: 1) **natural mortality** (causes include predation, disease, and old age), and 2) **fishing mortality**. Natural mortality is a critical parameter in biological models used in stock assessment. Several studies have estimated similar natural mortality rates for CA lobster (Chavez and Gorostieta, 2010; Kay, 2011; Nielson, 2011) and they are consistent with estimates for other temperate spiny lobster species (Kay and Wilson, 2012). Little is known about juvenile natural mortality. Factors that affect natural mortality include ocean temperature, oceanographic regimes (e.g., PDO, El Niño), reef-specific ecology, habitat characteristics, and existence of MPAs (Kay and Wilson, 2012). Approaches for estimating natural mortality include tag-recapture and examination of populations in MPAs.

Fishing mortality (*F*) is an estimate of the rate at which fish are caught. A harvest rate (*u*) can be calculated directly from *F*, and it is the percentage of the legally harvestable fish stock that is caught in a fishing season (Section 4.1). Fishing mortality (and harvest rates) lie at the core of this FMP. *F* directly links to the MLMA objectives (Table 5-1), to reference points determined or used by the FMP models, and to any control rule described by the FMP. A major emphasis of this FMP is focused upon the identification and management of harvest rates that avoid/minimize recruitment overfishing, economic overfishing, and ecological impacts. Available estimates for mortality range from poor to moderate and are adequate for modeling purposes. However, accurate and region-specific estimations of fishing mortality rates are central to accurate model runs, and are thus the highest research priorities identified in this FMP (Table 5-1).

Other EFI –Stock Composition

Stock Composition - Any description of the population attributes of a stock (age, size, sex), usually within a spatial context. This commonly refers to the spatial distribution of breeding groups or genetically-related organisms.
Length frequency distribution - A graphical representation of the number of organisms by length.

The models proposed by the CA lobster FMP to produce reference point data would benefit from additional EFI not explicitly listed in the MLMA Master Plan. CDFW may include any biological information that is "necessary to permit fisheries to be managed [sustainably]" as part of a fishery's EFI (FGC § 93). Additional EFI to improve modeling includes **stock composition**. Stock composition generally refers to the size composition (**length frequency distribution**), abundance, and sex ratio of a stock. Better information on the

spiny lobsters' stock composition can provide a useful and independent corroboration to CDFW's other assessment efforts.

Length frequency distribution gives CDFW a way to corroborate calculations of growth rate, fecundity, and mortality. However, the assumption that length frequency data derived from commercial landings would accurately represent the length frequencies of natural populations holds true only if lobsters of all sizes have an equal chance of entering and remaining in traps or other fishing/sampling gear. Otherwise, the true population size composition will be misrepresented in any data based on traps. To compensate for potential bias within the landings database, CDFW currently supplements its length-frequency data with samples from research traps, gill nets, and SCUBA surveys that are part of the collaborative South Coast MPA baseline study. California Sea Grant's at-sea sampling pilot project and creel sampling also provide more accurate length frequency distributions. At-sea sampling currently has several advantages over port-sampling: 1) higher spatial resolution; 2) sublegal-size lobsters are measured; and 3) bycatch can be recorded. Currently CDFW does not have a program for collection of individual length frequency data with guaranteed consistency through time. Such a program would expand CDFW's options for calculation of fishing mortality with potentially greater accuracy, distinguishing processes effecting lobster life stages differentially, and tracking cohorts through time.

Abundance of the legal-sized individuals can help assess present harvest rate and future catches. CDFW has calculated legal-size lobster abundance based on CDFW-collected commercial catch data in the past, but these estimations have relatively coarse spatial resolution. Finer geographical-scale estimations have also been made (e.g., Hovel and Neilson 2011; Kay et al. 2011; Iacchei et al 2005). CDFW has participated in new local studies to help fill the gaps between the previous studies, especially those pertaining to the southern portion of the bight.

The number of sublegal-size lobsters captured by the commercial fishery is being recorded in logbooks, and with improved tagging studies, comparisons of sublegal-size abundance across space and time can be adjusted to more accurately reflect the abundance of sublegal-size lobsters. Information on the sex ratio of the stock was recently collected by California Sea Grant's at-sea sampling program and CDFW is not planning any new monitoring effort to directly obtain information on stock sex ratios. Continued sex ratio information could be used to improve population model output and would be important if a sex-selective fishery were considered in the future.

In addition, research that describes invertebrate population changes in California MPAs is also an ongoing priority within CDFW to inform adaptive management of the State MPA network. MPAs affect lobster stock composition by producing large and localized increases in lobster average size and abundance inside reserve borders (Diaz et al., 2011). New information on the cumulative biomass and reproductive potential of the lobsters inside reserves can then be incorporated into the estimates for *F*, SPR, or other measures of stock size used in this FMP. CDFW's information on these parameters ranges from poor to rich, and obtaining better information is of the highest priority. This effort will potentially span decades as various components of the coastal ecosystem rebuild to pre-exploitation level.

Other EFI – Habitat Coverage by Type

An accurate estimation for the total percentage of CA lobster habitat that is contained within MPAs is an important input for the calculation of SPR (Section 4.3.1.3). CDFW obtained the current estimate by calculating the percentage of shallow hard-bottom habitats (0-100 m depth, 0-328 ft) that are protected by MPAs prohibiting both commercial and recreational take. This estimate utilizes the maximum extent of kelp

Table 5-1: Categories of EFI identified by the MLMA Master Plan and specific data types and their priorities for research identified by this FMP.

Biological EFI Category (MLMA)	Specific data types used in fisheries management	Current status of knowledge *(poor, moderate, rich)*	Priority for management and FMP *(low, medium, high, highest)*	Data collection methods												
				Logbooks	Landing Receipts	Rec. report cards	At-Sea Sampling	Port sampling	Creel sampling	Research traps	Research SCUBA	MPA monitoring	Larval collectors	Lab studies	Oceanography	Genetics
Age and growth	Individual growth rates	moderate	high				S	S	S	P		P		S		
	Longevity (max age and size)	poor	high									P				
Stock distribution	Catch relative to fishing blocks	rich	low	P	P					P		S			S	
	Genetic population structure/larval mixing	moderate	medium													P
Ecological interactions	Role as predators (e.g., to control grazers)	moderate	low								P			S		
	Essential habitat (e.g., surfgrass / shelters)	rich	medium								P			S		
Indices of abundance	Catch (per season)	rich	**highest**		P	P			P							
	CPUE	rich	**highest**	P		P	P			P						
	Visual surveys on seafloor	moderate	low								P					
Movement patterns	Seasonal/annual movement distances	moderate	medium				P			P						
	Nightly foraging distances	moderate	medium							P	P					
Recruitment	Source and sinks for larvae	poor	medium										P		P	P
	Larval abundance and recruitment	moderate	medium										P		P	
	Sublegal-size lobster abundance	poor	**highest**	P			P			P	S		S			
Reproduction	Size at maturity (SAM)	moderate	high				P			P		S		P		
	Fecundity	moderate	high							P		S		P		
Total mortality	Natural mortality	moderate	high							P		P				
	Fishing mortality (harvest rates)	moderate	**highest**	S	S		P			P		P				
	Handling mortality and sublethal impacts	poor	medium							P	P					
Stock composition	Size structure of stock (length frequency)	moderate	**highest**				P	P		P		P				
	Selectivity of length frequency sampling gear	poor	**highest**							P		P				
	Mean size of lobsters in catch	rich	**highest**	P	P		P	P		S						
	Effects of MPAs on size and abundance	moderate	**highest**				S			P	S	P				
Habitat coverage	% of a habitat type covered by MPAs	moderate	**highest**				P			P	P				S	

For each data type, descriptions are provided for the current status of knowledge and the priority of improving data collection for management under this FMP (i.e., importance for assessing, monitoring, and maintaining sustainability of the fishery). Finally, data collection methods that are best suited to obtaining each data type are indicated. (P = primary data source; S = secondary data source).

canopy as a proxy for hard-bottom habitat in areas where seafloor mapping data are not available. Incorporation of other habitat types such as tidal flats and eelgrass beds is currently not appropriate either because the extent to which CA lobsters utilize these habitats is unclear, or because there is limited spatial data detailing the extent of these areas. Overall, CDFW possesses a moderate amount of information related to habitat coverage; better assessment of these areas is of the highest priority (Table 5-1). CDFW will continue to incorporate new information to better calculate the current state of the population's spawning potential, as well as to better estimate the baseline condition during the period of stability in the early 2000s, which is necessary to improve the $SPR_{THRESHOLD}$.

5.3 Socioeconomic EFI: Update on the 2013 Economic Report

The purpose of socioeconomic EFI is to help inform CDFW of the social and economic impacts of potential regulatory actions (CDFG, 2001). The MLMA Master Plan characterized the CA lobster fishery as data poor back in 2001. Various socioeconomic aspects of the fishery have since been analyzed first in a 2009 report and again in 2013 (Hackett et al., 2009; Appendix VI; Section 2.5). CDFW will continue to pursue similar studies in the future to update established knowledge and fill any knowledge gaps. In particular, future survey efforts should track the popularity of hoop nets as well as improve estimates on groups that have been sparsely sampled in previous socioeconomic surveys (Section 2.2).

Employment

The commercial CA lobster fishery was responsible for an estimated 323 full-time equivalent jobs during the 2011-12 fishing season. The commercial fishery was also responsible for a total estimated economic effect of over $22 million in southern California over the same fishing season (Appendix VI). Analysis of the economic effects of the recreational fishery has not been done.

Expenditure

Analysis of the expenditures for both the recreational and the commercial fisheries during the 2011-2012 fishing season indicate that the Commercial fishery expended ~$10.5 million and the recreational fishery expended ~$40.8 million.

Resource Demand

The MLMA master plan defines resource demand as "the relationship between the quantity and quality of a good or service, and demand by the user at various market price or cost" (CDFG, 2001). Neither the 2009 nor the 2013 reports on the CA lobster fishery focused on this particular issue. However, recent increase in foreign demand and the associated rise in ex-vessel value for CA lobster show that better analyses on market demand may become increasingly important for effective fishery management.

Revenue

Revenue includes revenue from both sales conducted within the coastal community and sales through exports (CDFG, 2001). The ex-vessel value of lobsters landed in the 2011-12 fishing season was estimated at ~$12.9 million. The revenue earned by supporting industries (e.g., boatyards, trap makers, etc.) is also part of the economic impact of the commercial fishery, and it has been estimated to be just under $5 million per year between the 2009-10 and the 2011-12 fishing seasons (Appendix VI). However, as with the employment EFI, revenue for the supporting industry of the recreational fishery has not been calculated, and at this point can only be inferred from the sector's expenditure.

User/Industry Demographics

The demographics of the current commercial fishermen have not been analyzed. However, 86% of the recreational fishermen come from zip codes that are within 50 miles of the coastline (Appendix VI). Sport fishermen from further inland spend a disproportionately higher amount of money on their recreational trips (Appendix VI).

5.4 Cooperation and Collaboration in Fisheries Research

Globally, involvement of multiple stakeholders in fisheries research (e.g., the collection of fishery-dependent EFI) is increasing as researchers, managers, and fishermen expand communications and partnerships. The level and type of this involvement by stakeholders can differ widely. Research that involves stakeholders in some specific aspect of the project is considered cooperative research. In cooperative research, each stakeholder may focus their resources on one aspect of the research or may work jointly on one or several parts of the project (e.g. collecting data aboard a vessel provided by another stakeholder). Collaborative research, like cooperative research, brings stakeholders together to work towards a common goal. However, true collaborative research also involves stakeholders during all phases of research including hypothesis generation, data collection, and interpretation of results (NRC, 2004; Wendt and Starr, 2009).

Wendt and Starr (2009) add the caveat that true collaborative research also includes a joint intellectual effort during all phases of the research. While the distinctions between these two types of research are conceptually distinct, in most cases multi-stakeholder research is neither purely cooperative nor purely collaborative, but a continuum between the two as determined by the specific stakeholder involvement (NRC, 2004).

Cooperative and collaborative fisheries research (CFR) hold significant potential to improve fishery management by increasing the quantity of data collected (Karp et al., 2001; NRC, 2004) as well as improving communication, understanding, and trust between managers and stakeholders (McCay and Jentoft, 1996; Conway and Pomeroy, 2006; Wendt and Starr, 2009). In cases where the knowledge and skill of the stakeholders is successfully incorporated, CFR can also result in increasing the quality of data collected (NRC, 2004; Wendt and Starr, 2009).

While these benefits can be significant, they must also be weighed against the cost of conducting CFR. Elements for evaluating and prioritizing CFR include the expected benefits, the expected research costs, and the expectations for success (NRC, 2004).

Fishery participation in data collection and management is an integral part of some lobster fisheries (Phillips and Kittaka, 2000). In certain fisheries, industry participation focuses mostly upon CFR, in large part because it is cost-effective. However, because of its tight links to co-management, CFR can provide a bridge to locally-based co-management systems that may increase fishery sustainability (Wilson et al., 2003; Gutiérrez et al., 2011). Consequently, industry participation in other fisheries includes co-management arrangements in which industry directly participates in structuring harvest regulations. Important examples of lobster fisheries with CFR and co-management agreements include *P. interruptus* in Baja, Mexico (Scientific Certification Systems, 2011; Phillips et al., 2013), *H. americanus* in Maine (ASMFC, 2009; Acheson and Gardner, 2010), and *J. edwarsii* in some fishing communities in New Zealand (Miller and Breen, 2010).

Collaborative research and/or co-management can also be furthered when members of the commercial fishery and the recreational fishery form organizations to exchange information and perspectives as well

as to represent them during government processes. This FMP does not preclude future improvement to the HCR or better management alternatives, and the stakeholder community should encourage initiatives that further sustainability and fisheries performance as long as they adhere to the MLMA objectives. Fishermen are encouraged to collaborate on their own initiatives and to form community organizations to help inform management. An example of this type of arrangement is the California Sea Urchin Commission. Furthermore, interested parties may wish to work with CDFW and the Commission to develop innovations not explicitly mentioned in this FMP. These can include, but are not limited to, gear innovations, monitoring tools, regional management, and other technological advances.

6. Implementation and Amendment Process of the FMP

6.1 Implementation

The implementation of this FMP can be divided into 3 categories: 1) enforcement, 2) research and monitoring, and 3) management.

6.1.1 Enforcement

CDFW Law Enforcement Division (LED) officers patrol the coast and offshore islands off southern California on a daily basis. They also conduct inspections of landings, wholesale and retail facilities, restaurants, and vehicles used to transport fish. These officers serve to ensure compliance with CDFW regulations, including the ones that will result from this FMP, through both education and enforcement actions. They also collaborate with CDFW scientists to conduct research activities, participate in management activities, and provide on-the-ground information to management. Active enforcement is important to help ensure the estimated benefits to the stock from harvest regulations (e.g., MPAs, size limit, etc.) are realized.

6.1.2 Research and Monitoring

Chapter 4.7 outlines and discusses how CDFW will continue to monitor the CA lobster fisheries and to improve upon the existing state of knowledge regarding the fisheries and the species. These efforts include both primary research aimed at obtaining and refining the EFI as well as periodic monitoring of fishery-dependent data, such as information generated from the recreational lobster report cards and commercial landing receipts and logbooks.

6.1.3 Management

The Marine Life Management Act requires that "[f]ishery management decisions are adaptive and are based on the best available scientific information and other relevant information" (FGC § 7056(g). Furthermore, management systems should be periodically reviewed for their effectiveness and fairness (FGC § 7056(m)). The CDFW will analyze and act on the results of research and monitoring efforts as appropriate to better inform the management framework outlined in the FMP. The ongoing and potential research efforts described in the previous chapter are expected to yield new useful information regarding the CA lobster stock and fisheries.

By design, the HCR is adaptive in nature. The ocean is a dynamic environment; requiring very specific action could lead to improper management responses. The HCR directs CDFW to investigate the underlying causes of any significant change relative to the threshold reference points. Refinement with the most up-to-date information will always be part of this process, as will active solicitation of input from stakeholders in interpreting the data. Once the underlying cause of a change is identified, CDFW will undertake analysis (e.g., using the MSE model, constituent input, etc.) to determine the most appropriate course of action.

CDFW will continue to seek input from the various constituents as appropriate. CDFW will also bear the primary responsibility of conducting other future amendment processes. To facilitate active oversight and proactive management, CDFW projects that CA lobster management will require a minimum of two full-time dedicated scientific staff positions and one scientific aid position in the future. The scientific staff will be responsible for overseeing the commercial data collected from the trap logs and the landing receipts and the recreational data collected from the lobster report cards. The staff will also be conducting and coordinating future research and public outreach efforts. The dedicated scientists will also be responsible for monitoring the threshold reference points and advising CDFW management of the status of the fisheries and the stock.

6.1.4 Cost

Costs associated with lobster management as outlined in this FMP can be divided into two categories: 1) regular and ongoing research and management and 2) investigations that may be prompted by the HCR on an unknown and irregular basis. Ongoing management will include all of the biological and enforcement tasks associated with existing regulations and statutes as well as proposed regulatory changes associated with this FMP. The annual cost estimates outlined in Table 6-1 are a minimum. Estimated personnel costs are based on current rates which will rise in the future.

Monitoring the reference points outlined by this FMP and managing the current data streams will require a minimum of three CDFW Marine Region biological personnel dedicated exclusively to CA lobster. These include one environmental scientist already on staff plus one new environmental scientist and one new scientific aid to be hired. Staff benefits and overhead rates of 47.66% and 35.00% were applied, respectively.

The enforcement costs for the CA lobster fisheries totaled $ 493,463 for the 2013-14 fishing season. Officer hours accounted for $206,792 and $286,671 was attributed to patrol crafts' fuel and maintenance. It is not known how new regulations associated with this FMP will impact costs and therefore past costs should be considered the minimum of what may be required in the future. Aspects of recreational hole-punching of CA lobster tails and the commercial trap limit are likely to both require additional effort from enforcement staff and also improve enforcement efficiency. In total, CDFW expended 3,142 regular officer hours at an average of $47.09 per hour and 833 overtime hours at an average of $70.63 to regulate the commercial and recreational fisheries. Of this, 1,758 regular officer hours and 454 overtime hours were expended to enforce recreational statutes and regulations on shore. Enforcement of statutes and regulations from patrol crafts required 804 regular hours and 279

Table 6-1: Estimated Annual Implementation Costs.

Biological Personnel	New Environmental Scientist	Existing Environmental Scientist	Scientific Aid	Subtotal
Salaries & wages	72,702	72,702	23,000	
Staff benefits	34,650	34,650	10,962	
General expenses	6,000	6,000	1,500	
Other Expenses	20,000			
Overhead	46,673	39,673	12,412	
Biological personnel total	180,025	153,025	47,874	380,924
Enforcement (personnel & equipment combined)				493,463
ONGOING MANAGEMENT TOTAL				874,387

overtime hours. An additional 581 regular hours and 102 overtime hours were expended to enforce commercial laws and regulations that were not otherwise covered by vessel-based enforcement actions.

When HCR reference points are crossed, investigation of the underlying causes will be required. The scope of those investigations will depend on the number and identity of the reference points below threshold and their position. Scenarios of lesser concern may be investigated by examining existing data streams and require only some additional staff time from Marine Region staff not dedicated to lobster. Scenarios of greater concern may require dedicated field research efforts. This would involve equipment and travel costs, additional staff time, and possibly contracts with outside entities.

6.2 Adjustment and Amendment to Administration, Regulations, and the FMP

Under the FGC, each FMP "shall include a procedure for review and amendment of the plan, as necessary" (FGC § 7078). In particular, an FMP shall specify the type(s) of regulations that CDFW can adopt without amendment(s) to the FMP (FGC § 7087(b)). In addition to the type of regulations that can be adopted without an FMP amendment, this section will also prescribe the conditions of changing the FMP. This section does not apply to routine day-to-day CDFW operations.

6.2.1 Regulatory Amendments that Do Not Warrant FMP Amendments

The Commission can adopt new regulation concerning the CA lobster fishery without amendment to the FMP. These may include regulations designed to improve the orderly operation of the fisheries or more efficient conservation of the relevant resources. The LAC recommendations are examples of these regulations. This section does not modify CDFW's and the Commission's authority to promulgate regulations during emergencies (e.g., FGC § 240, GC § 11349.6).

6.2.2 When and How the FMP Will Be Amended

If new, relevant information becomes available, an FMP amendment based on that information may be appropriate. Not all changes to management procedures outlined in this FMP would prompt an amendment. For example, addition of a new or removal of an existing reference point would require amendment but refining parameters or calculations within the Cable-CDFW model using new EFI data would not require amendment. Any amendment that would affect an existing regulation or requires new regulations would be accompanied by a regulatory amendment proposal for the Commission.

CDFW may propose an FMP amendment out of its own initiative and discretion. In this case, CDFW will solicit input from Tribes, stakeholders, and the Commission. CDFW will provide Tribes and stakeholders with the relevant schedule and agenda. They will have at least 30 days to review the proposal prior to the hearing. CDFW may submit the proposal to the Commission after 30 days, or it may hold further public meetings before submission (see also FGC § 7077). Interested parties may also propose plan provisions or amendments to either CDFW or the Commission. Existing CDFW and Commission workload and priorities may affect the timeliness of the Commission's response to petitions.

An FMP amendment can be focused on a particular part of the document; an amendment process should not automatically trigger the amendment of the entire FMP. However, an amendment on one part of the FMP should not contradict another part. Adopting a new type of reference point not contemplated in Section 4.3 HCR is one example. Changing or replacing a threshold reference point should not automatically trigger a review of the entire natural history of the CA lobster, but such a change must not contradict other parts of the HCR that are not being amended.

6.3 List of Inoperative Statutes

The implementing regulations of this FMP will render the following sections of the Fish and Game code inoperative once they are adopted:

1. FGC § 8251: This section dictates the season length for the commercial CA lobster fishery. The HCR prescribed by this FMP incorporates changes to season lengths as a possible management adjustment.
2. FGC § 8252: This section prescribes the size limit for the commercial sector, which is identical to the recreational sector limit found in the CCR. The commercial limit will be moved into Title 14, CCR reflecting the Commission's authority to make adjustment.
3. FGC § 8254(c): This section states an annual lobster permit fee of $265. The permit fee will change due to implementation of the trap tag program.
4. FGC § 8258: This section lists the Districts where commercial lobster traps may be used to take CA lobster. The use of commercial traps to take CA lobster in certain Districts may change if the District closure option within the harvest control rule toolbox is used.

This FMP will render the following sections of the Fish and Game code inoperative as applied to only the CA lobster fisheries once the implementing regulations are in place:

1. FGC § 9004: This section requires commercial fishermen to service any deployed trap every 96 hours. However, 14 CCR § 122(n) specifically allows lobster fishermen to deploy unbaited traps more than 4 days before the season opens. Requiring fishermen to service unbaited traps is counterproductive. As such, this section will be rendered inoperative as applied to CA lobster fisheries.
2. FGC § 7857(e): This section prohibits CDFW from issuing more than one of a single type of permit, including a lobster permit, to a single fisherman. The trap limit program envisioned by the FMP may allow fishermen to stack multiple permits, and thus this section will be rendered inactive for lobster operator permits.

Glossary

Abundance - The total number of animals in a population. This is rarely known, but usually estimated from relative abundance (see **Relative abundance**), although other methods may be used.

Adaptive management - In regard to a marine fishery, means a scientific policy that seeks to improve management of biological resources, particularly in areas of scientific uncertainty, by viewing program actions as tools for learning. Actions shall be designed so that even if they fail, they will provide useful information for future actions. Monitoring and evaluation shall be emphasized so that the interaction of different elements within the system can be better understood.

Advisory Committee - The Advisory Committee is a body composed of public constituent representatives that provide important advice to the spiny lobster fishery.

Allocation - In the LFMP, allocation means a certain amount of lobster set aside for recreational, commercial, and ecosystem needs.

Bag limits - The total amount of fish or other species that may be captured per person per day by law.

Benthic - On or relating to the region at the bottom of a sea or ocean.

Biomass (B) - The total weight of organisms at a given point in time in a defined stock, area, population, or catch.

Bycatch - Fish or other marine life that are taken in a fishery but are not the target of the fishery. Includes non-target organisms whether or not they are discarded, and includes organisms discarded because they are of an undesirable species, size, sex, or quality, or because they are required by law not to be retained.

Cable-CDFW Model - A simplified and efficient fishery stock model developed for the California spiny lobster by Dr. Richard Parrish. CDFW currently uses this model to calculate the SPR of the stock.

Capacity - The potential ability of a vessel or a fleet of vessels to capture organisms. This ability is based on the number of fishing vessels in the fleet, the size and technical efficiency of each vessel, time spent fishing, and management regulations.

Catch Per Unit Effort (CPUE) - The rate at which fish are caught; typically expressed as a number or weight of fish captured per unit of effort. Units of effort can be assigned many ways, including the time spent fishing (hours or days), the amount of fishing gear deployed (number of vessels, traps, nets, etc.), the number of times that fishing gear is deployed and retrieved (e.g., net hauls, trap pulls), or a combination of these estimates. Because it is difficult and expensive to scientifically measure the number of fish in an area (abundance), CPUE is often used as an index for the relative abundance of organisms across time or space. For CA lobster, CPUE is typically defined as the number of legal (or sublegal-sized) lobsters per trap pull for the commercial fishery, and number of legal lobsters retained per fishing trip for the recreational fishery. Effort is most often described in terms of trap pulls, total traps, and number of active permits for the commercial fishery, and number of fishing trips for the recreational fishery.

Commercial fishery - Describes a group of enterprises and individuals as well as their actions associated with fishing for certain species with the intent of selling the catch.

Commission – California Fish and Game Commission

Conical hoop net - A modified style of hoop net used to catch lobster by the recreational lobster fishing sector in California; it is basket shaped, does not collapse, and does not lie flat on the seafloor.

Creel survey - Catch information gathered from recreational sources.

California Recreational Fisheries Survey (CRFS) - The California Recreational Fisheries Survey (CRFS) is the method for estimating total marine recreational finfish catch and effort in California. The CRFS is a coordinated sampling survey designed to gather catch and effort data from anglers in all modes of marine recreational finfish fishing.

Department - In the context of the LFMP, refers to the California Department of Fish and Wildlife (CDFW).

Depleted/Depletion - Exploitation of a resource down to unsustainable levels.

Depressed fisheries - The condition of a fishery for which the best available scientific information and other relevant information that the Commission or Department possesses or receives, indicates that a declining population trend has occurred over a period of time appropriate to that fishery. With regard to fisheries for which management is based on maximum sustainable yield, or in which a natural mortality rate is available, "depressed" means the condition of a fishery that exhibits declining fish population abundance levels below those consistent with maximum sustainable yield.

Economic output - Represents deliveries of final goods and services by the sector to domestic households, investment, government and non-profit institutions, and net exports outside the local economy.

Economic overfishing - Fishing levels that exceed maximum economic yield.

Ecosystem - The physical and climatic features and all the living and dead organisms in an area that are interrelated in the transfer of matter and energy, which together produce and maintain a characteristic type of biological community. Ecosystems can range in size.

Effort - A measure of some expenditure in pursuing an activity. The measure in CA lobster fishing effort is usually in terms of number of trap pulls, traps fished (in commercial fishery), number of fishing trips, or time spent fishing.

Effort Creep - A phenomenon where technological advancements in a fishery are able to mask the declining efficiency of a fishery caused by stock declines.

El Niño - A periodic warming of the ocean surface waters in the eastern Pacific Ocean. It is characterized by a lack of upwelling of cold, nutrient-rich waters nearshore.

Essential fishery information (EFI) - With regard to a marine fishery, means information about fish life history and habitat requirements; the status and trends of fish populations, fishing effort, and catch levels; fishery effects on fish age structure and on other marine living resources and users; and any other information related to the biology of a fish species or fishery that is necessary to inform management.

Ex-vessel price/Ex-vessel value - The value of fish at first sale by fishermen at the dock, distinguished from wholesale or retail value.

Fecundity - The reproductive capacity of an individual female animal during a reproductive event or breeding season, generally expressed as the number of eggs or larvae per unit weight or per individual.

Finfish – Any species of bony fish or cartilaginous fish (sharks, skates and rays). Finfish do not include amphibians, invertebrates, plants or algae.

Fishery - Fishing for, harvesting, or catching one or more populations of marine fish or marine plants that may be treated as a unit for purposes of conservation and management and that are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics.

Fishery-dependent data - Information collected directly from or during the process of fishing, or from fishery landing data. May be collected from commercial and/or recreational sources, and may include catch/effort reported by fishermen, size and age composition of the catch, and biological samples collected at port.

Fishery-independent data – Scientific research to collect information that is independent of commercial or recreational fishing operations. Surveys utilizing commercial fishing gear may provide unbiased estimates of abundance. Surveys may also use other methods (e.g., acoustics, SCUBA, video) to collect other biological or ecological information (e.g., movement, migration, growth rates, natural mortality) relevant to a fishery.

Fishing mortality (F) - The rate at which organisms in a population die due to fishing.

Growth overfishing - Fishing in which yield per recruit is lower than theoretical maximum values due to the removal of small and rapidly growing fish.

Habitat - The physical, chemical, and biological features of the environment where an organism lives.

Harvest control rules (HCR) -Harvest control rules are plans of action that prescribe adjustments in harvest regulations (e.g., fishing effort, total allowable catch, minimum legal size) and are activated ("triggered") when the calculated amount of a resource that can sustainably be taken (the defined upper limit, also known as "threshold reference point") is reached or surpassed. Harvest control rules must be based on objective, measurable criteria such as population size, productivity, density, or other inputs.

Harvest rate (u) - The percentage of legally harvestable individuals in a population that are removed each year due to fishing.

Harvest regulations - The rules that define how fishermen are allowed to harvest fish. Harvest regulations are diverse and include restrictions on size of animals harvested, effort, total catch, gear types, season, or location where fishing is permitted.

Hoop net - A round net used to catch lobster by the recreational lobster fishing sector in California; it traditionally lies flat on the seafloor and assumes a basket shape upon retrieval to the surface.

Indices of Abundance - Measurements of the abundance of an organism made over time; used to make inferences about the abundance of an entire population.

Individual transferable quota (ITQ) - A program which limits the catch allowed per license or individual as well as the number of individuals who participate.

Input (from **stock assessment models) -** The numerical parameters provided to a stock assessment model; these can be a biological parameter such as the growth rate of the species, or it can be a management parameter, such as the legal size limit.

Intertidal - The part of the shore that lies between the low and high water lines.

Instantaneous Fishing mortality (F) - The rate at which organisms are harvested or killed due to fishing; F is an instantaneous rate that reflects the rate at which a proportion of a population is being lost, whereas the harvest rate (*u*) is an annual rate that reflects the rate at which a number of fish from a population is being lost.

Landing receipt - A document provided by the Department to commercial fish markets for recording landing information. Information required includes date, port of landing, species or market category of fish, pounds landed, and price paid.

Landings - The number or poundage of fish unloaded at a dock by commercial fishermen or brought to shore by recreational fishermen for personal use. Landings are reported at the points where fish are brought to shore. Note that landings, catch, and harvest define different things.

Length frequency distribution - A graphical representation of the number of organisms by length.

Life history - The history of changes an organism passes through in its development from egg, spore, or other primary stage until its natural death.

Limited entry program - Regulatory program that restricts the total number of permitted fishing licenses or vessels.

Lobster Advisory Committee - A committee composed of representatives for the recreational fishery, the commercial fishery, environmental interest groups, scientific experts, non-consumptive recreational interest groups, and federal resource managers; the committee was responsible for providing crucial constituent inputs during the drafting process of this FMP in the form of a consensus recommendation.

Logbooks - Records of fishing activity and catch maintained by commercial fishermen. Typically used to estimate CPUE in assessment models.

Management strategy evaluation (MSE) - For the purposes of the CA lobster FMP, the MSE is a computer model that simulates lobster population dynamics, designed by a team led by Dr. Yong Chen, University of Maine. The MSE was designed to allow CDFW to monitor and evaluate the effects of management measures and the lobster fisheries on the lobster population. The model will not be ready for use until CDFW adapts its scripts to the state's fishery management framework.

Marine Life Management Act (MLMA) - The Marine Life Management Act (MLMA), which became California law January 1, 1999, calls for using several tools to meet its goals of conserving entire ecosystems, placing value on non-consumptive benefits, sustainability, habitat conservation, restoring depressed fisheries, limiting bycatch, and recognizing the interests of people dependent on fishing. FMPs are one of those tools.

Marine Life Protection Act (MLPA) - The MLPA, enacted in 1999, required the California Department of Fish and Wildlife to develop a Marine Life Protection Program, including a Master Plan for a network of Marine Protected Areas (MPAs) within state waters. The network of MPAs includes an improved State Marine Reserve (complete no-take areas) component and other classifications of MPAs (State Marine Parks and State Marine Conservation Areas). The goals of the MLPA are varied and include protecting portions of ecosystems in a variety of habitats, preserving biodiversity, and helping to sustain and protect populations of fished species.

Marine protected areas (MPAs) - Areas closed to all fishing, or to specific user groups, or to the take of certain species; they are used to geographically limit effort and to protect portions of stocks as well as various ecosystem services and non-consumptive uses.

Maximum economic yield (MEY) - The maximum possible revenue after accounting for the costs of fishing that may be achieved in a fishery. MEY typically is reached at smaller catches than MSY.

Maximum sustainable yield (MSY) - In a marine fishery, means the largest catch that can be taken from a stock continuously over time that does not result in a continuing reduction in stock abundance, assuming constant environmental conditions. MSY is generally presented as a maximum annual catch that can be maintained indefinitely; however, MSY can change with fluctuations in abundance and environmental variability (e.g. shifts in ocean regimes), requiring adjustments in allowable harvest.

Natural mortality (M) - The rate at which organisms in a population die due to natural causes.

Nearshore - All oceanic state waters within 0-3 miles from shore or less than 100 fathoms deep, whichever is greater.

Nocturnal - Relating to, or occurring at night.

Non-consumptive uses - Activities which involve the specified resource but no harvest is involved.

Offshore - All oceanic waters outside state waters or deeper than 100 fathoms (for comparison see **Nearshore**).

Optimum Yield (OY) - With regard to a marine fishery, means the amount of catch taken in a fishery that: 1) provides the greatest overall benefit to the people of California, particularly with respect to food production and recreational opportunities, and takes into account the protection of marine ecosystems; 2) is the maximum sustainable yield of the fishery, as reduced by relevant economic, social, or ecological factors; and 3) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing maximum sustainable yield in the fishery. Optimum yield should be no greater than maximum sustainable yield.

Output (of stock assessment models) - The substantive predictions of a model; for this FMP, it usually corresponds to the reference points.

Overfished - A stock that is at unacceptably low levels because it has experienced overfishing and has not been rebuilt.

Overfishing - Means a rate or level of take that the best available scientific information indicates is not sustainable or that jeopardizes the capacity of a marine fishery to produce the maximum sustainable yield on a continuing basis. The depletion of fish stocks to unacceptably low levels. See **Growth overfishing, Recruitment overfishing, and Economic overfishing**.

Pelagic - Of or relating to aquatic organisms that live in the ocean without direct dependence on the shore or bottom.

Physiological - Of or relating to the normal functioning of an organism.

Plankton - Very small organisms that passively drift with tide and current.

Planktonic - Of or related to **plankton.**

Population - All the individuals of a species that live in the same geographic area. A population may contain several discrete breeding groups or stocks.

Productivity - Describes the birth, growth, and death rates of a stock. A highly productive stock is characterized by high birth, growth and mortality rates, and as a consequence has a high turnover. Such stocks can usually sustain higher exploitation rates and, if depleted, could recover more rapidly than comparatively less productive stocks.

Proxy - A number that is used as a substitute for another number. In fisheries management, landing information is often used as a proxy for other types of information not yet available.

Recreational fishery - Describes a fishery associated with taking of any fish for any purpose other than profit.

Recruit - An organism entering the exploitable stage of its life cycle; or a larval or juvenile organism as it settles or appears in the adult ecological niche. See **Recruitment**.

Recruitment - The process, event, or rate by which individuals enter new life stages or segments of a population. *Larval recruitment* refers to the process or event by which larvae of marine species exit the planktonic life stage. *Fishery recruitment* (or, recruitment to the fishery) refers to the moment that an animal becomes vulnerable to capture in a fishery – usually because it has attained some minimum size or age for harvest.

Recruitment overfishing - Fishing that depletes the mature adult population (spawning stock) to low levels at which reproduction (and subsequent recruitment) is inadequate to replenish the population.

Reference points (biological reference points) - Reference points are quantitative (numerical) values that inform managers about the current status of a stock. Two important types must be considered, target and threshold (or limit) reference points. *Target reference point* is a numerical value that indicates that the status of a stock is at a desirable level; often management is geared towards achieving or maintaining this target. *Threshold (limit) reference point* is a numerical value that indicates that the status of a stock is unacceptable (e.g. overfished or too small), and that management action should be taken to improve stock status.

Relative abundance - Usually measured with indices that track trends of a population biomass (e.g., CPUE) over time. It is not a direct or (usually) precise estimate of biomass.

Report card - A mean of collecting fishery-dependent data on the recreational lobster fishery in California. Lobster report cards collect information on the number of people recreationally fishing for lobster each year, the gear they use, and their harvest and success rates. Required since 2008 for all persons fishing recreationally for lobster in California.

Scavengers - Animals that feed on dead or decaying organisms.

SCUBA - "Self-Contained Underwater Breathing Apparatus" utilized by the recreational lobster fishing sector in California to catch lobster by hand. **Settlement -** In marine ecology, it means the process by which organisms change from a pelagic larval life history phase to assume a new mode of life as a member of a sea-floor community. For CA lobster, it is the stage at which pueruli (late-stage larvae) settle to nearshore, surfgrass habitat.

Size at maturity (SAM) - The size at which 50% of animals in a population have reached sexual maturity and are capable of reproduction.

Size limit - The minimum size a fish or other organism must be for it to be possessed.

Skin diving - Breath hold diving (freediving) utilized to catch lobster by hand by the recreational CA lobster fishing sector in California.

Southern California Bight (SCB) - The coast and its immediate offshore areas between Point Conception to the north and the U.S. – Mexico border to the south. The curvature of the coastline and the relatively shallow depth of the area lead to oceanographic and biological characteristics that are clearly distinguishable from the central California coast.

Spawning potential ratio (SPR) - A ratio of the number of eggs produced during the lifetime of an average female in a fished population to the number of eggs produced during the lifetime of an average female in an unfished population; used to characterize the amount of impact fishing has on a population's ability to reproduce.

Spillover - The emigration of adults from a protected area to the fishing grounds, and/or larval export from the protected area to surrounding areas.

Stock - A group of fish of the same species in a given management area. A single stock may be comprised of multiple populations or be a portion of a single larger population.

Stock assessment - An evaluation of the status of a stock, including past and current stock levels and information to help guide future harvest. Assessments may integrate many different biological data, including growth rates of fish, mortality rates, age at first reproduction, fecundity, size classes present in the catch, and selectivity of fishing gear.

Stock Composition - Any description of the population attributes of a stock (age, size, sex), usually within a spatial context. This commonly refers to the spatial distribution of breeding groups or genetically-related organisms.

Stock Size - Total estimated number or biomass of fish within a stock.

Substrate - The surface or medium on or in which an organism lives (i.e., mud, sand, rocks).

Sustainable, Sustainable use, and Sustainability - With regard to a marine fishery, means both of the following: 1) continuous replenishment of resources, taking into account fluctuations; and 2) securing the highest possible present and long-term social and economic benefits, maintaining biological diversity, and managing fisheries in a way that does not exceed **optimum yield**.

Thresholds (threshold reference points) - For the purpose of this FMP, the levels of stock size or reproductive potential that are not sustainable.

Total allowable catch (TAC) - A specified numerical catch objective for each fishing season, the attainment (or expected attainment) of which may cause closure of the fishery.

Total allowable effort (TAE) - A specified numerical effort objective for each fishing season. This can be expressed in number of boats, amount of gear used, etc.

Total economic output - The total amount of economic output that does not take into account the amount of intermediate goods consumed during the harvest/production process. For CA lobsters, this means the amount of money generated before costs such as trap cost are considered. Also known as Gross Economic Output.

Total economic value added – Total economic output less the goods and services used up to create that output. For the CA lobster fishery, it means the net value after costs like trap purchases are accounted for. Also known as Net Economic Output.

Total mortality - Natural mortality and Fishing mortality combined.

Traps - Generally, a wire basket or cage used for trapping certain types of organisms.

Trap limit - A type of regulatory measure that restricts the number of traps a fisherman may simultaneously utilize within a given season.

Unfished biomass - The unfished or pristine biomass.

Upwelling - On the California coast, upwelling is the upward movement of deep waters into the nearshore ecosystem due to springtime winds moving the topmost layers of water away from land.

Yield - The total number or biomass of fish captured.

Yield per recruit (YPR) - A theoretical value that describes the yield to a fishery that is contributed by a given number of recruits (usually a single recruit).

Zooplankton - Small animals passively carried along with water currents and other water movement.

References

Acheson, J. M. and R. Gardner. 2010. The evolution of conservation rules and norms in the Maine lobster industry. Ocean and Coastal Management 53: 524-534.

Acheson, J. M. and A.W. Acheson. 2010. Factions, Models and Resource Regulation: Prospects for Lowering the Maine Lobster Trap Limit. Human Ecology, 38(5), 587-598.

Addison, J.T., M.C. Bell. 1997. Simulation modelling of capture processes in trap fisheries for clawed lobsters. Marine and Freshwater Research. 48: 1035-1044.

Alcala, A.C., G.R. Russ, A.P. Maypa, and H.P. Calumpong. 2005. A long-term, spatially replicated experimental test of the effect of marine reserves on local fish yields. Canadian Journal of Fisheries and Aquatic Sciences 62: 98-108.

Allen, B.M. 1916. Notes on the spiny lobster (*Panulirus interruptus*) of the California coast. University of California Publications in Zoology 16:139-152.

Arteaga-Ríos, L.D., J. Carrillo-Laguna, J. Belmar-Pérez, S.A. Guzman del Proo. 2007. Post-larval settlement of California spiny lobster *Panulirus interruptus* in Bahía Tortugas, Baja California and its relationship to the commercial catch. Fisheries Research. 88:51-55.

Ault, J.S., S.G. Smith, and J.A. Bohnsack. 2005. Evaluation of average length as an estimator of exploitation status for the Florida coral-reef fish community. ICES Journal of Marine Science 62: 417–423.

Arkema, K.A., D.C. Reed, S.C. Schroeter 2009. Direct and indirect effects of giant kelp determine benthic community structure and dynamics. Ecology 90:3126-3137.

ASMFC (Atlantic States Marine Fisheries Commission). 2009. Stock Assessment Number 09-01 of the ASMFC – American Lobster Stock Assessment. Boston, MA. 316 pp.

Ayala, Y. 1983. Madurez sexual y aspectos reproductivos de la langosta roja, *Panulirus interruptus* (Randall) en la costa oeste central de Baja California, Mexico. Ciencia Pesquera 4:33-48.

Backus, J. 1960. Observations on the growth rate of the spiny lobster. California Fish and Game 46:177-181.

Bakun, A. 1990. Global climate change and intensification of coastal ocean upwelling. Science. 247:198-201.

Bakun, A., D.B. Field, A.N.A. Redondo-Rodriguez, and S.J. Weeks. 2010. Greenhouse gas, upwelling-favorable winds, and the future of coastal ocean upwelling ecosystems. Global Change Biology, 16(4), 1213-1228.

Barilotti, D.C., D. Lees, D. Schroeder. 2005. Tajiguas Kelp Habitat (TKH) Fall 2004 Monitoring Report. Prepared for Conoco Phillips, PO Box 2197, Houston Texas 77252-2197, Houston, Texas.

Barsky, K. C. 2001. California Spiny Lobster. In: California's Living Marine Resources: A Status Report, University of California Press. 98-100.

Behringer, D, M.J.I. Butler, and J. Shields. 2010. A review of the lethal spiny lobster virus PaVI - ten years after its discovery. Proceedings of the Gulf and Caribbean Fisheries Institute 62:370-375.

Bentley, N., P.A. Breen, P.J. Starr, D.R. Sykes. 2002. Development and evaluation of decision rules for management of New Zealand rock lobster fisheries. New Zealand Fisheries Assessment Report 2002/.

Bentley, N., P.A. Breen, and P.J. Starr. 2005. Design and evaluation of a revised management decision rule for red rock lobster fisheries (*Jasus edwarsii*) in CRA7 and CRA8. New Zealand Fisheries Report 2003/30. 44 pp.

Bevacqua, D., P. Melià, M.C. Follesa, G.A. De Leo, M. Gatto, and A .Cau. 2010. Body growth and mortality of the spiny lobster *Palinurus elephas* within and outside a small marine protected area. Fisheries Research, 106(3), 543-549.

Beverton, R and S.J. Holt. 1956. A review of methods for estimating mortality rates in exploited fish populations, with special reference to sources of bias in catch sampling. Rapp. R-Réun. CIEM, 154.

Beverton, R.J.H. and S.J. Holt. 1957. On the dynamics of exploited fish populations. [1993 reprint of the 1957 edition]. Chapman.

Blecha, J.B. 1972. The effects of temperature on Biomass Production in Juvenile California spiny lobster, *Panulirus interruptus* (Randall). California State University, San Diego.

Blunden, J. and D. S. Arndt, Eds., 2013. State of the Climate in 2012. Bull. Amer. Meteor. Soc., 94(8), S1–S238.

Bodkin, J.L. and L. Browne. 1992. Molt frequency and size-class distribution in the California spiny lobster (*Panulirus interruptus*) as indicated by beach-cast carapaces at San Nicolas Island, California. California Fish and Game 78:136-144.

Bohnsack, J., S.F. Center, S. Meyers, R. Appeldoorn, J. Beets, D. Matos, and Y. Sadovy. 1990. Stock Assessment of Spiny Lobster, *Panulirus argus* in the US Caribbean Final stock assessment and fishery evaluation (SAFE) report for the workshop on spiny lobster resources in the US Caribbean San Juan, Puerto Rico, September 11-13, 1990.

Bonzon, K., K. McIlwain, C.K. Straussa, and T. Van Leuvan. 2010. Catch Share Design Manual: A Guide for Managers and Fishermen. Environmental Defense Fund. 189 pp.

Booth, J. D. 2011. Spiny Lobsters: Through the Eyes of the Giant Packhorse. Victoria University Press.

Branch, T.A. 2009. How do individual transferable quotas affect marine ecosystems? Fish and Fisheries 10: 39-57.

Breen, P.A., S.W. Kim, N. Bentley, P.J. Starr. 2003. Preliminary evaluation of maintenance management procedures for New Zealand rock lobster (*Jasus edwardsii*) fisheries. New Zealand Fisheries Assessment Report 2003/20. 65 p.

Bromley, D.W. 2009. Abdicating responsibility: the deceits of fisheries policy. Fisheries 34: 280-302.

Brown, R.S. 2009. Western rock lobster low puerulus risk assessment workshop help 1 and 2 April 2009. Western Australia Department of Fisheries, 168 St Georges Terrace, Perth, Western Australia, 6000. http://www.fish.wa.gov.au/Documents/occasional_publications/fop071.pdf

Caddy, J.F. 2002. Limit reference points, traffic lights, and holistic approaches to fisheries management with minimal stock assessment input. Fisheries Research. 56: 133-137.

Caldeira, K. and M. E. Wickett. 2003. Anthropogenic carbon and ocean pH. Nature 425:365-365.

California Department of Fish and Game. 2001. The Master Plan: A Guide for Development of Fishery Management Plans, as Directed by the Marine Life Management Act of 1998.

California Department of Fish and Game. 2001. Supplemental Environmental Document – Ocean Sport Fishing of Spiny Lobster (Section 27 through 30.10, Title 14, California Code of Regulations). State of California. Resources Agency. 44 p.

California Department of Fish and Wildlife Marine Wildlife Veterinary Care and Research Center. 2013. Sea Otter Necropsy Program. Causes of Mortality in Southern Sea Otters. https://www.wildlife.ca.gov/OSPR/Science/MWVCRC/Sea-Otter-Necropsy-Program

Caputi, N., R.S. Brown, and B.F. Phillips. 1995. Prediction of catches of the western rock lobster (*Panulirus cygnus*) based in indices of puerulus and juvenile abundance. ICES Marine Science Symposia 199:287-293.

Caputi, N., R. Melville-Smith, S. de Lestang, et al. 2010. The effect of climate change on the western rock lobster (*Panulirus cygnus*) fishery of Western Australia, Can. J. Fish. Aquat. Sci. 67, 85-96.

Caribbean Fishery Management Council. 1990. Amendment Number 1 to the Environmental Impact Statement, Fishery Management Plan and Regulatory Impact Review for the Spiny Lobster Fishery of Puerto Rico and the U.S. Virgin Island. San Juan, Puerto Rico.

Carretta, J.V., E. Oleson, D.W. Weller, A.R. Lang, K.A. Forney, J. Baker, et al. 2014. U.S. Pacific Marine Mammal Stock Assessment, 2014. NOAA NOAA Technical Memorandum NMFS.

Castanda-Fernandez de Lara, V., E. Serviere-Zaragoza, S. Hernandez-Vazquez, M.J. Butler. 2005. Feeding ecology of juvenile spiny lobster, *Panulirus interruptus*, on the Pacific coast of Baja California Sur, Mexico. New Zealand Journal of Marine and Freshwater Research 39:425-435.

Center for Ocean Solutions. 2012. Incorporating Ecological Principles into California Ocean and Coastal Management- Examples from Practice.

Chang, Y., C. Sun, Y. Chen, S. Yeh. 2012. Modelling the growth of crustacean species. Reviews in Fish Biology and Fisheries. 22: 157-187.

Chavez, E.A. and M. Gorostieta. 2010. Bioeconomic Assessment of the Red Spiny Lobster Fishery of Baja California, Mexico. CalCOFI Rep. 51: 153-161.

Collins, M., S. An, W. Cai, A. Anachaud, E. Guilyardi, F. Jin, M. Jochum, et al. 2010. The impact of global warming on the tropical Pacific Ocean and El Nino. Nature Geoscience 3, 391-397. doi:10.1038/ngeo868.

Connolly, S. R., B.A. Menge, and J. Roughgarden. 2001. A latitudinal gradient in recruitment of intertidal invertebrates in the northeast Pacific Ocean. Ecology, 82(7), 1799-1813.

Conway, F. and C. Pomeroy. 2006. Evaluating the human - as well as the biological - objectives of cooperative fisheries research. Fisheries 31:447-454.

Copes, P. 1986. A critical review of the individual quota as a device in fisheries management. Land Economics 62: 278-291.

Costello, C., S.D. Gaines, and J. Lynam. 2008. Can catch shares prevent fisheries collapse? Science 321: 1678-1681.

Culver, C. S., S.C. Schroeter, H.M. Page, and J.E. Dugan. 2010. Essential Fishery Information for Trap-Based Fisheries: Development of a Framework for Collaborative Data Collection. Marine and Coastal Fisheries, 2(1), 98-114.

Dayton, P.K., M.J. Tegner, P.B. Edwards, K.L. Riser. 1998. Sliding baselines, ghosts, and reduced expectations in kelp forest communities. Ecological Applications 8:309-322.

Dayton, P.K. 2003. The importance of natural sciences to conservation. The American Naturalist 162:1-13.

Castanda-Fernandez de Lara, V., M. Butler, S. Hernandez-Vazquez, S.G. Del-Proo, E. Serviere-Zaragoza. 2005. Determination of preferred habitats of early benthic juvenile California spiny lobster, *Panulirus interruptus*, on the Pacific coast of Baja California Sur, Mexico. Marine and Freshwater Research 56:1037-1045.

Delury, D.B. 1947. On the estimation of biological populations. Biometrics 3: 145-167.

Del Valle, I. and K. Astorkiza. 2007. Institutional designs to face the dark side of total allowable catches. ICES Journal of Marine Science 64: 851-857.

Dexter, D.M. 1972. Molting and growth in laboratory reared phyllosomes of California spiny lobster, *Panulirus interruptus*. California Fish and Game 58:107.

DFO (Fisheries and Oceans Canada). 2006. A Harvest Strategy Compliant with the Precautionary Approach. DFO Canadian Science Advisory Secretariat Science Advisory Report. 2006/023.

Díaz, D., S. Mallol, A.M. Parma, and R Goñi. 2011. Decadal trend in lobster reproductive output from a temperate marine protected area. Marine Ecology Progress Series, 433, 149-157.

Diaz-Iglesias, E. and M. Baez-Hidalgo. 2010. Relative viable fecundity in the red lobster *Panulirus interruptus* (Randall, 1840) in Baja California, Mexico. Hidrobiologica 20:81-83.

Diaz-Iglesias, E., A.K. Robles-Murillo, R.J. Buesa, M. Baez-Hidalgo, and M. Lopez-Zenteno. 2011. Bioenergetics of red spiny lobster Panulirus interruptus (Randall, 1840) juveniles fed with mollusc. Aquaculture 318:207-212.

Diaz-Arredondo, M.A., S.A. Guzman del Proo. 1995. Feeding habits of the spiny lobster (*Panulirus interruptus* Randall, 1840) in Bahia Tortugas, Baja California Sur. Ciencias Marinas 21:439-462.

Diekert, F. K. 2012. Growth overfishing: The race to fish extends to the dimension of size. Environmental and Resource Economics, 52(4), 549-572.

DiNardo, G. T. and J.A. Wetherall. 1999. Accounting for uncertainty in the development of harvest strategies for the Northwestern Hawaiian Islands lobster trap fishery. ICES Journal of Marine Science: Journal du Conseil, 56(6), 943-951.

Ebeling, A.W., D.R. Laur, R.J. Rowley. 1985. Severe storm disturbance and reversal of community structure in a southern California kelp forest. Marine Biology 84:287-294.

Eckert, G.L. 2007. Spatial patchiness in the sea cucumber Pachythyone rubra in the California Channel Islands. Journal of Experimental Marine Biology and Ecology. 348(1-2): 121-132.

Ecotrust. 2009. Briefing: a cautionary tale about ITQs. Issue 8 in series: Building the Conservation Economy. Ecotrust Canada, Clayoquot office, Vancouver, BC. 8 pp.

Engle, J. M. 1979. Ecology and growth of juvenile California spiny lobster, *Panulirus interruptus* (Randall) (Doctoral dissertation, University of Southern California).

Ennis, G. P., and M.J. Fogarty. 1997. Recruitment overfishing reference point for the American lobster, *Homarus americanus*. Marine and freshwater research, 48(8), 1029-1034.

Eno, N. C., D. S. MacDonald, J.A. Kinnear, S.C. Amos, C.J. Chapman, R.A. Clark, et al. 2001. Effects of crustacean traps on benthic fauna. ICES Journal of Marine Science: Journal du Conseil, 58(1), 11-20.

Eurich, J.G., R.L. Selden, R.R. Warner. 2014. California spiny lobster preference for urchins from kelp forests: implications for urchin barren persistence. Marine Ecology Progress Series 498:217-225.

Evans, L., J. Jones, J. Brock. 2000. Diseases of spiny lobster. In: Phillips BF, Kittaka J (eds) Spiny Lobsters: Fishery and Culture. Fishing News Books, Oxford, p 586-600.

Feely, R. A., C. L. Sabine, J. M. Hernandez-Ayon, D. Ianson, and B. Hales. 2008. Evidence for upwelling of corrosive "acidified" water onto the continental shelf. Science 320:1490-1492.

Evans, L., J. Jones, J. Brock. 2000. Diseases of spiny lobster. In: Phillips BF, Kittaka J (eds) Spiny Lobsters: Fishery and Culture. Fishing News Books, Oxford, p 586-600.

Field, C.B., G.C. Daily, F.W. Davis, S. Gaines, P.A. Matson, J. Melack, et al. 1999. Confronting Climate Change in California: Ecological Impacts on the Golden State. Union of Concerned Scientists, Cambridge, MA and Ecological Society of America, Washington, DC.

Flaaten, O. 2010. Fisheries economics and management. Norwegian College of Fishery Science, 16.

Fletcher, W. J. and K. Santoro. 2012. Status Reports of the Fisheries and Aquatic Resources of Western Australia 2011/12: the State of the Fisheries.

Fogarty, M.J., L. Gendron. 2004. Biological reference points for American lobster (Homarus americanus) populations: limits to exploitation and the precautionary approach. Canadian Journal of Fisheries and Aquatic Sciences. 61: 1392-1403.

Food and Agricultural Organization of the United Nation. 2001. Case Studies on the Effect of Transferable Fishing Rights on Fleet Capacity and Concentration of Quota Ownership. http://www.fao.org/docrep/005/y2498e/y2498e09.htm

Gardner, C., S. Larkin, and J.C. Seijo. 2013. Systems to maximize economic benefits in lobster fisheries. Chapter 5 (pp. 113-138) In: B Phillps, Ed, Lobsters: Biology, Management, Aquaculture, and Fisheries. Wiley-Blackwell, West Sussex, UK. 474 pp.

Gaylord, B. and S.D. Gaines. 2000. Temperature or transport? Range limits in marine species mediated solely by flow. The American Naturalist, 155(6), 769-789.

George, R.W. 2005. Comparative morphology and evolution of the reproductive structures in spiny lobsters, *Panulirus*. New Zealand Journal of Marine and Freshwater Research 39:493-501.

Glenn, R. P. and T.L. Pugh. 2006. Epizootic shell disease in American lobster (*Homarus americanus*) in Massachusetts coastal waters: interactions of temperature, maturity, and intermolt duration. Journal of Crustacean Biology, 26(4), 639-645.

Goñi, R., and D. Latrouite. 2005. Review of the biology, ecology and fisheries of *Palinurus spp.* species of European waters: *Palinurus elephas* (Fabricius, 1787) and *Palinurus mauritanicus* (Gruvel, 1911). Cahiers de Biologie Marine, 46(2), 127-142.

Goñi, R., R Hilborn, D. Díaz, S. Mallol, and S. Alderstein. 2010. Net contribution of spillover from a marine reserve to fishery catches. Marine Ecology Progress Series 400: 233-243.

González-Yáñez, A.A., R.P. Millán, M.E. de León, L. Cruz-Font, M. Wolff. 2006. Modified Delury depletion model applied to spiny lobster, *Panulirus argus* (Latreille, 1804) stock, in the southwest of the Cuban Shelf. Fisheries Research. 79: 155-161.

Goodyear, C.P. 1993. Spawning stock biomass per recruit in fisheries management: foundation and current use. Canadian Special Publication of Fisheries and Aquatic Sciences 120: 67-81.

Government of Western Australia Department of Fisheries. 2012. Status Reports of the Fisheries and Aquatic Resources of Western Australia 2011/2012. http://www.fish.wa.gov.au/Documents/sofar/status_reports_of_the_fisheries_and_aquatic_resources_2011-12.pdf

Government of Western Australia Department of Fisheries, Recreational Fishing for rock lobster guide. 2013. http://www.fish.wa.gov.au/Documents/recreational_fishing/licences/rec_licence_rock_lobster.pdf

Government of Western Australia Department of Fisheries lobster management. 2014. website: http://www.fish.wa.gov.au/Species/Rock-Lobster/Lobster-Management/Pages/default.aspx.

Grafton, R. Q., T. Kompas, and P. Van Ha. 2006. The Economic Payoffs from Marine Reserves: Resource Rents in a Stochastic Environment*. Economic Record, 82(259), 469-480.

Graham, M.H. 2004. Effects of local deforestation on the diversity and structure of Sothern California giant kelp forest food webs. Ecosystems 7:341-357

Groeneveld, J. 2000. Stock assessment, ecology and economics as criteria for choosing between trap and trawl fisheries for spiny lobster *Palinurus delagoae*. Fisheries Research 48: 141-155.

Guénett, S., T. Lauck, and C. Clark. 1998. Marine reserves: from Beverton and Holt to the present. Reviews in Fish Biology and Fisheries 8(3):251-272.

Guenther, C.M., H.S. Lenihan, L.E. Grant, D. Lopez-Carr, D.C. Reed. 2012. Trophic Cascades Induced by Lobster Fishing Are Not Ubiquitous in Southern California Kelp Beds. PloS One. 7(11): e49396.

Gutiérrez, N., R. Hilborn, and O. Defeo. 2011. Leadership, social capital and incentives promote healthy fisheries. Nature 470: 386-389.

Guzman del Proo, S.A., J. Carrillo-Laguna, J. Belmar-Perez, S. De La Campa, and A. Villa. 1996. The puerulus settlement of Red Spiny Lobster (*Panulirus interruptus*) in Bahia Tortugas, Baja California, Mexico. Crustaceana 69:949-957.

Hackett, S., D. King, D. Hansen, and E. Price. 2009. The Economic Structure of California's Commercial Fisheries. Technical Report. California Department of Fish and Game, Sacramento, CA. Accessed 21 February 2013. https://www.wildlife.ca.gov/Fishing/Commercial/Economic-Structure.

Hall, N. and C. Chubb. 2001. The status of the western rock lobster, *Panulirus cygnus*, fishery and the effectiveness of management controls in increasing the egg production of the stock. Marine and Freshwater Research 52: 1657-1667.

Halliday, R.G., L.P. Fanning, R.K. Mohn. 2001. Use of the traffic light method in fishery management planning. Canadian Science Advisory Secretariat Research Document. 2001/108.

Halpern, B.S., K. Cottenie, and B.R. Broitman. 2006. Strong top-down control in southern California kelp forest ecosystems. Science 312:1230-1232.

Harley, C.D.G., A.R. Hughes, K.M. Hultgren, B.F. Miner, C.J.B. Sorte, C.S. Thornber, L.F. Rodriguez, L. Tomanek, et al. 2006. The impacts of climate change in coastal marine systems. Ecol. Lett. **9**:228-241.

Harrold C. and D.C. Reed. 1985. Food availability, sea urchin grazing, and kelp forest community structure. Ecology 66:1160-1169.

Hatfield, B.B., J.A. Ames, J.A. Estes, M.T. Tinker, A.B. Johnson, M.M. Staedler, et al. 2011. Sea otter mortality in fish and shellfish traps: estimating potential impacts and exploring possible solutions. Endangered Species Research. Vol. 13: 219-229.

Herrnkind, W.F., J. Van Der Walker, and L. Bar. 1975. Population dynamics, ecology and behavior of spiny lobsters, *Panulirus argus*, of St John, USVI. IV. Habitation, patterns of movement and general behavior. Natural History Museum of Los Angeles County Science Bulletin 20:31-45.

Hilborn, R. and C.J. Walters. 1992. Quantitative Fisheries Stock Assessment: Choice, Dynamics and Uncertainty. Chapman and Hall, New York.

Hilborn, R. 2002. The dark side of reference points. Bulletin of Marine Science 70: 403-408.Hovel, Kevin A. and Douglas Neilson. 2011. Movement and population size of lobsters in San Diego Bay. Final Report assembled for the San Diego Unified Port District. 34p.

Hilborn, R. 2010. Pretty Good Yield and exploited fisheries. Marine Policy 34: 193-196.

Hobday, A., A. Smith, I. Stobutzki. 2004. Ecological Risk Assessment for Australian Commonwealth Fisheries. Final Report Stage 1. Australian Fisheries Management Authority Report No R01/0934, Canbera, Australia. 72pp.

Holling, C. S. 1978. Adaptive environmental assessment and management. Adaptive environmental assessment and management.

Hovel, K.A. and C.D. Lowe. 2007. Shelter Use, movement, and home range of spiny lobster in San Diego County. California Sea Grant College Program. Research Completion Reports. Paper MLPA07_01. 4p.

Hovel, K.A. and D.J. Neilson. 2011. Movement and population size of lobsters in San Diego Bay. Final Report assembled for the San Diego Unified Port District. 34p.

Hovel, K.A., D.J. Nielson, E. Parnell. 2015. Baseline characterization of California spiny lobster (*Panulirus interruptus*) in South Coast marine protected areas. A report to California Sea Grant and the California Ocean Science Trust. https://caseagrant.ucsd.edu/sites/default/files/SCMPA-25-Final-Report.pdf.

Iacchei, M., P. Robinson, and K.A. Miller. 2005. Direct impacts of commercial and recreational fishing on spiny lobster, *Panuliurus interruptus*, populations at Santa Catalina Island, California, United States. New Zealand Journal of Marine and Freshwater Research, 39:201-1214.

Iacchei, M., T. Ben-Horin, F. Garcia-Rodriguez, K. Selkoe, R. Toonen. 2009. Management without borders: population genetics of the California spiny lobster (*Panulirus interruptus*). Paper presented at the annual meeting of the International Marine Conservation Congress, George Madison University, Fairfax, Virginia, May 20, 2009, 1014-11-29. http://citation.allacademic.com/meta/p296626_index.html.

IPCC (Intergovernmental Panel on Climate Change), 2013. 2013. Summary for policymakers. Climate change 2013: the physical science basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, 1-27. [Stocker, T. F., D. Qin, G.K. Plattner, M. Tignor, S.K. Allen, J. Boschung, ... and P.M. Midgley.].

Jackson, J., M. Kirby, W. Berger, K. Bjorndal, L. Botsford, B. Bourque, et al. 2001. Historical overfishing and the recent collapse of coastal ecosystems. Science 293:629-637.

Jacobson, L.D. and A.D. MacCall. 1995. Stock-recruitment models for Pacific sardine (*Sardinops sagax*). Canadian Journal of Fisheries and Aquatic Sciences, 52(3), 566-577.

Johnson ME and H.J. Snook. 1927. Seashore animals of the Pacific Coast, Vol. Dover Publications, Inc, New York.

Johnson, M.W. 1956. The larval development of the California spiny lobster, *Panulirus interruptus* (Randall), with notes on *Panulirus gracilis* Streets. Proceedings of the California Acadamy of Science 29:1-19.

Johnson, M.W. 1960a. The offshore drift of larvae of the California spiny lobster, *Panulirus interruptus*. California Cooperative Oceanic Fisheries Investigations Report 7:147-161.

Johnson, M.W. 1960b. Production and distribution of larvae of the spiny lobster *Panulirus interruptus (*Randall) with records on P. gracilis (Streets). Bulletin of the Scripps Institute of Oceanography, University of California 7:413-446.

Johnston, S.J., and D.S. Butterworth. 2005. Evolution of operational management procedures for the South African West Coast rock lobster (*Jasus lalandii*) fishery. New Zealand Journal of Marine and Freshwater Research 39: 687-702.

Karp, W., C. Rose, J. Gauvin, S. Gaichis, M. Dorn, and G. Stauffer. 2001. Government-industry cooperative fisheries research in the north Pacific under the MSFCMA. Marine Fisheries Review 63:40-46.

Kay, M.C., H.S. Lenihan, J.W. Wilson, and C.J. Miller. 2010. The cost of vessel insurance in collaborative fisheries research: Strategies and perspectives from a program in California, USA. California Fish and Game Scientific Journal 96: 33-49.

Kay, M.C., J.R. Wilson, H.S. Lenihan, and J. Caselle. 2011. Monitoring and Assessment of Marine Reserves at the Northern Santa Barbara Channel Islands: A Multi-Species, Collaborative Trapping Program. Final Report to the California Ocean Protection Council/State Coastal Conservancy award 07-021.

Kay, M.C. 2011. Community Based Fisheries Research on California Spiny Lobster (*Panulirus interruptus*) at the Santa Barbara Channel Islands. Ph.D., University of California Santa Barbara.

Kay, M.C., and J.R. Wilson. 2012. Spatially explicit mortality of California spiny lobster (*Panulirus interruptus*) across a marine reserve network. Environmental Conservation 39: 215-224.

Kelly, S. 2001. Temporal variation in the movement of the spiny lobster *Jasus edwardsii*. Marine and Freshwater Research 52(3), 323-331.

Kennish, M. J. 2002. Environmental threats and environmental future of estuaries. Environmental conservation, 29(01), 78-107.

Kerstitch, A. N. 1989. Sea of Cortez marine invertebrates. Sea Challengers. 114 p.

Kicklighter, C.E., S. Shabani, P.M. Johnson, and C.D. Derby. 2005. Sea hares use novel antipredatory chemical defenses. Current Biology 15:549-554.

Kilada, R., B. Sainte-Marie, R. Rochette, N. Davis, C. Vanier, S. Campana. 2012. Direct determination of age in shrimps, crabs, and lobsters. Canadian Journal of Fisheries and Aquatic Sciences. 69: 1728-1733.

Koslow, J.A., L. Rogers-Bennett , and D.J. Neilson. 2012. A time series of California spiny lobster (*Panulirus interruptus*) phyllosoma from 1951-2008 links abundance to warm water oceanographic conditions in southern California. California Cooperative Oceanic Fisheries Investigations Report 53: 132-139.

Lafferty, K.D. 2004. Fishing for lobsters indirectly increases epidemics in sea urchin. Ecological Applications 14:1566-1573.

Lasker, R. 1985. An egg production method for estimating spawning biomass of pelagic fish: application to the northern anchovy, *Engraulis mordax*. U.S. Department of Commerce. NOAA Technical Report, NMFS 36, 99pp.

Leslie, P.H. and D.H.S. Davis. 1939. An attempt to determine the absolute number of rats on a given area. J. Anim. Ecol. 8: 94-113.

Lindberg, R.G. 1955. Growth, population dynamics, and field behavior in the spiny lobster, *Panulirus interruptus* (Randall). Univ. California Publications in Zoology 59:157-247.

Ling, S.D., C.R. Johnson. 2009. Population dynamics of an ecologically important range-extender: kelp beds versus sea urchin barrens. Marine Ecology Progress Series 374:113-125.

Linnane, A., R. McGarvey, J. Feenstra, and M. Hoare. 2013a. Northern Zone Rock Lobster (*Jasus edwardsii*) Fishery 2011/12. Fishery Assessment Report to PIRSA Fisheries and Aquaculture. South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI Publication No (No. 702). F2007/000320-7. SARDI Research Report Series.

Linnane, A., R. McGarvey, M. Hoare, and P. Hawthorne. 2013b. The importance of conserving recruitment pulses in rock lobster (*Jasus edwardsii*) fisheries where puerulus settlement is low or highly sporadic. Marine Biology Research, 9(1), 97-103.

Loflen, C.L. and K.A. Hovel. 2010. Behavioral responses to variable predation risk in the California spiny lobster *Panulirus interruptus*. Marine Ecology-Progress Series 420:135-144.

Long, W. Christopher, Swiney, K. M., and Foy, R. J. 2013. Effects of ocean acidification on the embryos and larvae of red king crab, *Paralithodes camtschaticus*. Marine pollution bulletin, 69(1), 38-47.

Mace, P.M. 1994. Relationships between common biological reference points used as thresholds and targets of fisheries management strategies. Canadian Journal of Fisheries and Aquatic Sciences. 51: 110-122.

Mace, P.M., and M.P. Sissenwine. 1993. How much spawning biomass per recruit is enough? Pp. 101-118 in: SJ Smith, JJ Hunt, and D Rivard, Eds, Risk evaluation and biological reference points for fisheries management. Canadian Special Publication on Fisheries and Aquatic Science, 120.

MacGinitie, G.E., M. MacGinitie. 1949. Natural History of Marine Animals, Vol. McGraw-Hill, New York.

Maddox, C.F. 1933. A marine drama. Cal Fish and game 19: 220-222.

Mai, T.T. and K.A. Hovel. 2007. Influence of local-scale and landscape-scale habitat characteristics on California spiny lobster (*Panulirus interruptus*) abundance and survival. Marine and Freshwater Research, 58:419-428.

Mathews, C. P. and M. Samuel. 1990 The relationship between maximum and asymptotic length in fishes. Fishbyte 8(2), 14-16.

Matthews, T.R. 2004. Fishing Effort Reduction in the Florida Spiny Lobster Fishery. Proceedings of the. Gulf and Caribbean Fisheries. Institute 48: 111-121.

Matthews, T.R., C. Cox, and D. Eaken. 2005. Bycatch in Florida's spiny lobster trap fishery. Proceedings of the Gulf and Caribbean Fisheries Institute. 47: 66-78.

Matthews, T.R., K.E. Maxwell, R.D. Bertelsen, C.D. Derby. 2009. Use of neurolipofuscin to determine age structure and growth rates of Caribbean spiny lobster *Panulirus argus* in Florida, United States. New Zealand Journal of Marine and Freshwater Research. 43: 125-137.

McCay, B. and S. Jentoft. 1996. From the bottom up: Participatory issues in fisheries management. Society and Natural Resources 9:237-250.

McGarvey, R., G.J. Ferguson, and J.H. Prescott. 1999. Spatial variation in mean growth rates at size of southern rock lobster, *Jasus edwardsii*, in South Australian waters. Marine and freshwater research, 50(4), 333-342.

Melville-Smith, R., and S. de Lestang. 2007. Changes in egg production of the western rock lobster (*Panulirus cygnus*) associated with appendage damage. Fishery Bulletin. 105(3): 418-425.

Methot, R. D., G. R. Tromble, D. M. Lambert, and K. E. Greene. 2013. Implementing a science-based system for preventing overfishing and guiding sustainable fisheries in the United States. ICES Journal of Marine Science: Journal du Conseil, fst119.

Miller, E. 2014. Pilot California Spiny Lobster Postlarvae Sampling Program: Collector Selection. Bulletin of the Southern California Academy of Sciences. 113(3): 180-186.

Miller, R.J. 1996. Options for reducing bycatch in lobster and crab pots. Alaska Sea Grant College Program, Fairbanks, AK (USA). 163-168.

Miller, R.J. and P.A. Breen. 2010. Are lobster fisheries being managed effectively? Examples from New Zealand and Nova Scotia. Fisheries Management and Ecology 17: 394-403.

Milon, J. W., S.L. Larkin, D.J. Lee, K.J. Quigley, and C.M. Adams. 1999. Florida's Spiny Lobster Trap Certificate Program.

Mitarai, S., D.A. Siegel, J.R. Watson, C. Dong, and J.C. McWilliams. 2009. Quantifying connectivity in the coastal ocean with application to the Southern California Bight. Journal of Geophysical Research 114:doi:10.1029/2008JC005166.

Mitchell, C.T., C.H. Turner, and A.R. Strachan. 1969. Observation on biology and behavior of California spiny lobster *Panulirus interruptus* (Randall). California Fish and Game 55:121.

Mitchell, J.R. 1971. Food preferences, feeding mechanisms and related behavior in phyllosoma larvae of the California spiny lobster, *Panulirus interruptus* (Randall). M.S. Thesis, San Diego State University.

Moland, E., M. Ulmestrand, E.M. Olsen, and N.C. Stenseth. 2013. Long-term decrease in sex-specific natural mortality of European lobster within a marine protected area.

Moore, K. A., R.L. Wetzel, and R.J. Orth. 1997. Seasonal pulses of turbidity and their relations to eelgrass (*Zostera marina L.*) survival in an estuary. Journal of Experimental Marine Biology and Ecology, 215(1), 115-134.

Morgan, L.E. and R. Chuenpagdee. 2003. Shifting Gears: Addressing the Collateral Impacts of Fishing Methods in U.S. Waters. Pew Science Series.

MPA Monitoring Enterprise. 2014. Draft Central Coast MPA Monitoring Plan. http://www.fgc.ca.gov/meetings/2014/aug/Exhibits/12.2_CentralCoastMPA_MonitoringPlan_Aug2014.pdf

Muller, R.G., J.H. Hunt, T.R. Matthews, W.C. Sharp. 1997. Evaluation of effort reduction in the Florida Keys spiny lobster, Panulirus argus, fishery using an age-structured population analysis. Marine and Freshwater Research. 48: 1045-1058.

Muñoz-Núñez, D. 2009. The Caribbean spiny lobster fishery in Cuba: An approach to sustainable fishery management. M. Sc., Duke University, Nicholas School of the Environment.

Murawski, S., S. Wigley, M. Fogarty, P. Rago, and D. Mountain. 2005. Effort distribution and catch patterns adjacent to temperate MPAs. ICES Journal of Marine Science 62:1150-1167.

Musick, J.A. 2011. Criteria to Define Extinction Risk in Marine Fishes: The American Fisheries Society Initiative. Fisheries. 24(12): 6-14.

Mykles, D.L. 1980. The mechanism of fluid absorption at ecdysis in the American lobster *Homarus americanus*. The Journal of Experimental Biology, 84(1), 89-102.

National Rock Lobster Management Group. 2010. Annual report. New Zealand Ministry of Fisheries.

Nauen, J.C. and R.E. Shadwick. 1999. The scaling of acceleratory aquatic locomotion: Body size and tail-flip performance of the California spiny lobster *Panulirus interruptus*. Journal of Experimental Biology 202:3181-3193.

Nauen, J.C. and R.E. Shadwick. 2001. The dynamics and scaling of force production during the tail-flip escape response of the California spiny lobster *Panulirus interruptus*. Journal of Experimental Biology 204:1817-1830.

Neilson, D.J., T. Buck, and R. Read. 2009. A Comparison of Catch Rate between a Traditional, Basket-style Hoop Net and a Rigid, Conical-style Hoop Net used in the California Recreational Lobster Fishery. California Fish and Game. 94(4):53-61.

Neilson, D.J. 2011. Assessment of the California Spiny Lobster (*Panulirus interruptus*). Final, post technical review, report submitted to and approved by the California Fish and Game Commission. 138p.

New Zealand Ministry for Primary Industry. 2009. Recreational rock Lobster stock report for Spiny Red Lobster Northland. http://fs.fish.govt.nz/Page.aspx?pk=5andtk=260andfpid=57

New Zealand Ministry for Primary Industry Recreational Rock Lobster website. 2014. http://www.fish.govt.nz/en-nz/Recreational/Fishery+Management+Areas/Auckland+and+Kermadec+Areas/Rock+Lobster.htm?WBCMODE=PresentationUnpublished

NOAA National Climatic Data Center. 2012. State of the Climate: Global Analysis for Annual 2012. http://www.ncdc.noaa.gov/sotc/global/2012/13

Nonaka, M., H. Fushimi, and T. Yamakawa. 2000. The spiny lobster fishery in Japan and Restocking. Chapter 13 (pp. 221-242) In: B Phillips and J Kittaka, Eds, Spiny Lobsters: Fisheries and Culture. Fishing News Books, Blackwell Science. Oxford. 679 pp.

NRC (National Research Council). 1998. Improving Fish Stock Assessment. Committee on Fish Stock Assessment Methods, National Research Council. National Academies Press. 188 pp. http://www.nap.edu/catalog/5951.html

NRC (National Research Council). 2004. Cooperative Research in the National Marine Fisheries Service. National Academies Press, Washington, D.C.

NRC (National Research Council), Committee on Sea Level Rise in California, Oregon, and Washington. 2012. Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. National Academies Press, Washington, DC. 210p.

Odemar, M.W., R.R. Bell, C.W. Haugen, and R.A. Hardy. 1975. Report on California Spiny Lobster, *Panulirus interruptus* (Randall) Research with Recommendations for Management. California Fish Game Operation Resources Branch. 98 pp. (Special Publication).

Osborne, Susan, and Rebecca Lindsey. 2013. 2012 State of the Climate: Earth's Surface Temperature. http://www.climate.gov/news-features/understanding-climate/2012-state-climate-earths-surface-temperature.

Parker, K.P. 1972. Recruitment and behavior of Puerulus larvae and juveniles of the California spiny lobster, *Panulirus interruptus* (Randall). San Diego State College.

Parrish, R. H., C.S. Nelson, and A. Bakun. 1981. Transport mechanisms and reproductive success of fishes in the California Current. Biological Oceanography, 1(2), 175-203.

Pecl, G., S. Frusher, C. Gardner, M. Haward, A. Hobday, S. Jennings, et al. 2009. The east coast Tasmanian rock lobster fishery –vulnerability to climate change impacts and adaptation response options. Report to the Department of Climate Change, Australia. Commonwealth of Australia.

Peterson, C. H., and M.J. Bishop. 2005. Assessing the environmental impacts of beach nourishment. Bioscience, 55: 887-896.

Phillips, B.F. 1986. Prediction of commercial catches of the western rock lobster *Panulirus cygnus*. Canadian Journal of Fisheries and Aquatic Sciences 43:2126-2130.

Phillips, B.F. and J. Kittaka (eds.). 2000. Spiny lobsters: fisheries and culture. Fishing News Books, Blackwell Science Ltd., Oxford, UK.

Phillips, B.F., C.F. Chubb, and R. Meliville-Smith. 2000. The Status of Australia's Rock Lobster Fisheries. Chapter 1 in: BF Phillips and J Kittaka, Eds., Spiny Lobsters Fisheries and Culture, 2nd Edition. Fishing News Books, London, pp 44-89.

Phillips, B. F. and P.S. McWilliam. 2009. Spiny lobster development: where does successful metamorphosis to the puerulus occur?: a review. Reviews in Fish Biology and Fisheries, 19(2), 193-215.

Phillips, B.F., R. Melville-Smith, M.C. Kay, and A. Vega-Velazquez. 2013. Panulirus Species. Chapter 10 (pp. 289-325) In: B Phillps, Ed, Lobsters: Biology, Management, Aquaculture, and Fisheries. Wiley-Blackwell, West Sussex, UK.

Pineda-Barrera, J., C.A.J. Diaz de Leon, and F. Uribe Osario. 1981. Fecundity of the red lobster *Panulirus interruptus* (Randall, 1842) in Baja California. Ciencia pesquera 1:99-118

Pisias, N.G., A.C. Mix, and L. Heusser. 2001. Millenial scale climate variability of the northeast Pacific Ocean and northwest North America based on radiolarian and pollen. Q. Sci. Rev. 20:1561-1576.

Pringle, J.D. 1986. California spiny lobster (Panulirus interruptus) larval retention and recruitment - a review and synthesis. Canadian Journal of Fisheries and Aquatic Sciences 43:2142-2152.

Puga, R., R. Piñeiro, R. Alzugaray, L.S. Cobas, M.E. de León, O. Morales. 2013. Integrating Anthropogenic and Climatic Factors in the Assessment of the Caribbean Spiny Lobster (Panulirus argus) in Cuba: Implications for Fishery Management. International Journal of Marine Science. 3(6): 36-45.

Puga, R., S.H. Vazquez, J.L. Martinez, and M.E. de Leon. 2005. Bioeconomic modeling and risk assessment of the Cuban fishery for spiny lobster *Panulirus argus*. Fisheries Research 75: 149-163.

Punt, A.E., R.A. Campbell, A.D.M. Smith. 2001. Evaluating empirical indicators and reference points for fisheries management: application to the broadbill swordfish fishery off eastern Australia. Marine and Freshwater Research. 52: 819-832.

Quetglas, A., A. Gaamour, O. Renones, H. Missaoui, T. Zarrouk, A Elabed, et al. 2004. Spiny Lobster (*Palinurus elephas* Fabricius 1787) fishery in the western Mediterranean: A comparison of Spanish and Tunisian fisheries, Bol. Soc. Hist. Nat. Islas Baleares 47:63-80.

Reed, D.C., S.C. Schroeter, D. Huang. 2006. An Experimental Investigation of the Use of Artificial Reefs to Mitigate the Loss of Giant Kelp Forest Habitat: a case study of the San Onofre Nuclear Generating Station's artificial reef project, California Sea Grant, San Diego, California.

Restrepo, V. 2001. Dynamic Depletion Models. In Report on the FAO/DANIDA/CFRAMP/WECAFC Regional Workshops on the Assessment of the Caribbean Spiny Lobster (*Panulirus argus*). Belize City, Belize and Merida, Mexico: FAO Fisheries Report No. 619.

Ries, J. B., Cohen, A. L., and McCorkle, D. C. 2009. Marine calcifiers exhibit mixed responses to CO_2-induced ocean acidification. Geology, 37(12), 1131-1134.

Roberts, C. M., G. Branch, R.H. Bustamante, J.C. Castilla, J. Dugan, B.S. Halpern, et al. 2003. Application of ecological criteria in selecting marine reserves and developing reserve networks. Ecological Applications, 13(sp1), 215-228.

Robles, C. 1987. Predator foraging characteristics and prey population structure on a sheltered shore. Ecology 68:1502-1514.

Robles, C., D. Sweetnam, and J. Eminike. 1990. Lobster predation on mussels: shore-level differences in prey vulnerability and predation preference. Ecology. 71:1564-1577.

Robles, C., J. Robb. 1993. Varied carnivore effects and the prevalence of intertidal algal turfs. Journal of Experimental Marine Biology and Ecology 166:65-91.

Robles, C.D. 1997. Changing recruitment in constant species assemblages: Implications for predation theory in intertidal communities. Ecology 78:1400-1414.

Robles, C.D., M.A. Alvarado, and R.A. Desharnais. 2001. The shifting balance of littoral predator-prey interaction in regimes of hydrodynamic stress. Oecologia 128:142-152.

Rochet, M. J. 2000. Does the concept of spawning per recruit make sense? ICES Journal of Marine Science: Journal du Conseil, *57*(4), 1160-1174.

Roemmich, D. and J.A. McGowan. 1995. Climate warming and the decline of zooplankton in the California current. Science. 267:1324-1326.

Rosenberg, A., P. Mace, G. Thompson, G. Darcy, W. Clark, J. Collie, et al. 1994. Scientific review of definitions of overfishing in US fishery management plans. NMFS Technical Memorandum. 205 pp.

Roth, A.C. 1972. Agonistic behavior and its relationship to group density, size differences, and sex in the California spiny lobster, *Panulirus interruptus*.

Royal Society. 2005. Ocean acidification due to increasing atmospheric carbon dioxide. The Royal Society: the science policy section, London.

Rykaczewski, R. R. and J.P. Dunne. 2010. Enhanced nutrient supply to the California Current Ecosystem with global warming and increased stratification in an earth system model. Geophysical Research Letters, 37(21).

Sainsbury, K. 2008. Best Practice Reference Points for Australian Fisheries. A Report to Australian Fisheries Management Authority and the Department of Environment and Heritage. R2001/0999.

Sainsbury, K.J., A.E. Punt, A.D.M. Smith. 2000. Design of operational management strategies for achieving fishery ecosystem objectives. ICES Journal of Marine Science. 57: 731-741.

Schmitt, R.J. 1982. Consequences of dissimilar defenses against predation in a subtidal marine community. Ecology 63:1588-1601.

Schmitt, R.J. 1987. Indirect interactions between prey: apparent competition, predator aggregation, and habitat segregation. Ecology 68:1887-1897.

Schmitt, W.L. 1921. The Marine decapod crustacean of California. Univ. Calif. Publ. Zool., **23**:1-470.

SCS (Scientific Certification Systems). 2004. An MSC Assessment of the Red Rock Lobster Fishery, Baja California, Mexico. Final Report. Scientific Certification Systems, Emeryville, California, USA. 206 p.

SCS (Scientific Certification Systems). 2011. MSC Public Certification Report, Baja California Lobster Fishery, Mexico, MSC Re-Certification. Scientific Certification Systems, Emeryville, California, USA. 92 p.

SCS (Scientific Certification Systems). 2014. Baja California Red Lobster Fishery, Mexico, 3rd Year MSC Annual Surveillance Audit Report. Scientific Certification Systems, Emeryville, California, USA. 24 p.

Selkoe, K. A., A. Vogel, and S.D. Gaines. 2007. Effects of ephemeral circulation on recruitment and connectivity of nearshore fish populations spanning Southern and Baja California. Marine Ecology-Progress Series-, 351, 209.

Serfling, S.A. 1972. Recruitment, habitat preference, abundance, and growth of the puerulus and early juveline stages of the California spiny lobster *Panulirus interruptus* (Randall). California State University, San Diego.

Serfling, S.A. and R.F. Ford. 1975a. Ecological studies of the puerulus larval stage of California spiny lobster, *Panulirus interruptus*. Fishery Bulletin 73:360-377.

Shanks, A., G.C. Roegner, and J. Miller. 2010. Using megalope abundance to predict future commercial catches of Dungeness crabs (*Cancer magister*) in Oregon. CalCOFI Reports 51:106-118.

Shepherd, J.G. 1982. A versatile new stock-recruitment relationship for fisheries, and the construction of sustainable yield curves. ICES Journal of Marine Science. 40(1): 67-75.

Shepherd, S.A., K.R. Rodda, K.M. Vargas. 2001. A chronicle of collapse in two abalone stocks with proposals for precautionary management. Journal of Shellfish Research. 20:843-856.

Shester, G.G. 2008. Sustainability in small-scale fisheries: an analysis of the ecosystem impacts, fishing behavior and spatial management using participatory research methods. Ph.D. dissertation, Stanford University, California. 225 pp.

Shester, G., and F. Micheli. 2011. Conservation challenges for small-scale fisheries: Bycatch and habitat impacts of traps and gillnets. Biological Conservation. 144(5): 1673-1681.

Shabani, S., S. Yaldiz, L. Vu, and C.D. Derby. 2007. Acidity enhances the effectiveness of active chemical defensive secretions of sea hares, *Aplysia californica*, against spiny lobsters, *Panulirus interruptus*. Journal of Comparative Physiology a-Neuroethology Sensory Neural and Behavioral Physiology 193:1195-1204.

Sharp, W. C., R.D. Bertelsen, and V.R. Leeworthy. 2005. Long-term trends in the recreational lobster fishery of Florida, United States: Landings, effort, and implications for management. New Zealand Journal of Marine and Freshwater Research, 39(3), 733-747.

Shaughnessy, F. J., W. Gilkerson, J.M. Black, D.H. Ward, and M. Petrie. 2012. Predicted eelgrass response to sea level rise and its availability to foraging Black Brant in Pacific coast estuaries. Ecological Applications, 22(6), 1743-1761.

Shields, J. 2011. Diseases of spiny lobsters: A review. Journal of Invertebrate Pathology 106:79-91.

Sissenwine, M. P. and J.G. Shepherd. 1987. An alternative perspective on recruitment overfishing and biological reference points. Canadian Journal of Fisheries and Aquatic Sciences, 44(4), 913-918.

Sloan, S. and K. Crosthwaite. 2007. Management Plan for the Northern Zone Rock Lobster Fishery. Paper No. 51, South Australian Fisheries Management Series. Fisheries Division, Primary Industries and Resources South Australia. Adelaide. 82 pp.

Smith, G. G. and A.J. Ritar. 2007. Sexual maturation in captive spiny lobsters, *Jasus edwardsii*, and the relationship of fecundity and larval quality with maternal size. Invertebrate Reproduction and Development, 50(1), 47-55.

Snyder, M.A., L.C. Sloan, N.S. Diffenbaugh, and J.L. Bell. 2003. Future climate change and upwelling in the California Current. Geophys. Res. Lett. 30:1823.

South Atlantic Fishery Management Council. 1998. Comprehensive amendment addressing Sustainable Fishery Act definitions and other required provisions in fishery management plans of the South Atlantic region. Charleston, SC.

South Atlantic Fishery Management Council. 2012. Final Amendment 11 to the Fishery Management Plan for Spiny Lobster in the Gulf of Mexico and South Atlantic. Charleston, SC.

South Australia Fishery Management (Rock Lobster Fisheries) Regulations, 2006. http://legislation.sa.gov.au/LZ/C/R/FISHERIES%20MANAGEMENT%20%28ROCK%20LOBSTER%20FISHERIES%29%20REGULATIONS%202006.aspx.

South Australia Fisheries Management (General) Regulations, 2007. http://legislation.sa.gov.au/LZ/C/R/FISHERIES%20MANAGEMENT%20%28GENERAL%29%20REGULATIONS%202007.aspx

Spanier, E. and R.K. Zimmerfaust. 1988. Some physical properties of shelter that influence den preference in spiny lobsters. Journal of Experimental Marine Biology and Ecology 121:137-149.

Sparre, P., S.C. Venema. 1998. Introduction to Tropical Fish Stock Assessment – Part 1: manual. FAO Fisheries Technical Paper. FAO FTP 306/1 Rev. 2. 407 pp.

Starr, P. J., N. and Bentley. 2002. Assessment of the NSS stock of red rock lobster (*Jasus edwardsii*) for 1999. New Zealand Fisheries Assessment Report, 28, 50.

Starr, P. 2010. Fisher-collected sampling data: lessons from the New Zealand experience. Marine and Coastal Fisheries, 2(1), 47-59.

Steneck, R. S. 2006. Is the American lobster, *Homarus americanus*, overfished? A review of overfishing with an ecologically based perspective. Bulletin of Marine Science, 78(3), 607-632.

Steneck, R. S., M.H. Graham, B.J. Bourque, D. Corbett, J.M. Erlandson, J.A. Estes, et al. 2002. Kelp forest ecosystems: biodiversity, stability, resilience and future. Environmental conservation, 29(04), 436-459.

Steneck, R.S., R.A. Wahle. 2013. American lobster dynamics in a brave new ocean. Canadian Journal of Fisheries and Aquatic Sciences. 70: 1612-1624

Stewart, J. 1984. Lobster diseases. Helgoland Meeresunter 37:243-254

Stull, A.T. 1991. Nightly foraging movement and den fidelity of the California spiny lobster, *Panulirus interruptus*, at Santa Catalina Island, California. California State University Long Beach.

Tapia-Vasquez, O.M. and J.J. Castro-Gonzalez. 2001. Fecundidad y anatomia microscopica del ovario de la langosta roja *Panulirus interruptus* de Punta Eugenia, Baja California Sur, Mexico. Ciencia Pesquera 14:63-66.

Tegner, M.J., P.K. Dayton. 1981. Population structure, recruitment and mortality of two sea urchins (*Strongylocentrotus franciscanus* and *S. purpuratus*) in a kelp forest. Marine Ecology Progress Series 5:255-268.

Tegner, M.J. and L.A. Levin. 1983. Spiny lobsters and sea urchins: analysis of a predator-prey interaction. Journal of Experimental Marine Biology and Ecology 73:125-150.

USFWS (United States Fish and Wildlife Service). 2005. Draft Supplemental Environmental Impact Statement: Translocation of Southern Sea Otters. USFW, Ventura.

USGS (United States Geological Survey). 2014. Spring 2014 California Sea Otter Census Results. USGS Western Ecological Research Center. Santa Cruz, California. Available at: http://www.werc.usgs.gov/ProjectSubWebPage.aspx?SubWebPageID=24&ProjectID=91.

Vega, V.A., Gómez, R.C., Espinoza, C.G., and Sierra, R.P. Langosta de Baja California *Panulirus interuptus*. In: Arenas, P.R., and Diaz de Leon, A. (eds). 2000. Sustentabilidad y Pesca Responsible en Mexico: EvaluaciÛn y Manejo 1997-1998. INP-SEMARNAP. (ISBN: 968-817-296-0) 691p.\

Vega V.A. 2003a. Dinámica poblacional,evaluación y manejo de la langosta roja (*Panulirus interruptus*) en la costa centralde la península de Baja California. Informe técnico finaldel proyecto de investigación SIMAC-20000-7009. 86 p.

Vega, V.A. 2003b. Reproductive strategies of the spiny lobster *Panulirus interruptus* related to the marine environmental variability off central Baja California, Mexico: management implications. Fisheries Research 65:123-135.

Walters, C. J., and R. Hilborn. 1978. Ecological optimization and adaptive management. Annual review of Ecology and Systematics, 157-188.

WCPFC (Western and Central Pacific Fisheries Commission). 2012. Introduction to Harvest Control Rule for WCPO Tuna Fisheries. MO1-IP/06.

Wendt, D.E., R.M. Starr. 2009. Collaborative Research: An Effective Way to Collect Data for Stock Assessments and Evaluate Marine Protected Areas in California. Marine and Coastal Fisheries: Dynamics, Management and Ecosystem Science. 1(1): 315-324.

Wilson, D.C., J.R. Nielsen, and P. Degnbol. 2003. The Fisheries Co-management Experience: Accomplishments, Challenges and Prospects. Fish and Fisheries Series 26, Kluwer Academic Publishers. Dordrecht, The Netherlands.

Wilson, R. C. 1948. A review of the southern California spiny lobster fishery. Calif. Fish Game. **34**(2):71-80.

Winget, R.R. 1968. Trophic relationships and metabolic energy budget of the California spiny lobster, *Panulirus interruptus* (Randall). San Diego State College.

Withy-Allen, K.R., and K.A. Hovel. 2013. California spiny lobster (*Panulirus interruptus*) movement behavior and habitat use: implications for the effectiveness of marine protected areas. Mar Freshwater Res, 64:359-371.

Zhang, Y. and Y. Chen. 2012. Effectiveness of Harvest Control Rules in Managing American Lobster Fishery in the Gulf of Maine. North American Journal of Fisheries Management, 32(5), 984-999.

Ziegler, P., M. Haddon, S. Fusher, C. Johnson. 2004. Modelling seasonal catchability of the southern rock lobster *Jasus edwardsii* by water temperature, moulting and mating. Marine Biology. 145:179-190.

Ziegler, P., S. Frusher, C. Johnson. 2003. Space-time variation in catchability of southern rock lobster *Jasus edwardsii* in Tasmania explained by environmental, physiological and density-dependent processes. Fisheries Research. 61:107-123.

Zimmer-Faust, R.K. and J.F. Case. 1982. Odors influencing foraging behavior of the California spiny lobster, *Panulirus interruptus*, and other decapod crustacea. Marine Behaviour and Physiology 9:35-58.

Zimmer-Faust, R.K., J.E. Tyre, J.F. Case. 1985. Chemical attraction causing aggregation in the spiny lobster, *Panulirus interruptus* (Randall), and its probable ecological significance. Biological Bulletin 169:106-118.

Zimmer-Faust, R.K., E. Spanier. 1987. Gregariousness and sociality in spiny lobsters: implications for den habitation. Journal of Experimental Marine Biology and Ecology 105:57-71.

Personal Communication

Culver, Carolynn. Sea Grant Advisor/Research Scientist. Marine Science Institute, University of California, Santa Barbara. Santa Barbara, CA.

Matthews, Thomas. Fishery Biologist, Florida Fish and Wildlife Conservation Commission. Tallahassee, FL.

Renzullo, Jennifer. Field Manager, CA Lost Fishing Gear Recovery Project. UC Davis Wildlife Health Center. Davis, CA.

Salazar, James. Owner, Saba Slayer Kayak Fishing Guide Service. Rolling Hills Estates, CA.

Appendix: Letter to Tribal Representatives

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State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Santa Barbara Field Office
1933 Cliff Drive, Suite 9
Santa Barbara, CA 93109
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

October 10, 2013

Name
Title
Business
Street Address
City, STATE Zip

Dear Honorable [FILL IN FULL NAME], Chairperson:

The California Department of Fish and Wildlife (Department) would like to inform you as a tribal representative that its Marine staff will be writing and compiling a Spiny Lobster Fishery Management Plan (FMP) over the next several months. The Department would like to know if spiny lobster is a culturally significant species to your Tribe, and, if so, if you would like to provide input into the development of the FMP or to seek government-to-government consultation with the Department about the FMP and the management of the spiny lobster fishery.

The Marine Life Management Act requires that the fishery management plan shall form the primary basis for managing California's commercial and sport marine fisheries. The spiny lobster supports important commercial and sport fisheries in southern California, and this FMP will ensure the continued health of the lobster fisheries in California.
The FMP will summarize all the readily available information on spiny lobster and its fisheries including: lobster natural history and population dynamics; fishery landings, regulations, and participants; current management and conservation measures; monitoring of the fisheries; essential fisheries information that is still needed; and a harvest control rule(s) should the lobster resource show signs of being overfished.

The Department has received suggestions and recommendations from various stakeholder groups, and has worked with a Lobster Advisory Committee that was created last year to develop recommendations. The lobster FMP website is: http://www.dfg.ca.gov/marine/lobsterfmp/ .

The Department understands that the spiny lobster fishery may be of interest to some tribes in California, and the Department is soliciting input from tribes. The Department is also committed to understanding tribal interests, if any, relating to the spiny lobster fisheries in southern California before the draft FMP is completed. Next year, the draft lobster FMP will be peer reviewed both scientifically and by the general public. While tribes can provide comments on the spiny lobster FMP at that time, the Department would like to understand tribal interests early in the process.

The Department would welcome your preliminary input on southern California's spiny lobster resource and fisheries by November 15, 2013, so that it might be considered when writing the draft FMP. Please send your comments to Ms. Kristine Barsky, Senior Marine Biologist and Lobster FMP Coordinator, via email at Kristine.Barsky@wildlife.ca.gov or to the address above. If you would like more information on

the lobster FMP, or would like to set up either an informal informational meeting or a formal government-to-government consultation, please contact Ms. Barsky at (805) 985-3114.

We look forward to receiving your comments.

Sincerely,

Craig Shuman
Manager of the Marine Region

ec: Steven Ingram, Senior Staff Counsel and Tribal Liaison
Office of the General Counsel
Department of Fish and Wildlife

Sonke Mastrup, Executive Director
California Fish and Game Commission

Tribes contacted for the Lobster FMP process

Tribe Contacted
Costanoan Ohlone Rumsen Carmel Tribe
Fernandeno Tataviam Band of Mission Indians
Gabrieleno/Tongva San Gabriel Band of Mission Indians
Gabrielino Tongva Nation
San Fernando Band of Mission Indians
Tehachapi Indian Tribe
Juaneño Band of Mission Indians
Juaneno Band of Mission Indians Acjachemen Nation
Juaneno Band of Mission Indians Acjachemen Nation
Barona Group of the Capitan Grande
Campo Kumeyaay Nation
Ewiiaapaayp Tribal Office
Inaja Band of Mission Indians
Jamul Indian Village
Kwaaymii Laguna Band of Mission Indians
La Jolla Band of Mission Indians
La Posta Band of Mission Indians
Los Coyotes Band of Mission Indians
Manzanita Band of Kumeyaay Nation
Mesa Grande Band of Mission Indians
Pala Band of Mission Indians
Pauma Band of Yuima
Rincon Band of Mission Indians
San Luis Rey Band of Mission Indians
San Pasqual Band of Mission Indians
Santa Ysabel Band of Diegueno Indians
Sycuan Band of the Kumeyaay Nation
Northern Chumash Tribal Council
Salinan Tribe of Monterey & San Luis Obispo Counties
Coastal Band of the Chumash Nation
Santa Ynez Band of Mission Indians
Viejas Band of Mission Indians

State of California – Natural Resources Agency
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Santa Barbara, CA 93109
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

October 19, 2015

Contact name
Tribal group name
Address

Dear Honorable Tribal Representative:

The California Department of Fish and Wildlife (Department) would like to inform you as a tribal representative that several items are under development regarding the management of California's spiny lobster fisheries, and we are inviting your Tribe to provide input before these items are submitted to the Fish and Game Commission (Commission) for their possible consideration. In particular, the Department will be delivering two principle items to the Commission during 2015 and 2016: 1) a California Spiny Lobster Fishery Management Plan (FMP), and 2) new spiny lobster commercial and recreational fishery regulations. We anticipate proposing the first item at the Commission's December 2015 meeting and the second item at the Commission's February 2016 meeting. The Department would like to know whether your Tribe is interested in providing input on one or both of these proposed management items. At your discretion, your Tribe's input could be provided during the established provisions under the Commission process for public input beginning in December 2015, or through discussions or formal government-to-government consultation prior to December.

The California Spiny Lobster FMP

The Marine Life Management Act requires that fishery management plans (FMPs) shall form the primary basis for managing California's commercial and sport marine fisheries. The California spiny lobster resource supports important commercial and recreational fisheries in southern California, and this FMP sets a management framework for the fishery to ensure the continued health of the fisheries in California.

The FMP summarizes all the readily available information on spiny lobster and its fisheries including: lobster natural history and population dynamics; fishery landings, regulations, and participants; current management and conservation measures; monitoring of the fisheries; essential fisheries information that is still needed; and a harvest control rule to provide for a sustainable harvest.

The Department has received suggestions and recommendations from various stakeholder groups, and has worked with a Lobster Advisory Committee that was created to develop recommendations. The draft California Spiny Lobster FMP is currently available on the Departments spiny lobster FMP website at http://www.dfg.ca.gov/marine/lobsterfmp/ .

Amending Spiny Lobster Commercial and Recreational Regulations

The Department is scheduled to request authorization to publish notice of intent to amend regulations associated with the FMP at the Commission's February 2016 meeting. Proposed commercial spiny lobster regulation amendments that will be considered by the Commission include: a commercial trap

limit; increasing the trap service requirement from 4 to 7days; extending the period (from 6 to 9 days) for deploying and retrieving traps before and after the season; and reporting of commercial trap loss. Proposed recreational amendments include: requiring the hole-punching or fin-clipping of all retained lobsters; changing the timing of the recreational season opener from 12:01 am to 6 a.m. on the first Saturday of the season; require hoop net operators to mark hoop net floats with GO-ID numbers; and clarifying methods of take for crustaceans.

If you would like more information on the California Spiny Lobster FMP or the proposed regulatory amendments, or to request a printed copy of the draft FMP, please contact Mr. Tom Mason, Senior Environmental Scientist, by email, tom.mason@wildlife.ca.gov, or by phone, (562) 342-7107. If you would like to request formal government-to-government consultation, please contact Steven Ingram, Tribal Liaison, by email, tribal.liaison@wildlife.ca.gov, or by phone, (916) 651-7401.

We look forward to receiving your input.

Sincerely,

Craig Shuman, D. Env.
Regional Manager, Marine Region

ec: Steven Ingram, Senior Staff Counsel and Tribal Liaison
Office of the General Counsel
Department of Fish and Wildlife

Sonke Mastrup, Executive Director
California Fish and Game Commission

Tribe Contacted
Agua Caliente Band of Cahuilla Indians
Augustine Band of Cahuilla Mission Indians
Barona Group of the Capitan Grande
Cabazon Band of Mission Indians
Cahuilla Band of Indians
Campo Band of Mission Indians
Chemehuevi Reservation
Colorado River Indian Tribe
Ewiiaapaayp Tribal Office
Fort Mojave Indian Tribe
Iipay Nation of Santa Ysabel
Inaja Band of Diegueño Mission Indians
Jamul Indian Village
La Jolla Band of Mission Indians
La Posta Band of Mission Indians
Los Coyotes Band of Mission Indians
Manzanita Band of Kumeyaay Nation
Mesa Grande Band of Diegueño Mission Indians
Morongo Band of Mission Indians
Pala Band of Mission Indians
Pauma Band of Luiseño Indians
Pechanga Band of Mission Indians
Ramona Band of Cahuilla Mission Indians
Rincon Band of Mission Indians
San Manuel Band of Mission Indians
San Pasqual Band of Diegueño Mission Indians
Santa Rosa Band of Cahuilla Indians
Santa Ynez Band of Mission Indians
Soboba Band of Mission Indians
Sycuan Band of the Kumeyaay Nation
Torres-Martinez Desert Cahuilla Indians
Twenty-Nine Palms Band of Mission Indians
Viejas Band of Kumeyaay Indians

Appendix II: Executive Summary of the Constituent Involvement Plan

This Constituent Involvement Plan details the activities that will be conducted to involve constituents and participants in the development of the Spiny Lobster Fishery Management Plan (FMP). The FMP is being developed for the spiny lobster fishery by the California Department of Fish and Game as required under the Marine Life Management Act of 1998. An important part of the act is the good faith effort to involve all interested parties in resource management decisions through the dissemination of accurate information and collaboration.

I. Points of Input for Constituents

The Department uses a number of avenues to engage the public in development of the Spiny Lobster Fishery Management Plan (FMP).

Lobster Advisory Committee

- The Advisory Committee is a collaborative body of representatives from major constituencies that provides the Department with advice, recommendations, and feedback regarding actions that need to be taken during the development of the FMP. The Advisory Committee will give guidance on FMP objectives and end products, as well as provide ideas on content and management options that address the key issues put forth by constituents, members of the public, and our contractors. The Committee will review draft documents generated during the FMP process, and will provide feedback on content.

- CDFW ensured that the composition of the Lobster Advisory Committee reflects the diversity of interests and complexity of the California spiny lobster fishery. The Committee is made up of twelve members and five alternates, as follows:

- Rodger Healy (Commercial Fishing Member)
- Jim Colomy (Commercial Fishing Member)
- Shad Catarius (Commercial Fishing Member)
- Josh Fisher (Commercial Fishing Alternate Member)
- Jim Salazar (Recreational Fishing Member)
- Michael Gould (Recreational Fishing Member)
- Al Stasukevich (Recreational Fishing Member)
- Paul Romanowski (Recreational Fishing Alternate Member)
- Lia Protopapadakis (Marine Science Member)
- Kevin Hovel (Marine Science Member)
- Jono Wilson (Marine Science Alternate Member)
- Sarah Sikich (Environmental Organization Member)
- Huff McGonigal (Environmental Organization Alternate Member)
- Sean Hastings (Federal Agency Member)
- David Kushner (Federal Agency Alternate Member)
- Claudette Dorsey (Non-Consumptive Recreational Member)
- Chris Grossman (Non-Consumptive Recreational Member)

Lobster Advisory Committee Schedule

Meeting Dates:

- **June 20, 2012, Los Alamitos (9:00 AM to 4:00 PM)** – LAC Charter and Ground Rules development, Timeline for FMP, List of Lobster FMP Issues, FMP Conceptual Framework, Comments from Public Meetings, and Review of Draft Fishery Overview Chapter
- **August 1, 2012** –Review Summary of Management Options.
- **December 5, 2012** – Discuss findings of Economic Profile Report, and Comments on Draft Fishery Management and Conservation Chapter.
- **April 10, 2013** – Discuss poaching issues and recreational fishery management
- **June 12, 2013** – Review Comments from Public Management Options Meetings.
- **July 10, 2013** – Discuss and evaluate fishing management options
- **August 15, 2013** – Review Management Strategy Evaluation Results.
- **September 11, 2013** – Finalize consensus for recreational fishing management measures, discuss and evaluate the harvest control rule, and identify monitoring and research priorities and funding mechanisms

Schedule for Public Meetings

Public Information Meetings

Description (both dates and locations): The purpose is to introduce the Lobster Fishery Management Plan (FMP) process, and explain what an FMP is and what it is not. CDFW will also discuss the general timeline for FMP completion. The majority of this meeting will focus on gathering information from members of the public regarding the issues or management concerns that need to be addressed during the FMP process.

Dates and Locations:
Wednesday, April 18, 2012
Oxnard Performing Arts and Convention Center
800 Hobson Way
Oxnard, CA 93030
http://www.oxnardpacc.com/directions.html

Thursday, April 19, 2012
Grand Pacific Palisades Hotel
Auditorium
5805 Armada Dr.
Carlsbad, CA 92008
http://www.grandpacificpalisades.com/map-directions

Agenda (both dates and locations):

6:00 p.m.	Open House Workshop (no pre-registration required)
6:30 p.m.	Public meeting begins
6:45 p.m.	Highlights of the FMP Process and how to contribute
7:00 p.m.	Public Questions and Comments
8:00 p.m.	Open House Workshop
9:00 p.m.	Meeting concludes

Management Options Meetings

The purpose is to receive comments on potential management options, the impact of each option, and preferred options or suites of options.

- Dates: **April 23-24, 2013**
- Locations: **Ventura and Orange counties**

Fish and Game Commission Regulator Process

The formal regulatory process will begin in February 2015.

Written Comments

- The Spiny Lobster Fishery Management Plan Web Site has the ability to receive written comments. Web Site address: http://www.dfg.ca.gov/marine/lobsterfmp/
- Written comments can also be mailed to:

  Department of Fish and Game
  Attn: Spiny Lobster FMP
  1933 Cliff Drive, Suite 9
  Santa Barbara, CA 93109

II. Methods for Providing Constituents with Information

Since communication and participation are crucial to a successful FMP process, the Department will provide information through a range of options.

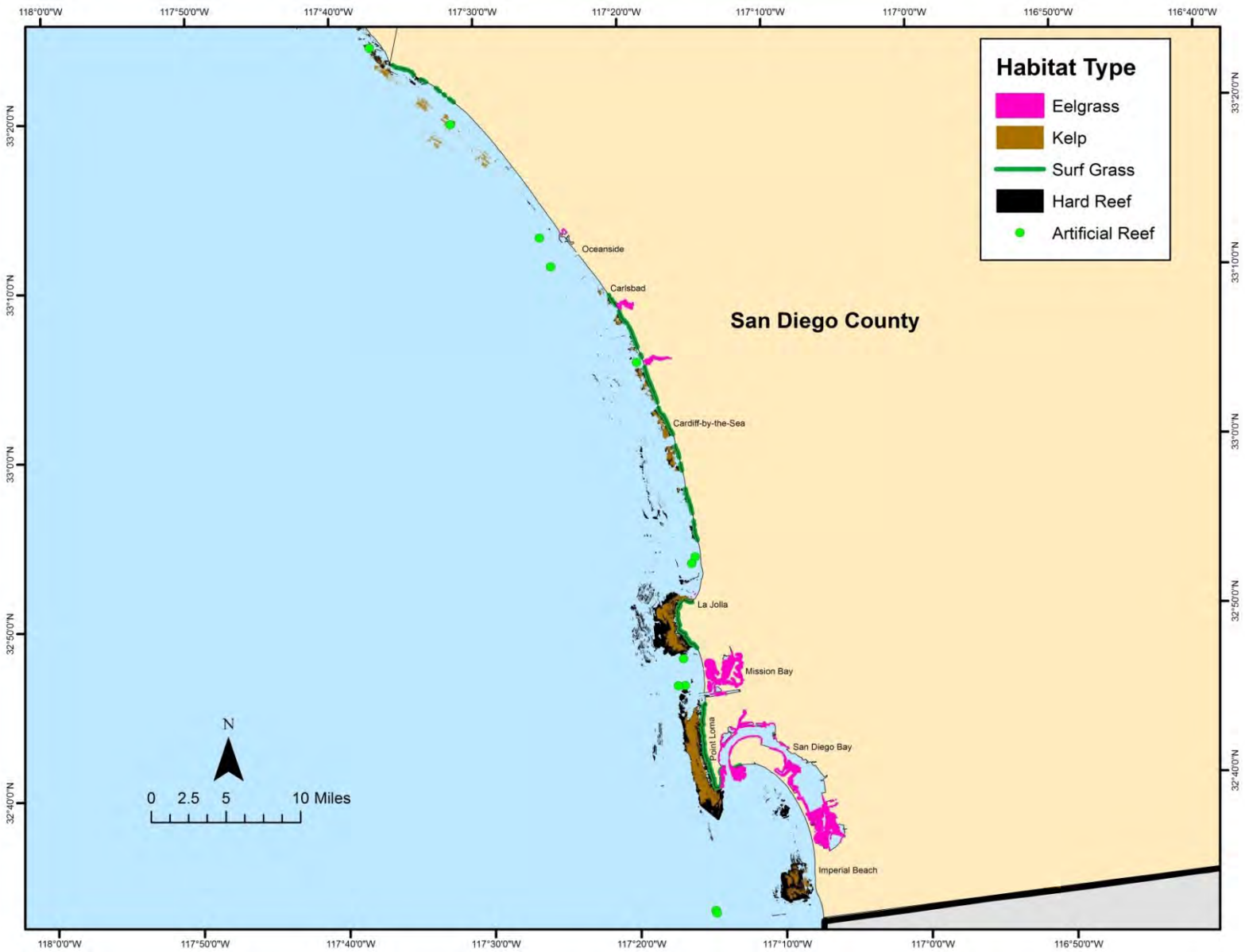
Available Resources

- The Spiny Lobster Fishery Management Plan Web Site: http://www.dfg.ca.gov/marine/lobsterfmp/
- Electronic notices. Constituents can sign up for the Lobster FMP News Service through the Spiny Lobster Fishery Management Plan Web Site. The News Service will distribute electronic notices about future events. Once you are signed up, you can expect to receive emails that:
  - Announce the debut of a fully populated Lobster FMP website that includes informative background documents on lobster.
  - Keep constituents informed of news and public meeting information during the Lobster FMP process.
  - Announce the availability of Lobster FMP draft documents
- For those who cannot receive email, the Lobster FMP team will send the identical announcements via the U.S. Postal Service. To sign up to receive the Lobster FMP News Notices via mail, please contact Ms. Rosalyn McFarland at (805) 568-1231 to provide your mailing address.
- Flyers available at Fish and Game offices, and posted at strategic locations.
- Marine Management Newsletter

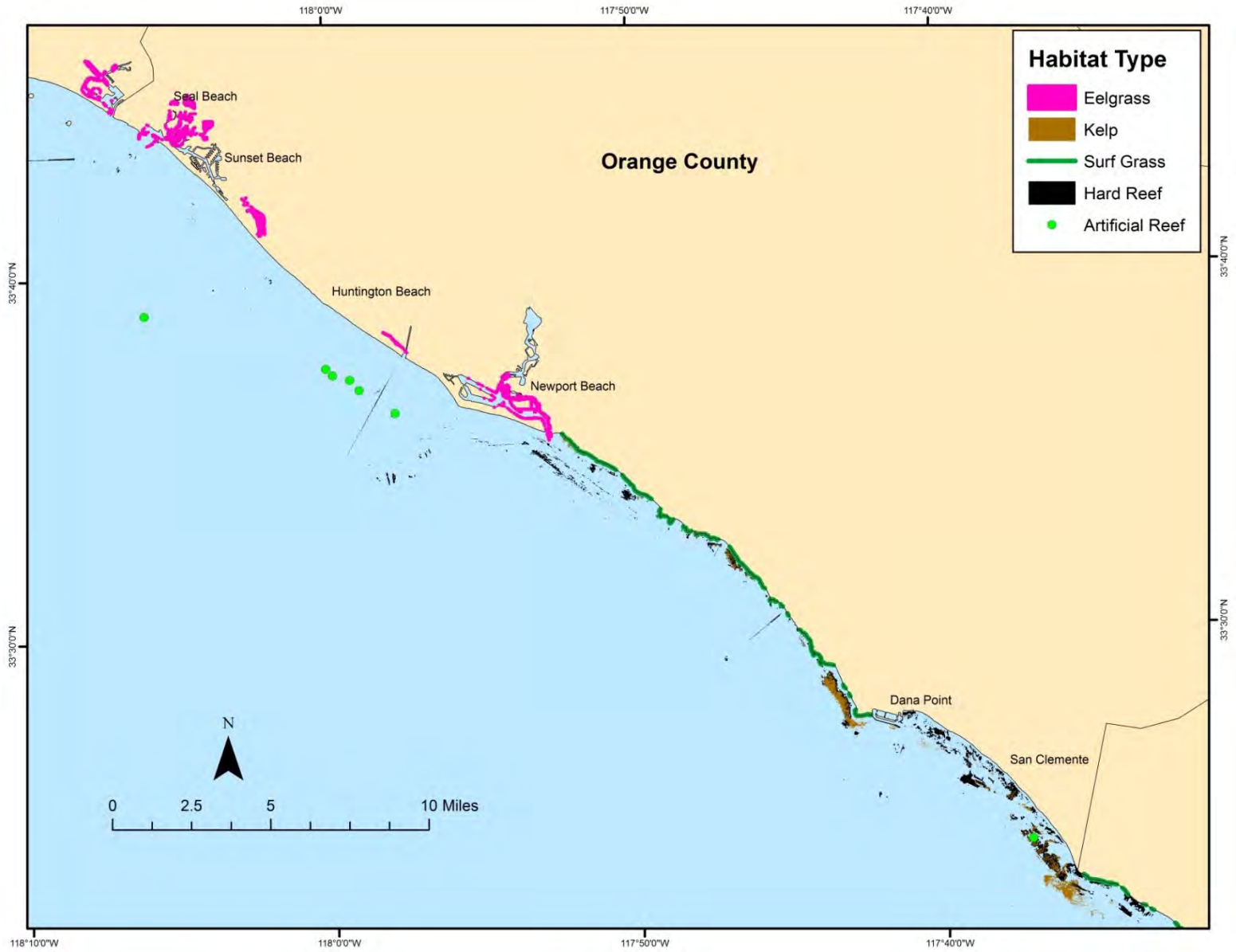
Special Publications

- Spiny Lobster Stock Assessment
- Technical Panel Review Publication of Stock Assessment

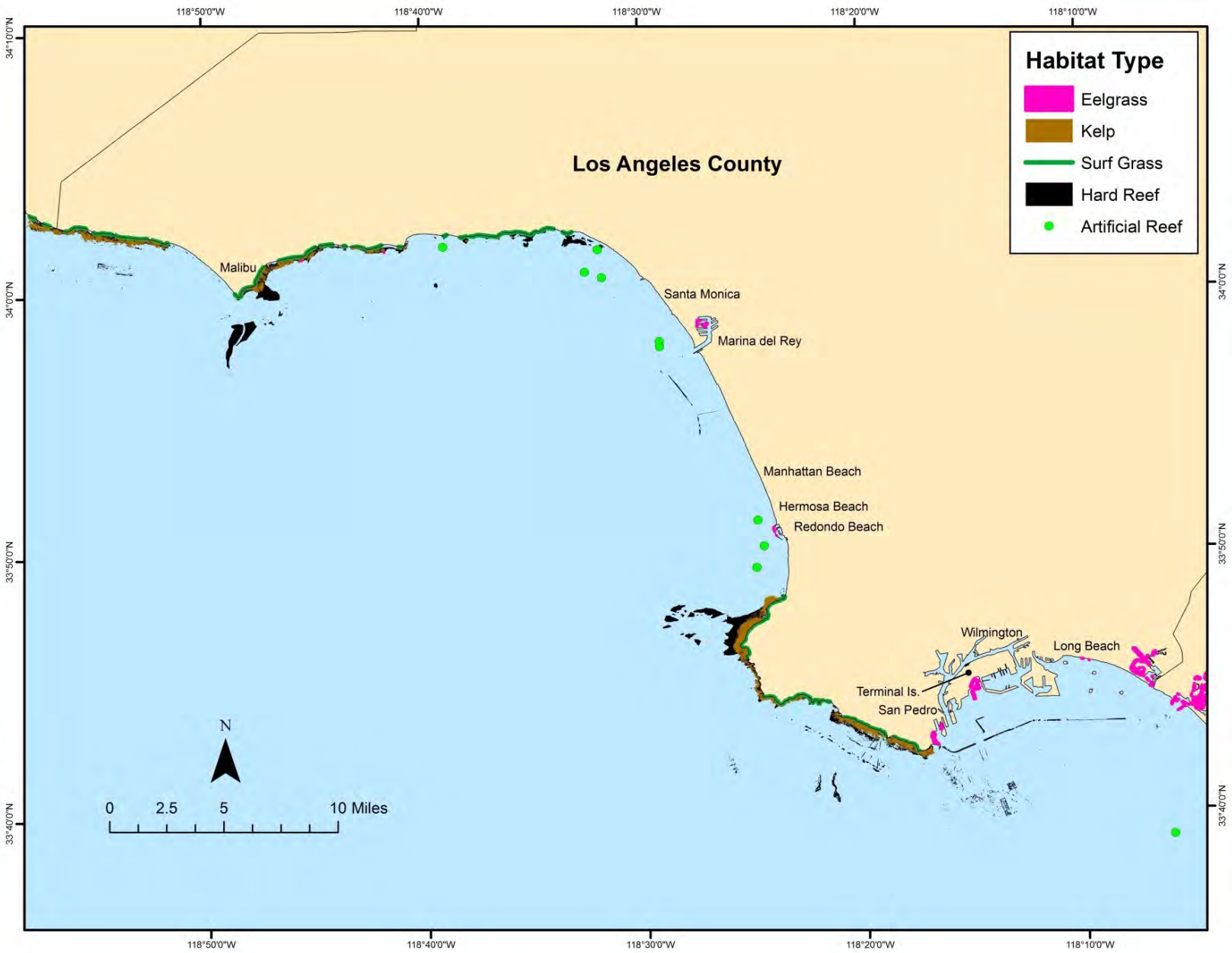
Appendix III: Habitat Maps by Areas



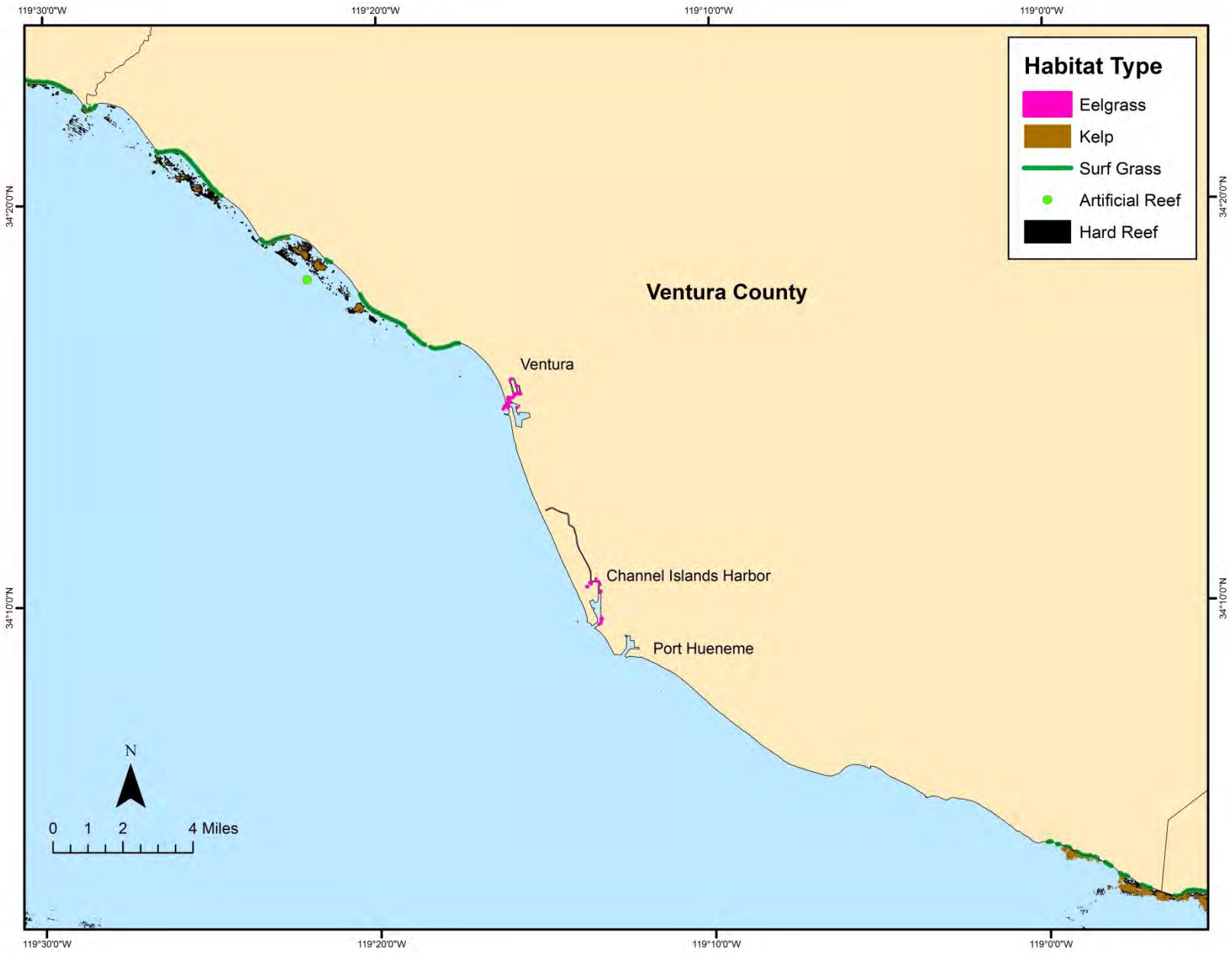
Critical CA lobster habitats along San Diego County



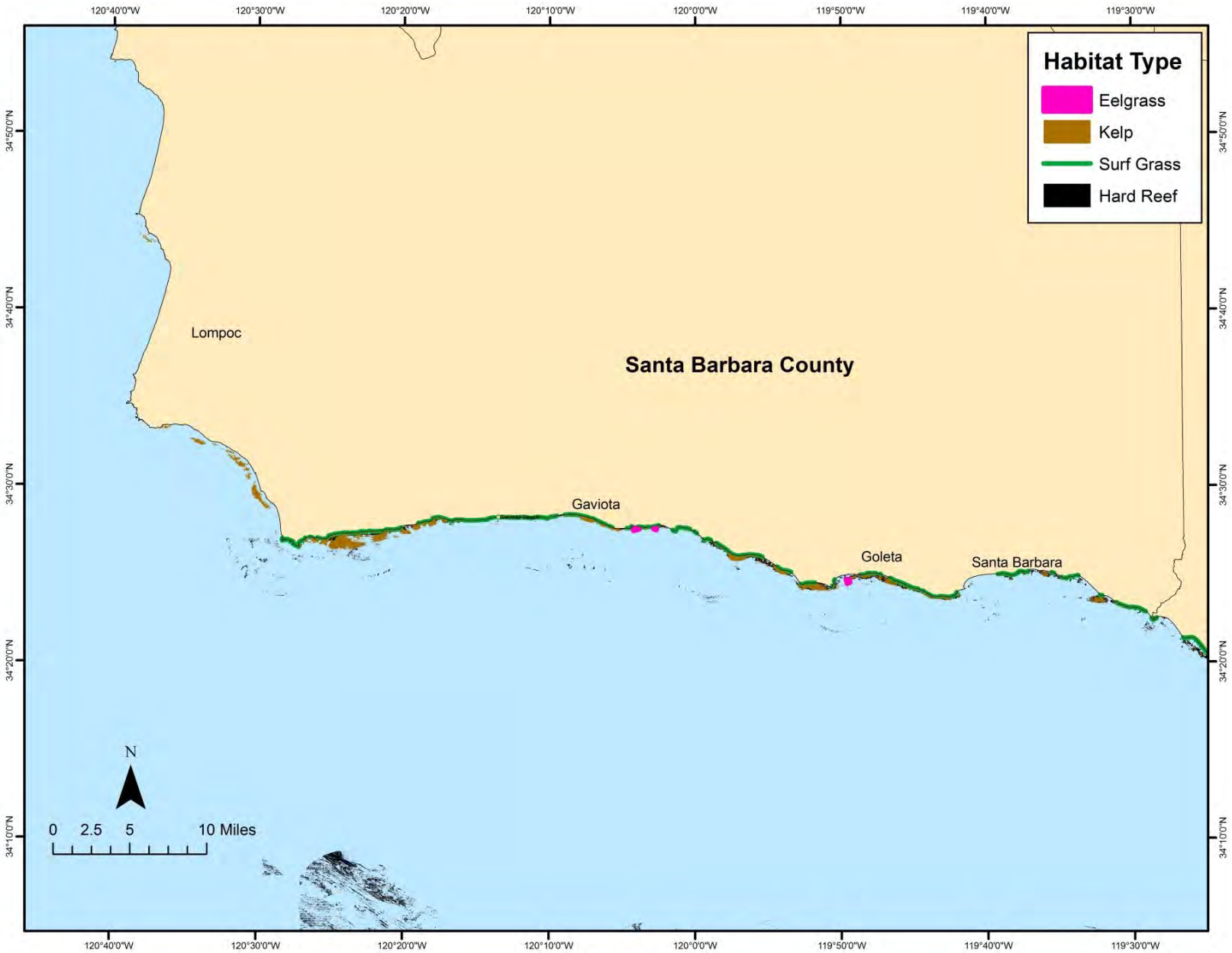
Critical CA lobster habitats along Orange County



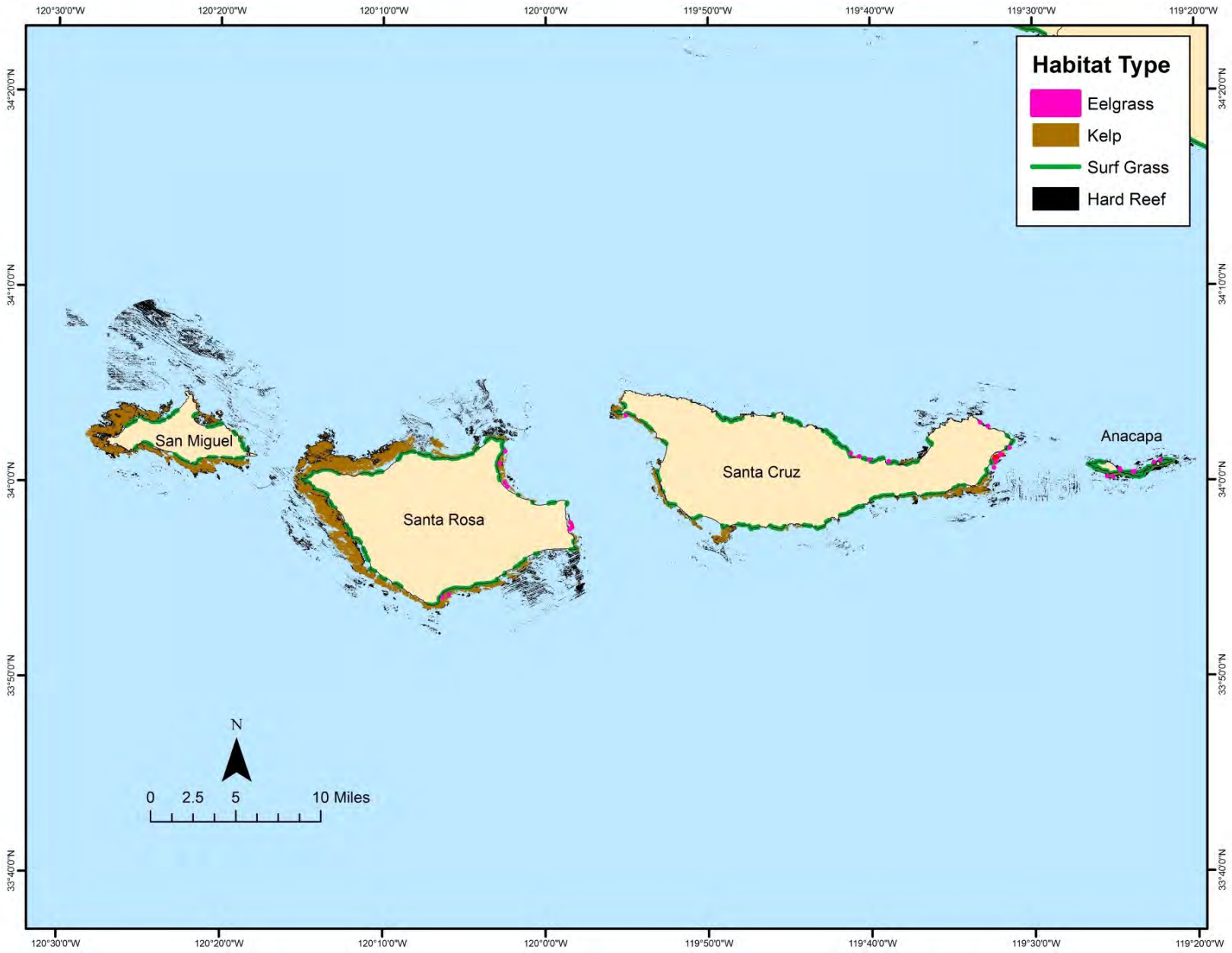
Critical CA lobster habitats along Los Angeles County



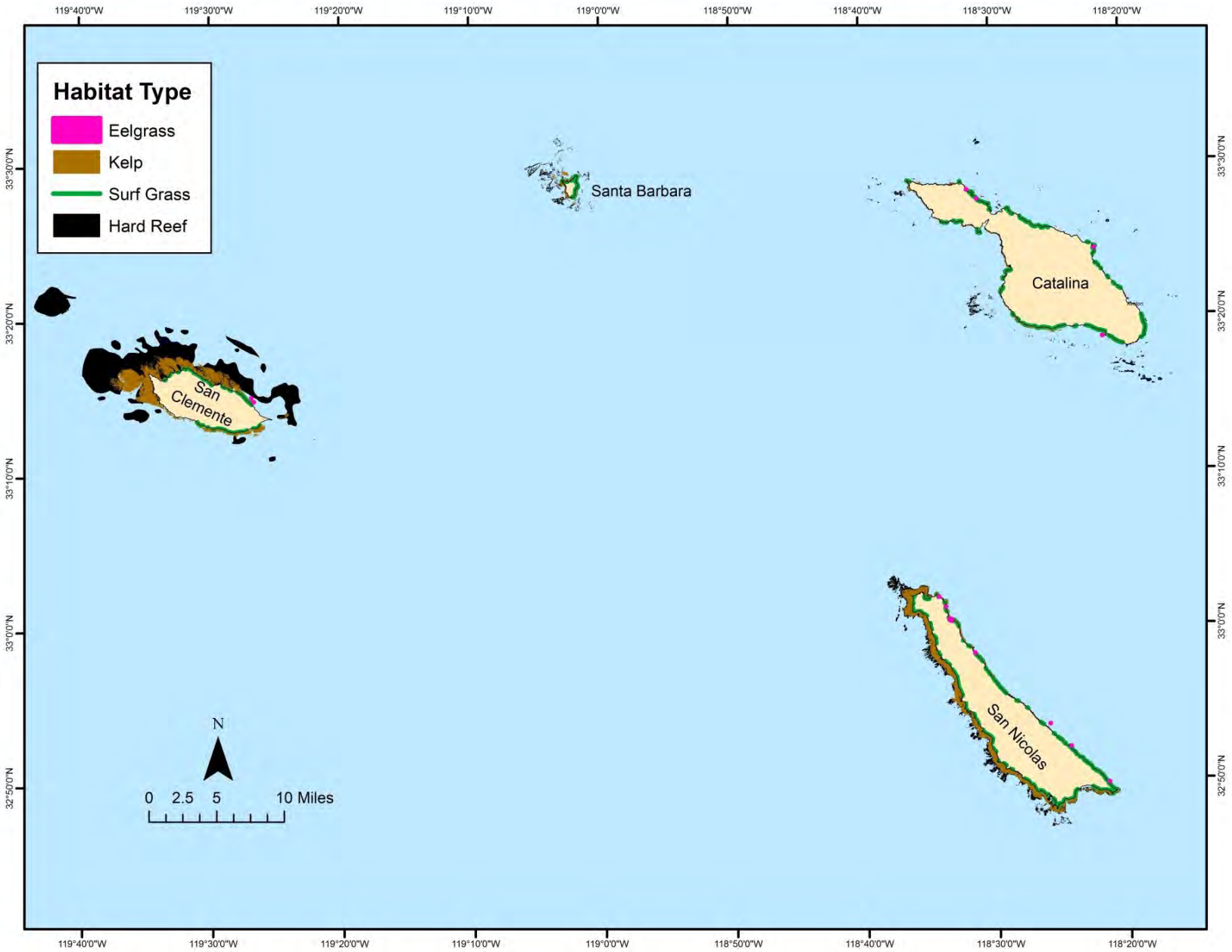
Critical CA lobster habitats along Ventura County



Critical CA lobster habitats along Santa Barbara County

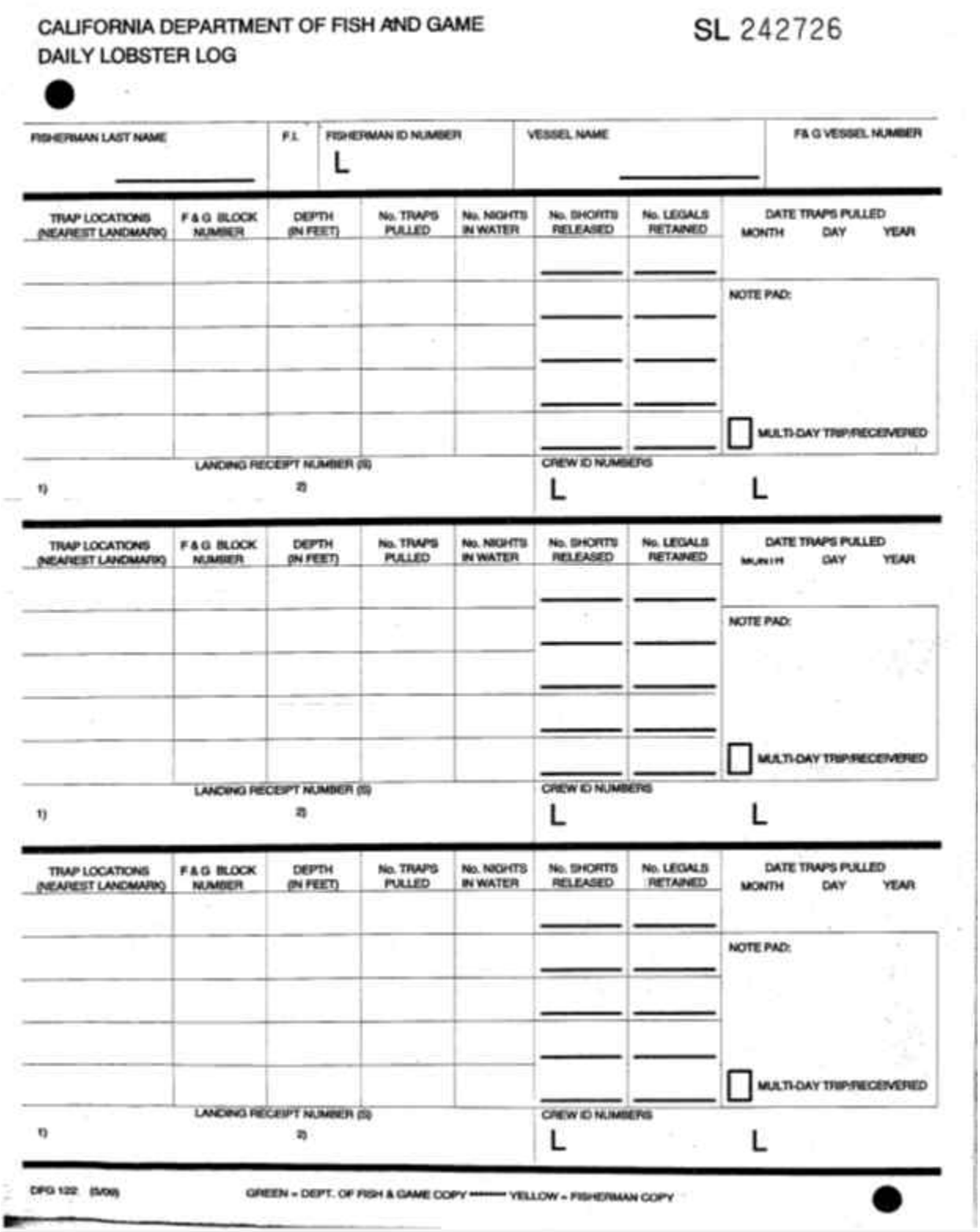


Critical CA lobster habitats around the Northern Channel Islands



Critical CA lobster habitats around the southern Channel Islands

Appendix IV: Current Commercial Logs and Landing Receipts



CALIFORNIA DEPARTMENT OF FISH AND GAME
DAILY LOBSTER LOG

SL 242726

FISHERMAN LAST NAME	F.I.	FISHERMAN ID NUMBER	VESSEL NAME	F& G VESSEL NUMBER
		L		

TRAP LOCATIONS (NEAREST LANDMARK)	F & G BLOCK NUMBER	DEPTH (IN FEET)	No. TRAPS PULLED	No. NIGHTS IN WATER	No. SHORTS RELEASED	No. LEGALS RETAINED	DATE TRAPS PULLED MONTH DAY YEAR
							NOTE PAD:
							☐ MULTI-DAY TRIP/RECEIVERED

LANDING RECEIPT NUMBER (S)
1) 2)

CREW ID NUMBERS
L L

TRAP LOCATIONS (NEAREST LANDMARK)	F & G BLOCK NUMBER	DEPTH (IN FEET)	No. TRAPS PULLED	No. NIGHTS IN WATER	No. SHORTS RELEASED	No. LEGALS RETAINED	DATE TRAPS PULLED MONTH DAY YEAR
							NOTE PAD:
							☐ MULTI-DAY TRIP/RECEIVERED

LANDING RECEIPT NUMBER (S)
1) 2)

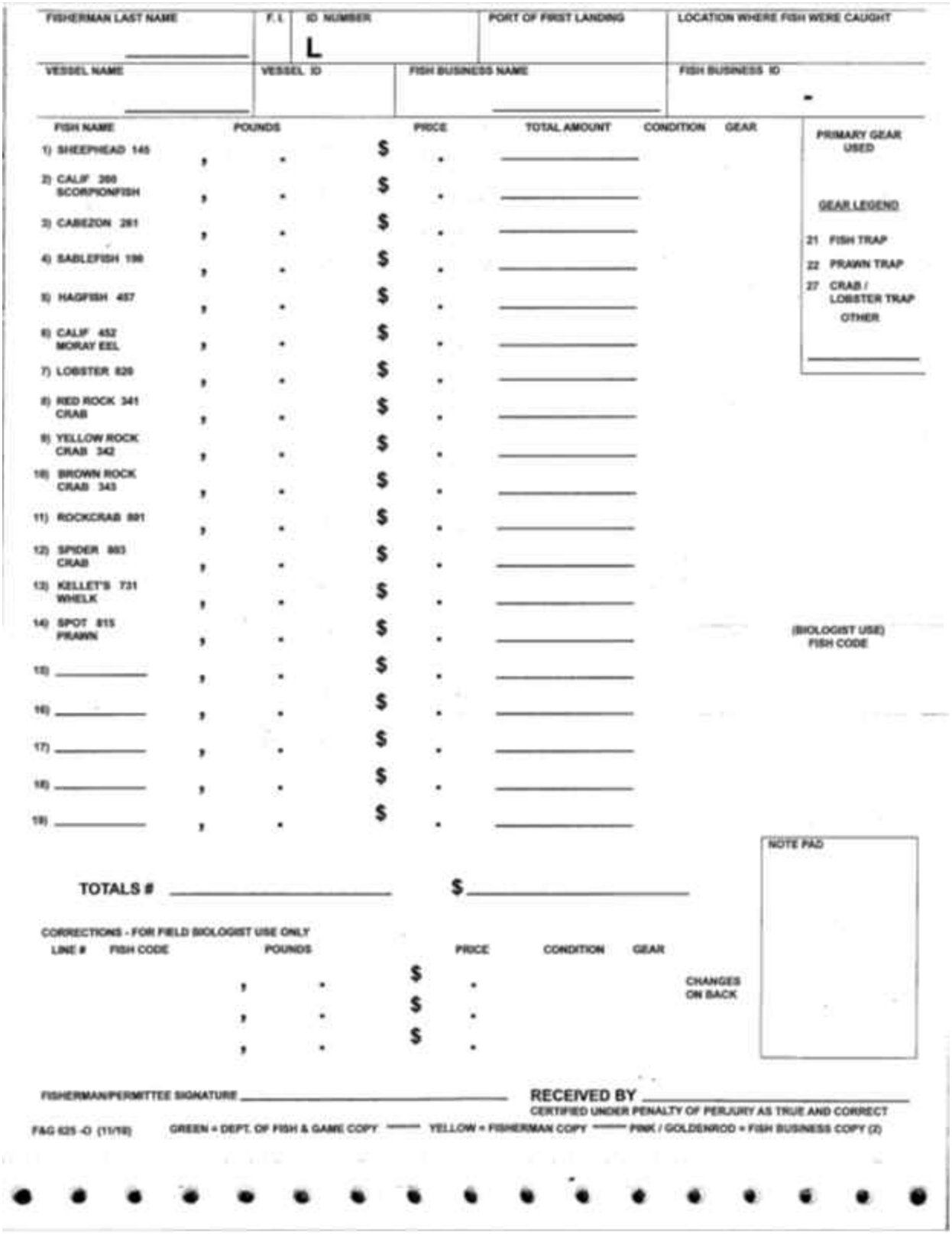
CREW ID NUMBERS
L L

TRAP LOCATIONS (NEAREST LANDMARK)	F & G BLOCK NUMBER	DEPTH (IN FEET)	No. TRAPS PULLED	No. NIGHTS IN WATER	No. SHORTS RELEASED	No. LEGALS RETAINED	DATE TRAPS PULLED MONTH DAY YEAR
							NOTE PAD:
							☐ MULTI-DAY TRIP/RECEIVERED

LANDING RECEIPT NUMBER (S)
1) 2)

CREW ID NUMBERS
L L

DFG 122 (5/06) GREEN – DEPT. OF FISH & GAME COPY ——— YELLOW – FISHERMAN COPY



FISHERMAN LAST NAME | F. I. | ID NUMBER L | PORT OF FIRST LANDING | LOCATION WHERE FISH WERE CAUGHT

VESSEL NAME | VESSEL ID | FISH BUSINESS NAME | FISH BUSINESS ID

FISH NAME	POUNDS	PRICE	TOTAL AMOUNT	CONDITION	GEAR
1) SHEEPHEAD 145	, .	$.			
2) CALIF 200 SCORPIONFISH	, .	$.			
3) CABEZON 281	, .	$.			
4) SABLEFISH 196	, .	$.			
5) HAGFISH 457	, .	$.			
6) CALIF 452 MORAY EEL	, .	$.			
7) LOBSTER 820	, .	$.			
8) RED ROCK 341 CRAB	, .	$.			
9) YELLOW ROCK CRAB 342	, .	$.			
10) BROWN ROCK CRAB 343	, .	$.			
11) ROCKCRAB 891	, .	$.			
12) SPIDER 893 CRAB	, .	$.			
13) KELLET'S 731 WHELK	, .	$.			
14) SPOT 815 PRAWN	, .	$.			
15)	, .	$.			
16)	, .	$.			
17)	, .	$.			
18)	, .	$.			
19)	, .	$.			

PRIMARY GEAR USED

GEAR LEGEND
21 FISH TRAP
22 PRAWN TRAP
27 CRAB / LOBSTER TRAP
OTHER

(BIOLOGIST USE) FISH CODE

NOTE PAD

TOTALS # $

CORRECTIONS - FOR FIELD BIOLOGIST USE ONLY

LINE #	FISH CODE	POUNDS	PRICE	CONDITION	GEAR
		, .	$.		
		, .	$.		
		, .	$.		

CHANGES ON BACK

FISHERMAN/PERMITTEE SIGNATURE RECEIVED BY

CERTIFIED UNDER PENALTY OF PERJURY AS TRUE AND CORRECT

F&G 625 -O (11/10) GREEN = DEPT. OF FISH & GAME COPY — YELLOW = FISHERMAN COPY — PINK / GOLDENROD = FISH BUSINESS COPY (2)

Landing Receipt

Appendix V: Climate Change Vulnerability of the CA Spiny Lobster

By Dr. Douglas J. Neilson

The science of climate change (CC) involves the study of climatic stressors (e.g., atmospheric air temperature) affected by increasing man-made atmospheric greenhouse gas (GHG) concentrations, and their associated environmental responses. An exhaustive discussion of all the potential stressors is beyond the scope of this chapter and only a small portion, deemed to have obvious potential impacts when applied to the California spiny lobster fishery, will be covered. For the most part, these impacts are restricted to those acting directly on the lobster or fishery. There are understood to be indirect impacts as well, where CC affects some aspect of the environment that cascades down to the lobster. While changes to lobster habitat included in ecosystems that also include lobster will be briefly discussed, the larger topic of how ecosystem interactions are affected by CC is beyond the scope of this chapter. As our understanding of CC evolves, and direct or cascading responses in the environment are newly recognized or better resolved, this chapter should be revisited. As such, this chapter should be considered an initial step in an ongoing effort to addressing lobster-related CC issues.

This chapter will briefly discuss the life history and associated habitats for the California spiny lobster which will be important to understand as we discuss CC vulnerabilities. What CC is, and the underlying cause – GHG, and specifically changes in CO_2 - will then be discussed. Since CC is understood to be a global phenomenon and is being driven at this scale, this chapter will first lay out how the selected climate variables are expected to change over time. The relatively local response to CC in California will then be discussed, followed by how the spiny lobster population, habitat, and fishery, are potentially affected. Finally, ocean acidification will be briefly addressed. Ocean acidification is not a result of CC but rather is caused by the same rise in atmospheric CO_2 that contributes to CC.

Spiny Lobster Life History and Habitats

The California spiny lobster is endemic to the west coast of North America from Monterey, California southward at least as far as Magdalena Bay, Baja California (Wilson, 1948; Schmitt, 1921), with a small isolated population in the northwestern corner of the Gulf of California (Kerstitch, 1989). The main portion of the population resides in Mexico, and relatively few lobsters are found north of Point Conception. In U.S. waters, spiny lobsters are commercially fished from Point Conception south to the Mexican Border. Lobsters spend their larval phase, which can last up to ten months, as part of the plankton (Mai & Hovel, 2007; Mitchell 1971). Carried by currents, lobster larvae have been found as far as 530 km offshore and at depths as deep as 137 m (California Department of Fish and Game, 2001). The final, puerulus, stage is a strong swimmer and moves inshore in search of shallow, vegetated habitats such as eelgrass or surfgrass beds (Mai & Hovel, 2007) in which to settle. Survival of the individual is therefore dependent on both the starting distance offshore of the pueruli and its ability to locate suitable habitat. Sub-adult and adult lobster are bottom dwellers and found at depths ranging from the intertidal to 64 m (California Department of Fish and Game, 2001)

Spiny lobster are found in rocky areas often with plant communities dominated by giant kelp (*Macrocystis* sp.), feather boa kelp (*Egregia* sp.), coralline algae (*Corallina* sp.), and surf grass (*Phyllospadix* sp.) (Lindberg, 1955). They are also associated with eel grass (*Zostera* sp.) which flourishes in sandy areas (California Department of Fish and Game, 2001). Spiny lobsters are a major predator of benthic invertebrates and act as a keystone species preying on mussels along rocky shores (Robles et al., 1990) and on sea urchins in kelp forests (Tegner and Levin, 1983; Lafferty, 2004).

Climate Change

Climate Change is occurring as evidenced by observations of increasing global air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level (IPCC, 2007). The scientific consensus is that the driving force behind this change is man-made sources of greenhouse gases (GHG) – carbon dioxide (CO_2), methane, and nitrous oxide - and globally the average net effect of human activities since pre-industrial times has been one of warming. While methane and nitrous oxide concentrations are significant contributors to climate change, CO_2 is the currently the primary contributor and will be the focus of this discussion. The primary source of CO_2 is fossil fuel consumption.

In 2005, global atmospheric CO_2 levels were measured at 379 ppm, far exceeding the range observed over the last 650,000 years, and emissions grew by approximately 80% between 1970 and 2004 (IPCC 2007). In 2012, average atmospheric CO_2 levels had grown to 392.6 ppm globally, and exceeded 400 ppm for the first time at several arctic sites (Blunden and Arndt, 2013).

Responses to Climate Change

Local responses to climate change may not follow the global trend in either magnitude or direction of response. Because of this, global trends will be discussed briefly to introduce each climate stressor and lay the foundation on which to compare and contrast the local, California responses.

Global Responses

The IPCC (2007) reported that eleven of the twelve years from 1995 to 2006 ranked among the twelve warmest years since 1850. All of the ten warmest years on record have occurred since 1998 including 2012 (Blunden and Arndt, 2013), and 1998 was the only year in the 20th century hotter than 2012 (NOAA 2012). The trend appears to be continuing; July 2013 was the 37th consecutive July and 341st consecutive month with a global temperature above the 20th century average (Osborne and Lindsey, 2013). The rate of warming has also increased. Since 1880, the decadal rate of increase has been 0.11°F increasing to 0.28°F per decade since 1970 (NOAA, 2012).

Global average sea level rise (SLR) has occurred at an average rate of 1.8 mm yr^{-1} since 1961, increasing to 3.1 ± 0.7 mm yr^{-1} since 1991 (IPCC, 2007). Estimations of future global sea rise are on the order of 8-23 cm (3.15-9.06 in) by 2030, 18-48 cm by 2050, and up to 140 cm by 2100, all relative to sea level in 2000 (NRC 2012). These estimates vary however based upon which models are used and which variables are included; the NRC values, for instance, are higher than the IPCC (2007) estimation (18-59 cm) for the year 2100.

California Responses

Air temperatures are expected to increase more over continental land masses than over the oceans (Bakun, 1990). Along the California coastline, this will result in atmospheric pressure gradients leading to intensification of winds (Field et al., 1999). Stronger winds, in turn, are expected to intensify upwelling along the west coast of the US. Under normal conditions, intensification of upwelling would lead to cooler water temperature. However, higher air temperature can also lead to stronger thermal stratification and a deepening of the thermocline (Roemmich and McGowan, 1995), reducing the cooling effect of, and nutrient delivery by, the upwelling. On millennial timescales, upwelling has been positively correlated to air temperatures (Pisias et al., 2001), and upwelling along the California coast has increased over the last 30 years (Snyder et al., 2003). Previous warm periods were associated with reduced current flow in the California Current system (Pisias et al., 2001).

SLR will vary depending on a number of factors both long-term and short term. These include storm events, melting ice and glaciers, circulation patterns, climate variations, and tectonics. (NRC, 2012). Modeled SLR at west coast tide gage locations predicted relative sea level rises of around 0.35 ± 0.25 mm yr^{-1}. Total SLR off Los Angeles, relative to 2000, is projected at 14.7 ± 5.0 cm (5.79 ± 1.97 in) by 2030, 28.4 ± 9.0 cm by 2050, and 93.1 ± 24.9 cm by 2100.

The primary force behind year-to-year variability along the California coast is the El Niño Southern Oscillation (ENSO) (Field et al., 1999). The name refers to coupled ocean-atmospheric processes where the Southern Oscillation is a flip-flop of atmospheric pressure over the south Pacific, and where El Niño refers to the in-water response. El Niños result in rapid warming events in California, increased storminess, and drops in phytoplankton and kelp productivity. Strong El Niño events can increase sea levels 10 to 30 cm (3.94 – 11.81 in), raise sea surface temperature (SST) an average of 2.7 °F, increase stratification, and decrease nutrient delivery into surface waters, all over a few winter months. El Niño events persist for a few months to a year with some extreme El Niños lasting for two years. La Niña displays an equally abrupt and short-lived effect on California coastal ecosystems. However, in the case of La Niña, SST is suppressed (-1.8 °F on average). Currently it is unknown whether ENSO activity will be enhanced, or damped, or whether the frequency of ENSO events will change (Collins et al., 2010)

Lobster

Increased SST conditions will likely favor the spiny lobster fishery since behavioral changes related to warm temperatures, increase harvest (Pringle, 1986; Koslow et al., 2012). Also, California is situated at the northern edge of the lobster's current domain range; lower numbers of lobster north of Point Conception are generally attributed to the cooler water found there. Increasing SST could therefore result in a general extension northward of lobster, particularly during El Niño years or times of enhanced Davidson Current northward flow. These latter two conditions are also thought to provide episodic transport of larvae north from Mexico which would also increase the spiny lobster abundance over time. (Pringle, 1986).

As SST increases, assemblages within southern California kelp forests will shift to more dominance of southern species – such a shift has already been observed in some kelp forests (Field et al. 1999). Kelp itself may be impacted by increasing SST and reduced nutrients, although it is unclear at this point exactly what response, positive or negative, kelp forests will have relative to climate change. Likewise, It is unclear if the California spiny lobster, being more tropical, would be directly (i.e. physiologically) affected negatively by increasing SST.

There is an increased likelihood of disease with higher water temperatures. As an example, the bacterial infection, epizootic shell disease, is present in American lobster stocks on the east coast of the US and is possibly linked to higher water temperatures. Catchability increases with increasing temperature. Considered alone, this could lead to higher harvests in the future. Even if countered by other climate change factors, variations in catchability would still need to be understood and addressed in stock assessment and modeling efforts for accurate results.

It is still unclear whether increased stratification or upwelling, countering stratification, will be the dominant response to climate change. Increased stratification, however, is projected to lead to declines in zooplankton abundance (Roemmich and McGowan, 1995) which could adversely affect the zooplankton larval phase of the spiny lobster directly or indirectly by reducing food sources. Conversely, upwelling and alongshore transport are strong determinants of dispersal and recruitment (Gaylord and Gaines, 2000; Connolly et al., 2001). Harley et al. (2006) cited modeling work that suggested increased

offshore movement (e.g., upwelling) can be negatively correlated with population size in benthic species. Very strong upwelling, therefore, could reduce the ability of lobster to maintain adult populations in some areas. This is probably more applicable to regions north of Point Conception and, as such, would act to reduce northward movement of the lobster range rather than impact the southern California population.

Increasing SLR will lead to coastal inundation and increased coastal erosion, in particular when accompanied by expected higher intensity storm events coinciding with high tidal periods. Coastal erosion can lead to silting of coastal habitat necessary for the lobster, in particular seagrass beds used for settlement and adult foraging. Even in areas spared from excessive silting, seagrass beds would still be sensitive to changing wavelengths of light brought about by increased turbidity and water depth. The fishing industry could also experience flooding at dock and harbor facilities. This would potentially affect both the fishermen and dealers.

Seagrass beds could be impacted by more frequent, higher intensity storm events damaging part of a bed, or completely destroying it. These events could also become relatively common occurrences. Damage or destruction of seagrass beds would impact lobster through reduction in suitable habitat for puerulus settlement. This could result in adult mortality exceeding recruitment leading to local loss of populations. Similarly, kelp beds could be damaged or destroyed at more frequent intervals. Lobsters are considered, along with urchins and kelp, to be necessary for the health of the kelp forest ecosystem. If kelp is lost at higher frequencies the result could be an imbalance in the kelp/lobster/urchin relationship leading ultimately to loss of the ecosystem (and by extension, the lobster located there). In terms of the fishery, these storm events could also affect the fishermen economically by hindering their ability to fish, and by the destruction of gear.

Changes to the lobster stock may also occur via altered larval distribution and settlement, loss or gain of coastal nursery habitats, and altered abundances of strongly interacting species (e.g. predators and prey) (Pecl et al. 2009). Though first-stage larval abundance generally is correlated with SST (Fig. 5), changes in wind patterns and storm frequency may alter larval dispersion and settlement (Caputi et al. 2010). Because spiny lobster larvae spend up to 10 months in the plankton stage, and the final larval stage actively swims from offshore to coastal nursery habitats, settlement success is dependent on the planktonic larvae's distance offshore at the time of final molt. Any change in currents and storms that result in farther offshore dispersion will have an adverse effect on harvest in the future.

Ocean Acidification

Although not specifically caused by climate change, ocean acidification is a separate phenomenon also related to increasing amounts of atmospheric CO_2. The ocean absorbs CO_2 from the atmosphere naturally and acts as a buffer for atmospheric CO_2. The pH of the oceans, however, is affected by the level of absorbed CO_2. With increasing levels of atmospheric CO_2, the ocean's CO_2 level also rises and the water becomes more acidic. It has been estimated that the oceans have absorbed half of the anthropogenic-induced CO_2 from the atmosphere (Pecl et al., 2009), and this has resulted in a more acidic ocean. (Caldeira and Wickett, 2003; Royal Society, 2005; Pecl et al, 2009). As acidity continues to increase, there will be increasingly adverse effects on many organisms that use calcium carbonate for their shells and skeletons since calcium carbonate will dissolve as acidity increases. Water corrosive enough to dissolve seashells has been observed off California and similar occurrences are expected to become more frequent (Feely, 2008). The types of organisms potentially affected include snails and mussels, corals, and many phytoplankton species. It is unclear if there will be any adverse effects of

acidification directly on lobster (Pecl et al., 2009). Also, distribution, extent, and composition of coastal vegetated habitats that house lobster all may change due to altered dissolved CO_2 concentrations.

References

Barsky, K. C. 2001: California Spiny Lobster. In: *California's Living Marine Resources: A Status Report*, University of California Press. 98-100.

Bakun, A. 1990. Global climate change and intensification of coastal ocean upwelling. Science. 247:198-201.

Blunden, J., and D. S. Arndt, Eds., 2013: State of the Climate in 2012. *Bull. Amer. Meteor. Soc*., **94** (8), S1–S238.

Caldeira, K. and M. E. Wickett. 2003. Anthropogenic carbon and ocean pH. Nature 425:365-365

California Department of Fish and Game. 2001. Supplemental Environmental Document – Ocean Sport Fishing of Spiny Lobster (Section 27 through 30.10, Title 14, California Code of Regulations). State of California. Resources Agency. 44 p.

Caputi, Nick; Melville-Smith, Roy; de Lestang, Simon; et al., 2010: The effect of climate change on the western rock lobster (Panulirus cygnus) fishery of Western Australia, *Can. J. Fish. Aquat. Sci*. **67**, 85-96.

Collins, Mat, Soon-Il An, Wenju Cai, Alexandre anachaud, Efic Guilyardi, Fei-Fei Jin, Markus Jochum, Matthieu Langaigne, Scott Power, Axel Timmermann, Gabe Vecchi and Andrew Wittenberg. 2010. The impact of global warming on the tropical Pacific Ocean and El Nino. Nature Geoscience 3, 391-397. doi:10.1038/ngeo868.

Feely, R. A., C. L. Sabine, J. M. Hernandez-Ayon, D. Ianson, and B. Hales. 2008. Evidence for upwelling of corrosive "acidified" water onto the continental shelf. Science 320:1490-1492.

Field, C.B., G.C. Daily, F.W. Davis, S. Gaines, P.A. Matson, J. Melack, and N.L. Miller. 1999. *Confronting Climate Change in California: Ecological Impacts on the Golden State*. Union of Concerned Scientists, Cambridge, MA and Ecological Society of America, Washington, DC.

Harley, Christopher D.G., A. Randall Hughes, Kristin M. Hultgren, Benjamin F. Miner, Cascade J.B. Sorte, Carol S. Thornber, Laura F. Rodriguez, Lars Tomanek and Susan L. Williams. 2006. The impacts of climate change in coastal marine systems. Ecol. Lett. **9**:228-241.

IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor, and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Johnson, Craig R.; Banks, Sam C.; Barrett, Neville S.; et al., 2011: Climate change cascades: Shifts in oceanography, species' ranges and subtidal marine community dynamics in eastern Tasmania. *J. Exp. Mar. Bio.,* **400**:17-32.

Kerstitch, Alex N. 1989. Sea of Cortez marine invertebrates. Sea Challengers. 114 p.

Koslow, J.A., L. Rogers-Bennett, D.J. Neilson, 2012: A time series of California spiny lobster (*Panulirus interruptus*) phyllosoma from 1951 to 2008 links abundance to warm oceanographic conditions in southern California. *CALCOFI Reports* **53**, 132-139.

Lafferty, K.D. 2004. Fishing for lobsters indirectly increases epidemics in sea urchin. Ecological Applications **14**:1566-1573.

Lindberg, R.G. 1955. Growth, population dynamics, and field behavior in the spiny lobster, *Panulirus interruptus* (Randall). Univ. California Publications in Zoology **59**:157-247.

Mai, Thien T., and Kevin A. Hovel. 2007. Influence of local-scale and landscape-scale habitat characteristics on California spiny lobster (*Panulirus interruptus*) abundance and survival. Marine and Freshwater Research, **58**:419-428.

Mitchell, J.R. 1971. Food preferences, feeding mechanisms and related behavior in phyllosoma larvae of the California spiny lobster, *Panulirus interruptus* (Randall). M.S. Thesis, San Diego State University.

Neilson, D.J., 2011: *Assessment of the California Spiny Lobster (Panulirus interruptus).* Final, post technical review, report submitted to and approved by the California Fish and Game Commission. 138p.

NOAA National Climatic Data Center, State of the Climate: Global Analysis for Annual 2012, published online December 2012, retrieved on August 29, 2013 from http://www.ncdc.noaa.gov/sotc/global/2012/13.

NRC, Committee on Sea Level Rise in California, Oregon, and Washington. 2012. Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. National Academies Press, Washington, DC. 210p.

Orr, J. C., V. J. Fabry, O. Aumont, L. Bopp, S. C. Doney, R. A. Feely, A. Gnanadesikan, N. Gruber, A. Ishida, F. Joos, R. M. Key, K. Lindsay, E. Maier-Reimer, R. Matear, P. Monfray, A. Mouchet, R. G. Najjar, G. K. Plattner, K. B. Rodgers, C. L. Sabine, J. L. Sarmiento, R. Schlitzer, R. D. Slater, I. J. Totterdell, M. F. Weirig, Y. Yamanaka, and A. Yool. 2005. Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms. Nature 437:681-686.

Osborne, Susan, and Rebecca Lindsey. 2012 State of the Climate: Earth's Surface Temperature. published online August 2, 2013, retrieved on August 29, 2013 from http://www.climate.gov/news-features/understanding-climate/2012-state-climate-earths-surface-temperature.

Pecl, G., Frusher, S,. Gardner, C., Haward, M., Hobday, A., Jennings, S., Nursey-Bray, M., Punt, A., Revill, H., van Putten, I., 2009: The east coast Tasmanian rock lobster fishery –vulnerability to climate change impacts and adaptation response options. Report to the Department of Climate Change, Australia. Commonwealth of Australia.

Pisias, N.G., A.C. Mix, and L. Heusser. 2001. Millenial scale climate variability of the northeast Pacific Ocean and northwest North America based on radiolarian and pollen. Q. Sci. Rev. **20**:1561-1576.

Pringle, J.D., 1986: California spiny lobster (*Panulirus interruptus*) larval retention and recruitment: a review and synthesis. *C. J. Fish. Aquatic Sciences* **43**, 2142–2152.

Robles, C., D. Sweetnam and J. Eminike. 1990. Lobster predation on mussels: shore-level differences in prey vulnerability and predation preference. Ecology. **71**:1564-1577.

Roemmich, D, and J.A. McGowan. 1995. Climate warming and the decline of zooplankton in the California current. Science. 267:1324-1326.

Royal Society. 2005. Ocean acidification due to increasing atmospheric carbon dioxide. The Royal Society: the science policy section, London

Schmitt, W.L. 1921. The Marine decapod crustacean of California. Univ. Calif. Publ. Zool., **23**:1-470.

Snyder, M.A., L.C. Sloan, N.S. Diffenbaugh, and J.L. Bell. 2003. Future climate change and upwelling in the California Current. Geophys. Res. Lett. **30**:1823.

Tegner, M.J. and L.A. Levin. 1983. Spiny lobsters and sea urchins: analysis of a predator prey interaction. Journal of Experimental Marine Biology and Ecology. **73**:125-150.

Wilson, Robert C. 1948. A review of the southern California spiny lobster fishery. Calif. Fish Game. **34**(2):71-80.

Appendix VI: Economic Report

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H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

An Economic Report on the Recreational and Commercial Spiny Lobster Fisheries of California

Photo Courtesy of: California Department of Fish and Wildlife

Prepared by:

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3 April 2013

We are grateful for the participation of many recreational and commercial spiny lobster fishermen in the data-gathering component of this report. We thank Kristine Barsky and Kai Lampson of CDFW for their support and assistance. We also acknowledge the extensive assistance provided by staff at H. T. Harvey & Associates and at CDFW.

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Executive Summary

- The project scope was to update annual expenditure estimates associated with commercial spiny lobster fishing in California from Hackett et al. (2009); to use the California Ocean Fish Harvester Economic (COFHE) model from Hackett et al. (2009) to estimate the economic impacts associated with ex-vessel commercial landings in California; to develop a spiny lobster recreational fishing sampling design and survey questionnaire; and to use the survey results to estimate recreational fishing expenditures in California.
- Based on 2012 interview data and prior "bottom-up" expenditure modeling from Hackett et al. (2009), we estimate that commercial fishermen targeting spiny lobster in California spent ~$10,555,000 on fishing- and vessel-related expenditures in the 2011-12 fishing season.
- Based on the mean of total ex-vessel revenue from the 2009-10 through 2011-12 commercial fishing seasons in California, we estimate that the multiplier effect associated with commercial landings resulted in total annual statewide economic output of ~$22,523,000 and 323 jobs. Of the California counties in which spiny lobster landings occurred, San Diego County experienced the largest share of statewide output and jobs. Based on 2012 survey data we estimate that annual expenditures in the recreational fishery in California were ~$37,093,000. Note that not all of these expenditures necessarily occur in California. Also note that these are expenditures and not total economic impact, which is beyond the scope of this report.
- The average recreational fisherman has fished spiny lobster for nearly 9 years and spends an average of just over 2/3 of a day on a typical fishing trip. Spiny lobster fishing constitutes an average of just over 1/3 of a recreational fisherman's total fishing effort in a given year. Private vessels provided just over 1/2 of all access to the recreational fishery, and on average about 8% of a vessel's annual usage was estimated to be targeted at spiny lobster fishing.

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Section 1.0 Introduction

The California spiny lobster, *Panulirus interruptus* (hereafter spiny lobster), occurs in shallow, rocky coastal areas from Point Conception (Santa Barbara County) into Mexico, including offshore islands and banks (Barsky 2003). A significant commercial and recreational fishery exists for spiny lobster, and the season in California runs from early October to mid-March, with approximately 2/3 of landings usually being made from October through December. Commercial fishermen targeting spiny lobster set baited, wire traps from vessels that usually range between 22 to 49 feet in length. Spiny lobster has been a relatively lucrative fishery. A total of 751,000 pounds of spiny lobster was landed by commercial fishermen in 2011 in California at a total ex-vessel value of ~$12,910,000, yielding an average price per pound of ~$17.00 (CDFW 2013). In 2012, preliminary data indicate roughly similar landings as 2011. Price per pound fluctuates throughout the season, and in the 2012/13 fishing season it ranged from $12 to $25 per pound. Export markets (e.g., China) have helped drive higher prices in the commercial fishery in recent years (Barsky, pers. comm., 2013).

This economic report provides an update of direct expenditure information by commercial fishermen described in Hackett et al. (2009). Commercial expenditure updating occurred by way of interviewing a set of commercial spiny lobster fishermen and identifying the extent to which mean expenditure levels by category have changed since 2007. This report also utilized the California Ocean Fish Harvester Economic (COFHE) commercial fishery economic impact model from Hackett et al. (2009) to estimate total economic impact. This was done by applying the COFHE multipliers (available at http://www.dfg.ca.gov/marine/economicstructure.asp) to the mean of total seasonal ex-vessel revenue averaged over the 2009-10, 2010-11, and 2011-12 fishing seasons. Commercial fishery economic impacts were estimated at the county, region, and statewide scales. Note that in Hackett et al. (2009) the spiny lobster fishery was grouped with crab in the "Lobster and Crab" operational configuration (OC). In contrast, this report focuses entirely on the targeted spiny lobster fishery.

This report also includes an estimate of the direct expenditures made by recreational fishermen targeting spiny lobster in the recreational fishery off the coast of California. These direct expenditures were estimated from survey data gathered in collaboration with California Department of Fish and Wildlife (CDFW) using the spiny lobster report card database. It is beyond the scope of this study to estimate economic impact. To do so one would need to "margin" the retail expenditures to get a wholesale estimate, group expenditures by appropriate economic sector category, and apply multipliers (e.g., RIMS II) or use economic impact software (e.g., IMPLAN).

In Section 2 below we summarize commercial expenditures in the spiny lobster fishery. In Section 3 we describe economic impacts associated with the mean of the last 3 season's worth of ex-vessel revenue from commercial spiny lobster harvest. In Section 4 we summarize estimated expenditures in the spiny lobster recreational fishery. The survey instruments used to elicit commercial and recreational fishing data are provided in the Appendices to this report.

Section 2.0 Estimated Commercial Expenditures in the Spiny Lobster Fishery

The overall goal for this portion of the report was to update the expenditure information for the "lobster and crab" operational configuration (OC) from Hackett et al. (2009). Due to resource constraints, we were unable to reproduce the comprehensive survey methodology used in Hackett et al. (2009). Instead we used a key-informant interview methodology in which we asked commercial spiny lobster fishermen the extent to which (inflation-adjusted) expenditures by category (averaged at the individual fisherman level) reported in Hackett et al. (2009) reflected expenditures for a "typical" commercial fisherman. We asked contacts at CDFW to identify commercial fishermen who were likely to have a broad, industry-wide perspective and who would thus be able to reflect on the expenditures made by a typical commercial spiny lobster fisherman.

Annual average fixed and variable cost information from the lobster and crab OC in Hackett et al. (2009) was provided to the interviewees in numerical and pie-chart format (see Appendix A for an example used for the small-vessel stratum). These "cost sheets" were adjusted for inflation (2007 nominal expenditures from Hackett et al. (2009) were adjusted to 2012 values). Interviewees were asked to determine a percentage by which those expenditures should be increased or decreased to reflect the expenditure experience of a "typical" spiny lobster commercial fisherman. Some expenditure categories from Hackett et al. (2009) such as "electrical gear" and "other gear" purchases and repairs were consolidated into a "gear purchases" and "gear repairs" category. The cost sheets were stratified into vessel size classes used in Hackett et al. (2009) – small (< 26 feet), medium (26 to 36 feet), and large (> 36 feet). Cost sheets for a given size class were given to selected fishermen with vessels of the same size class, and afterwards personnel from H. T. Harvey & Associates called to interview the commercial fishermen and complete the questionnaire component of the cost sheets.

A total of 10 commercial fishermen participated in the interviews. We use the term "interviewee" below to refer to these commercial spiny lobster fishermen who were interviewed in 2012 to help us update Hackett et al. (2009) expenditures circa 2007. Of the 10 interviewee responses, 8 were determined to be useable, while 2 were not (addressed below). When participants reported a range of values (e.g., "bait expenses from the cost sheet need to be increased by 10-30%"), then the mean of the range (in this instance, 20%) was coded and used in the analysis. If a fisherman simply indicated that costs should "increase" or "decrease", those data were treated as a blank (unanswered) and not used in the following analysis (there were very few of these responses). Percentage changes for each cost category were averaged within each vessel size class (small size class and a combined medium-large size class).

As noted above, we asked interviewees to report a "typical" commercial fisherman's expenditures within a vessel size class in the spiny lobster fishery, and to indicate the percentage increase or decrease that should be made to the 2007 expenditure information from Hackett et al. (2009). Many of the interviewees indicated that expenditures we reported from the 2007 study were far too low, even after the figures were inflated to

current dollars, and suggested very large expenditure increases. When such expenditure increases were implemented fleet-wide, net revenues (e.g., ex-vessel revenue less reported expenditures) were estimated to be negative. Conversations with CDFW contacts indicated that negative net revenues were very unlikely for this lucrative fishery. We then turned to an analysis of activity level. An analysis of trip frequency determined that the interviewees selected by CDFW were more active fishermen than the average commercial fisherman. As a result it is likely that the interviewees were reporting "typical" expenditures that actually reflected the experience of the top 10-20% of commercial fishermen. As many categories of estimated expenditures increase with activity level, applying percentage increases from these highly active fishermen would result in a substantial over-estimate of fleet-wide expenditures. To correct for this likely overestimate of expenditures, we developed an "activity-based" weighting system.

First we used the expenditure estimation models by category from Hackett et al. (2009) and applied those to each commercial fisherman in the commercial spiny lobster fishery based on their vessel type, home port, and number of trips. Next we inflated these expenditures to current dollars. We then adjusted these expenditures using the mean percentage change by expenditure category provided by the commercial spiny lobster interviewees (one set of mean percentage change values was calculated from small-vessel interviewees, and another set was calculated from combined medium and large vessel interviewees). This percentage change is likely to be too high for most commercial spiny lobster fishermen, for reasons described in the preceding paragraph. Accordingly, we then applied the activity-based weight to each expenditure category for each commercial spiny lobster fisherman in a given vessel size class. The activity-based weight is a quotient equal to the individual fisherman's total number of fishing trips in 2011 divided by the mean number of fishing trips by the relevant interviewee group in 2011. The effect of this activity-based weight is to deflate (inflate) the percentage change from the interviewee group when an individual fisherman's level of activity is less than (greater than) that of the interviewee group. This weighting system was not applied to expenditure categories that are unlikely to be related to activity level – slip fees, member association fees, harbor fees, and interest.

Note that responses from 2 interviewees remained inexplicable and substantial outliers even after consideration of their vessel size, number of trips, and other observable characteristics. This raised concern about their reliability, ultimately resulting in those interviewee responses not being included in the analysis.

We also discovered that while we asked participants to provide an annualized value for engine, hull, and other major capital purchases, the responses were consistent with reporting an actual purchase price rather than an annualized "debt service" type value. For example, we might receive a reported annual expenditure of $16,000 for engine purchase, when what we wanted was the "annualized" cost (which might be ~ $1,800 per year as debt service on a 10 year loan). We thus needed to annualize these capital expenditure percentage change values from the interviewee group. To do so, we used data on frequency of capital purchases from Hackett et al. (2009) to develop an additional "annualized capital purchase" weighting system. The annualized capital purchase weight simply equals the frequency of non-blank and non-zero capital expenditure responses from the commercial fisherman survey in Hackett et al. (2009). Annualized engine and hull purchase expenditures for each commercial spiny lobster fisherman were thus estimated the same way as

other expenditure categories described in the preceding paragraph, except that the additional annualized capital purchase weight was also applied.

Commercial license, permit, and boat registration expenditures were calculated from CDFW 2011/12 fees. Once we estimated all expenditure categories for each individual commercial spiny lobster fisherman as described above, a fleet-wide expenditure total was built from the bottom up by summing expenditures estimated for each commercial fisherman. The resulting annual expenditure estimates for the commercial spiny lobster fishery are provided in Table 1. We estimate that commercial spiny lobster fishermen spent $10,555,000 in expenditures related to spiny lobster fishing for the 2011-12 fishing season. Nearly one half of this figure was estimated to derive from crew wages, bait, and fuel.

Table 1. Annual Estimated Expenditures for the California Spiny Lobster Commercial Fishing Fleet for Fishing Season 2011-12

	Estimated Total Expenditures			
Vessel Size Categories	**< 26**	**26 - 36**	**> 36**	**Grand Total**
Fixed Expenditures				
Hull Repair	51,754	191,515	129,482	**372,751**
Hull Purchase	37,380	100,317	32,348	**170,045**
Engine Repair	116,752	216,295	65,951	**398,997**
Engine Purchase	65,139	152,793	10,490	**228,423**
Gear Repair	195,973	216,341	161,195	**573,509**
Gear Purchase	116,509	217,036	119,781	**453,326**
Insurance	73,819	169,990	102,172	**345,981**
Storage	110,863	69,906	24,653	**205,422**
Interest	0	79,243	78,019	**157,262**
Registration and License Fees	54,582	57,890	20,675	**133,147**
Slip	181,581	317,976	142,250	**641,807**
Variable Expenditures				
Bait	733,113	590,865	282,964	**1,606,941**
Food	54,218	126,005	69,993	**250,217**
Fuel	496,234	508,249	325,447	**1,329,930**
Crew Wages	603,042	900,017	366,229	**1,869,287**
Harbor Fees	0	9,434	3,322	**12,756**
Transportation	250,753	139,917	65,304	**455,974**
Member Fees	3,398	10,869	3,827	**18,094**
Federal Tax	238,043	618,720	263,595	**1,120,359**
State Tax	44,170	117,054	50,045	**211,268**
	Total			
Grand Total Expenditures	3,427,322	4,810,431	2,317,742	**10,555,495**

Section 3.0 Economic Impact Estimates for the Commercial Spiny Lobster Fishery

3.1 Overview of Economic Impact Assessment

The material below draws closely from Hackett et al. (2009). Firms in every industry are linked through their purchases and sales with firms in other industries and with households. Inter-industry linkages and the impact of activities in one industry on overall household income, employment, business sales, tax revenues, and other economic conditions are important but not always apparent by examining direct industry statistics. Input-output models display direct, indirect, and induced economic linkages, and measure impacts of changes or proposed changes in industrial activity or in government policies that are expected to change industrial activity. Direct impacts are associated with the direct purchases of inputs (e.g., labor and intermediate inputs) by an industry to support an increase in industry output. Indirect impacts are associated with additional "rounds" of inter-industry purchases and sales that are generated as a result of direct impacts. Induced impacts are from increases in household expenditures that result from increases in household income associated with direct and indirect impacts.

Input-output models form the core of modern economic impact assessment decision support tools. Hackett et al. (2009) offers economic impact assessment models for California's commercial fisheries. To build these models, Hackett et al. (2009) collected statewide commercial fishing expenditure and earnings data in 2007 for 20 different OCs or fishery sectors that reflect vessel and gear types and the associated commercial fishing expenditures for target species groups. These expenditure data, combined with CDFW landings and revenue data, were used to develop input-output models with 20 detailed OCs for the state of California, 4 coastal regions within California, and 22 individual counties that make up those coastal regions. These 27 models, collectively called the COFHE Model, were developed by King and Associates, Inc. (coauthors in Hackett et al. 2009) from a widely used and respected regional economic modeling tool called the IMPLAN (IMpact Analysis for PLANning) system (MIG 2013).

The COFHE models are designed to show the economic linkages and impacts of California's commercial fish harvesting industries and how they are affected by external economic, regulatory, or environmental changes that affect ex-vessel revenues. These models show how each commercial fishing OC is linked with other industries and with households. The models were then used to develop economic "multipliers" that show the "ripple" effects of changes in fisheries and fisheries management decisions on the California economy. The multipliers developed through the COFHE model are presented per million dollars of direct sector output.

The most typical use for the COFHE model is to assess the economic impact associated with a regulatory change that has known impacts on ex-vessel revenues due to changes in landings. In this report we apply the COFHE model multipliers to total ex-vessel revenue at county, region, and statewide scales. The resulting economic impact is associated with the existence of the commercial spiny lobster fishery in California. If,

hypothetically speaking, this fishery were newly opened, then the economic impact figures provided below would provide an estimate of the additional economic activity associated with opening the fishery at different geographical scales. Key economic impact terms are defined in Table 2 below.

Table 2. Definitions of Economic Impact Terms Used in this Report

IMPLAN Term	Definition
Direct Effects	The impacts associated with the direct purchases of inputs (e.g., labor and intermediate inputs) by an industry to support a $ 1 increase in industry output.
Indirect Effects	The impacts associated with additional "rounds" of inter-industry purchases and sales that are generated as a result of direct impacts. Indirect impacts include the direct impacts of purchases of inputs (e.g., labor and intermediate inputs) by industries that sell to the industry responsible for the direct impacts, and by the industries that sell to those industries, and so on.
Induced Effects	The impacts associated with increases in household expenditures that result from increases in household income associated with direct and indirect impacts. The inclusion of induced impacts based on "income effects" is what distinguishes Type II multiplier Effects from Type I multiplier effects.
Total Effects	The total of all direct, indirect, induced impacts.
Industry Output	Total industry production, equal to shipments plus net additions to inventory.
Jobs	Annual average number of full time-equivalent jobs, including self-employed individuals.
Employee Compensation	Total payroll costs, including wages and salaries plus benefits.
Indirect Business Tax	Sales, excise fees, licenses and other taxes paid during normal operation. This includes all payments to the government except for taxes based on income.
Labor Income	Sum of Employee Compensation and Proprietor's Income.
Other Property Income	Includes corporate income, rental income, interest and corporate transfer payments.
Proprietor Income	Income from self-employment.
Total Value Added	The value added during production to all purchased intermediate goods and services. This is equal to employee compensation plus proprietor's income plus other property income plus indirect business taxes.

*Source: Adapted from IMPLAN User Guide, Version 2.0

3.2 Economic Impacts Associated with the Mean Value of Ex-Vessel Landings over the 2009-10 through 2011-12 Fishing Seasons

Below we provide economic impact estimates at the county, region, and state-wide scales. Note that these economic impact estimates are based on the mean value of ex-vessel landings over the 2009-10, 2010-11, and 2011-12 spiny lobster commercial seasons. We estimate that the multiplier effect associated with commercial landings resulted in total annual statewide economic output of ~$22,523,000 and 323 FTE jobs (Table 3). Of the California counties in which spiny lobster landings occurred, San Diego County experienced the largest share of statewide output and jobs (Table 4).

Table 3. Economic Impacts for the State of California

	California			
	Direct Effects	**Indirect Effects**	**Induced Effects**	**Total Effects**
Output	$11,188,354	$4,992,389	$6,342,309	$22,523,052
Employee Compensation	$695,893	$1,401,744	$1,778,367	$3,876,004
Proprietor's Income	$3,831,866	$208,003	$293,616	$4,333,496
Labor Income Effect	$4,527,770	$1,609,747	$2,071,983	$8,209,500
Other Property Type Income	$198,604	$691,843	$1,315,695	$2,206,142
Indirect Business Taxes	$750,257	$337,810	$373,031	$1,461,110
Total Value Added	$5,476,632	$2,639,411	$3,760,708	$11,876,751
Jobs	241.4	34.8	46.7	322.8

Table 4. Economic Impacts by County: Los Angeles, Orange, Santa Barbara, San Diego, and Ventura

	Los Angeles				Orange			
	Direct Effects	Indirect Effects	Induced Effects	Total Effects	Direct Effects	Indirect Effects	Induced Effects	Total Effects
Output	$1,943,905	$882,078	$1,098,382	$3,924,364	$1,650,987	$676,320	$790,676	$3,117,983
Employee Compensation	$120,907	$243,046	$310,368	$674,321	$102,688	$197,796	$216,747	$517,231
Proprietor's Income	$665,764	$38,835	$52,973	$757,571	$565,442	$29,148	$40,142	$634,732
Labor Income Effect	$786,671	$281,882	$363,343	$1,431,894	$668,130	$226,945	$256,889	$1,151,963
Other Property Type Income	$34,506	$120,716	$228,897	$384,119	$29,307	$102,006	$173,631	$304,944
Indirect Business Taxes	$130,354	$58,824	$64,413	$253,590	$110,710	$48,917	$49,292	$208,919
Total Value Added	$951,530	$461,423	$656,651	$2,069,603	$808,147	$377,868	$479,811	$1,665,826
Jobs	41.9	6.1	8.2	56.2	35.6	4.8	5.8	46.3

	Santa Barbara				San Diego			
	Direct Effects	Indirect Effects	Induced Effects	Total Effects	Direct Effects	Indirect Effects	Induced Effects	Total Effects
Output	$2,353,173	$659,931	$899,510	$3,912,615	$3,643,257	$1,303,157	$1,665,442	$6,611,856
Employee Compensation	$146,363	$205,255	$259,506	$611,126	$226,603	$394,015	$472,866	$1,093,487
Proprietor's Income	$805,931	$32,763	$44,623	$883,317	$1,247,768	$56,011	$76,763	$1,380,543
Labor Income Effect	$952,296	$238,019	$304,129	$1,494,443	$1,474,375	$450,026	$549,629	$2,474,027
Other Property Type Income	$41,771	$103,191	$205,634	$350,597	$64,671	$193,329	$370,064	$628,061
Indirect Business Taxes	$157,797	$53,097	$58,194	$269,088	$244,306	$100,142	$107,902	$452,350
Total Value Added	$1,151,864	$394,307	$567,957	$2,114,128	$1,783,352	$743,494	$1,027,595	$3,554,438
Jobs	50.8	6.0	7.7	64.4	78.6	10.8	13.3	102.8

	Ventura			
	Direct Effects	**Indirect Effects**	**Induced Effects**	**Total Effects**
Output	$1,597,033	$517,177	$582,053	$2,696,263
Employee Compensation	$99,332	$160,609	$166,446	$426,387
Proprietor's Income	$546,963	$18,479	$26,436	$591,880
Labor Income Effect	$646,295	$179,088	$192,883	$1,018,267
Other Property Type Income	$28,349	$76,490	$135,721	$240,560
Indirect Business Taxes	$107,092	$41,226	$39,983	$188,301
Total Value Added	$781,738	$296,804	$368,587	$1,447,128
Jobs	34.5	4.2	4.9	43.5

Section 4.0 Estimated Expenditures in the Spiny Lobster Recreational Fishery

We developed a recreational survey instrument that, like other recreational fishing surveys, seeks expenditure information associated with spiny lobster fishing. Capital expenditures on vessel and non-specific gear are weighted by the reported percentage of targeted usage in the spiny lobster recreational fishery. The survey instrument is provided in Appendix B of this report. A stratified random sampling design was also developed for CDFW. In order to preserve confidentiality, CDFW conducted the telephone surveys and provided us with tabulated results. We begin with an overview of the survey methodology, and then provide demographic summary information and expenditure estimates drawn from the tabulated results of the survey.

4.1 Survey Methodology

A stratified random sampling design was developed for sampling spiny lobster recreational fishermen, as it is likely that there are substantially different levels and types of expenditure across groups of fishermen. Stratified sampling takes advantage of the ability to create groups where the target of interest (i.e., angler expenditures) is most similar among units (i.e., recreational fishermen) within a stratum, which helps reduce variation of the overall estimate (Thompson 1992, see Cochran 1977, for greater detail on stratified sampling). In this case we use strata that delineate groups based on home origin (i.e., the fisherman's residence), catch location, and gear type.

Stratification based on home origin regions was used in an attempt to account for potential differences in expenditure incurred by geographic area. Home origin is defined as the location where people live, and was determined based on the zip codes provided on spiny lobster report cards. The rationale for home origin groups is based on the likelihood that fishermen traveling to the catch location from further away have an increased likelihood of incurring a lodging expense. Catch location pertains to the area fished, as indicated by the location codes on the report cards. The rationale for catch location groups is based on the likelihood that fuel and related expenditures linked to additional vessel transit distance to the fishing grounds will vary across catch locations. This is especially the case for offshore and island catch locations where transit expenditures are expected to be considerably higher than catch locations that are closer to the coast.

We based our final decision on appropriate home origin regions on sample size considerations, geographical breaks related to population density (extent of urbanization), and graphical analyses. As illustrated in Figure 1 the majority of returned cards are from coastal zip codes immediately adjacent to the coast (1,174 of 4,640), or zip codes for locations outside the immediate coastal strip but within 50 miles of the coast (2,834 of 4,640). There was a large drop-off in the number of returned report cards beyond 50 miles from the coast (632 of 4,640), suggesting a substantial decrease in activity from fishers further than 50 miles from the coast, assuming that reporting rates do not differ with distance from the coast. In addition, most of the population

lives within 50 miles of the coast, and are more likely to take day trips to go fishing with reduced expenditures per fishing trip compared to those who would travel from further away and make longer trips.

In summary, we utilized the following home origin regions:

1. Coastal (zip codes directly adjacent to the coast)
2. Regional (i.e., close enough to the coast for reasonable day trip, < 50 miles, but beyond coastal)
3. Beyond (> 50 miles from the coast)

Figure 1. Map of Potential Home Origin of California Spiny Lobster Recreational Fisherman. Note that "Within 50 miles to Coast" includes zip code areas that are partially within this zone

In addition to home origin regions, we also pre-stratified based on catch location regions. Fishing grounds in coastal waters off San Diego, Los Angeles/Orange County, and Santa Barbara/Ventura were grouped into a "Not Offshore" category (3,679 of 4,640 report cards). Due to the potential for greater trip expenditures associated with catch locations in the Channel Islands and more distant offshore grounds, a second category, "Offshore and Islands" (961 report cards) was created.

Finally, gear type is an important consideration for pre-stratification in that the focus of the trip and behavior patterns/investment in the recreational fishery may differ a great deal. Anglers targeting spiny lobster generally utilize either some type of diving gear, or deploy some form of hoop net. The equipment associated with each method also differs, as does the expenditure of the equipment.

For the purposes of pre-stratification, we collapsed the 2 types of hoop netting (traditional basket-style hoop nets and rigid conical-style hoop nets) into one category, "hoopers", and the 2 types of diving (skin and scuba) into another category, "divers" (Barsky 2003). Overall there were a greater number of returned report cards for hoopers (2,840) than divers (1,800). The CDFW's 2007 creel survey of recreational lobster fishermen found that 80% used hoop nets and 20% were divers.

We had considered finer breaks in categories (e.g., between traditional and rigid hoop nets, or between scuba and skin diving), but concluded that differences in net technology did not warrant further stratification. Due to sample size considerations (i.e., relatively few skin divers), and the large degree of overlap between the 2 activities for many fishermen, we opted for a single comprehensive "divers" category.

Analysis of activity patterns also showed the strongest differences between gear types (see Figure 2), supporting the idea that the expenditures between hoopers and divers may be considerably different. Distributions of activity patterns were plotted using kernel smoothing techniques (Bowman and Azzalini 1997) to allow graphical comparisons among gear types. Kernel smoothing was used to estimate probability densities for the range of values of activity patterns found in the dataset. These probability densities were plotted against the number of trips to graphically represent distributions of activity patterns. In general, divers tended to take more trips per year than hoopers, and were more likely to make > 5 trips in a year/season.

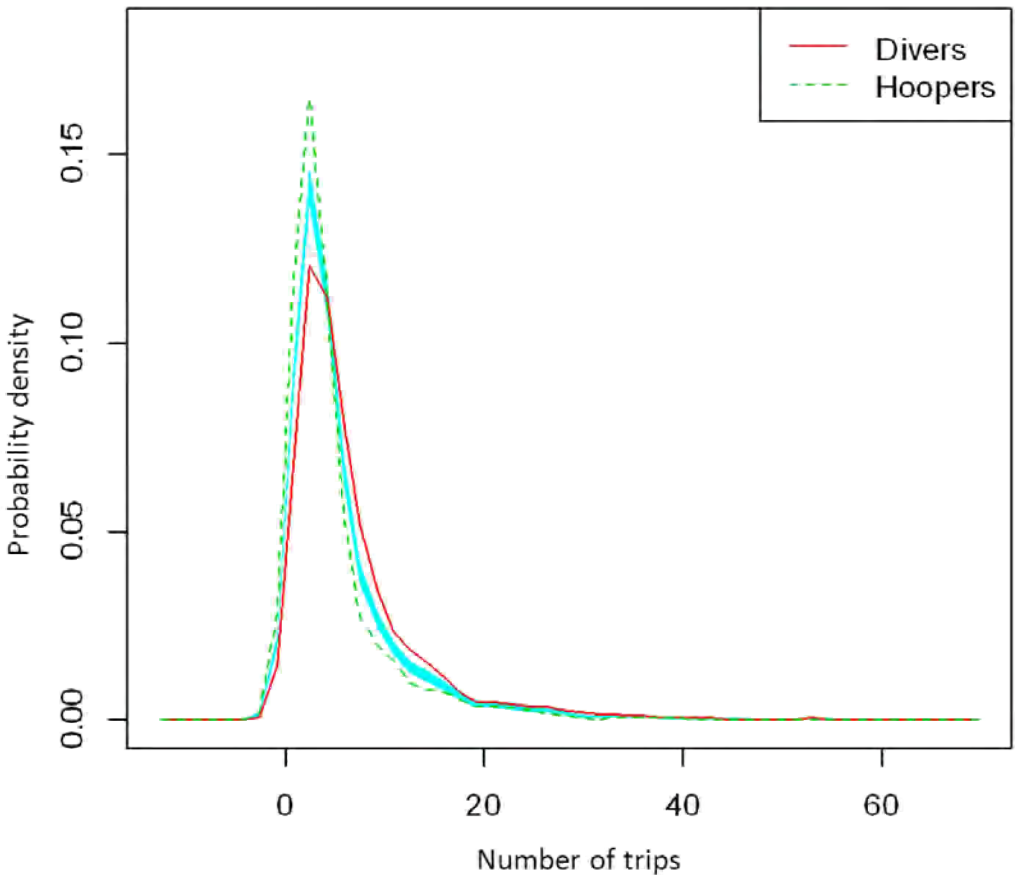


Figure 2. Smoothed Probability Density Distribution Curves for Activity Patterns by Gear Type. The turquoise band is a reference band of equality (see Bowman and Azzalini 1997); if both lines fall within the band, there is no difference between the 2 distributions.

To classify the data, we designated a dominant gear type used by a fisherman (defined as > 50% of trips, i.e., > 50% of trips diving resulted in classification as "divers"; > 50% of trips hooping resulted in classification as "hoopers"; 50/50% of trips for "divers"/"hoopers" resulted in classification as "both" (1 report card)). If no one category represented > 50% of the trips (27 report cards), we evaluated the detailed record of trips to determine the appropriate gear category (23 of 27 were deemed "both"). Due to the small number of fishermen in the "both" category however, we decided to lump this category with the category that had the most similar pattern of activity, the "hoopers."

We developed stratum-specific sample sizes that are proportional to the stratum size (i.e., proportional allocation). If we had more information regarding variance of expenditures within each stratum, we could try to achieve optimal allocation of sampling effort using different sampling proportions per stratum, minimizing variance for a given expenditure; however, this information does not currently exist. Proportional allocation is the same as the optimal allocation scheme in that it minimizes variation for a given expenditure under certain conditions (i.e., when the stratum variances are equal and the costs of sampling each unit within a given stratum are equal) (Chambers and Clark 2012). For the purpose of this study, we are assuming that

both conditions hold. Although it would be desirable to allocate more effort to those strata that have greater variance, there are no data to support that allocation at this time. In addition, it is reasonable to assume that calling an angler from one stratum will have a similar cost to calling a fisherman in any other stratum. Table 5 provides the proposed stratum sizes and the sample sizes by stratum.

Table 5. Sample Sizes by Stratum

Home Origin	Location	Gear Type	Stratum Size	Proportion of Total	Proposed Sample Size	Actual Sample Size
< 50	Not offshore	Hoopers	1,711	0.37	111	140
< 50	Not offshore	Divers	708	0.15	46	64
< 50	Offshore	Hoopers	236	0.05	15	20
< 50	Offshore	Divers	179	0.04	12	17
Beyond	Not offshore	Hoopers	198	0.04	13	18
Beyond	Not offshore	Divers	114	0.02	7	10
Beyond	Offshore	Hoopers	44	0.01	3	4
Beyond	Offshore	Divers	276	0.06	18	24
Coastal	Not offshore	Hoopers	537	0.12	35	47
Coastal	Not offshore	Divers	411	0.09	27	37
Coastal	Offshore	Hoopers	114	0.02	7	10
Coastal	Offshore	Divers	112	0.02	7	10
Total			4,640		300	401

A minimum proposed sample size per stratum of 3 was selected, as this is the absolute minimum required to generate a reasonable estimate of variance. For the vast majority of strata, proposed sample sizes are much greater than 3 (see Table 5). The strata selected were a balance between the idea of lumping strata to provide the greatest sample sizes possible per stratum, and making sure that we had enough strata to capture the groups most likely to have relatively large differences in expenditures with similar expenditures within each group. This approach resulted in a recommendation of a total sample size of 300 completed interviews, which amounts to picking the sample size that allows us to use 3 at a minimum for any given stratum under proportional allocation.

Interviews were conducted by telephone by CDFW personnel based on a list of randomly selected spiny lobster report card identification numbers. CDFW personnel then linked the selected identification numbers to the appropriate phone numbers before making the telephone calls. Potential survey participants were selected from recreational fishery participants who returned a 2011 spiny lobster report card. Interviewers would call a number, and if they were unsuccessful with the target interviewee (no answer, refusal to

participate, language barrier), then they would move on to the next contact on the list. If they completed the list for a particular stratum and still had not met the target number of completed surveys, then they would start over from the top of the list in an attempt to reach target interviewees who did not answer the first time (skipping prior refusals, language barriers, and completed interviews). Under this procedure the maximum number of times that a contact could be called was twice. In contrast meeting the sample size for some of the stratum groups was easier (more people answered the phone, fewer refusals, language barriers, etc.) and interviewers did not have to call all of the contacts on the list. A few contacts were obviously erroneous or didn't have phone numbers: Interviewers did not attempt to contact these people. CDFW generally found anglers to be willing to participate, and as a result CDFW elected to increase sample size by about 1/3 overall, with increases spread as evenly as possible across all strata. The column "actual sample size" in Table 5 indicates the number of recreational fishers interviewed by CDFW.

4.2 Expenditure Estimates for the Spiny Lobster Recreational Fishery

4.2.1 Estimation Methods

Estimates of the mean expenditures were generated using a bottom-up approach, taking estimates of the mean expenditure from respondents and extrapolating to the total number of report cards that were sold. Estimates of expenditures (mean, standard deviation) were first generated by stratum in accordance with the stratified sampling design used to select participants for the telephone survey. Mean expenditure for each stratum was generated based on the following formula for stratified estimators from Cochran (1977):

$$\bar{y}_{st} = \sum \frac{N_h}{N} \cdot \bar{y}_h ,$$

where N_h is the number of spiny lobster report cards in stratum h, N is the total number of spiny lobster report cards sold in 2011 adjusted by the % of returned cards that did not fish (13.5%), N = 28,868, and $\bar{y}_h$ is the estimated mean expenditure for stratum h. Once this estimate was obtained, the total was simply calculated as:

$$\hat{Y} = N \cdot \bar{y}_{st} .$$

Estimates of the 95% confidence interval for total expenditures were calculated based on the estimated sampling variance as:

$$\hat{Y} \pm t \cdot \sqrt{\hat{V}\left(\hat{Y}_{st}\right)} ,$$

where t is the appropriate t-value, and the sampling variance is estimated as:

$$\hat{V}\left(\hat{Y}_{st}\right) = \sum \frac{N_h(N_h - n_h)\left(s_h^2\right)}{n_h},$$

where N_h is as defined previously, n_h is the stratum sample size, and s_h^2 is the stratum variance (Cochran 1977).

All trip-related expenditures were attributed to spiny lobster fishing expenditures, as the survey instrument specifically asked for typical expenditures associated with spiny lobster fishing trips. In contrast, annual boat-related costs, which included items such as boat insurance and gear replacement, were attributed to spiny lobster fishing based on the percentage of annual boat or water craft usage that was reportedly dedicated to spiny lobster fishing in 2011. Note that these costs are subject to potential inestimable inaccuracies of the interviewee's perception of the percentage of their boat usage for spiny lobster fishing. The exceptions to the calculations based on the percentage of annual boat or water craft usage for spiny lobster fishing were fishing gear and related expenditures specifically linked to spiny lobster fishing. In calculating the average annual expenditure for the "other" costs (Question 10 of the annual, seasonal, one-time expenditure section), we assumed that these costs were strictly related to spiny lobster due to the way the question was worded (i.e., "…related to recreational lobster fishing…"), and so these costs were not adjusted based on vessel usage in the spiny lobster fishery.

In their 2006 estimation of the economic contribution of marine angler recreation in the U.S., Gentner and Steinback (2008) utilized a mail survey methodology applied to a sample of anglers originated from the Marine Recreational Information Program (MRIP) intercept survey to elicit angler expenditure information. As with the present study, Gentner and Steinback (2008) used a license-based random survey frame for their California angler expenditure estimates. They report the potential for avidity bias that could affect certain categories of durable expenditures, based on prior experience, and corrected for avidity bias using weights developed by Thomson (1991). One can argue that mail surveys such as those employed by Gentner and Steinback (2008) require an elevated level of commitment and initiative on the part of the angler to complete and return, and this commitment and initiative may be correlated with their level of avidity. In contrast, our telephone interview methodology at least partially addresses this issue and we therefore do not believe there is a strong case for avidity bias in our data, and consequently do not apply avidity weights.

For total annual travel expenditures, most categories of responses were multiplied by the respondent's number of trips (extracted from a separate CDFW database). We also applied $0.55 per mile to reported spiny lobster fishing-related ground transportation based on the federal rate from 2011. To determine total annual respondent expenditures on dive or party boat trips, we multiplied the reported cost per trip fare by the reported number of such trips in 2011.

For the calculation of the 95% confidence interval (CI) for total cost for a particular expenditure category, we used a weighted average of the degrees of freedom based on the effective "n" (see Satterthwaite 1946, as cited

in Cochran 1977) for each cost type (i.e., annual boat purchase cost, boat insurance, etc.) to find the appropriate t-value; weights were based on the contribution of the cost type to the total annual cost.

4.2.2 Demographic Information and Estimated Expenditures in California's Recreational Fishery for Spiny Lobster

Means, totals, and standard deviations (SD) for expenditures are presented in Tables 6 through 10. The average recreational fisherman has fished spiny lobster for nearly 9 years and spends an average of just over 2/3 of a day on a typical fishing trip (Table 6). Spiny lobster fishing constitutes an average of just over 1/3 of a recreational fisherman's total fishing effort in a given year (Table 6). Private vessels provide just over 1/2 of all access to the recreational fishery (Table 7), and on average about 8% of a vessel's annual usage was estimated to be targeted at spiny lobster fishing (Table 8A).

Annual expenditures in the recreational fishery for spiny lobster in California are estimated to be $37,093,000 (Table 9). The largest sources of expenditures were non-coastal residents who live within 50 miles of the coast who fished spiny lobster along the coast, and those who live more than 50 miles from the coast who dove for spiny lobster offshore (Table 9). Spiny lobster gear, boat/gear maintenance, and boat purchases were the largest annual expenditure categories (Table 8), while transportation, vessel fuel, meals and beverages, and dive/party boat fees were the largest trip-based expenditure categories (Table 10). Note that not all of these expenditures necessarily occur in California. Also note that these are expenditures and not total economic impact, which is beyond the scope of this report.

Table 6. Demographic Estimates for the Spiny Lobster Recreational Fishery, Means and Standard Deviations

Home Origin	Location	Gear Type	Years Fishing for Spiny Lobster		Spiny Lobster Fishing Trip Duration (Days)		Fraction of Total Fishing Effort (Lobster)	
			Mean	SD	Mean	SD	Mean	SD
<50	Not offshore	Hoopers	3.91	5.95	0.31	0.40	0.26	0.30
	Not offshore	Divers	18.18	13.45	0.31	0.35	0.43	0.29
	Offshore	Hoopers	8.10	11.17	1.28	0.82	0.26	0.26
	Offshore	Divers	12.88	11.76	0.81	0.97	0.57	0.33
Beyond	Not offshore	Hoopers	2.12	1.41	0.57	1.24	0.34	0.42
	Not offshore	Divers	7.70	13.00	1.73	1.43	0.41	0.47
	Offshore	Hoopers	2.50	1.29	2.38	1.49	0.37	0.44
	Offshore	Divers	9.46	11.15	3.90	2.77	0.49	0.43
Coastal	Not offshore	Hoopers	9.91	16.38	0.18	0.07	0.28	0.32
	Not offshore	Divers	11.57	11.35	0.24	0.35	0.47	0.34
	Offshore	Hoopers	2.60	0.94	0.79	1.35	0.30	0.38
	Offshore	Divers	21.70	16.73	1.41	1.55	0.45	0.29
		Overall	8.75	3.86	0.68	0.25	0.35	0.13

Table 7. Proportion of Recreational Fishermen who Fish for Spiny Lobster by Access Type

			Proportion by Access Type											
Home Origin	Location	Gear Type	Beach	Beach/ Boat	Boat	Charter Boat	Jetty	Kayak	Launch from Beach	Party Boat	Pers. Water-Craft	Pier	Private Boat	Shore
<50	Not offshore	Hoopers	0.03	0.00	0.00	0.00	0.01	0.04	0.01	0.05	0.00	0.22	0.64	0.00
	Not offshore	Divers	0.50	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.00	0.44	0.00
	Offshore	Hoopers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.95	0.00
	Offshore	Divers	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.41	0.00
Beyond	Not offshore	Hoopers	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.28	0.56	0.00
	Not offshore	Divers	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.10	0.00	0.00	0.30	0.00
	Offshore	Hoopers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
	Offshore	Divers	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.17	0.00
Coastal	Not offshore	Hoopers	0.04	0.00	0.00	0.00	0.02	0.00	0.00	0.06	0.02	0.15	0.70	0.00
	Not offshore	Divers	0.68	0.03	0.11	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.11	0.03
	Offshore	Hoopers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
	Offshore	Divers	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.30	0.00
		Mean	0.18	0.00	0.01	0.00	0.01	0.02	0.02	0.10	0.00	0.11	0.54	0.00

Table 8A. Estimated Annual Recreational Fisherman Expenditure Estimates

Home Origin	Location	Gear Type	Boat or Water Craft		% of Annual Boat or Water Craft Usage (for Lobster)		Boat Insurance		Slip Fees	
			Total	SD	Mean	SD	Total	SD	Total	SD
<50	Not offshore	Hoopers	$996,904	$6,358,197	0.08	0.17	$132,034	$331,774	$159,637	$979,413
	Not offshore	Divers	$823,356	$3,560,214	0.13	0.25	$119,658	$303,138	$307,318	$1,198,819
	Offshore	Hoopers	$0	$0	0.08	0.12	$94,743	$168,694	$247,802	$850,070
	Offshore	Divers	$0	$0	0.09	0.18	$81,912	$246,970	$263,756	$820,755
Beyond	Not offshore	Hoopers	$369,600	$1,083,138	0.09	0.20	$116,458	$435,255	$246,640	$1,045,327
	Not offshore	Divers	$0	$0	0.10	0.32	$56,720	$179,364	$10,635	$33,631
	Offshore	Hoopers	$0	$0	0.04	0.07	$4,829	$9,119	$0	$0
	Offshore	Divers	$0	$0	0.00	0.01	$486	$2,383	$0	$0
Coastal	Not offshore	Hoopers	$24,880	$147,694	0.12	0.23	$64,926	$209,046	$80,596	$264,884
	Not offshore	Divers	$62,197	$378,331	0.08	0.20	$22,446	$85,459	$74,844	$362,830
	Offshore	Hoopers	$177,250	$560,514	0.02	0.03	$53,459	$168,057	$116,560	$236,388
	Offshore	Divers	$0	$0	0.06	0.08	$55,412	$135,934	$170,068	$402,831
		Overall	$2,454,188	$7,399,602	0.08	0.08	$803,083	$781,569	$1,677,855	$2,303,579

Table 8B. Estimated Annual Recreational Fisherman Expenditure Estimates

Home Origin	Location	Gear Type	DMV Registration Fees (Boat and Trailer)		Boat Taxes		Annual Maintenance or Replacement of Boat Gear and Equipment	
			Total	SD	Total	SD	Total	SD
<50	Not offshore	Hoopers	$88,976	$524,967	$32,809	$124,490	$743,664	$2,074,209
	Not offshore	Divers	$30,517	$105,277	$44,115	$139,018	$1,320,574	$3,934,693
	Offshore	Hoopers	$3,242	$6,473	$55,775	$97,186	$375,212	$708,445
	Offshore	Divers	$13,171	$48,453	$11,795	$48,633	$156,615	$488,614
Beyond	Not offshore	Hoopers	$5,041	$17,584	$704,978	$2,900,032	$162,610	$359,090
	Not offshore	Divers	$2,127	$6,726	$19,143	$60,535	$141,800	$448,411
	Offshore	Hoopers	$1,199	$1,968	$103	$206	$10,275	$20,550
	Offshore	Divers	$236	$865	$347	$1,495	$1,216	$5,273
Coastal	Not offshore	Hoopers	$19,001	$60,846	$24,197	$88,904	$489,314	$1,228,024
	Not offshore	Divers	$6,256	$19,150	$1,555	$6,971	$85,438	$264,160
	Offshore	Hoopers	$2,184	$6,709	$28,360	$89,682	$52,466	$133,029
	Offshore	Divers	$1,046	$3,306	$33,805	$92,672	$183,311	$548,287
		Overall	$172,996	$541,800	$956,982	$2,912,914	$3,722,496	$4,769,842

Table 8C. Estimated Annual Recreational Fisherman Expenditure Estimates

Home Origin	Location	Gear Type	Electronic Gear		Spiny Lobster Fishing Gear		Other Expenditures	
			Total	SD	Total	SD	Total	SD
<50	Not offshore	Hoopers	$102,838	$421,853	$1,237,232	$2,089,914	$49,765	$251,005
	Not offshore	Divers	$105,514	$461,687	$956,023	$1,616,749	$310,185	$896,550
	Offshore	Hoopers	$371,829	$1,598,685	$128,267	$167,942	$0	$0
	Offshore	Divers	$0	$0	$441,668	$916,559	$6,553	$27,018
Beyond	Not offshore	Hoopers	$34,393	$145,152	$142,638	$301,803	$34,222	$53,711
	Not offshore	Divers	$0	$0	$138,539	$163,857	$9,217	$29,147
	Offshore	Hoopers	$8,220	$16,440	$22,263	$32,311	$0	$0
	Offshore	Divers	$179	$876	$223,925	$351,706	$114,467	$507,369
Coastal	Not offshore	Hoopers	$47,201	$180,077	$436,463	$595,724	$99,306	$205,614
	Not offshore	Divers	$8,120	$34,446	$587,765	$950,450	$40,322	$126,447
	Offshore	Hoopers	$13,294	$39,024	$14,180	$29,894	$1,418	$4,484
	Offshore	Divers	$6,970	$22,041	$59,594	$108,607	$0	$0
		Overall	$698,557	$1,733,168	$4,388,555	$3,059,985	$665,455	$1,089,486

Table 9. Estimated Total Recreational Fisherman Annual, Trip, and Grand Total Expenditures, with 95% Confidence Intervals

Home Origin	Location	Gear Type	Annual			Trip			Grand Total		
			Total	95% CI		Total	95% CI		Total	95% CI	
<50	Not offshore	Hoopers	$3,543,861	$2,361,061	$4,726,661	$3,834,313	$3,150,282	$4,518,343	$7,378,174	$6,011,104	$8,745,243
	Not offshore	Divers	$4,017,260	$2,599,456	$5,435,064	$3,985,715	$2,738,220	$5,233,210	$8,002,975	$6,114,130	$9,891,820
	Offshore	Hoopers	$1,276,869	$415,100	$2,138,638	$980,949	$680,996	$1,280,902	$2,257,818	$1,344,622	$3,171,015
	Offshore	Divers	$975,471	$333,234	$1,617,707	$1,548,263	$834,119	$2,262,408	$2,523,734	$1,563,307	$3,484,161
Beyond	Not offshore	Hoopers	$1,816,581	$273,546	$3,359,615	$1,965,233	$730,433	$3,200,033	$3,781,813	$1,804,999	$5,758,628
	Not offshore	Divers	$378,181	$57,898	$698,463	$1,212,433	$629,897	$1,794,968	$1,590,613	$926,116	$2,255,110
	Offshore	Hoopers	$46,888	$4,951	$88,826	$301,277	$168,425	$434,128	$348,165	$208,946	$487,384
	Offshore	Divers	$340,857	$93,260	$588,453	$4,446,683	$3,417,064	$5,476,301	$4,787,540	$3,729,359	$5,845,720
Coastal	Not offshore	Hoopers	$1,285,883	$872,100	$1,699,667	$1,064,607	$759,732	$1,369,482	$2,350,490	$1,836,345	$2,864,636
	Not offshore	Divers	$888,944	$524,635	$1,253,253	$1,470,411	$956,378	$1,984,444	$2,359,354	$1,729,461	$2,989,248
	Offshore	Hoopers	$459,170	$53,438	$864,901	$362,971	$161,455	$564,488	$822,141	$368,839	$1,275,443
	Offshore	Divers	$510,204	$69,977	$950,431	$379,741	$198,481	$561,001	$889,945	$413,520	$1,366,370
		Overall	$15,540,168	$12,752,113	$18,328,223	$21,552,594	$19,103,798	$24,001,390	$37,092,762	$33,381,291	$40,804,233

Table 10A. Estimated Recreational Fisherman Trip Expenditures

Home Origin	Location	Gear Type	Dive/Party Boat		Trip Duration (Days)		Dive Gear Rental		Gas for Boat	
			Total	SD	Mean	SD	Total	SD	Total	SD
<50	Not offshore	Hoopers	$344,214	$2,738,838	0.01	0.06	$0	$0	$1,145,767	$2,382,055
	Not offshore	Divers	$138,689	$573,076	0.11	0.39	$56,439	$311,032	$1,866,268	$4,559,396
	Offshore	Hoopers	$58,720	$262,604	0.05	0.22	$0	$0	$482,671	$512,848
	Offshore	Divers	$357,791	$498,163	0.74	1.03	$14,416	$41,824	$424,303	$1,041,751
Beyond	Not offshore	Hoopers	$110,196	$262,896	0.22	0.55	$0	$0	$586,432	$2,013,328
	Not offshore	Divers	$41,831	$111,676	1.30	2.75	$15,385	$27,500	$111,313	$186,151
	Offshore	Hoopers	$0	$0	0.00	0.00	$0	$0	$37,675	$46,627
	Offshore	Divers	$960,447	$762,612	2.31	1.41	$15,024	$73,601	$233,226	$804,117
Coastal	Not offshore	Hoopers	$45,104	$188,994	0.34	1.13	$28,789	$197,371	$340,833	$590,418
	Not offshore	Divers	$289,563	$920,521	0.22	0.58	$21,424	$74,856	$427,157	$931,467
	Offshore	Hoopers	$0	$0	0.00	0.00	$0	$0	$211,353	$279,208
	Offshore	Divers	$76,670	$181,309	0.35	0.75	$12,546	$26,653	$129,642	$185,872
		Overall	$2,423,223	$3,118,636	0.30	0.19	$164,024	$387,211	$5,996,639	$5,820,325

Table 10B. Estimated Recreational Fisherman Trip Expenditures

Home Origin	Location	Gear Type	Bait		Lodging		Meals and Beverages	
			Total	SD	Total	SD	Total	SD
<50	Not offshore	Hoopers	$550,088	$1,202,154	$29,350	$208,747	$606,951	$951,956
	Not offshore	Divers	$100,145	$401,754	$69,516	$406,371	$788,712	$1,611,999
	Offshore	Hoopers	$40,084	$61,474	$0	$0	$258,148	$338,814
	Offshore	Divers	$0	$0	$199,865	$809,822	$123,195	$184,072
Beyond	Not offshore	Hoopers	$131,687	$290,395	$99,929	$294,769	$357,964	$1,098,757
	Not offshore	Divers	$0	$0	$120,530	$226,806	$156,689	$172,392
	Offshore	Hoopers	$2,466	$2,882	$21,920	$26,846	$75,350	$51,867
	Offshore	Divers	$7,512	$20,770	$263,989	$527,002	$413,869	$729,396
Coastal	Not offshore	Hoopers	$189,079	$275,496	$0	$0	$269,793	$715,548
	Not offshore	Divers	$57,360	$221,558	$31,099	$189,166	$172,494	$274,195
	Offshore	Hoopers	$1,702	$4,474	$0	$0	$105,641	$130,282
	Offshore	Divers	$0	$0	$0	$0	$86,428	$115,243
		Overall	$1,080,122	$1,349,124	$836,197	$1,147,645	$3,415,234	$2,458,166

Table 10C. Estimated Recreational Fisherman Trip Expenditures

Home Origin	Location	Gear Type	Transportation		Harbor Fees		Other Expenditures	
			Total	SD	Total	SD	Total	SD
<50	Not offshore	Hoopers	$953,741	$1,073,774	$125,505	$296,981	$78,697	$286,990
	Not offshore	Divers	$674,139	$1,075,725	$138,386	$537,214	$153,421	$372,181
	Offshore	Hoopers	$79,690	$62,024	$40,737	$69,441	$20,900	$71,281
	Offshore	Divers	$349,141	$416,393	$25,163	$42,923	$54,389	$201,778
Beyond	Not offshore	Hoopers	$666,020	$1,259,517	$13,004	$33,400	$0	$0
	Not offshore	Divers	$713,013	$858,995	$15,953	$31,850	$37,719	$89,981
	Offshore	Hoopers	$153,591	$111,652	$8,905	$12,925	$1,370	$2,740
	Offshore	Divers	$2,474,852	$2,122,295	$52,726	$115,647	$25,040	$76,783
Coastal	Not offshore	Hoopers	$131,013	$306,673	$15,923	$63,522	$44,073	$135,831
	Not offshore	Divers	$318,532	$701,644	$57,152	$269,856	$95,630	$280,999
	Offshore	Hoopers	$36,477	$97,904	$7,799	$17,189	$0	$0
	Offshore	Divers	$62,203	$53,579	$3,346	$10,580	$8,906	$20,991
		Overall	$6,612,411	$3,150,726	$504,599	$690,215	$520,145	$615,246

Section 5.0 References

Barsky, K. 2003. California spiny lobster. *In* W. Leet, C. Dewees, R. Klingbeil, and E. Larson, editors. California's living marine resources: A status report. p 98-100. California Department of Fish and Game, Sacramento, CA. Publication SG01-11.

Bowman, A.W. and A. Azzalini. 1997. Applied Smoothing Techniques for Data Analysis: The Kernel Approach with S-Plus Illustrations. Oxford Statistical Science Series No. 18. Clarendon Press, Oxford, England.

California Department of Fish and Wildlife (CDFW). 2013. Final 2011 California Commercial Landings. Accessed 21 February 2013. http://www.dfg.ca.gov/marine/landings11.asp.

Chambers, R. and R. Clark. 2012. An Introduction to Model-Based Survey Sampling with Applications. Oxford University Press Inc, New York, NY.

Cochran, W.G. 1977. Sampling Techniques. 3rd edition. John Wiley & Sons, New York, NY.

Gentner, B. and S. Steinback. 2008. The Economic Contribution of Marine Angler Expenditures in the United States, 2006. U.S. Department of Commerce. NOAA Tech. Memo. NMFS-F/SPO-94. Accessed 21 February 2013. http://spo.nmfs.noaa.gov/tm/SPO94.pdf.

Hackett, S., D. King, D. Hansen, and E. Price. 2009. The Economic Structure of California's Commercial Fisheries. Technical Report. California Department of Fish and Game, Sacramento, CA. Accessed 21 February 2013. http://www.dfg.ca.gov/marine/economicstructure.asp.

Minnesota IMPLAN Group (MIG). 2013. MIG. Accessed 16 January 2013. http://www.implan.com.

Thomson, C.J. 1991. Effects of avidity bias on survey estimates of fishing effort and economic values. American Fisheries Society Symposium 12:356-366. Accessed 21 February 2013. http://swfsc.noaa.gov/publications/cr/1991/9174.pdf.

Thompson, S.K. 1992. Sampling. John Wiley & Sons, New York, NY.

Personal Communications

Barsky, K., California Department of Fish and Wildlife. Personal communications. Various dates, 2013.

Appendix A. Commercial Expenditure Update Survey

Following is the cover letter and the questionnaire used in the key-informant interviews with commercial spiny lobster fishermen. We produced fixed and variable cost questionnaires for each of 3 vessel size class strata – large, medium, and large. Included below are the cover letter and questionnaire used for informants with small vessels.

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

15 August 2012

Name of Recipient
1234 Street
City, CA 12345

Dear Commercial Lobster Fisherman:

A fishery management plan is in progress for the spiny lobster fishery, and we are updating expenditure information so that we better understand the positive economic contribution of commercial lobster fishermen to the state and to local economies in California.

In 2007 we did an economic survey of all commercial fishermen in California in order to generate expenditure information and to demonstrate their positive economic contribution. In this brief survey, we are providing you with average annual expenditures by category based on the 2007 survey results. We are asking you whether you feel that these averages are still a reasonable estimate of typical annual costs for a commercial lobster vessel less than 26 feet in length.

As you complete the survey, please note that we are not asking you to compare your expenditures to the averages, as each individual's annual expenditures on categories such as engine purchase will vary quite a bit. Instead we ask whether these averages are a reasonable estimate of typical annual costs for a commercial lobster vessel less than 26 feet in length.

If the answer is yes, then simply indicate that on the sheet. If they are not reasonable, then for a given cost category (such as bait or engine repair), please indicate to us how much higher or lower (in percentage terms) the typical annual expenditure should be.

We will call you within the next two weeks to get your responses. If you have any questions, please contact Sharon Kramer at skramer@harveyecology.com or (707) 822-4141 ext 101.

Please note that your individual responses will be kept confidential, and will be aggregated along with those from others to develop an updated estimate of total expenditures by all commercial lobster fishermen. Our goal is to generate an accurate estimate of the total positive economic contribution from commercial lobster fishing in California.

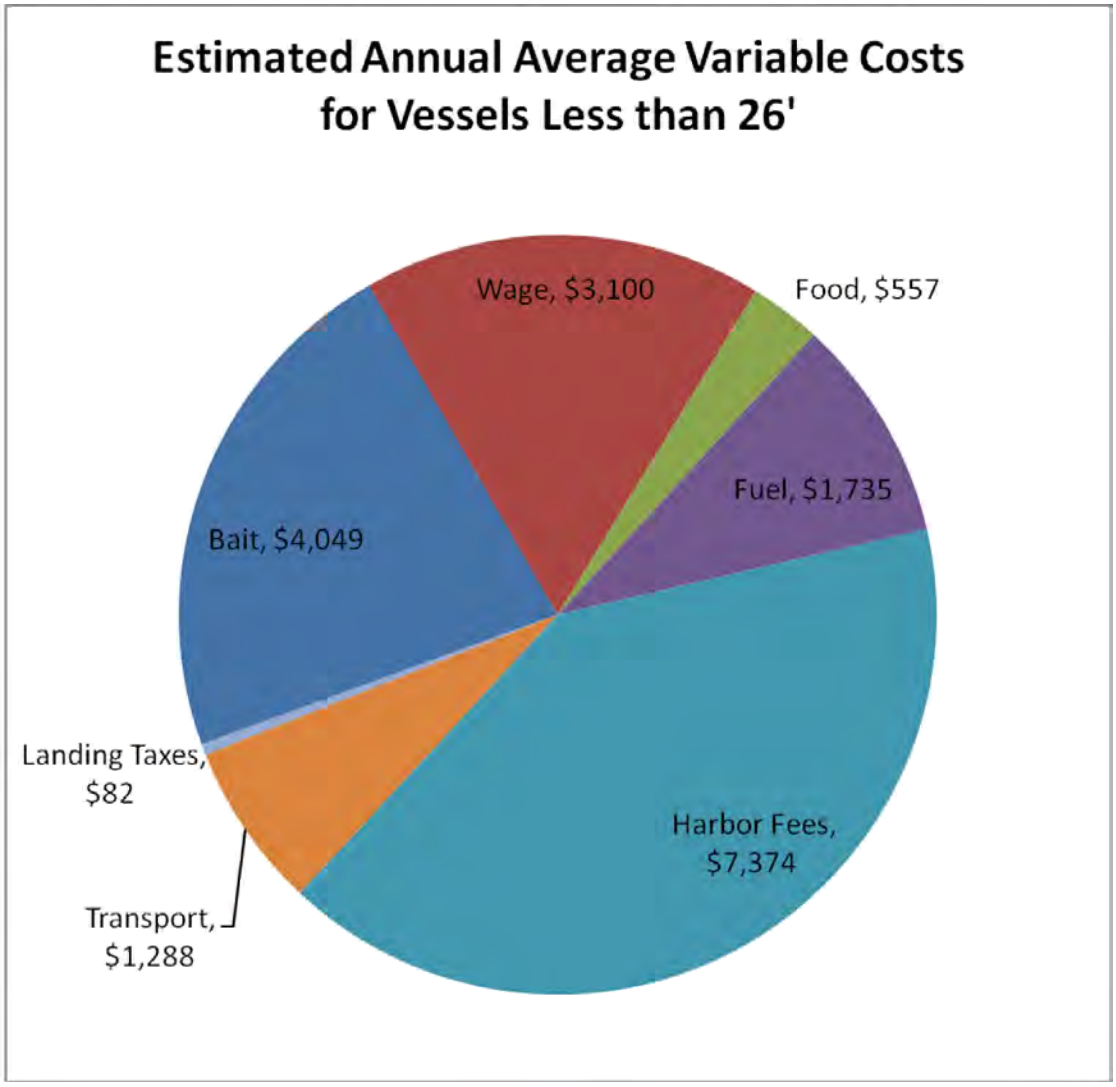
Thank you,

Steven C. Hackett

Dr. Steven C. Hackett
Humboldt State University

Sharon H. Kramer

Dr. Sharon Kramer
H. T. Harvey & Associates



Variable Costs are costs that increase or decrease based on how much you fish. The above estimated annual variable costs (adjusted for inflation) are averaged across all responses to our 2007 survey. These costs imply an average per-trip cost of $849.

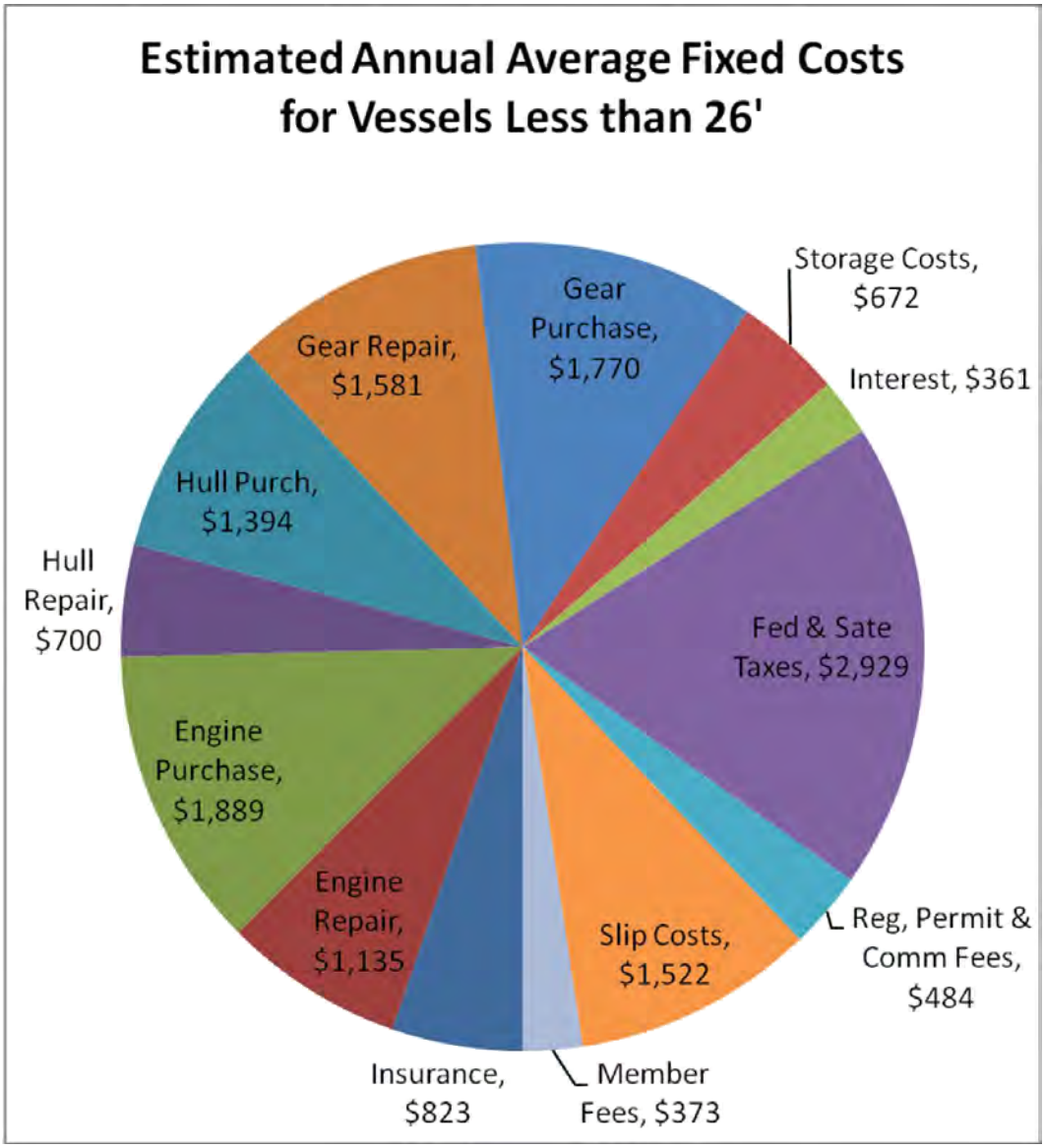
Do you feel that these are a reasonable estimate of typical annual variable costs for a lobster vessel less than 26 feet in length? Yes / No (circle one).

If not, then please correct the cost categories below. Circle whether the cost should increase or decrease, and indicate the correct percentage increase or decrease with an X.

Bait	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $4,049	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Crew Wages/Comp.	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $3,100	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)

Food (fishing-related)	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $557	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Fuel & Lube (vessel)	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $1,735	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Harbor Fees (ex: hoist)	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $7,374	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Transportation*	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $1,288	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Landing Taxes	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $82	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)

* Transportation related to fishing (truck and auto)



Fixed Costs are costs that commercial fishermen incur whether they fish or not. The above estimated annual fixed costs (adjusted for inflation) are averaged across all responses to our 2007 survey.

Do you feel that these are a <u>reasonable estimate of typical annual fixed costs</u> for a lobster vessel less than 26 feet in length? Yes / No (circle one).

If not, then please correct the cost categories (ex. "Engine Purchase") needing adjustment. Circle whether the cost should increase or decrease, and indicate the correct percentage increase or decrease with an X.

Insurance (vessel)	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $823	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)

Engine Repair (vessel)	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $1,135	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Engine Purch. (vessel)*	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $1,889	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Gear Repair	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $1,581	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Gear Purchase*	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $1,770	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Hull Repair	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $700	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Hull Purchase*	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $1,394	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Storage (vessel, gear)	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $672	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Interest (vessel)*	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $361	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Member/Assoc. Fees	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $373	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Federal & State Taxes	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $2,929	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)
Permit, License, Reg.	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $484	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)

Slip Costs	increase / decrease	by:	___	0% - 20%	___	60% - 80%
Ann. Avg. = $1,522	(circle one)		___	20% - 40%	___	80% - 100%
			___	40% - 60%	___	100% + (specify %)

* The annual average cost reported for engine and hull purchases come directly from our 2007 survey. As these expenditures only occur infrequently (thankfully), the cost reported here can be thought of as an annualized cost, somewhat like an annual loan payment absent the interest. Vessel-related interest expenditures from vessel-related loan payments are listed separately above.

Appendix B. Recreational Fishery Expenditure Survey

Following is the telephone interview script used to gather demographic and expenditure information from participants in the spiny lobster recreational fishery. The sample frame was derived from CDFW's spiny lobster report card database of recreational fishery participants. Due to CDFW's confidentiality agreement associated with the report card database, the research team provided a survey methodology and sampling design and the calls were conducted by CDFW personnel.

RECREATIONAL LOBSTER PARTICIPANT SURVEY

Opening Script:

Introduce yourself
Describe purpose of call and of the project
DFG is trying to determine how much money is being generated by the recreational lobster fishery in the state of California. The information that we are interested in collecting goes beyond license sales. This survey will help DFG to accurately characterize the economic contribution of the fishery.

Responses will be protected, interviewee can contact Kristine Barsky for questions or comments [kbarsky@dfg.ca.gov, tel.# (805)985-3114]

Basic Questions Script:

I would like to start with some basic questions about your fishing history and how you fish. I will then turn to the economic questions.

1. How many years have you been fishing for lobster?
2. What is your most common type of access when you fish for lobster?
   Do you fish from a Pier/dock, launch from a beach, use a private boat, go on a party boat, or use a personal watercraft (kayak, etc.)?
3. On average, how many hours or days does the average lobster fishing trip take you, including travel time to and from fishing grounds (fraction of day is ok). I'm only asking about trips that you just fished for lobster. Please tabulate as days (or fraction of days – xx hrs/24).
   Trip definition = the time period in which a fisherman travels to the fishing grounds, seeks lobster, concludes fishing, and returns home
4. Approximately what percentage of your total fishing effort (including all fishing trips) was dedicated to lobster fishing in 2011?

Expenditure Questions Script:

Moving on to the economic questions. The first questions will address annual, seasonal, or one-time expenditures you have made that are linked to your lobster fishing activity. After that I'll ask about typical trip-related expenditures.

Do you own a boat or other watercraft that you use for lobster fishing or diving?
If they answered yes, start with question 1, otherwise skip to question 9.

1. Did you purchase your boat or water craft this past year? If so, then how much did you spend?
2. What percentage of your annual boat or water craft usage was for fishing for lobster?
3. How much do you spend per year on boat insurance?

4. Do you keep your boat in the water, (If yes) then how much do you spend in total cost annually on slip fees?
5. How much do you spend annually on DMV registration fees for your boat and trailer?
6. How much do you spend annually on taxes (e.g., property or luxury taxes) on your boat?
7. How much did you spend last year on maintenance (like hull cleaning) or replacement of boat gear & equipment (boat, engine, equipment)?
8. If you own a boat or other water craft, did you purchase any electronic gear (GPS, radio, fish finder, radar, etc) this past year that was used for fishing lobster? If so, then how much did you spend?
9. Did you purchase any lobster fishing gear (dive gear, hoop nets, other lobster equipment) this past year? If so, then how much did you spend?
10. Excluding the cost of fishing licenses and report cards, are there any other annual, seasonal, or one-time expenditures related to recreational lobster fishing that you would like to add in?
    Ask for $$ and category

I would like to finish the survey with some questions about your typical expenditures associated with lobster fishing trips.

1. Did you purchase a spot on a dive boat or a party boat for lobster this last year (2011)?
2. If so, then how much do you typically spend on a single boat trip (just the cost of the trip fare)?
3. Did you rent dive gear for lobster fishing last year? If so, then how much do you typically spend on dive gear rentals per lobster fishing trip?
4. How much do you typically spend on gas for the boat you use (yours or a shared boat) on each lobster fishing trip?
5. How much do you typically spend on bait on a lobster fishing trip?
6. How much do you typically spend on lodging during a lobster fishing trip?
7. How much do you typically spend on meals and beverages during a lobster fishing trip?
8. How many miles (one-way) did you drive to a port, dock, or beach for each lobster fishing trip? [Note: Researchers will double on-way miles you record and multiply by the average total cost per mile driven from the Department of Transportation to get $$ expenditure]
9. If you trailer a boat to a launch facility for lobster fishing trips, then how much do you typically spend on harbor fees (boat launch, docking, or parking) per trip? (Includes smaller craft if relevant (kayak, paddle or surf board….).
    This should be entered as $0 if (i) the fisherman keeps a boat in the water and already provided a cost earlier in the survey, or (ii) they don't use a boat to fish
10. Are there any other expenditures you usually make on a typical recreational lobster fishing trip you would like to add?
    Ask for $$ and category; Examples = power wash, SCUBA tank air refills

Appendix VII: Ocean Science Trust External Scientific Peer Review

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Final Report of the Scientific Review Committee

Scientific review of the reference point thresholds prescribed in the draft Fishery Management Plan for California Spiny Lobster (*Panulirus interruptus*)

Convened by the California Ocean Science Trust

Supported by the California Ocean Protection Council and the California Ocean Science Trust

May 2015

CALIFORNIA OCEAN SCIENCE TRUST

Review Participants

CALIFORNIA OCEAN SCIENCE TRUST

California Ocean Science Trust is a boundary organization. We work across traditional boundaries, bringing together governments, scientists, and citizens to build trust and understanding in ocean and coastal science. We are an independent non-profit organization established by the California Ocean Resources Stewardship Act (CORSA) of 2000 to support managers and policymakers on the U.S. West Coast with sound science, and empower participation in the decisions that are shaping the future of our oceans.

Ocean Science Trust served as the independent appointing agency in alignment with the Procedural Guidelines for the California Department of Fish and Wildlife's Ad Hoc Independent Scientific Advisory Committees. Ocean Science Trust convened the review committee and designed and implemented a scientific review process that promoted objectivity, transparency, and scientific rigor (see Appendix C).

SCIENTIFIC REVIEW COMMITTEE

John Field (chair)
Research Fishery Biologist, Fisheries Ecology Division, Southwest Fisheries Science Center, National Marine Fisheries Service (NOAA)

Michel Comeau
Head of the Lobster Section, Department of Fisheries and Oceans Canada

Robert Muller
Assessment and Modeling, Florida Fish and Wildlife Conservation Commission, Florida Wildlife Research Institute

Pete Raimondi
Chair/Professor, Department of Ecology and Evolutionary Biology, University of California, Santa Cruz

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

The Mission of the Department of Fish and Wildlife is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.

California Department of Fish and Wildlife staff were engaged throughout the review process. They delivered presentations to the review committee and supplied additional data, information, and feedback to Ocean Science Trust as necessary throughout the review process.

Travis Buck	Tom Mason
Julia Coates	Carlos Mireles
Kai Lampson	Anthony Shiao

The California Department of Fish and Wildlife Marine Region Program Manager, Tom Barnes, was the primary management contact for this review. California Wildlife Foundation was the grant manager for this project.

Table of Contents

Recommended citation: Final report of the scientific review committee, scientific review of the reference point thresholds prescribed in the draft Fishery Management Plan for California Spiny Lobster (*Panulirus interruptus*). California Ocean Science Trust, Oakland, CA. May, 2015.

Cover image: Ken Curtis

Background

Spiny lobster (*Panulirus interruptus*) populations support important commercial and recreational fisheries, and play a key role in the southern California kelp forest ecosystem. Over the last three years, the California Department of Fish and Wildlife (the Department) has developed a draft spiny lobster fishery management plan (FMP) to guide management of these fisheries in accordance with the Marine Life Management Act. An FMP assembles information, analyses, and management options, and serves as the vehicle for the Department to present a coherent package of information, and proposed regulatory and management measures to the California Fish and Game Commission (the Commission). The FMP becomes effective upon adoption by the Commission, following their public process for review and revision. Thus, it is important for the scientific underpinnings of the draft FMP to have undergone independent review prior to submission to the Commission.

The Department is committed to incorporating the best scientific information into management decisions. To this end, the Department approached the Ocean Science Trust to convene experts to conduct an assessment of key scientific and technical components within the FMP and supporting spawning potential ratio (SPR) cable model. Ocean Science Trust, an independent organization that works to advance independent science in management decisions, tailored this review to meet the science needs of the Department, and served as the appointed entity to design and coordinate all aspects of this review.

REVIEW SCOPE

Ocean Science Trust, in consideration of the management request, worked with the Department to develop a scope of review focusing on the scientific and technical underpinnings of the FMP and supporting materials. Thus, this was not a comprehensive review of the FMP, or the proposed approach to management contained therein. Rather, the central question of this review was:

Given the Department of Fish and Wildlife's available data streams and analysis techniques, are the technical components, models, and supporting documents that underpin the FMP scientifically sound and reasonable?

The review focused on the following components:

1. The three proposed reference point thresholds (i.e., catch, catch per unit effort (CPUE), and spawning potential ratio) that will serve as signals for when changes within the fishery may warrant management responses;
2. The underlying science that informed the decision to manage the fishery as a single stock;
3. The comprehensiveness of the data supporting the estimate of spiny lobster habitat contained within marine protected areas;
4. Estimates of stock productivity and its ability to support fishing (i.e., calculations for the lobster growth curves adopted in the Parrish Model for setting the spawning potential ratio threshold); and
5. The spawning potential ratio (SPR) model as presented in "DRAFT Report on the Cable-CDFW 1.0 Model and the Calculation of Spawning Potential Ratio" (cable model), including model assumptions, calculations, interpretation, and application of the model results in setting the SPR reference point threshold.

In addition to these specific sections of the FMP, reviewers were asked to identify priority research and monitoring gaps associated with the scientific and technical components of the FMP. Reviewers also provided recommendations for ways to work more closely with the academic community to collect and maintain the most up-to-date essential fishery information (EFI).

SUMMARY OF THE REVIEW PROCESS

This review took place from October 2014 – May 2015. Ocean Science Trust implemented a scientific review process[1] that sought to promote objectivity, transparency, candor, efficiency, and scientific rigor. A multidisciplinary, four-member review committee was assembled, representing international expertise in fisheries science and management, marine ecology, stock assessment, and modeling. Reviewer names remained anonymous until completion of this review to encourage candid feedback. Ocean Science Trust facilitated constructive interactions between reviewers and the Department through a series of remote meetings, where Department staff provided reviewers with the management context, presented an overview of the scientific and technical elements under review, and were available to answer reviewer's questions. In addition, Ocean Science Trust convened reviewers independently to allow the review committee to candidly discuss the review materials and conduct their assessment. Ocean Science Trust worked with the review committee to assemble and synthesize their written and verbal responses to guiding questions, as well as discussion from remote meetings into this final report. This report is publicly available on the Ocean Science Trust website[2].

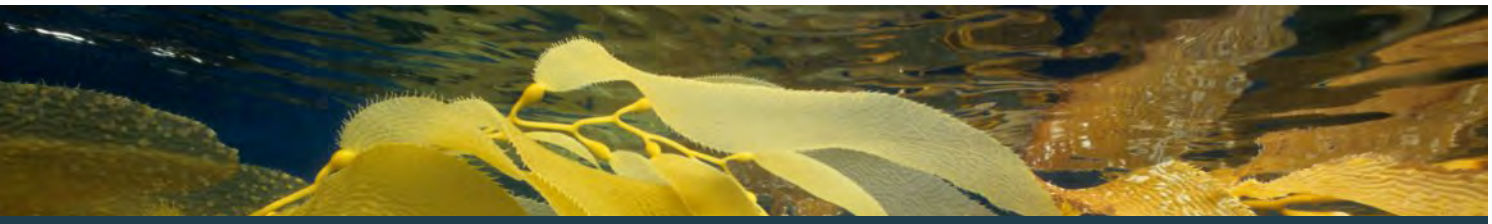
PROJECT MATERIALS UNDER REVIEW

The following materials were provided by the Department to the review committee for scientific and technical review:

- Draft Spiny Lobster Fishery Management Plan, For Technical Review, 11/4/2014[3]
- Draft Report on the Cable-CDFW 1.0 Model and the Calculation of Spawning Potential Ratio
- Draft Spawning Potential Ratio Cable-CDFW 1.0 Model

Additional data and information were provided by the Department at the request of the review committee to assist with their assessment throughout the review process.

[1] Available at http://bit.ly/1Fd9A6X
[2] Available at http://bit.ly/1Fd9zA3
[3] Draft available on the Department of Fish and Wildlife website at http://bit.ly/1Fda254



Review and Recommendations

Foremost, the review committee valued the opportunity to provide independent scientific recommendations for consideration in management of the California spiny lobster fisheries. They acknowledged the extensive time and resources that went into the development of the FMP and supporting model by both the Department, the Lobster Advisory Committee, stakeholders, and outside experts, including modeler Dr. Richard Parrish. Reviewers appreciated the Department staff's constructive engagement throughout the course of the review, as well as their willingness to thoughtfully consider recommendations from this report. The Department produced an FMP that is user-friendly and readable by broad audiences, is well referenced, and incorporates the effects of no-take marine protected areas for the first time in a state-managed fishery. Reviewers noted that the FMP would complement the fairly robust management measures already in place.

This assessment is organized around the key focal points identified in the scope of review. These recommendations aim to improve the science supporting the proposed reference point thresholds prescribed in the draft FMP. Where possible, insight is provided on the implications of each recommendation.

The main recommendations concern the spawning potential ratio (SPR) cable model, several of which would need to be addressed before this model can provide a sound scientific basis for decision-making. Additional scientific guidance and considerations are included that would produce a more scientifically robust FMP, as well as longer-term recommendations, data and research needs that would strengthen the science contained within the model and FMP and its ability to inform management as new information and analyses become available.

This FMP is the first instance where state fisheries managers in California are employing a technical model (aside from a formal stock assessment) to inform the development of a harvest control rule. As such, reviewers thought it valuable to close the review with some insight into how scientific models are scoped, considered, and reviewed as FMPs are developed for other state fisheries in the future.

1. EVALUATION OF THE PROPOSED REFERENCE POINT THRESHOLDS

Three proposed quantitative reference points and associated thresholds – spawning potential ratio, catch, and catch per unit effort (CPUE) – are meant to serve as metrics to assess the state of the lobster fishery and stock. The FMP states that whenever a stock reaches a threshold reference point, resource managers must investigate the cause and potentially provide a response. The Department has to review the catch, catch per unit effort, and update the spawning potential ratio on an annual basis. This process is designed to monitor the fishery and its stock in order to prevent any of the metrics from reaching a threshold.

Below are the scientific review committee's recommendations for each reference point. For sections 1.1 (SPR) and 1.2 (catch, CPUE), recommendations are divided into those that reviewers suggest the Department address before adopting the FMP, and those that are longer-term considerations, which can be addressed after adoption of the FMP.

1.1 Spawning Potential Ratio (SPR) Cable Model and the SPR Reference Point

Much of the review focused on the SPR cable model, since it is the main measure of the spiny lobster spawning biomass structure and the only biological reference point in the FMP (i.e., it integrates information and assumptions about lobster growth, reproduction, and mortality). The model, starting with 1,000 recruits, calculates an equilibrium SPR value – a ratio of the number of eggs produced by the fished population over the number of eggs produced by the unfished population. Being an equilibrium model, it does not track cohorts or size trends over time, but does provide relative abundance estimates for the fixed number of recruits. Therefore, this SPR estimate is used to estimate an annual fishing mortality rate specific to a given year's observed mean size, with no temporal connection among the annual estimates. The FMP advises that when the $SPR_{CURRENT}$ falls below the "stable and productive" reference period between 2000-2010 ($SPR_{THRESHOLD}$, based on the average SPR value during this period), the Department is required to investigate the underlying cause and potentially provide a management response for the Commission to consider. The model also evaluates the effects that marine protected areas (MPAs) may have on the calculated SPR value of the lobster stock.

During the course of the review, reviewers were provided with three iterations of the SPR model. The model was originally developed by Dr. Richard Parrish, and underwent further development and revisions by the Department. The final version (referred to here as the cable model) is the version intended for use in the management of the fishery, and was the main focus of this assessment. The cable model includes the following revisions from the previous iterations:

1. a new growth model (i.e., changing the model from a von Bertalanffy growth model to a newly developed model)
2. changes to initial time step (i.e., size, age, season)

The draft FMP provided to reviewers for their work was developed based on the original model and did not reflect these revisions. The reviewers were instructed to assume that the draft FMP would be revised to reflect the most recent cable model. Additionally, following initial technical discussions between Department staff and the reviewers, the Department agreed to remove a prescribed value for the SPR threshold in order to allow for the ability to continually improve the model without amending the FMP.

1.1.1 Key Recommendations for Securing a Management-Ready SPR Model

Reviewers agreed that the cable model requires essential revisions before it can provide a scientific basis for management of the lobster fishery, but that these revisions are likely achievable before the FMP is adopted. In the longer term, more substantive data collection and research initiatives to better inform a model comparable to the current model, or an alternative modeling approach, are identified as priorities. Below are the key recommendations for securing a management-ready SPR model, organized around thematic areas.

Growth Model

- ***Rely on the von Bertalanffy growth modeling methods until the newly developed growth model can be robustly validated.***

  The primary revision to the SPR model by the Department was the replacement of a von Bertalanffy growth model, with a new set of Gaussian 4-parameter growth curves that were developed by Department staff. These were based on raw data from three tag-recapture studies in order to estimate male and female lobster growth rates. Growth curves are central to determining a stock's ability to replenish itself. Reviewers acknowledged the inherent difficulties in obtaining reliable growth rates for crustaceans, such as lobsters, that grow through molting. Though von Bertalanffy growth models are widely used and accepted, they represent a generic growth response; the Department examined multiple growth models in an attempt to employ an alternative that better represented the growth of *P. interruptus*.

The reviewer's main concern with the current SPR cable model is with the application of the new Gaussian growth curves. While reviewers recognized that the Gaussian 4-parameter curves may better fit the data, they had concerns that these growth models have not been subject to rigorous scientific discussion. The results of the Gaussian curves are not consistent with the existing literature regarding the growth patterns of lobsters in similar ecosystems, and lead to potentially unrealistic SPR model behavior and results. In particular, they lead to growth rate estimates that are very slow such that mature individuals can reproduce many times prior to being vulnerable to full fishing mortality. Slow growth rates in this particular SPR model implementation translate into lower harvest rates and a reduced impact of fishing on population reproductive output; the slower you make growth, the lower the estimated relative exploitation rate is in the SPR model. This is contrary to what is typically understood about growth rates and stock productivity. The fact that this model estimates a "snapshot" of relative exploitation rate in a given year with assumed constant recruitment, rather than tracking exploitation and cohort strength (and potential feedback to recruitment) over time contributes to this somewhat counter-intuitive result, but the unusually slow growth is the primary driver. The net effect of the Gaussian growth model as applied in SPR cable model is that fishing mortality of most legal lobsters has a reduced impact on the estimated SPR, relative to SPR estimation based on the von Bertalanffy growth model.

von Bertalanffy growth expands the resolution of the SPR model compared to the Gaussian growth curves

These Gaussian growth curves are not necessarily incorrect – in fact, they may well be a more accurate representation of lobster growth – and should be improved with additional research. Reviewers commend the Department for making strides to move beyond the standard growth model. Further studies showing that the approach has some precedent with crustaceans and more investigation of the underlying data is necessary before the Gaussian growth model can be applied with confidence. If and when an alternative growth model is considered to be sufficiently developed to incorporate into the SPR model, the Department should consider whether that model is consistent with growth models of lobsters in other (similar) ecosystems, and ensure that sensitivity analyses are conducted to evaluate the effects of any new growth relationships on SPR model performance.

With current understanding, the von Bertalanffy growth model is more appropriate for a relative metric of exploitation as it is more responsive to changes in exploitation, produces results that are comparable to methods used elsewhere for similar fisheries, and expands the resolution of the SPR model (see Appendix A for further analyses conducted by reviewers). Thus, reviewers recommend that the Department rely on the more standard and widely used von Bertalanffy growth modeling methods, until the newer Gaussian curves can be robustly validated.

Longer-term considerations are included in section 1.1.2, including the need to routinely collect length or other size compositional data (length or weight distributions) and information on actual selectivity and maturity curves, which would provide the basis for a more robust SPR model (e.g., more accurate estimates of fishing mortality). Reviewers recognized that there is inherent variability in the growth data at small sizes using the available tag-recapture studies, and provide some recommendations that may increase comfort with new Gaussian growth curves based on these data.

- ***Use SPR with caution at high exploitation rates.***

  It is also important to note that the SPR cable model (with either growth model applied, although the problem is exacerbated at slower growth rates) becomes uninformative at very high exploitation rates (Appendix A). This is partially a result of the confounding of the maturity and selectivity curves described below. This constraint should be recognized explicitly in the SPR model documentation and the FMP, and the Department should be cautious when interpreting results at high exploitation rates.

- ***Reconsider some of the tag-recapture data that were removed from the growth models.***

  The growth models are based on a limited data set, from which some outliers and negative values were removed (per Department presentation to review committee). Juveniles can often show high growth rates in short timeframes, thus some of the data identified and removed might actually be informative. In addition, the Department should consider making the "negative growth" data points zero instead of removing them from the analyses if they are believed to be measurement error. Reconsidering how these data points are treated may reduce variability at small lobster sizes and lead to more accurate estimates of growth.

Model Functionality

- ***Update the vulnerability relationship.***

  In the cable model, the vulnerability function has precisely the same coefficients as maturity. If this is a true coincidence, it should be explained. However, recent data on female lobsters from Hovel et al. (2015) and Kay (2011) indicate that female lobsters may be reproductive at smaller sizes than previously thought. The Department should verify, and if appropriate, update this function in the cable model. In addition, the current function in the cable model is for the commercial fishery that uses traps. Traps have an upper limit based on the throat size of the trap while there is no upper limit in the recreational fishery. Therefore, there should be a separate vulnerability relationship for the recreational fishery in any future model that can account for recreational catch.

- ***Revisit the natural mortality function.***

  The natural mortality function assumes that natural mortality decreases as lobsters grow; however within the current cable model, a minimum rate occurs at an age of 17.92 years and then the rate increases again. This pattern of senescence is unusual, and the Department should provide additional references or data to support the assumption that older, larger lobsters experience higher natural mortality. If the proportion of 'plastered females' (i.e., female lobsters that have mated) is lower at larger sizes, suggesting that large females are not contributing as much to SPR, those data should be presented.

- ***Explain the ramifications of SPR being independent year to year.***

  Each model run begins with exactly 1,000 larvae, and ignores variable and episodic recruitment, and the relationship between spawning biomass and recruitment. The model also assumes constant carrying capacity and a constant function for density dependence, among other considerations. These limitations should be made more explicit in the FMP and model report.

Sensitivity Analyses

- ***Make greater use of sensitivity analyses in explaining the model.***

  Sensitivity analyses are important for understanding the impacts of a model's input variables. They can help identify parameters that are likely to have no effect on the output (and could potentially be removed), as well as variables that have a large effect (where attention should be focused on ways to reduce uncertainty around these values/inputs). The Department should conduct explicit sensitivity analyses each time the SPR cable model is revised, and make this information available in the accompanying report to provide additional credibility to the reasoning behind such revisions. Standard practice is to double and halve the variable of interest and observe the impact to the outputs. The Department should consider assembling and formally communicating the error and uncertainty associated with the cable model results.

1.1.2 Longer-Term Considerations for the SPR Model

The review scope charged reviewers with conducting an assessment of the SPR model based on the Department's currently available data streams that would not require additional information or research. However, the model may benefit considerably from and be more robust as a result of addressing the following longer-term recommendations after adoption of the FMP.

Research Needs

- ***Explore alternative methods to estimate lobster growth.***

  Novel methods for age validation and improved growth estimation continue to emerge and should be explored, either by the Department or by academic and other independent research institutions. For example, direct methods of growth and age determination are now possible for crustaceans by measurements of annual molt-independent growth bands. Detection of growth bands in calcified regions of the eyestalk or gastric mill using the cold cure epoxy resin technique has been reported for cold-water shrimps (*Sclerocrangon boreas* and *Pandalus borealis*), snow crab (*Chionoecetes opilio*) and American lobster (*Homarus americanus*) (Kilada et al. 2012). A similar technique could be used to better estimate growth for the California spiny lobster (even on a spatially explicit basis), and perhaps elaborate or modify the 2011 stock assessment model to include an age-based parameter. Identifying these as key research priorities in the FMP may incentivize outside researchers and funders to pursue this research.

Direct methods of growth and age determination are now possible for crustaceans

- ***Explore additional technical models that can account for variable recruitment.***

  Given that lobster recruitment is likely highly variable and episodic, a key longer-term research objective should be the development of a more sophisticated modeling approach that can track cohorts over time.

- ***Develop a sampling program to collect individual lobster length or weight composition data from both sectors of the fishery.***

  Estimates of fishing mortality used to obtain a corresponding SPR value each year are currently determined using average weight data from the commercial sector. The relevant parameters are derived using an extrapolation, linking logbook data to fish ticket data. These estimates would be greatly improved by a program in which actual length or weight measurements (by individual) could be collected. The sampling program needs to include the recreational sector as well because it accounts for approximately 30% of the landings and their vulnerable sizes may differ from commercial traps. Such data would be helpful in informing more sophisticated modeling approaches (e.g., that track cohorts over time) in the longer-term as well.

- ***Prioritize obtaining intermediate recapture data, which could be useful for better understanding the dynamics of lobster growth rates.***

  While alternative methods to estimate growth are ultimately necessary, reviewers provided a suggestion that may improve upon the existing estimates in the near term.

  The growth curves were developed from data sets with gaps at important size ranges. Tag-recapture data gaps exist between the Engle (1979) and Hovel et al. (2015) data sets, in the 30 mm and 55 mm size classes. Currently, juvenile data must be extrapolated out in any growth curve model. Additional data would be valuable in "filling in" the points between data sets for a more accurate estimate of California spiny lobster growth.

Model Functionality

- ***Develop a function or method to incorporate recreational catch into the model.***

  Recreational catch is a substantial portion of overall catch and is not accounted for in the SPR model. This sector is potentially harvesting larger lobsters, thus, the vulnerability to fishing differs between the recreational and commercial sectors. It is important to parse out the proportion of the spawning potential coming from larger individuals. If this is the case, the vulnerability curve applied in the SPR cable model for the recreational sector should not be dome-shaped, but rather should be asymptotic, and there may be other facets of the recreational fishery of significance in accurately assessing SPR.

- ***Revisit the SPR model as MPAs reach their full maturity.***

  The SPR cable model assumption that South Coast MPAs have reached full maturity (thus, are having a threshold impact on the fishery) is unlikely given the MPAs are newly established. A number of factors will differ as MPAs reach full maturity, including the possibility of increased density dependence which could affect movement and reproduction as well as that spawning stock (given growth curves) may not yet be optimized through size and density. In other words, the current SPR model inputs may be over- or underestimating the effects of MPAs.

- ***Formalize a process to review, revise, update, and evaluate the SPR model and its effectiveness in meeting management goals as new data, information, or analyses become available.***

  Models like SPR will require continual refinement as new information and data are obtained. Many such improvements can be accomplished within this FMP framework. The reviewers commend the Department for removing a prescribed SPR threshold from the language of the draft FMP. This allows the ability to recalculate an appropriate threshold as the model is improved rather than needing to delay implementing these changes by waiting for the FMP to be formally amended. It would be valuable to formalize a process for considering revisions to the model – which may have substantial implications for the SPR outputs – as changes and updates are made. Reviewers recommend convening fishery managers and biologists with independent experts to evaluate the input data, coding, and effectiveness of the model at regular intervals.

1.2 Catch- and CPUE-based Reference Points

As noted previously, the process of reviewing current seasonal catch and CPUE data should permit the Department to monitor the fishery and its stock, and prevent any of the measures from reaching a threshold. However, reviewer consensus is that the Catch and CPUE-based reference points are not very robust or sensitive to picking up trends or slow declines. There is concern that "sliding" calculations will rarely exceed the established thresholds. Even when a threshold is exceeded, no specific management responses are required, thus these measures act more as indicators than as reference points. Section 1.2.1 contains key recommendations that would allow for a more robust method to monitor the condition or trajectory of the fishery, and should be addressed before adopting the FMP. Section 1.2.2 includes recommendations that could be addressed in the longer-term.

1.2.1 Key Recommendations for Catch and CPUE-based Reference Points

- ***Describe the catch and CPUE thresholds as "fishery indicators" instead of reference points.***

  A more informative approach to identifying declines in the fishery may be to present the proposed catch and CPUE reference points as indicators of fishery condition, and set the thresholds to more conservative levels. This could provide a more sensitive measure (i.e., reference thresholds would be crossed more easily, making for earlier "warning signs") and allow the Department to elicit useful scientific information for interpreting any changes observed in SPR.

  Reviewers conducted some additional analyses to explore the sensitivity of the threshold to detecting changes in the fishery (see Appendix B for a description of the full method). They compared California's proposed approach to a method currently under development for the American lobster (*Homarus americanus*) in Canada. In 2014, Canada established a reference point for the American lobster using commercial catch based on the Precautionary Approach (PA) for the southern Gulf of St. Lawrence fisheries. Employing the PA on a 123-year long data series, American lobster landings were below an upper stock reference point 85 times (Appendix B, Figure 1). However, applying the California spiny lobster approach to the same American lobster data revealed that California's proposed 0.8 catch-based reference point would only be exceeded two times (Appendix B, Figure 2), indicating it may not be a very sensitive measure for detecting fishery declines.

  Reviewers then applied Canada's Precautionary Approach to the California spiny lobster commercial landings data (Appendix B, Figure 3). Based on the PA and using a three year running average for landings, California spiny lobster commercial landings would have dropped below an upper stock reference point 31 times between 1935 and 2013, compared to 11 times as indicated in the draft FMP using the current 0.8 catch-based reference point (FMP Figure 4-6).

Based on these preliminary analyses, the 0.8 thresholds are not very sensitive to picking up trends in the fishery. If catch and CPUE data were used as contextual information for interpreting SPR, the thresholds could be set to more conservative levels to allow for greater sensitivity to detect fishery declines.

Another approach for detecting trends would be to report both a static number for $CATCH_{threshold}$ and $CPUE_{threshold}$ in addition to the moving averages, along with a discussion of the pros and cons of each method and what information they can provide.

- ***Clarify rationale for the use of 0.8 thresholds prescribed in the FMP.***

  The FMP should provide more clarity about how the thresholds were derived. They appear to be derived from the Hilborn 2010 citation referenced in the FMP. That study made the point that a broad range of relative abundance levels are typically associated with a more narrow range of relative yield (e.g., most give 80% or more of theoretical maximum), such that declines below 80% of the theoretical maximum could indicate substantial stock declines (if not driven by declines in effort or markets). This is an important aspect of the Catch and CPUE component, and should be better explained in the text.

- ***Report the CPUE statistic in mass per unit effort.***

  The current approach to calculating the CPUE statistic in the FMP is in numbers of individual lobster, not total weight of catch. Using weight (linked to fish tickets) may be more appropriate and is a more typical metric used in such fisheries.

- ***Include greater discussion of the reliability of recreational catch estimates.***

  Recreational catches are a substantial portion of the total catch for spiny lobsters, but seem to have a different trajectory, and one might expect trends to vary from commercial trends in the future as well. The Department should discuss the uncertainty around these recreational catch estimates in greater detail, and clarify whether they were adjusted or tuned to account for non- or under-reporting. Understanding the magnitude and significance of recreational catch is key in considering control rules.

1.2.2 Longer-Term Considerations for Catch and CPUE Data

Again, the review scope charged reviewers with conducting an assessment of the existing reference points and associated thresholds. However, the model may benefit considerably from, and be more robust as a result of addressing the following longer-term recommendations.

- ***Explore other technical models to obtain additional or alternative biological reference points that account for inter-annual variability in recruitment and other variables.***

  The Department could consider estimating the annual fishing mortality rates with a modified Delury depletion model (González-Yáñez et al. 2006, Puga et al. 2013) rather than the moving average approaches for catch and CPUE from average size used in the FMP. A Delury model includes the total numerical catch, the effort and the index of abundance in number (CPUE) as input data, which also takes into account inter-annual variability in recruitment. This approach would allow for both the commercial and recreational sectors to be modeled and there are extensions of the model that include a stock-recruit relationship for obtaining biological reference points. If size composition data become available in the future, the Department may also want to consider a more robust population dynamics analysis similar to one used for Australian southern rock lobsters (*Jasus edwardsii*) (Punt and Kennedy 1997). Additional age-structured analyses (Muller et al. 1997) or yield or egg production models that account for individual variability in growth (Fogarty and Idoine, 1988) may also be informative and should be explored further.

- ***Standardize commercial and recreational catch data to the same spatial reference points.***

  Commercial and recreational fishermen report location at different spatial scales. In comparing Figures 2-3 and 2-10 in the FMP, it appears that commercial fishermen report by Department of Fish and Wildlife block, while recreational fishermen may report by various specific locations (e.g., each of the Channel Islands has a single location code). This discrepancy will confound comparisons in evaluating questions such as the extent of spatial overlap in the commercial and recreational fisheries (e.g., line 825-26 in the FMP).

2. SCIENCE SUPPORTING THE DECISION TO MANAGE AS A SINGLE-STOCK

The FMP provides evidence to suggest that California spiny lobster larvae are well mixed throughout the Southern California Bight ("…complete population mixing due to the species' protracted larval phase"). Accordingly, the Department proposes considering the entire lobster stock within the U.S. border with one spawning potential ratio (SPR) value and threshold. However, Department data show that individuals in the northern Channel Islands are notably larger than the minimum legal size, while lobsters in the south are generally caught very close to the legal size, suggesting northern lobsters participate in more spawning seasons than southern lobsters before capture.

Reviewer's evaluation of the literature and existing research on the population structure of California spiny lobster suggests there is some potential for localized recruitment, and that the species does not maintain a single homogenous population despite the extended pelagic larval duration (Iacchei et al. 2013). However, reviewers recognize that the decision on single-stock management must take into account social, economic, and other factors in addition to the science. It is ultimately up to the Fish and Game Commission to determine the most appropriate method to manage the stock.

- ***Assess and report any spatially explicit differences between regions of the fishery.***

  Available data suggests there are clear regional differences in size distribution, catch, timing of catch, and effort – several of which are meaningful to the calculation of SPR and to determining how it varies in space and time. There is also evidence that growth and reproduction differ spatially, which could lead to spatially structured source-sink dynamics that may interact with fishing in a way inconsistent with single stock

predictions. While lobsters have an extended larval period with extreme dispersal potential (which could lead to assumptions of complete larval mixing), studies in other lobster species suggest substantial localized recruitment (Iacchei et al. 2013).

Reviewers recommend reporting any spatial differences among regions of the fishery to assist decision-makers with parsing out trends in catch and life history traits across the region, and assess whether current harvest control rules are adequately meeting management goals.

Reporting spatial differences among regions of the fishery can help decision-makers parse out trends in catch and life history traits

- ***Interactions with the Mexican spiny lobster stock should be considered and discussed in greater detail throughout the FMP.***

The reviewers expressed concern about the decision to neglect potential interactions between California and Mexico lobster populations. Given how the biology and management of Mexico's portion of the stock has implications for the entire range of the species, the FMP should include discussion of the potential uncertainty in SPR calculations associated with neglecting potential contributions from the south.

For example, regardless of the genetic structure of California spiny lobster, if the larval pool for California's population includes a large contribution from the Mexican portion of the stock, the actual SPR may be insensitive to management actions in California. The Department should discuss uncertainty around larval transport and reproductive interactions between California and Mexico's lobster populations. This should include a more comprehensive review of the literature (e.g., bolstering literature citations supporting the idea that stock is, or is not, well mixed).

- ***Prioritize longer-term research needs relating to regional differences in the species' biological parameters.***

The Department should prioritize collection of data aimed at better understanding lobster population genetics, plankton connectivity modeling, and the benthic stage. This could provide greater insight into source and sink populations, interactions with Mexican spiny lobster populations, and how management in California will affect the population.

Evidence from multiple lobster fisheries suggests local recruitment processes are possible. A recent microsatellite and mitochondrial DNA study in California spiny lobster suggests that the genetic structure of the *P. interruptus* exhibits genetic patchiness (Iacchei et al. 2013). The species does not maintain a single homogenous population, despite the species' 240-to 330-day pelagic larval duration. Instead, these lobsters appear to either have substantial localized recruitment or maintain planktonic larval cohesiveness whereby siblings more likely settle together than disperse across sites. However, DNA analysis in the Caribbean lobster (*P. argus*) suggest that populations of this spiny lobster are highly interconnected throughout its range, with a single genetic stock structure (Truelove et al. 2014, Lipcius and Cobb 1994; Silberman and Walsh 1994), except for a few sites where self-recruitment is enhanced by persistent offshore gyres. Lastly, a genetic study in the American lobster *(Homarus americanus*) indicated a genetic homogeneity of the northern region of the lobster population (suggesting a single genetic stock) within the Gulf of St. Lawrence (Kenchington et al. 2009). However, a larval transport model for this species also showed an extensive pelagic connectivity with some level of local recruitment (Chassé and Miller 2010) and no physical features that restrict benthic stage exchanges (Comeau and Savoie 2002).

Research suggests California spiny lobster populations exhibit localized recruitment

3. ESTIMATE OF LOBSTER HABITAT CONTAINED WITHIN MARINE PROTECTED AREAS

The FMP factors in the effects of California's network of MPAs by including them as a component of the fishing mortality calculation in the SPR cable model. The model includes an estimate that 14.6% of all available lobster habitat is protected by MPAs. This is based on available hard-bottom habitat data, augmented by proxy information where suitable bottom-type data are not available, for all the areas that comprise lobster habitat. Only areas that prohibit both recreational and commercial take were used for this calculation. In the near term, reviewers would like to see additional discussion in the FMP of the data sources used, and going forward, refinements to these estimates as the model is improved. Given other uncertainties in the spatial analyses, reviewers suggested that an estimate of 15% is likely adequate.

- ***Provide greater discussion of the data sources used to estimate suitable lobster habitat.***

  Reviewers acknowledge the rigor of the hard bottom data set used to generate the estimate, however the Department should provide more clarity on the locations where information was not available from this data set. It would also be informative to report a rough percent of unmapped habitat and percent of the estimate that was calculated using kelp canopy.

- ***Continue to refine the MPA estimate as new information becomes available.***

  The data used to estimate lobster habitat contain critical data gaps within the shallow nearshore regions (typically 10-15 meter depths) where remote sensing techniques are generally infeasible (known as the "white zone"). New research is providing better information to bridge these data gaps.

  Ongoing research through UC Santa Cruz, the California Department of Fish and Wildlife (staff contact: Paulo Serpa), and Ocean Science Trust is making progress on estimating sand versus rocky habitats across the State within this white zone. The first stage has been completed in the North Central coast and may be expanded statewide over the coming years, and could potentially provide an additional data source to incorporate into the Department's MPA estimate. The Seafloor Mapping Lab at California State University, Monterey Bay developed a shallow water mapping vessel, the R/V Kelp Fly, uniquely able to map the white zone. As these new data sources become available, the Department should include them as refinements to the cable model. The Department should also explore the contribution of habitat from breakwaters and artificial jetties.

- ***Consider developing a function or method to consider actual marine protected area sizes in the SPR cable model.***

  The SPR cable model makes coarse assumptions about the size and spacing of MPAs within the lobster range. The actual values of these parameters are well known, and accounting for California's actual MPA sizes and spacing – which differ regionally – could have implications for regional estimates of vulnerability because of the assumptions of movement that interact with the size and location of MPAs.

4. RESEARCH AND MONITORING

- ***Continue to update and prioritize research and data needs in the FMP.***

  The FMP includes Table 5-1, a prioritized list of research and data needs. Throughout this report, reviewers have identified additional research and data needs that would support more robust management of the fishery (some of which parallel those noted in the FMP). Additional recommendations from this review should be incorporated in the table as well. These science needs could provide further impetus for collecting the information identified and prioritized. A resource with up-to-date research and monitoring needs

provides independent researchers (and potential funders), with the basis for assessing the applicability of given research or other proposals to spiny lobster management and/or state information needs. The Department should continue to update this prioritization and guidance.

5. ADDITIONAL RECOMMENDATIONS

This section contains additional recommendations reviewers considered important, but were not clearly outlined in the formal scope of review.

- ***The harvest control rule matrix should include predetermined management options.***

  While reviewers recognized that this recommendation might be outside of the review scope, they agreed that scientific recommendations are most successful when they are accompanied by predetermined management actions. The lack of pre-determined management response options when one or more of the management thresholds are exceeded has the potential for inaction if the indices or data suggest there are troubling in the fishery. Table 4-2 in the draft FMP lists the suggested management response sequence, including four scenarios in which "No response is required," and another four in which a response is required. However, the required response in these scenarios is an investigation of underlying causes and confirmation with multiple models and approaches; if management action is required, the FMP guidance is to "tailor management response to prevailing conditions." The reviewers found these requirements vague.

  One of the key benefits of pre-specified harvest control rules is a higher certainty of the actions that will be taken when reference points are exceeded. This allows models to be used to evaluate the effectiveness of these actions to restore the fishery to the desired condition.

  Other fisheries that have used SPR for developing harvest control rules may provide good resources for identifying appropriate management responses to thresholds that have been exceeded. Consider supplementing FMP Table 4-1 (summary of SPR thresholds for other lobster fisheries) with a discussion of the management response are in those various management scenarios, as well as whether any of those fisheries also include target SPR rates.

- ***Clarify the information required for setting total allowable catch (TAC).***

  Lines 1964-1965 state that "Creating a TAC for the CA lobster fishery would likely require the Department to estimate the total biomass of the stock…". This is not necessarily true. For example the Market Squid fisheries established a TAC based on historical high catch levels in the absolute absence of total biomass estimates or idealized CPUEs. For many groundfish and other exploited fishes, a common practice in the absence of a quantitative guidance for stocks or stock complexes is to set a TAC at some fraction (e.g., 0.5, 0.75) of the peak historical catch. Any TAC that might be implemented should have a rationale, but it does not mean it requires a sophisticated model.

Looking Forward: Considerations for developing scientific models for state fishery management plans

The California spiny lobster FMP represents one of the first examples of a state fishery management plan including the use of a technical model to obtain harvest control rules. The experts who participated in this review have experience developing and using fisheries models at the federal and international levels, and thought it valuable to provide insight into processes employed elsewhere.

When considering the development and use of other technical models going forward, the Department should ensure that the plan for producing the science is decoupled from any management concerns. This will include scoping the objectives, approaches, reporting requirements, and responsibilities of various participants in advance. Model development should take place from a position of academic freedom focused on developing the best model, given the resources and data. The Department should ensure the process is inclusive and transparent from the outset.

Reviewers also suggest decoupling the review of technical models from review of the FMP that such models inform. Future model reviewers should have the responsibility of ensuring that the models represent the best available science and the most robust methods. This review committee acknowledges that ideally an in-person, multi-day review workshop with the model development team would allow more detailed technical discussion and model improvement. It is advantageous to have several days to review, so that modelers can be given "homework" on sensitivity tests or alternative analyses that come up during the review and report back. Any future review team should include scientists from outside the region and fishery, and if possible, international expertise. A goal should be to ensure that the model is clearly understandable to those with no background in the particular fishery under consideration. Only models that have been accepted by reviewers as the best available science are advanced to managers. This way, managers can make recommendations and develop harvest control rules based on a model that has been independently recognized as scientifically rigorous.

As noted in this report, models like SPR will require continual refinement and review to ensure they are effectively meeting management goals. Formalizing a process to periodically review the model coding and configuration, and incorporate recent information is recommended. Groups like SouthEast Data, Assessment and Review[1] (SEDAR) and NOAA PFMC Stock Assessment Review (STAR) Panels may provide informative examples of successful approaches that vary in detail and level of time and analyses required.

[1] More information at http://sedarweb.org/

References

Chassé, J., and R.J., Miller. 2010. Lobster larval transport in the southern Gulf of St. Lawrence. Fish. Oceanogr. 19:5, 319–338.

Comeau, M., and Savoie, F. 2002. Movement of the American lobster, *Homarus americanus*, in the southwestern Gulf of St. Lawrence. Fish. Bull. 100: 181-192.

Engle, J.M. 1979. Ecology and growth of juvenile California spiny lobster, *Panulirus interruptus* (Randall). Dissertation, University of Southern California, Los Angeles, California.

Fogarty, M.J. and JS. Idoine. 1988. Application of a yield and egg production model based upon size to an offshore American lobster population. Trans. Am. Fish. Soc. 117:350-362.

González-Yáñez, A. A., R. Puga Millán, M. E. de León, L. Cruz-Font, and M. Wolf. 2006. Modified Delury depletion model applied to spiny lobster, *Panulirus argus* (Latreille, 1804) stock, in the southwest Cuban Shelf. Fish. Res. 79:155-161.

Hovel, K., Nielsen, D.J., and Parnell, E. 2015. Baseline characterization of California spiny lobster (*Panulirus interruptus*) in South Coast marine protected areas. https://caseagrant.ucsd.edu/sites/default/files/SCMPA-25-Final-Report.pdf

Hilborn, R. 2010. Pretty Good Yield and exploited fisheries. Marine Policy 34: 193-196.

Iacchei, M., Ben-Horin, T., Selkoe, K. A., Bird, C. E., García-Rodríguez, F. J., & Toonen, R. J. (2013). Combined analyses of kinship and FST suggest potential drivers of chaotic genetic patchiness in high gene-flow populations. Molecular Ecology, 22(13), 3476–3494. doi:10.1111/mec.12341

Kay, M. 2011. Community Based Fisheries Research on California Spiny Lobster (*Panulirus interruptus*) at the Santa Barbara Channel Islands.

Kenchington, E.L., G.C. Harding, M.W. Jones, and P.A. Prodöhl. 2009. Pleistocene glaciation events shape genetic structure across the range of the American lobster, *Homarus americanus*. Molecular Ecology 16 1654-1667 doi: 10.1111/j.1365-294X.2009.04118.x]

Kilada, R., B. Sainte-Marie, R. Rochette, N. Davis, C. Vanier, and S. Campana. 2012. Direct determination of age in shrimps, crabs, and lobsters. Can. J. Fish. Aquat. Sci. 69: 1728–1733 doi:10.1139/cjfas-2012-0254.]

Lipcius, R. N., Cobb, J. S. (1994). Ecology and fishery biology of spiny lobsters. In: Phillips, B. F., Cobb, J. S., Kittaka, J. (eds.) Spiny lobster management: current situation and perspectives. Blackwell Scientific, Oxford, p. 1-30

Muller, R. G. , J. H. Hunt, T. R. Matthews, and W. C. Sharp. 1997. Evaluation of effort reduction in the Florida Keys spiny lobster, *Panulirus argus*, fishery using an age-structured population analysis. Marine and Freshwater Research 48: 1045-1058.

Puga, R., Piñeiro, R., Alzugaray, R., Cobas, L.S., de León, M.E., and Morales, O. 2013, Integrating Anthropogenic and Climatic Factors in the Assessment of the Caribbean Spiny Lobster (*Panulirus argus*) in Cuba: Implications for Fishery Management, International Journal of Marine Science, Vol.3, No.6 36-45 (doi: 10.5376/ijms.2013.03.0006)

Punt, A.E. and R.B. Kennedy. 1997. Population modelling of Tasmanian rock lobster, *Jasus edwardsii*, resources. Mar. Freshw. Res. 48: 967-980.

Silberman, J. and Walsh, P. 1994. Population genetics of the spiny lobster, *Panulirus argus*. Bull. Mar. Sci., 54: 1084.

Truelove, N.K., Griffiths, S., Ley-Cooper, K., Azueta, J., Majil, I., Box, S.J., Behringer, D.C., Butler, M.J., Preziosi, R.F. 2015. Genetic evidence from the spiny lobster fishery supports international cooperation among Central American marine protected areas. Conservation Genetics, Vol. 16(2), pp 347-358. (http://dx.doi.org/10.1007/s10592-014-0662-4)

Appendices

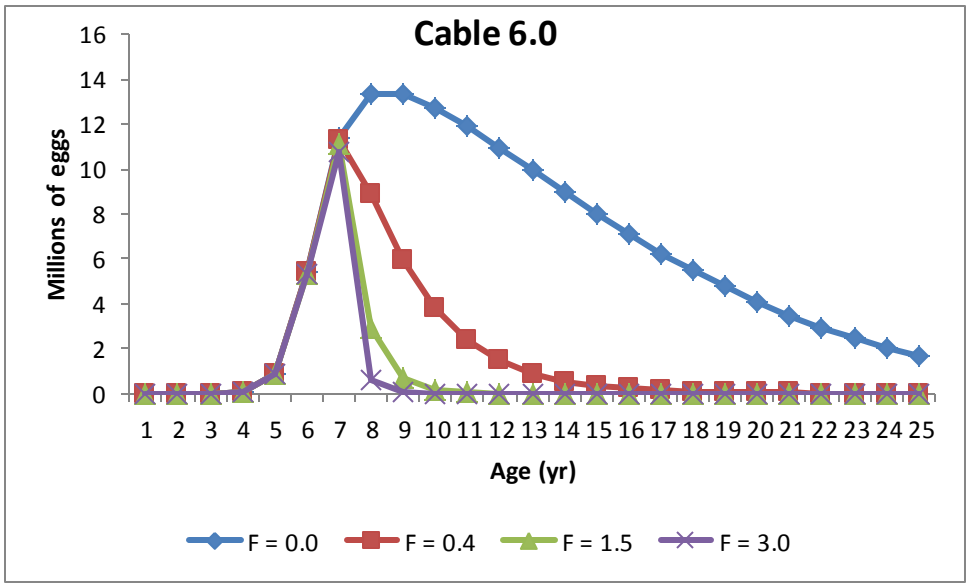
Appendix A: von Bertalanffy and Gaussian Growth Curve Comparison, and *Appendix B: Applying the Canadian Precautionary Approach to California Department of Fish and Wildlife Commercial Landings* contain additional analyses that were conducted by the review committee as part of their assessment in support of the recommendations contained within this report.

Appendix C: Scientific and Technical Review Process details the process Ocean Science Trust developed and implemented for this review.

APPENDIX A: VON BERTALANFFY AND GAUSSIAN GROWTH CURVE COMPARISON

We (the review committee) compared the von Bertalanffy and Gaussian growth models to determine which would be most appropriately applied in the SPR model. The first step was to examine the cumulative fecundities, in millions of eggs, over the projected 25-year lifetime. The age-specific fecundities from the Cable 6.0 model, which uses a von Bertalanffy growth curve, and those from the CDFW 1.0 model, that uses their new growth model, are shown in Figure 1 plotted at the same scale. The main difference is the levels of fecundity. In the Cable model, the cumulative fecundity at F = 0 is 147.2 million eggs while the fecundity at F = 0 in the CDFW model is 46.4 million. At high fishing mortality rates, the fecundities are similar (17.7 vs. 15.8 million eggs at F = 3.0) which means that the SPR ratio will be much higher in the CDFW model; the higher SPR is just the result of the much lower unfished cumulative fecundity (Figure 2).

A.



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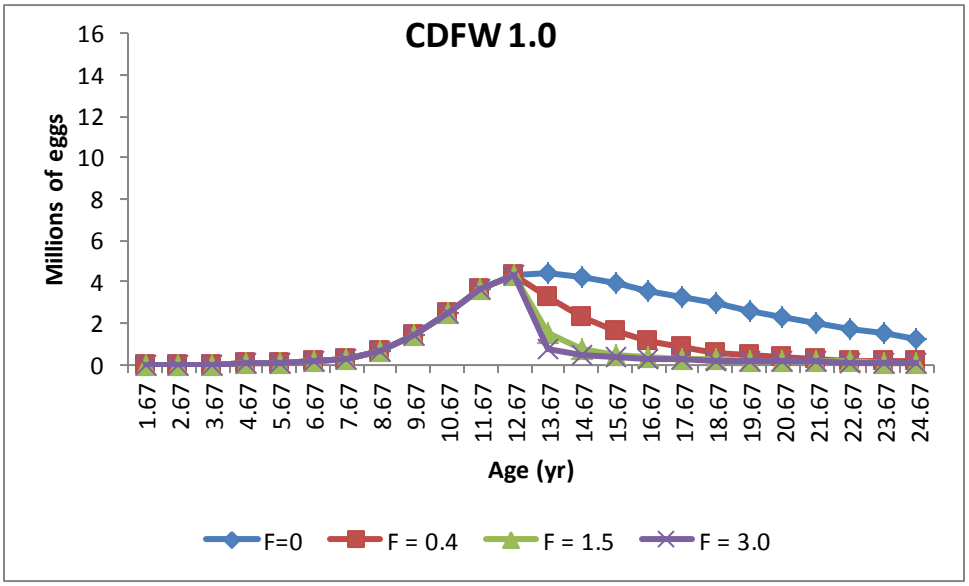

Figure 1. Fecundity by age for the two SPR models: a) the Cable 6.0 and b) CDFW 1.0 for a range of fishing mortality rates.

Even for a high fishing mortality rate of 3.0 per year, the CDFW model still has a SPR value of 34%. However, when we plotted the corresponding average lobster weight against fishing mortality (Figure 3), which is the basis of the control rule, we found that neither model would be a very sensitive way of determining fishing mortality and the corresponding fishing mortality rate that would be used to obtain the SPR value each year. Note that the axes in Fig. 3 are plotted to reflect that the average weight is what is measured so as to estimate the fishing mortality rate. With the current SPR model, fishing mortality would be undefined at average weights less than 1.40 lb. For comparison, the average weight at legal size (82.5 mm CL is 1.25 lb for males and 1.38 lb for females).

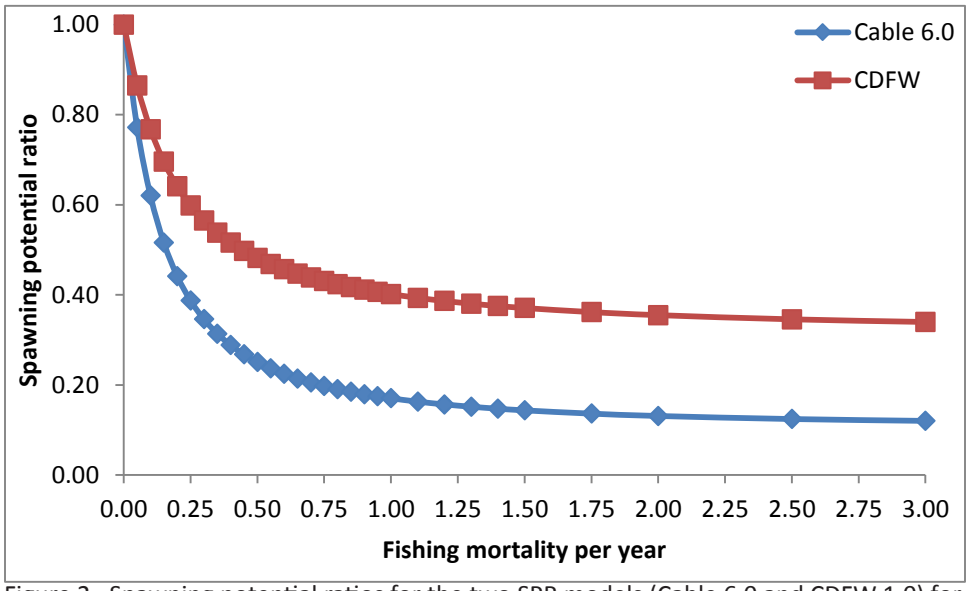

Figure 2. Spawning potential ratios for the two SPR models (Cable 6.0 and CDFW 1.0) for a range of fishing mortality rates.

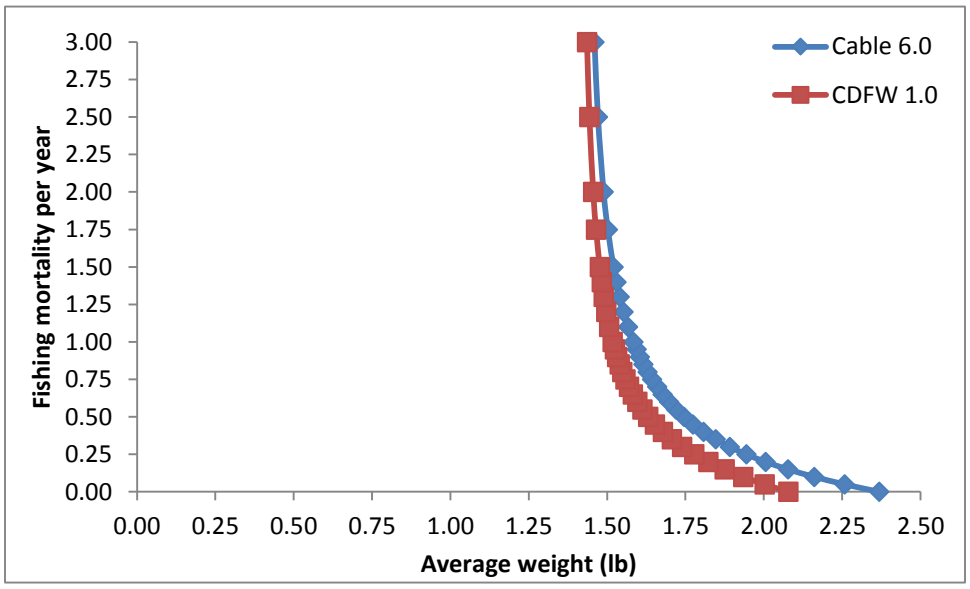

Figure 3. Average spiny lobster weights and the corresponding fishing mortality rates from the two SPR models (Cable 6.0 and CDFW 1.0).

APPENDIX B: APPLYING THE CANADIAN PRECAUTIONARY APPROACH TO CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE COMMERCIAL LANDINGS

We compared the sensitivity of the Department's proposed catch-based threshold approach with another strategy in use for the American lobster in Canada. In 2014, Canada established a reference point for their southern Gulf of Saint Lawrence lobster fisheries using commercial catch based on the Precautionary Approach. Based on this approach, if landings are between an upper stock reference (USR) and the limit reference point (LRP, i.e., the caution zone) it automatically triggers management considerations. These harvest control rules are pre-set management actions aimed at exiting the caution zone and re-entering the healthy zone (i.e., above the upper stock reference point). Based on a 123-year data series for the southern Gulf of Saint Lawrence, management considerations would have been triggered for the American lobster 85 times, and 12 times in a recovery mode (i.e., drastic reduction of effort to a no fishing situation) (Figure 1). However, applying the California spiny lobster approach to the same American lobster data revealed that California's proposed 0.8 reference point would only be exceeded two times (Figure 2).

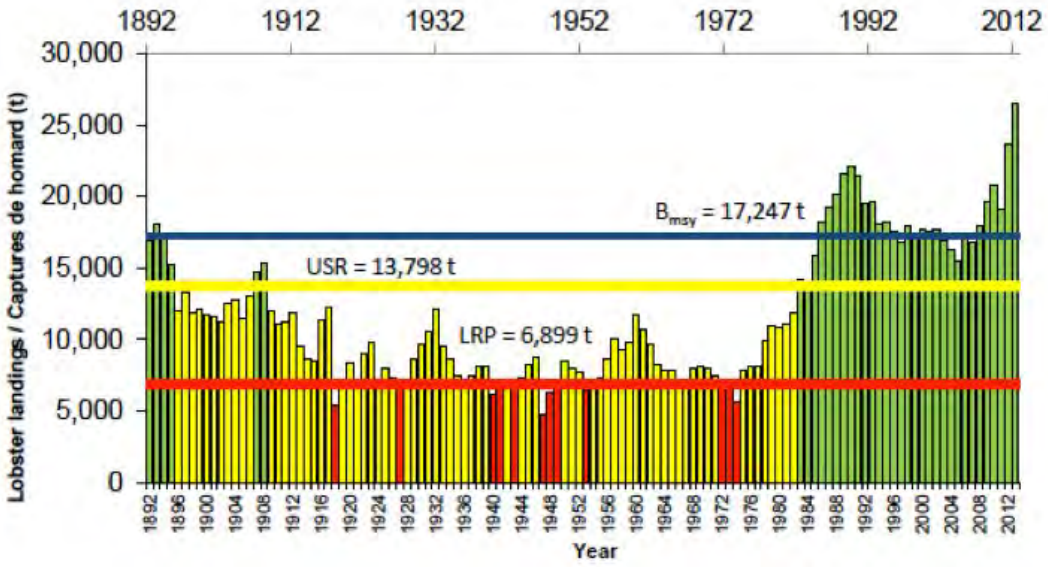

Figure 1. American lobster landings (1893-2013) in the southern Gulf of St. Lawrence; years in the healthy zone (i.e., above the upper stock reference [USR]) in green, caution zone (i.e., between the USR and the limit reference point [LRP]) in yellow, and below LRB in red. The biomass for the maximum sustainable yield (B_{msy}) is estimated at 17,247 t.

We then applied Canada's Precautionary Approach to the Department's California spiny lobster commercial landings data. To do this, we calculated a hypothetical biomass at maximum sustainable yield (B_{msy}) based on a time period from low landings followed by a "recovery" to higher and more sustained landings. Based on the information in the draft spiny lobster FMP, the lowest landings (with information available on effort) were observed in 1974 followed by increasing landings (with fluctuations) until 2013. Based on the trap pull haul (webinar presentation fig. 2.6), it seems that the effort level (traps hauled) increased 4 times: 200,000-400,000 between 1973-1979; 400,000-600,000 (with a drop in 1991-2) between 1980-94; ±800,000 between 1995-2011; and above 1 million in 2012-3. A reasonable assumption is that the stock could sustain the 800,000 trap haul level (16 years) since the landings did not drop during the time. Hence, the time period could be established between 1974 and 2011. However, please note that based on the CPUE reference values (see fig. 4.7 in FMP document), one could reasonably argue that the stock does not seem to react well to the level of effort in the last 7 years and that the time period should/could be 1974-2007. Nevertheless, using the 1974-2011 period

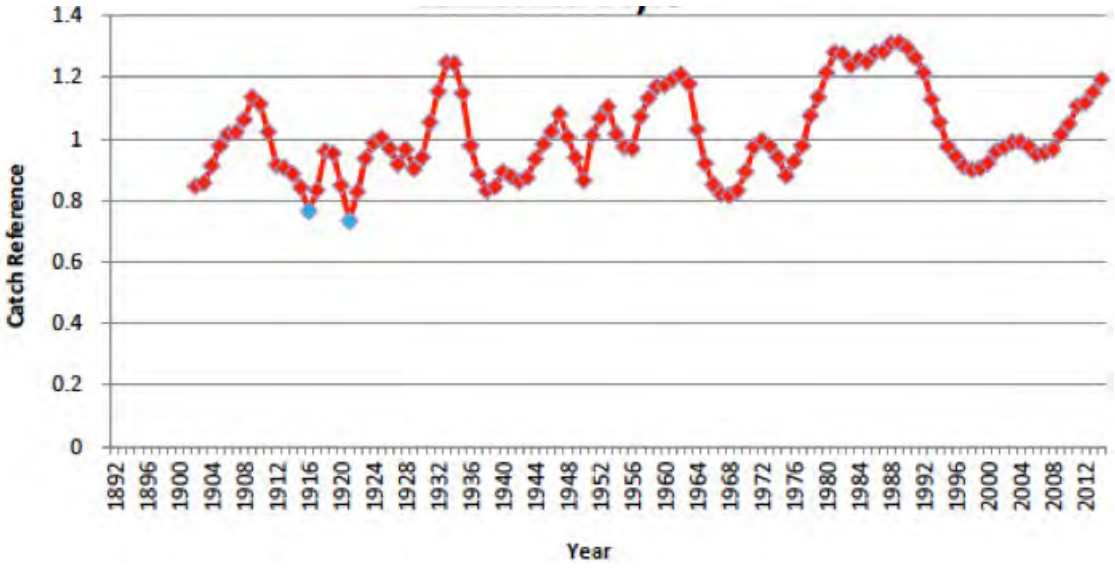

Figure 2. Catch reference for the American lobster landings (1892-2013) in the southern Gulf of St. Lawrence using the California spiny lobster catch-based threshold approach.

the B_{msy} is estimated at 587,409, given an upper stock reference (80% of B_{msy}; USR) of 469,927, and the limit reference point (40% of B_{msy}; LRP) of 234,963 (Figure 3). The draft FMP (Figure 4.6) indicates that between 1935 and 2013 management considerations would have been trigged 11 times, mostly between 1960-74. Based on the precautionary approach and using a 3-year running average for landings, the spiny lobster fishery was below LPR in 1975-6 (critical zone; normal because the time period stated at low values), which would trigger a recovery period (i.e., drastic reduction of effort to a no fishery situation). Since 1935, landings were between LRP and USR (caution zone) 31 times (latest 1977-87) that would have triggered immediate management actions from pre-established harvest control rules (mainly effort reductions) to, hopefully, exit the caution zone and re-enter the healthy zone. Landings between USR and Bmsy was observed 9 times (latest 1993-5) but does not trigger urgent management considerations, but could be used by managers to start a dialogue with the industry (e.g., to be cautious).

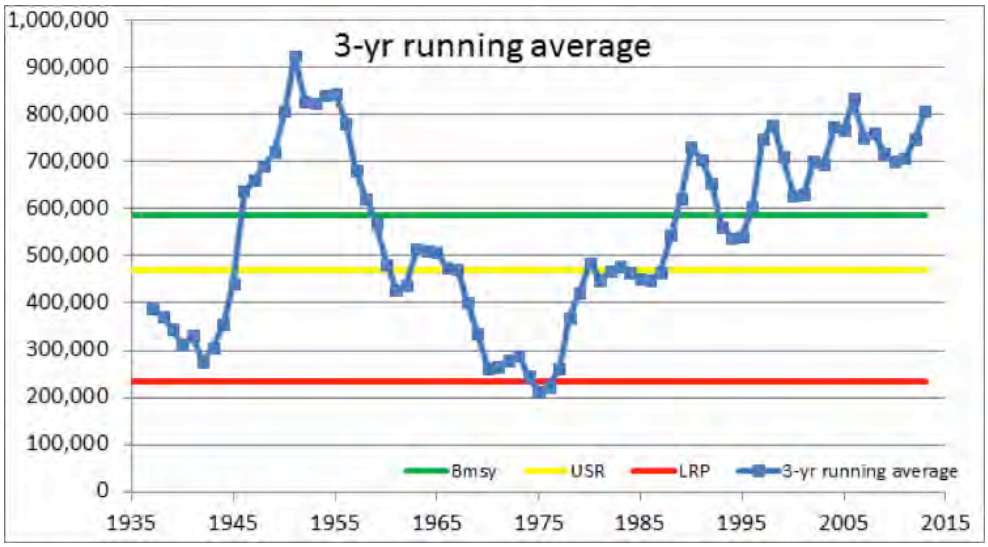

Figure 3. Application of Canada's Precautionary Approach to California spiny lobster commercial landings data; years in the healthy zone (i.e., above the upper stock reference [USR; yellow line]), caution zone (i.e., between the USR [yellow line] and the limit reference point [LRP; red line]), and below LRP. The biomass for the maximum sustainable yield (B_{msy}) is estimated at 587,409 lbs.

APPENDIX C: SCIENTIFIC AND TECHNICAL REVIEW PROCESS

The California Department of Fish and Wildlife (the Department) asked California Ocean Science Trust to coordinate an external scientific and technical review of the reference point thresholds prescribed in the California Spiny Lobster Fishery Management Plan (FMP) and supporting materials. Specifically, the Department sought an independent assessment of whether the technical components, spawning potential ratio model, and supporting documents that underpin the proposed reference point thresholds prescribed in the FMP are scientifically sound and reasonable given the Department's currently available data streams and analysis techniques. See the "Scope of Review" for details on the charge to reviewers.

Ocean Science Trust designed and implemented all aspects of the review process, including compiling appropriate background materials, drafting instructions to guide reviewers throughout the process, scheduling and hosting remote meetings as appropriate, and working with reviewers to produce a written final summary report, among other activities. Upon completion of the review, the final report was delivered to the Department and made publicly available on the Ocean Science Trust website. Throughout, Ocean Science Trust facilitated constructive interactions between the Department and reviewers as needed in order to ensure reviewers provide recommendations that are valuable and actionable, while maintaining the independence of the review process and outputs

Scientific Review Principles

In any review, it is our intent to provide an assessment of the work product that is balanced, fairly represents all reviewer evaluations, and provides feedback that is actionable. When building a scientific and technical review process, we seek to balance and adhere to six core review principles. These principles help guide the design and implementation of each review, and shape the final outputs:

- **Scientific rigor:** the process must yield an evaluation of whether scientific and technical components contained within products are valid, accurate and thorough.
- **Transparency:** given the context for the review, the process must include the appropriate level of information disclosure and openness in order to facilitate social recognition and accountability.
- **Legitimacy:** the process must yield an output that is viewed as authoritative in the eyes of scientific community, the requesting agency, and other constituents.
- **Credibility:** the process will seek to be unbiased and incorporate the best available science.
- **Salience:** the process will consider the most relevant scientific information while balancing management needs and timelines.
- **Efficiency:** the process will be as cost-effective as possible, and utilize time, resources, and effort in a proficient manner to create the most robust output possible.

Review Process

The review took place from October 2014 through May 2015. A timeline of each task is provided below.

	2014			2015				
Milestone	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**
Task 1 - Review Preparation								
Scope and process development; budget and administrative preparation; reviewer solicitation and selection process; collateral material development	X							
CDFW delivery of draft FMP to Ocean Science Trust		X						
Task 2 – Conduct Review								
Webinar 1: Initiation of Review (Attendees: CDFW, Review Committee, Ocean Science Trust)			X					
Webinars 2: FMP Assessment (Attendees: Review Committee, Ocean Science Trust)				X				
CDFW delivery of draft SPR model and report to Ocean Science Trust						X		
Webinar 3: SPR Model Assessment *(Attendees: CDFW, Review Committee, Ocean Science Trust)*						X		
Webinar 4: Cont. SPR Model Assessment, Develop Review Recommendations *(Attendees: Review Committee, Ocean Science Trust)*							X	
Task 3 – Finalize Summary Report								
Deliver final report to CDFW and make available online; publish membership of review committee; present findings to the Fish and Game Commission								X

Assembling the Review Committee

Ocean Science Trust implemented a reviewer selection process to assemble a review committee composed of four external scientific experts. Ocean Science Trust consulted with and accepted reviewer recommendations from the Ocean Protection Council Science Advisory Team (OPC-SAT), as well as Ocean Science Trust's own professional network among the academic and research community. Membership included experts from academia, research institutions, and government entities in order to deliver balanced feedback and multiple perspectives. Reviewers were considered based on three key criteria:

- **Expertise:** The reviewer should have demonstrated knowledge, experience, and skills in one or more of the following areas:
    - Fisheries biology, stock assessments and modeling, including spawning potential ratio analyses and application
    - Invertebrate ecology and/or population biology, with an understanding of California's coastal ecosystems, and how invertebrate stocks respond to fishing pressure, climate change and marine protected areas
- **Objectivity:** The reviewer should be independent from the generation of the product under review, free from institutional or ideological bias regarding the issues under review, and able to provide an objective, open minded, and thoughtful review in the best interest of the review outcome(s). In addition, the reviewer should be comfortable sharing his or her knowledge and perspectives and openly identifying his or her knowledge gaps.
- **Conflict of Interest:** Reviewers will be asked to disclose any potential conflicts of interest to determine if they stand to financially gain from the outcome of the process (i.e. employment and funding). Conflicts will be considered and may exclude a potential reviewer's participation.

Final selections for the review committee were made by the Ocean Protection Council Science Advisor (Ocean Science Trust Executive Director). Ocean Science Trust selected one member of the review committee to serve as chair to provide leadership among reviewers, help ensure that all members act in accordance with review principles and policies, and promote a set of review outputs that adequately fulfill the charge and accurately reflect the views of all members.

Series of Review Webinars

All meetings took place via a series of remote online meetings (webinars) and phone calls. At the outset of the review, Ocean Science Trust worked with the Department to develop detailed reviewer instructions that encouraged focused scientific feedback throughout the process. Instructions included directed evaluation questions and delegated tasks for reviewers based on their individual areas of expertise. The instructions were used to guide the development of meeting agendas, and track progress throughout the course of the review. For each meeting, advanced work was required of participants (e.g., conducting analyses, drafting responses to guiding questions, preparing presentations) in order for all parties to come prepared for meaningful discussions. Ocean Science Trust notified CDFW of additional requested materials and data prior to the first "Initiation of Review" webinar in mid-November.

- **Webinar 1: Initiation of Review (*December 2014*)**

Ocean Science Trust hosted an initial remote meeting (webinar) to provide the review committee and Department staff an overview of the scope and process, and clarify the roles and responsibilities of each participant. The Department provided a summary of the relevant management context to ensure reviewers understood the role of the review in the FMP development process, and how the outputs would be considered. The bulk of the webinar focused on a presentation by the Department of the scientific and technical components

of the draft FMP. The webinar was an opportunity to develop a shared understanding of the tasks and allow reviewers to ask the Department any clarifying questions about the review materials before they convened independently to conduct their technical assessment.

- **Webinars 2-4: Reviewers convened with Ocean Science Trust to conduct review (*January through April 2015*)**

Ocean Science Trust convened three remote one- to two-hour webinars with the review committee to conduct an in-depth evaluation of the components identified in the Scope of Review. In advance of each webinar, reviewers were asked to prepare responses to guiding evaluation criteria questions from the review instructions. During each webinar, reviewers discussed their findings and developed conclusions and recommendations. Outputs from each webinar, as well as reviewer responses to the questions, guided the development of the final report.

Final Summary Report

Ocean Science Trust worked with the review committee to synthesize reviewer assessments (responses to the review instructions and input during webinars) into a cohesive, concise final report. The final report was delivered to the Department in May 2015, and made publicly available on Ocean Science Trust's website along with the identities of the review committee members. Ocean Science Trust presented the review results on behalf of the review committee at the June 10, 2015 California Fish and Game Commission public meeting in Mammoth, California.

Contact Information

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Appendix XIII – CA Lobster FMP Edits in Response to Scientific Peer Review Comments

The scientific foundation for the California Spiny Lobster Fishery Management Plan (CA lobster FMP) underwent an independent, external peer review by a panel of academic and government scientists, expert in lobster fisheries and marine invertebrates. Reviewers focused on the reference points used within the harvest control rule (HCR), the model used to calculate spawning potential ratio (SPR), methods for incorporation of the effects of marine protected areas on the stock and fishery, and the decision to manage CA lobster as a single stock. The primary changes to the previous draft of this FMP in response to peer review include:

- A von Bertalanffy growth model was used to describe lobster age at a given size within the model used to calculate SPR.
- Catch and catch per unit effort (CPUE) reference points were made more sensitive by setting the threshold levels at 0.9 rather than 0.8.
- Expanded discussion of possible reference points and associated models was added to the FMP along with increased explanation of the selected approach.
- Information on regional differences within the stock was added and better understanding of these differences was highlighted as an information need.

The responses below address each specific recommendation made by the panel and highlight what changes, if any, were made to the draft FMP in response. California Department of Fish and Wildlife (CDFW) responses to comments follow the same outline structure within the panel's final report (Appendix VIII to the CA lobster FMP). The Cable model was originally developed by Dr. Richard Parrish under contract with the South Bay Cable Liaison Committee (Parrish 2013), and ongoing revision of it has been necessary to address some panel recommendations. References to the CDFW-Cable model in this document are for the most recent version that was developed through collaboration among CDFW staff and CDFW contractors, including assistance from Dr. Parrish.

1 Evaluation of the proposed reference point thresholds

1.1 Spawning Potential Ratio (SPR) Cable Model and the SPR Reference Point

1.1.1 Key Recommendations for Securing a Management-Ready SPR Model

Growth Model

Comment: Rely on the von Bertalanffy growth modeling methods until the newly developed growth model can be robustly validated.
Response: CDFW fit a von Bertalanffy model to existing growth data from tag-recapture studies generating a new equation to relate size and age within the CDFW-Cable model. Separate male and female equations resulted in greatly underestimated maximum size, which lead to unrealistic model results. Given this, von Bertalanffy parameters derived for the Mexican CA spiny lobster stock were taken from Vega (2003). Equations with separate parameters for males and females were input to the CDFW-Cable model (see Appendix VII to the CA lobster FMP).

Comment: Use SPR with caution at high exploitation rates.
Response: Discussion of the limitations to the CDFW-Cable model at high exploitation rates were added to the FMP within section 4.3.1 and the corresponding Figure 4-9.

Comment: Reconsider some of the tag-recapture data that were removed from the growth models.
Response: Growth increments of 0 mm were retained as recommended. The occurrence of negative growth increments as well as outliers was re-examined. After accommodating the data filtering requirements designed to ensure a molt had occurred between lobster measurements (>150 days at liberty and measurements before and after the molting season) negative values fell out of the data set. Two extreme outliers remained and were removed. As stated above, the resulting von Bertalanffy model was unrealistic and was not used.

Model Functionality

Comment: Update the vulnerability relationship.
Response: Lobster vulnerability to traps is described by a size-dependent equation within the CDFW-Cable model. This equation simulates low vulnerability for small lobsters that are able to escape through escape ports, grows to high vulnerability for legal-size lobsters, then low vulnerability again for very large lobsters that are too large to enter trap funnels. Parameters determine the rate at which vulnerability increases then decreases again. Equations for vulnerability and female sexual maturity are of a similar form because maturity also increases quickly as females increase in size. The parameter guiding this increase was the same in an earlier model version by coincidence. The parameter for female maturity was set based on published observations of sizes of berried females. The parameter for vulnerability was set based on sizes of lobsters typical in traps. That parameter was then "tuned" within the model to produce a simulated percentage of shorts in the catch that matched this percentage from commercial log data. This tuning procedure was repeated on the most recent model version, which utilizes a different growth model, resulting in slightly different vulnerability parameters.

Comment: Revisit the natural mortality function.
Response: The CDFW-Cable model natural mortality function is size-based and results in high natural mortality for young lobsters which decreases to a value of 0.17 for most size classes before increasing again for large lobsters. CDFW performed a sensitivity analysis to examine differences in model output using natural mortality equations with and without increasing natural mortality for old, large lobsters (senescence). Senescence had little impact on model results because few lobsters live to achieve the size at which senescence is relevant. Therefore simulated senescence was removed from the natural mortality function. Additional references were added to the FMP within section 5.2, subsection on total mortality. The referenced studies also used natural mortality rates of approximately 0.17 although typically used a constant rate rather than size-based. Temperature and von Bertalanffy parameters were also used to calculate an estimate for natural mortality following methods described in Hearn (2008) and again achieved a result of approximately 0.17.

Comment: Explain the ramifications of SPR being independent year to year.
Response: Additional discussion of the drawbacks to equilibrium modeling was added to section 4.3.1.3. The constant recruitment used within the CDFW-Cable model, and therefore lack of a stock-recruitment relationship, is described as the reason for using an SPR threshold based on a set of reference years rather than knowledge of a sustainable spawning stock biomass based in MSY. Additional discussion of this issue has been added to CDFW's report on the Cable-CDFW Model.

Sensitivity Analyses

Comment: Make greater use of sensitivity analyses in explaining the model.
Response: In response to requests by the review panel for additional sensitivity analyses during the review process, CDFW analyzed model sensitivity to natural mortality equations of multiple forms, MPA and movement related parameters, vulnerability parameters, and ghost fishing. Results from these analyses have been added to CDFW's report on the model. Results of further sensitivity analyses on changes in model output resulting from growth model changes requested by the review panel were also added. CDFW will continue to use these analysis techniques when future model changes are considered.

1.1.2 Longer-Term Considerations for the SPR Model

Research Needs

Comment: Explore alternative methods to estimate lobster growth.
Response: This was identified as a research priority in section 5.2 on Essential Fisheries Information (EFI) and subsection on age and growth. Emerging techniques for direct identification of crustacean age were described and referenced. Available tag-recapture data and modeling efforts of CDFW to date were also described. The CDFW-Cable model report provides more detail. A statement that CDFW will look to collect more growth data and develop new models was added to the natural history section (3.2) subsection on growth. The importance of regionally specific growth information, if the CDFW-Cable model is to be used in a regionally specific way, was added to section 4.3.1.3.

Comment: Explore additional technical models that can account for variable recruitment.
Response: There are currently no adequate data on lobster recruitment that can be used to develop a stock-recruitment relationship for CA lobster. This is one of the reasons for the choice to use equilibrium modeling to estimate SPR. However, CDFW recognizes the drawbacks of equilibrium modeling and will seek to improve understanding of CA lobster recruitment in the future. CDFW has demonstrated a relationship between CA lobster landings and the abundance of phyllosoma larvae in CalCOFI samples (Koslow et al. 2012) but this may not translate into a relationship between landings and recruitment. The MSE model has options for the use of either a Beverton-Holt or Ricker recruitment curve and CDFW hopes to further improve the MSE model and use it to provide context for future management decisions. Models for calculating reference points that incorporate stock-recruitment relationships are noted in section 4.2.4.

Comment: Develop a sampling program to collect individual lobster length or weight composition data from both sectors of the fishery.
Response: This is noted as a research priority in section 5.2 covering EFI, subsection on stock composition. Improvements that these data could provide to models are noted in section 4.3.1.3.

Comment: Prioritize obtaining intermediate recapture data, which could be useful for better understanding the dynamics of lobster growth rates.
Response: This was noted as a priority in section 5.2 on EFI, subsection on age and growth.

Model Functionality

Comment: Develop a function or method to incorporate recreational catch into the model.
Response: The CDFW-Cable model calculates SPR based on input data on average weight of individuals in the commercial catch. Currently, there are not adequate data on average weight of lobsters taken in the recreational fishery. Other aspects of the model, such as vulnerability, are based on data describing the vulnerability of lobsters to traps and not to hand take. An intensive research program and annual monitoring would be required to generate appropriate equations, parameters, and input data for recreational take. Additionally, improvement in recreational catch estimates as report card return rates improve would be necessary for confident inclusion of recreational dynamics in models. Additional data sources, such as as annual telephone surveys of fishermen who did not return their report card would help, but require additional capacity and resources to undertake.

Comment: Revisit the SPR model as MPAs reach their full maturity.
Response: Additional discussion of the "credit" given to the simulated lobster stock from MPAs was added to section 4.3.1.3. CDFW agrees that MPAs are unlikely to have achieved their full potential and may not for some time and now state within the FMP "… it is unlikely that the MPAs, implemented in 2012 as a result of the south coast MLPA process, have actually achieved equilibrium and their full potential. Given that the average weight during the 2014-15 fishing season was above the average of the reference years, $SPR_{CURRENT}$ for 2014-15 was also above $SPR_{THRESHOLD}$ with or without the model benefit from MPAs. CDFW will monitor average weight and SPR closely until further research illustrates substantial benefit of MPAs to CA lobster and that the model-simulated enhancement to reproductive potential is warranted."

Comment: Formalize a process to review, revise, update, and evaluate the SPR model and its effectiveness in meeting management goals as new data, information, or analyses become available.
Response: Section 4.3.1.3 notes that equations and parameters in the model will be revised as information becomes available. Section 6.2.2 on the amendment process states that revising calculations within the Cable-CDFW model to include new EFI would not require an amendment but removal or addition of a different reference point would.

1.2 Catch and CPUE-based Reference Points

1.2.1 Key Recommendations for Catch and CPUE-based Reference Points

Comment: Describe catch and CPUE thresholds as "fishery indicators" instead of reference points.
Response: The Canadian precautionary approach described in the peer-review report as well as other reference point approaches were explored. Discussion of these approaches relative to the approach used in the CA Lobster FMP was added to sections 4.2.4, 4.2.5, and 4.3.1.3. CDFW asserts the catch and CPUE reference points play a valuable role in the HCR and therefore were not removed from the HCR or reclassified as "indicators." However, as recommended by the review panel, the effects of making the catch and CPUE reference points more sensitive were explored and threshold levels were increased from 0.8 to 0.9. Descriptions of stock history relative to those thresholds are given in sections 4.3.1.1 and 4.3.1.2. Previously the FMP stated that investigations would be initiated if the catch or CPUE declined for seven consecutive seasons. This was intended to bring additional attention to declining catch or CPUE even if they remain above the reference point threshold. In recognition that consistent declines have not been seen previously, investigations will instead be initiated if the catch or CPUE reference points decline for six consecutive seasons. This adds additional sensitivity to the reference points and is better aligned with stock history.

Comment: Clarify rationale for the use of 0.8 thresholds prescribed in the FMP.
Response: Additional explanation of the rationale for using moving averages and the revised threshold values of 0.9 for the catch and CPUE reference points was added to sections 4.3.1.1 and 4.3.1.2.

Comment: Report the CPUE statistic in mass per unit effort.
Response: CPUE is calculated as number of lobsters caught per trap pull because both of these data are collected on the commercial log. Reporting mass per unit effort would require linking logs to landing receipts which requires a variety of assumptions and results in removal of a large amount of data. Therefore no change was made in response to this comment.

Comment: Include greater discussion of the reliability of recreational catch estimates.
Response: Additional discussion of the reliability of these data was added to section 2.2. Table 2-1 was updated with new estimates of the total weight of recreational landings and 95% confidence intervals, as well as the percent of total landings represented by recreational landings. However, these confidence intervals cannot reflect uncertainty "due to poaching or the potential that catch on returned report cards is not representative of catch on un-returned report cards."

1.2.2 Longer-Term Considerations for Catch and CPUE Data

Comment: Explore other technical models to obtain additional or alternative biological reference points that account for inter-annual variability in recruitment and other variables.
Response: Discussion of, and references to, other types of models for generating reference points was added to sections 4.2.4, 4.2.5 and 4.3.1.3. CDFW is open to further exploration of these model options. These options, particularly a Delury depletion model which may not require new data streams, could be useful if prompted to investigate stock status by the HCR.

Comment: Standardize commercial and recreational catch data to the same spatial reference points.
Response: CDFW commercial fishing blocks, which are 10 x 10 nm, are a long-standing reporting requirement on commercial logs. This level of detail is not tractable on a recreational report card. Existing report card catch locations can be overlaid with and attributed to commercial blocks. However a variety of assumptions are required where boundaries are not well aligned. In the future, CDFW will seek to better define recreational take locations so that they align well with commercial blocks, where possible.

2. Science Supporting the Decision to Manage as a Single-Stock

Comment: Assess and report any spatially explicit differences between regions of the fishery.
Response: A new section (3.10) was added to the natural history chapter to describe what is known about regional differences within the stock. The spatial limitations of the CDFW-Cable model and the concerns of using the model to produce regionally specific results are discussed in section 4.3.1.3. Some analyses of differences in effort and catch were performed as part of an effort to refine our analyses of average weight. This helped inform the discussion of regional differences in section 3.10. Another new section (3.4) was added to describe existing literature on genetic population structure. This literature suggests that management as a single stock is appropriate and that while mixing across the border with Mexico occurs, it likely doesn't dominate CA dynamics.

Comment: Interactions with Mexico's spiny lobster stock should be considered and discussed in greater detail throughout the FMP.
Response: A new section (4.4.1) was added to describe Mexico's stock status and management. Additional discussion of how recruitment from Mexico would affect our use of SPR as a reference point was added to section 4.3.1.3.

Comment: Prioritize longer-term research needs relating to regional differences in the species' biological parameters.
Response: Additional description and references for larval recruitment data were added to section 5.1.2 in the larval collectors subsection. The potential use of these data to understand regional differences and population sources and sinks is noted in section 5.2 on recruitment. The importance of understanding regional differences in age at maturity and fecundity is noted in section 5.2, subsection on reproduction. Regionally-specific estimates of fishing mortality were already given the highest research priority in section 5.2, subsection on Mortality. The importance of information in all these categories if the CDFW-Cable model is to be used for regionally-specific results is noted in section 4.3.1.3. Genetic population structure/larval mixing was added as a data type in Table 5-1.

3. Estimate of Lobster Habitat Contained within Marine Protected Areas

Comment: Provide greater discussion of the data sources used to estimate suitable lobster habitat.
Response: Sources for different lobster habitat categories were foot noted in section 3.1. Table 4-2 was added to provide the relative areas of hard and soft habitat types and unknown regions, as well as their mapping resolution within regions of the Southern California Bight (SCB). The amount of hard bottom area estimated using kelp canopy as a proxy was also noted.

Comment: Continue to refine the MPA estimate as new information becomes available.
Response: Improvement of habitat information is given the highest priority in section 5.2 and Table 5-1. Its importance to calculation of SPR within the CDFW-Cable model is noted.

Comment: Consider developing a function or method to consider actual marine protected area sizes in the SPR cable model.
Response: The CDFW-Cable model was designed as an equilibrium model. It is run only a single time under each scenario with no stochasticity or variability in parameters. MPA size and spacing represents an average of the actual variation along the entire SCB coast. One method for incorporating a range of MPA parameters could be to average outputs from multiple runs using different MPA parameter settings. However, using the CDFW-Cable model to produce regionally-specific results based on MPA parameters without including regionally specific biological parameters for many of the functions may not be appropriate. A much more complex model would be more appropriate for inclusion of realistic MPA size and spacing and could concurrently include variable recruitment and other regional differences. An individual-based model like the MSE model is better structured for these functions and CDFW hopes to continue improvement of that model in the future.

4. Research and Monitoring

Comment: Continue to update and prioritize research and data needs in the FMP.
Response: The data needs and research priorities outlined in Chapter 5 of the FMP were closely reviewed. CDFW is undergoing a systematic review of data needs and existing data streams for the lobster fishery as well as all other fisheries. CDFW is also working towards developing a public-facing repository for our research and data needs.

5. Additional Recommendations

Comment: The harvest control rule matrix should include predetermined management options.
Response: The HCR was designed to be discretionary as predetermined management options were not supported by the LAC. Inclusion of multiple reference points was intended to help provide a more complete picture of stock status and influences. Based on these relatively nuanced reference points, management responses can be flexible because of multiple toolbox options and also because investigations prompted by the HCR should provide further guidance on stock influences. Edits were made to both Table 4-3: Harvest Control Rule Matrix and Table 4-4: Control Rule Toolbox to clarify potential reasons for reference point positions and suggested responses.

Comment: Clarify the information required for setting total allowable catch (TAC).
Response: Additional description of TACs, methods for their determination, and references were added to section 4.3.3.

Appendix IX: LAC Regulatory Recommendations and CDFW Memorandum to the Commission on LAC Recommendations

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California Department of Fish and Wildlife

CDFW Feedback on Implementation Details of the Lobster Advisory Committee Commercial Recommendations:

The California Department of Fish and Wildlife (CDFW) recently met with the Lobster Advisory Committee (LAC) Commercial Representatives to discuss details regarding implementation of the proposed regulatory changes to the commercial lobster fishery recommended by the LAC. Input from CDFW Marine Region and Law Enforcement Division (LED) is provided in Blue Font below. This information is being disseminated to refine the details prior to the formal regulatory process which takes place after the Fisheries Management Plan (FMP) has been adopted in 2015. The LAC recommendations will part of the Lobster FMP implementing regulations that will be formally introduced to the Fish and Game Commission in mid-2015. Any new regulations that are adopted would not be implemented until the 2016-2017 lobster season.

LAC Commercial Proposal

Table 1. COMMERCIAL TRAP LIMIT

CATEGORY	NUMBER OF TRAPS	PROVISIONS
"300" Transferable Permit (T) "300" Non-transferable permit (NT)	300	• May stack another permit for a maximum of 2 permits (2 x 300 traps = 600 trap maximum) • The second permit remains transferable • Death provision applies only to transferable permits (NT permits are not transferable – even due to death)
CDFW supports the proposed LAC trap limit of 300 traps with the ability to stack another permit for a maximum of 2 permits (2 permits X 300 traps = 600 trap maximum). The second permit remains transferable, and the death provision only applies to transferable permits.		
Phase-In Stacking Permit	300	• Available to either transferable or non-transferable permittees • Non-transferable permit • Only available for three years (must be renewed annually) • Permit funds would go for commercial lobster research & monitoring – ($5,000 - $10,000 annual permit fee) • Would become effective when trap limits go into effect
CDFW recognizes that a "Phase-In Stacking Permit" may no longer be necessary given the projected timeline for the proposed implementing regulations. New regulations would become effective for the 2016/2017 season.		

Table 2. GENERAL PROVISIONS

- Death provision applies only to transferable permits
  CDFW Proposed Details:
- non-transferable permits can never be transferred - even upon death

- All traps must be tagged (on trap or buoy or both)(must be purchased annually); details to be worked out with LED
  CDFW Proposed Details:
- Traps shall be tagged w/ Dept. issued trap tags
- 300 trap tags shall be issued once a year to each permittee before the start of the season
- Program costs to be incorporated into permit fees, and tags will not be purchased separately

- Catastrophic gear loss provision; details to be worked out with LED (application would include requirement to report details of loss)(Information could be shared with permitted recovery projects)
  CDFW Proposed Details:
- The Department is considering defining catastrophic loss as the loss of 75 or more tags per permit. Catastrophic loss claims will be formally submitted to the Department for approval. LED will determine whether to approve or deny catastrophic loss claims. Claim information must include a detailed description of the circumstance that caused the loss, date of loss, number of traps lost along with their tag numbers, and location of lost traps (Latitude and Longitude coordinates).
- Catastrophic loss tags would be uniquely identifiable.

- Allow scuba equipment on board commercial vessels to retrieve lost traps or remove line from prop (not allowed to "fish" when on scuba)
  CDFW Proposed Details:
- Scuba gear already allowed per T14 122. Cannot be used for "take"
- Provide clarification that no lobsters can be taken or possessed w/scuba gear, or any other underwater breathing apparatus (including hookah). However, this equipment can be used to locate and secure (retrieve) traps
- Provide clarification that lobsters contained in a trap that has been secured using scuba gear, or any other underwater breathing apparatus equipment (including hookah), can be possessed after the trap has been serviced aboard the vessel

- More than one permittee may operate from a single vessel; each permittee whose traps are being pulled must be aboard
  CDFW Proposed Details:
- Dual Permittee on board – both permittees will be responsible for any violation found on vessel

- 7 day soak time using "Federal Rules" regarding weather
  CDFW Proposed Details:
- Adopt similar language to CFR Title 50 §660.230(3)
- Traps must be attended at least once every 7 days. No specific weather exemption. If traps cannot be pulled due to weather, fishermen will be responsible for burden of proof (e.g. NOAA weather advisory, or other formal documentation from a government weather agency)

- Limit use of "note" to fish traps by other than permit holder. May open (and retain the lobsters within) or retrieve traps belonging to another lobster fisherman with a note and notification to DFW LED (details to be worked out with LED); may not bait or fish traps for another permittee

  CDFW Proposed Details:
- Formalize the "note" process by requiring permittees to submit a waiver request to the Department. Waiver should be similar to the Dungeness Crab Waiver to Pull Traps
- Specific protocol and procedures for the Lobster Waiver to be established by LED
- CDFW will determine each waiver request on individual case basis. The information submitted in the waiver request will be used to determine the conditions. Lobsters may not be retained unless specified by CDFW as a condition on the waiver
- Department to be notified in advance
- Responsibility for violations is transferred to the individual permittee that has permission to pull
- Traps need to be either removed from water or wired open as specified by CDFW as a condition on the waiver.
- Establish provision to allow other fishermen targeting other species to recover lost or derelict gear (if found more than 9 days after the close of lobster season). This would be modeled after the existing provision for the recovery of up to 6 Dungeness crab traps.

- Allow commercial fishermen to start hauling their traps to sea before the season starts on the Monday before opening week (9 days before the commercial opener) and allow traps with doors open to remain in the water not more than 9 days after the close of the season

  CDFW Proposed Details:
- Allow traps to be deployed (unbaited and doors wired open) 9 days before the commercial opener, and allow traps to remain in the water (unbaited and doors wired open) not more than 9 days after the close of the season. Traps must be out of the water no later than 9 day after the close of the season.
- "Bait day" remains the same

- Branding of floats allowed (details to be worked out with LED)

  CDFW Proposed Details:
- This is already allowed under current regulations and so a regulatory change is not necessary to implement it. Therefore, the following clarification is provided as guidance to encourage effective compliance. Each buoy identifying a lobster trap would display the commercial fishing license identification number of the lobster operator permit holder followed by the letter P. The commercial fishing license number and the letter P would be at least one (1) inch in height and at least one-eight (1/8) inch in width, and either branded on the buoy in a way that is clearly readable or painted in a color that contrasts with that of the buoy. All lobster permit holders would maintain lobster trap buoys in such a condition that buoy identifying numbers are clearly readable.

- **Additional Issue (Not addressed by the LAC):** Traps that are wired open and unbaited still need to be serviced every 96 hours per FG9004

  CDFW Proposed Details:
- Traps that are wired open and unbaited would be exempt from the trap service requirement for a period up to 14 days. Traps that have not been serviced after 14 days will be considered

abandoned.

CDFW Staff

Bob Puccinelli – Captain, Law Enforcements Division

Craig Shuman – Regional Manager

Tom Barnes – Manager of State Managed Species

Kai Lampson – Lobster FMP Coordinator

Representatives on the LAC

Rodger Healy – Commercial Fishing Representative

Shad Catarius – Commercial Fishing Representative

Jim Colomy – Commercial Fishing Representative

Josh Fisher – Alternate Commercial Fishing Representative

Spiny Lobster Fishery Management Plan
Lobster Advisory Committee
Recreational Lobster Fishery Management Recommendations

The California Department of Fish and Wildlife (CDFW) recently met with the Lobster Advisory Committee (LAC) Recreational Representatives to discuss details regarding implementation of the proposed regulatory changes to the recreation lobster fishery recommended by the LAC. Input from CDFW Marine Region and Law Enforcement Division (LED) is provided in Blue Font below. This information is being disseminated to refine the details prior to the formal regulatory process which takes place after the Fisheries Management Plan (FMP) has been adopted in 2015. The LAC recommendations will be part of the Lobster FMP implementing regulations that will be formally introduced to the Fish and Game Commission (Commission) in mid-2015. It is expected that any new regulations adopted by the Commission would be implemented at the start of 2016-2017 lobster season.

Please Note: Proposals to prohibit or "ban" the use of conical hoop nets or to establish a seasonal limit were not part of the LAC's consensus recommendations for the recreational fishery. CDFW will not be forwarding these proposals to the Commission as part of the LAC recommendations.

Full consensus was achieved by the Lobster Advisory Committee for the following:

Issue: Lobster caught by recreational fishermen is being illegally sold in the commercial market place. Requiring sport fishermen to clip or punch the center tail flap makes it possible for law enforcement to identify lobsters caught in a recreational fishery that end up in the market and take appropriate legal action. This proposal will give law enforcement a tool to address buyers and markets that purchase lobster from recreational fishermen.

Proposal: Recreationally caught lobsters are to be tail-clipped (removing the bottom half of the central tail flap) or tail-punched in the central tail flap (Australia requires a 10 mm minimum hole). Additional details will be worked out with LED (e.g. clipped when landed?).

LAC Action: The LAC achieved consensus on the tail-clipping proposal above.

CDFW Proposed Details:

- Allow both tail clipping and tail punching as an option: remove at least the bottom half of central tail fin or single hole punch the center tail fin with a hole no less than ¼ inch in diameter

- The tail must be clipped or punched at the same time the catch information is reported on the report card (T14 29.91(C): When the cardholder moves to another location code, or finishes fishing for the day, he or she must immediately record on the card the number of lobster kept from that location

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Issue: Use of mechanized pullers has made it easier to rob from commercial traps.

Proposal: Restrict the use of mechanized pullers only to persons in possession of proof of disability/medical (Disabled Mechanized Hoop Net Puller Permit). This restriction would only pertain to power driven mechanized pullers and not hand operated davits with single pulley systems.

> Clarification: This restriction only applies to individuals targeting or in possession of lobster, not persons solely targeting crab.
>
> Proposed CDFW Disabled Mechanized Hoop Net Puller Permit Form:
> The following conditions must be met to qualify for issuance of a Disabled Mechanized Hoop Net Puller Permit: "For the purposes of this permit a disability means a permanent loss, significant limitation, or diagnosed disease or disorder, which substantially impairs an individual's ability to physically pull by hand and retrieve a hoop net for the purpose of targeting lobster." A medical physician must sign the permit application form.

LAC Action: The LAC achieved consensus on the mechanical puller restriction proposal above.

Some members noted that the broad wording of the disability option could render the management measure ineffective and suggested that the LAC work with LED to ensure the new rule has "teeth" when it is applied.

CDFW Recommendation:

- Mechanized pullers should not be restricted beyond current legal use
- The potential for illegal use given the circumstance is not viewed as a reasonable justification for restriction
- Illegal use of mechanized pullers is not a commonly observed problem. LED reported one case over ten years ago, with four lobsters taken from a commercial trap using a mechanized puller
- The creation of disabled hoop net puller permit creates an unnecessary burden on disabled persons through the potential added expense and time to obtain the necessary note from a physician in order to obtain a permit

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Issue: The midnight opener creates a "rush" mentality that fuels conflicts between recreational users and poses a safety risk. The current lobster opener date and time can be difficult to understand (confusion regarding when the season actual "starts") and constituents are having trouble following the law. CDFW has been asked to consider an alternate start time.

Proposal: Make the lobster opener 6:00 a.m. on Saturday instead of 12:01 a.m. on Saturday.

Key discussion points:

- New time is workable for LED
- Proposal improves safety conditions
- Regulatory change has no impact on the resource
- Commercial season dates would not change

LAC Action: The LAC achieved consensus on the lobster opener proposal above. The group acknowledged concerns regarding the economic impact this proposal may have on some dive charters.
LAC recommendation is for a 6:00 a.m. Saturday start time (lobster opener)

CDFW Recommendation:

- Proposed 6:00 am Saturday start time is easier to facilitate enforcement patrols
- Promotes a safer environment for both boaters and divers on opening day
- Reduces the "rush" mentality which fuels negative diver/hoop netter interactions at harbors and jetties

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Issue: Marking hoop net floats will improve accountability and safety among recreational fishermen, and may help reduce illegal commercialization.

Proposal: Hoop net floats should be marked with unique ID (DL, Go ID, etc. — details to be worked out with LED).

LAC Action: The LAC achieved consensus on the marked hoop net proposal above.

CDFW Proposed Details:

- Buoy identification should be required with GO ID number. This number shall be legible, but there will be no size or color specification. Go ID number helps maintain fishermen's confidentiality, and minimizes the risk of identity theft
- LED can easily verify this number in the field as it can be cross referenced with the fishing license

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Issue: Spear fisherman have been harassed or cited for carrying a spear gun while in the pursuit of lobster. Constituents have asked for clarity on the definition of a "hooked" device.

Proposal: Keep change simple. Ensure regulatory language focuses on how lobster can be taken (i.e. "skin and scuba divers may take lobsters by hand only") and not how it cannot be taken; remove "hooked device" term from current regulations. The proposal allows for possession of a spear gun or pole spear underwater while hunting lobsters. Misuse of this equipment to take lobster (lobster can only be taken by hand) would remain illegal.

LAC Action: The LAC achieved consensus on the hooked device proposal above.

CDFW Recommendation:

- Remove "hooked device" for clarification

MEETING PARTICIPANTS

CDFW Staff

Bob Puccinelli – Captain, Law Enforcements Division

Craig Shuman – Regional Manager

Tom Barnes – Manager of State Managed Species

Kai Lampson – Lobster FMP Coordinator

Representatives on the LAC

Jim Salazar – Recreational Fishing Representative

Michael Gould – Recreational Fishing Representative

Al Stasukevich – Recreational Fishing Representative

Paul Romanowski – Recreational Fishing Representative

State of California
Department of Fish and Wildlife

Memorandum

Date: May 22, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Briefing Binder Submission for the June 10-11 Fish and Game Commission Meeting Regarding the Spiny Lobster Fishery Management Plan**

Background

An extensive public scoping process was used by the Department of Fish and Wildlife (Department) to develop implementing regulations for a Spiny Lobster Fishery Management Plan (FMP). The Department established the Lobster Advisory Committee (LAC) as a formal stakeholder group who met over a period of two years to make management recommendations, including regulation changes. The LAC consisted of seated representatives from a broad spectrum of constituencies. Through consensus, the LAC approved a management framework that established proposed mechanisms to promote an orderly fishery while assuring sustainability and also taking into account the economic implications of that same framework. The Department supports the efforts of the LAC, and has made every effort to recommend FMP regulations that are consistent with the LAC consensus-based proposals. The Department and LAC regulatory recommendations were transmitted to the Commission for consideration at its April 8th, 2015 meeting.

The Department is requesting direction from the Commission on options to include in a regulatory package that is associated with the FMP. The enclosed table summarizes the LAC and Department commercial and recreation spiny lobster regulatory recommendations. This table provides a summary of the recommendations transmitted to the Commission at its April 8th, 2015 meeting. The Department will also be requesting direction from the Commission on four additional Department recommendations for the commercial spiny lobster fishery that are included in the table.

The additional recommendations include:

1. Require each lobster operator permit holder to report the number and location of traps lost at the end of each season. This will allow the Department to estimate gear loss for the fishery and help facilitate recovery efforts.

2. Extend the lobster operator permit death provision transfer period from one to two years. This is recommended by the Department's License and Revenue Branch (LRB) to provide families or estates an extra year to transfer a permit.
3. Add a prohibition on the transfer of lobster operator permits to include pending violation(s). Current regulations allow permits to be transferred when a permit holder has pending violations. This recommendation was added at the request of LRB and Law Enforcement Division to prevent transfers from occurring before results of the pending violation(s) are known.
4. Require a Department application for the transfer of lobster operator permits.

If you have any questions or need additional information, please contact Dr. Craig Shuman, Regional Manager of the Marine Region, by telephone at (805) 568-0216 or by email at craig.shuman@wildlife.ca.gov.

Attachment

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Summary Table of the Lobster Advisory Committee and Department of Fish and Wildlife spiny lobster regulatory recommendations

Background: The Department of Fish and Wildlife (Department) is requesting direction from the Fish and Game Commission (Commission) on options to include in the regulatory package that is associated with the Spiny Lobster Fishery Management Plan. This table provides a summary of the Lobster Advisory Committee (LAC) and Department commercial and recreation spiny lobster regulatory recommendations transmitted to the Commission at its April 8th, 2015 meeting. The table also includes additional Department recommendations not addressed by the LAC.

	LAC Consensus and Department Recommended Lobster Regulatory Changes	
1	Regulations to implement the lobster Fishery Management Plan (FMP).	Identifies the purpose and scope, harvest control rules, management responses, and lists definitions specific to the FMP.
	Recreational Recommendations	
	Change Summary	**Purpose**
2	Require the hole-punching or fin-clipping of all retained lobsters.	To reduce illegal commercialization of sport caught lobsters.
3	Change recreational season opener from 12:01 am to 6 a.m. on Saturday.	To increase safety during the season opener.
4	Require hoop net operators to mark hoop net floats with GO-ID numbers.	Allows Enforcement to easily identify the owner of a hoop net.
5	Clarify methods of take for crustaceans.	Clarifies that spear gear can be possessed by divers while targeting or in possession of lobsters so long as the gear is not used in the taking of lobster.
	Commercial Recommendations	
	Change Summary	**Purpose**
6	Trap limit of 300 traps per permit with the ability to purchase a second permit for a maximum 600 traps.	To improve the commercial fishery and create a more orderly fishery.
7	Add fees and forms associated with trap tag program.	Required to add new fees and other administrative requirements for the trap tag program.
8	Catastrophic trap tag loss provision. Catastrophic loss defined as the loss of 75 or more tags per permit.	To allow for the replacement of tags lost over a season.
9	Clarify use and possession of SCUBA equipment from commercial lobster vessels.	Amended for clarification purposes.
10	More than one permittee may operate from single vessel.	Added for clarification purposes. Each permittee whose traps are being pulled must be aboard and both permittees will be responsible for any violation found on vessel.
11	Require traps to be serviced at least every 7 days (currently 4 days).	Proposed as part of the trap limit proposal.
12	Waiver requirement for allowing lobster operator permit holders to service another fishermen's traps.	To formalize the process to meet enforcement and fishermen's needs.
13	Add a provision to allow fishermen to recover up to 6 lost traps.	To allow for the retrieval of lost gear.
14	Extend the period (from 6 to 9 days) for deploying and retrieving traps before and after the season.	Proposed as part of the trap limit proposal.
15	Allow branding of trap buoys.	**No regulatory change needed**: Already covered by existing regulations and will be clarified.

Summary Table of the Lobster Advisory Committee and Department of Fish and Wildlife spiny lobster regulatory recommendations

	Additional Department Recommendations Not Addressed by the LAC	
	Change Summary	**Purpose**
16	Define abandoned traps. Traps considered abandoned if not retrieved 14 days after the season ends.	To define when a trap is considered abandoned.
17	Improving fishery dependent data collection.	Department recommends modifying lobster logbooks and landing receipts to gather essential fishery information to better manage the fisheries.
18	Prohibit the transfer of a lobster operator permit when there are pending violation(s).	Added as an enforcement need.
19	Extend the lobster operator permit death provision transfer period from 1 to 2 years.	Added at the request of the Departments Licenses and Revenue Branch to allow more time to transfer a permit.
20	Require an application for the transfer of lobster operator permits.	Require an application to transfer a permit. Add appeal requirements when a transfer is denied. Add criteria for transfer of permit under a tag system.
21	Reporting of commercial trap loss.	At the end of each season, require commercial fishermen to report the number and location of traps lost over the season.
	LAC Consensus Recommendations Not Supported by the Department	
	Change Summary	**Rationale for not Supporting**
22	Restrict the recreational use of mechanized pullers to only disabled fishermen.	Proposed by the LAC due to concerns of the illegal use of mechanized pullers to poach commercial traps. Law Enforcement Division indicates that illegal use of mechanized pullers is not a commonly observed problem. Proposed regulation would penalize the lawful anglers using mechanical pullers due to the very few anglers that may abuse the use of mechanized pullers.
23	Three-year phase-in trap limit approach.	The Department does not support this recommendation as the projected timeline for the proposed implementing regulations is later than anticipated by the LAC. This gives industry more time to prepare for the proposed new trap limit. In addition, it will be difficult for the Department to implement and administer the program as proposed by the LAC.

Appendix X: Cable-CDFW Model Report

The version of the Cable-CDFW Model Report that was provided to the independent scientific review committee is available at https://www.wildlife.ca.gov/Conservation/Marine/Lobster-FMP. CDFW is working to revise the report in response to committee comments and will post a fully revised report before the February, 2016 Fish and Game Commission meeting.

Fish & Game Commission
FMP Adoption Process

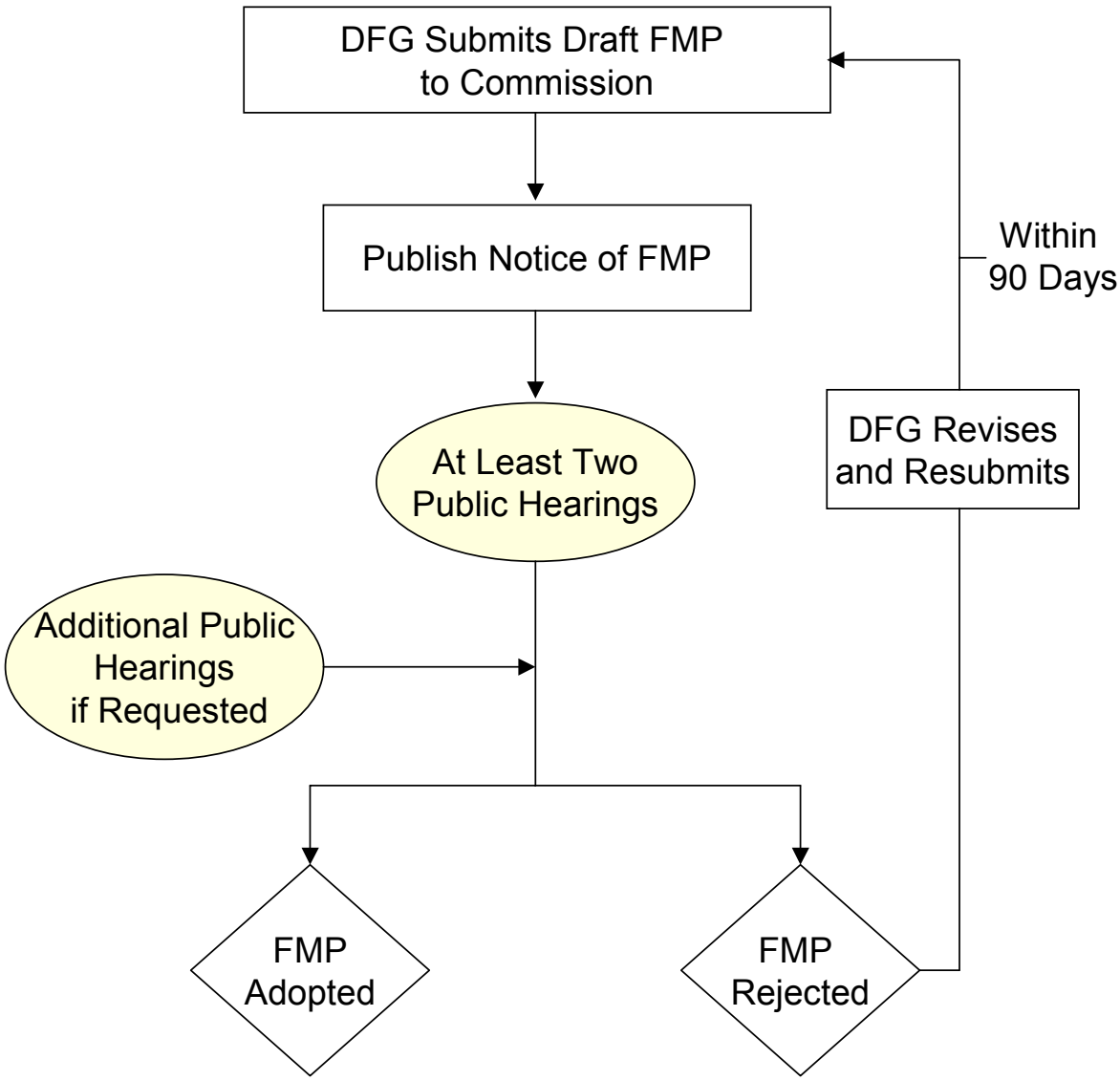


Figure 5-3. Illustration of opportunities for public involvement during the Fish and Game Commission fishery management plan (FMP) adoption process. Written comments may be submitted at any time, up to adoption by the Commission. DFG = Department of Fish and Game

Opportunities for public involvement

Draft CA Spiny Lobster Fishery Management Plan

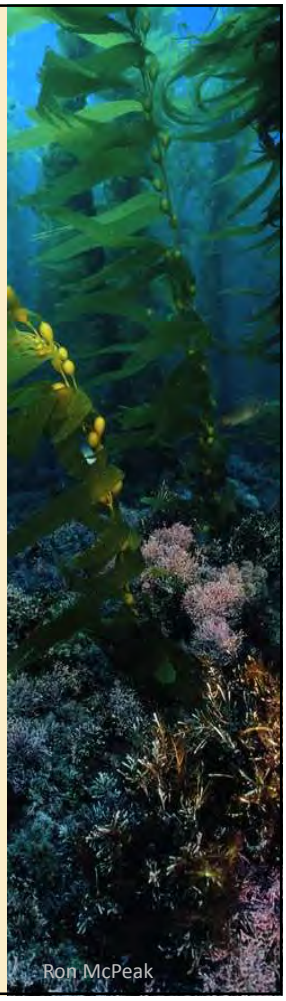
Fish and Game Commission Meeting
December 9-10, 2015
Julia Coates
Environmental Scientist, Marine Region

Presentation Outline

- FMP Development Process
- FMP Contents
- Harvest Control Rule
- Scientific Peer Review
- Next Steps

The FMP Process (2012-2015)

- Constituent involvement
  - Public meetings & contact with Tribes
  - Lobster Advisory Committee (LAC), 2012-13
  - Website, courtesy draft FMP, Nov 2014
- Commission and Marine Resource Committee (MRC) updates
- Independent scientific review, May 2015
  - Committee of experts facilitated by Ocean Science Trust (OST)
  - FMP edited in response to comments



FMP Contents

- Meets MLMA requirements for FMPs
- Natural history and history of the fisheries
- Harvest Control Rule
- Essential fisheries information and research objectives

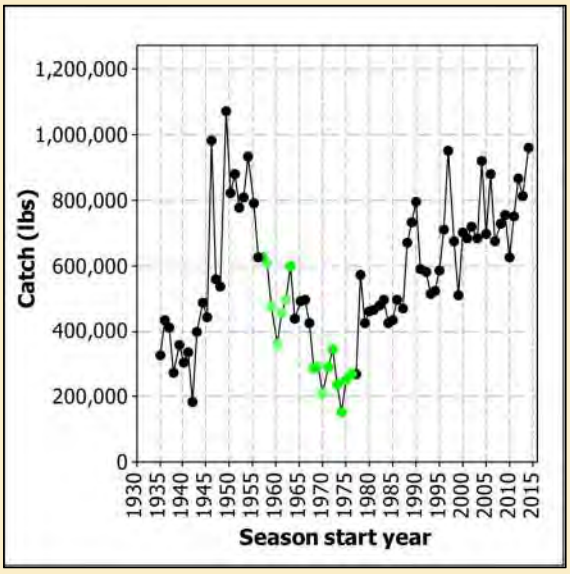

Rafael Rivera

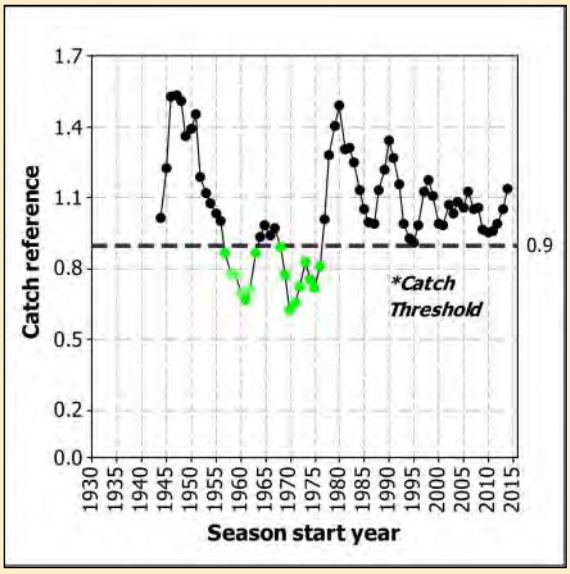
Harvest Control Rule (HCR) Components

- **3 Reference Points**: gauge status of the stock and commercial fishery
- **Matrix:** links reference point status with interpretation of stock/fishery status and possible management response
- **Toolbox:** 8 management tools available

HCR Reference Points: Catch

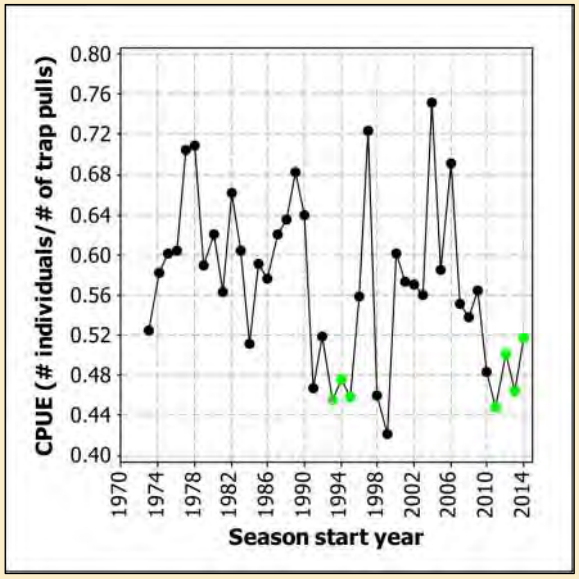
- Moving average
- Catch Ref = (avg last 3 seasons) / (avg last 10 seasons)
- Threshold = 0.9

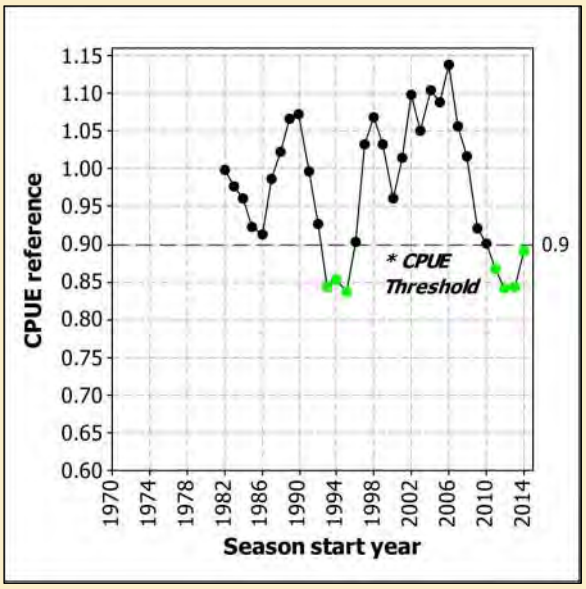




HCR Reference Points: Catch per Unit Effort

- Moving average
- CPUE Ref = (avg last 3 seasons) / (avg last 10 seasons)
- Threshold 0.9





HCR Reference Points: Spawning Potential Ratio (SPR)

- Measure of reproductive potential
  = (eggs from current stock) / (eggs from unfished stock)
- Calculated by the Cable-CDFW model
- Threshold = average SPR 2000-01 to 2007-08 seasons
- MPA benefit to lobster reproductive potential

HCR Matrix

Scenario	Reference Point			Interpretation/ possible causes	Suggested management response sequence
	CATCH	CPUE	SPR		
6	↓	↑	↓	• Stock overfished • Possible catchability increase (effort creep due to technology, etc.)	a) Investigate underlying causes b) Confirm/monitor CPUE (misreporting?) c) Confirm SPR trends and model inputs d) If action is needed, implement one or more of the eight regulatory options in the control rule toolbox as appropriate

HCR Management Toolbox

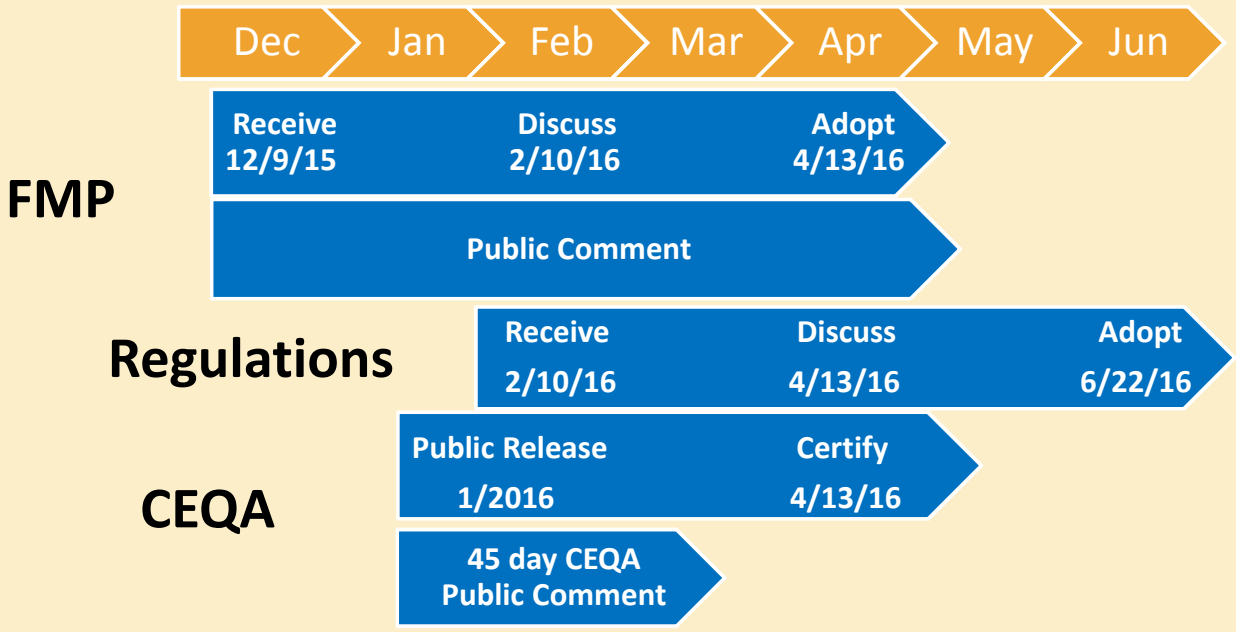
- Change commercial trap limit
- Change recreational bag limit
- Total allowable catch (TAC)
- District closures
- Change season length
- Change minimum size
- Impose maximum size
- Sex-selective fishery

Peer Review

Focus	Outcome
Cable-CDFW model	Changed lobster age-growth relationship
	Recognition of other modeling options
Reference points	Increased sensitivity of catch & CPUE reference points (0.8 to 0.9)
MPAs	Look to increase sophistication of MPA dynamics in model
	Monitor MPA effects on lobster relative to "credit" given by model
Management as a single stock	Expanded discussion of regional differences within the stock
	Essential fisheries information research priority

*Appendix VIII: CA Lobster FMP Edits in Response to Scientific Peer Review Comments

Next Steps



- Send comments to Commission by email (fgc@fgc.ca.gov) or mail

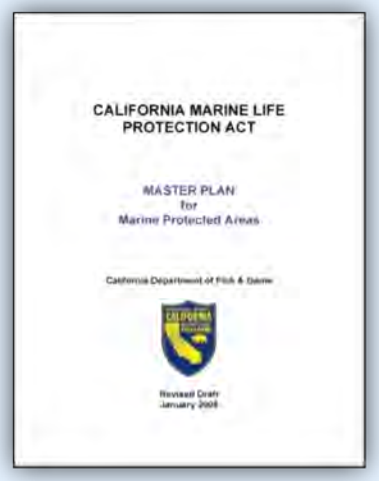
Department Recommendation

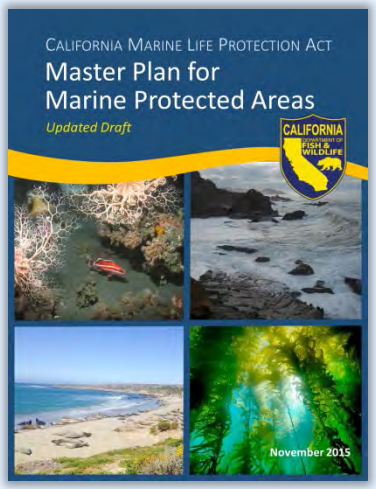
- Add Fish and Game Code section 8258 to the list of inoperative statutes in section 6.3 of the FMP

Thank You/Questions

Julia Coates
Environmental Scientist, Marine Region

Marine Life Protection Act
Master Plan for Marine Protected Areas
Updated Draft





California Fish and Game Commission Meeting

December 9, 2015 • San Diego, CA

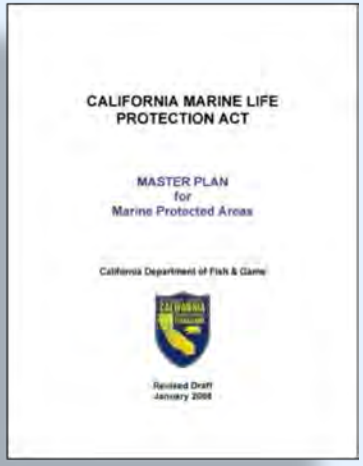
Adam Frimodig
California Department of Fish and Wildlife

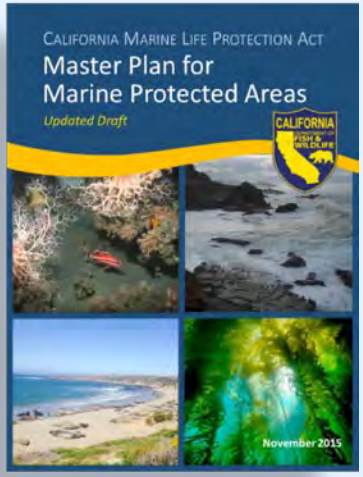
Presentation Outline

1. Background
2. Purpose and Approach
3. Updated Master Plan Components
4. Timeline

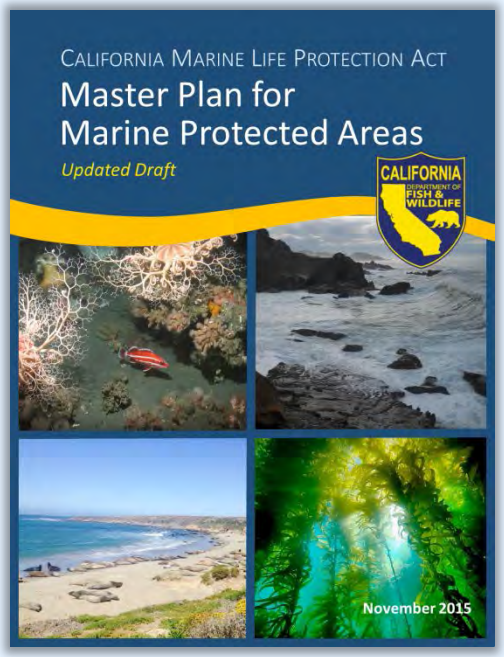
Background

- CDFW required to develop, Commission to adopt
- 2005: framework developed
- 2008: draft plan adopted
- 2013-15: visioning to update plan





Purpose and Approach



- Sets forward looking, programmatic guidance
- Shifts focus from planning to managing a statewide network
- Align priorities with state partners

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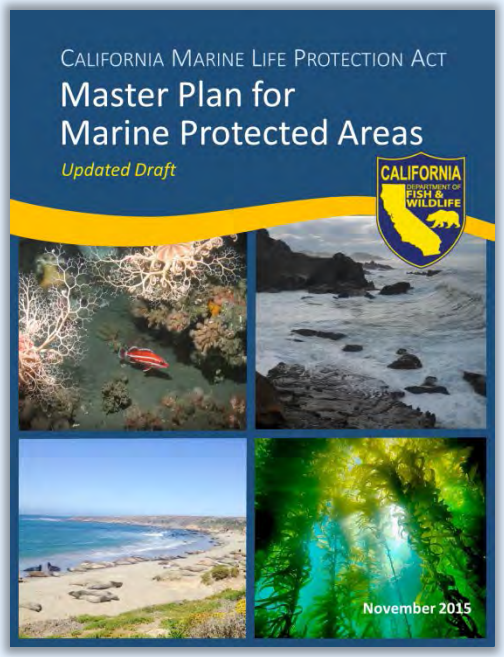
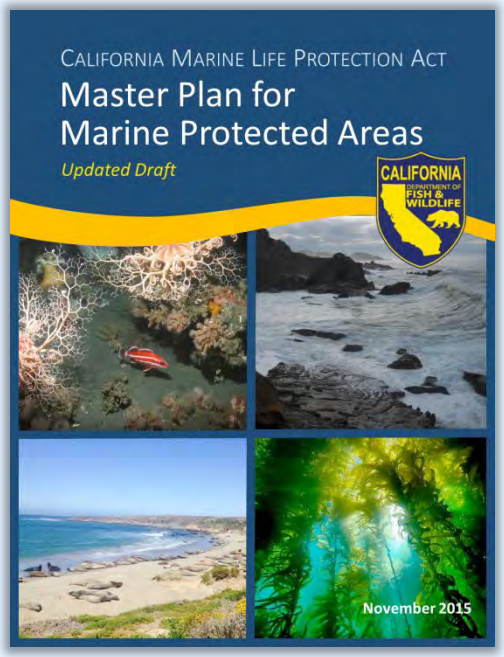
Key Components

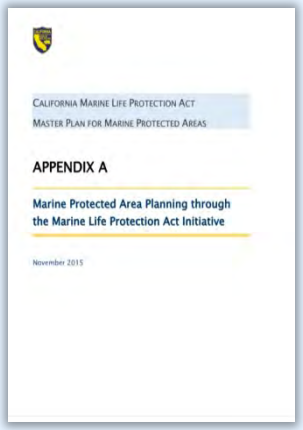


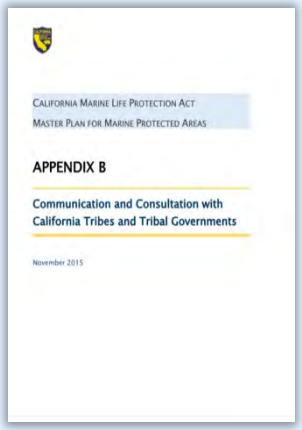
- Operationalizes the Marine Life Protection Program
- Clearly describes governance and partnerships
  - Including processes for collaboration
- Provides network guidance and emphasizes adaptive management

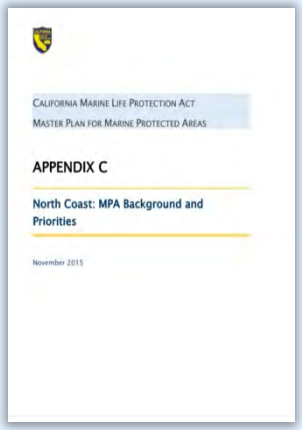
Key Components, Continued

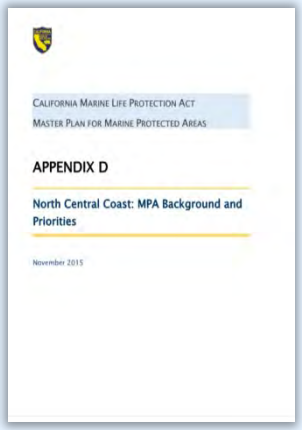


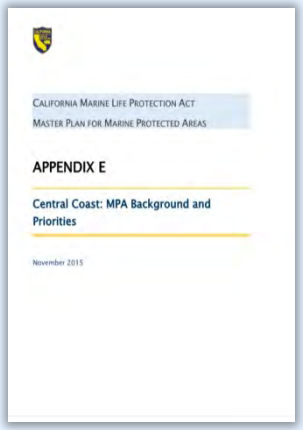
- 10-year formal management review
  - Exceptions may be considered
- Statewide MPA monitoring program
- Includes historical and unique regional considerations

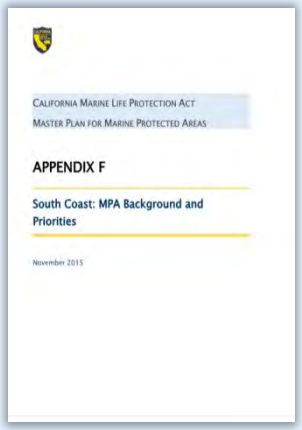












Timeline

- **December 2013 – present:** updates at MRC and FGC meetings
- **February 6, 2015:** notified Tribal governments
- **September 25, 2015:** released preliminary draft to Tribes upon request
- **December 2015:** draft released to Commission
- **February 2016:** potential discussion hearing
- **April 2016:** potential Commission adoption

Questions ◈ More Information



- The 2015 Master Plan for MPAs is available at:
  - Commission website: *http://www.fgc.ca.gov/meetings/2015*
  - CDFW website: *www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan*

- To submit public comments, please visit the Commission website: *http://www.fgc.ca.gov/contact*

State of California
Department of Fish and Wildlife

Memorandum

Date: November 13, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for the December 9-10, 2015 Fish and Game Commission Meeting Re: Receipt of the Draft Updated Master Plan for Marine Protected Areas, Marine Life Protection Act.**

The Department of Fish and Wildlife (Department) is pleased to transmit the draft updated Master Plan for Marine Protected Areas (updated Master Plan for MPAs) to the Commission for receipt at its December meeting, which will begin the public comment period. A discussion hearing is anticipated at the Commission's February 2016 meeting, followed by potential adoption at the April 2016 meeting.

The Marine Life Protection Act (MLPA) requires the Department to develop, and the Commission to adopt, a master plan that guides the implementation of a Marine Life Protection Program to adopt and manage California's MPAs to the extent possible as a statewide network. The previous draft Master Plan for MPAs, adopted by the Commission in January 2008, focused on designing and siting MPAs through a regional approach. The updated plan provides statewide guidance for MPA management to meet the goals of the MLPA, including an MPA monitoring program that draws from existing regional components to gather sufficient information and informs a ten-year review cycle to evaluate MPA network efficacy and adaptive management.

The updated Master Plan for MPAs is the culmination of over two years of work and represents a close collaboration with the Commission, Ocean Protection Council, and Ocean Science Trust. Over the course of its development, the Department has regularly updated the Commission and Marine Resources Committee, and solicited open communications with California Tribal governments and tribes, including releasing a preliminary draft to tribes upon request in September 2015.

If you have any questions regarding this item, please contact Dr. Craig Shuman, Regional Manager, Marine Region at (805) 568-1246. The public notice for this document should identify Environmental Scientist, Adam Frimodig as the Department's point of contact. He can be reached at (707) 445-5397 or via email at Adam.Frimodig@wildlife.ca.gov.

Attachments

Draft Updated Marine Life Protection Act Master Plan for Marine Protected Areas
Appendix A: Marine Protected Area Planning Through the Marine Life Protection Act Initiative
Appendix B: Communication and Consultation with California Tribes and Tribal Governments
Appendix C: North Coast: MPA Background and Priorities
Appendix D: North Central Coast: MPA Background and Priorities
Appendix E: Central Coast: MPA Background and Priorities
Appendix F: South Coast: MPA Background and Priorities

ec: Department of Fish and Wildlife

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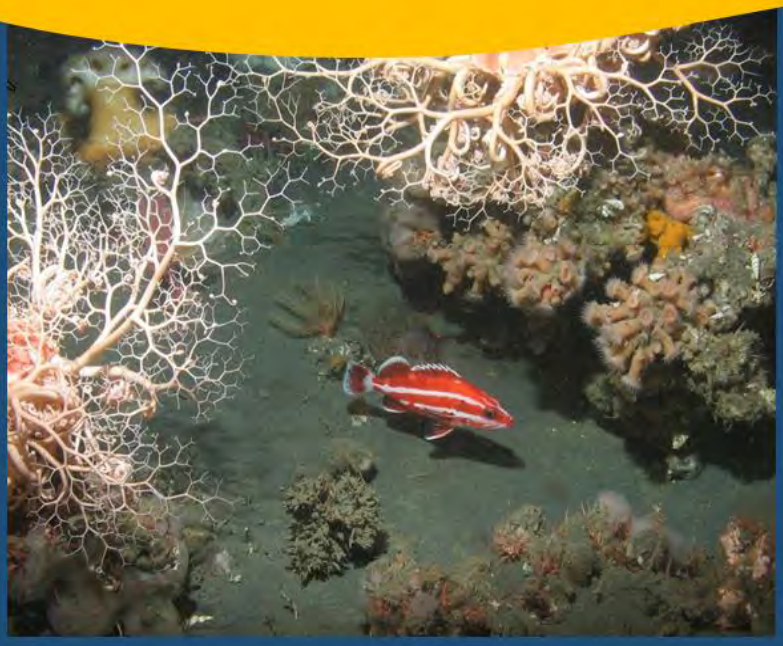
CALIFORNIA MARINE LIFE PROTECTION ACT

Master Plan for Marine Protected Areas

Updated Draft

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE



November 2015

Photo Credits

Top left (North Coast): Image of Mattole Canyon State Marine Reserve, taken by California Department of Fish and Wildlife / Marine Applied Research & Exploration (note basket stars, a yelloweye rockfish, and other species).

Top right (North Central Coast): Image of Stewarts Point State Marine Conservation Area, taken by Brian Owens, California Department of Fish and Wildlife

Bottom left (Central Coast): Image of elephant seals in Piedras Blancas State Marine Reserve, taken by Michelle Horeczko, California Department of Fish and Wildlife

Bottom right (South Coast): Image of a giant kelp forest in Laguna Beach State Marine Reserve, taken by Cameron Wertz

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Acronyms

Acronym	Definition
ARMP	Abalone Recovery and Management Plan
BRTF	Blue Ribbon Task Force
CASG	California Sea Grant
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CNRA	California Natural Resources Agency
Commission	California Fish and Game Commission
COPA	California Ocean Protection Act
FGC	Fish and Game Code
FMP	Fishery Management Plan
MLMA	Marine Life Management Act
MLPA	Marine Life Protection Act
MLPA Initiative	California Marine Life Protection Act Initiative
MLPP	Marine Life Protection Program
MMA	Marine Managed Area
MMAIA	Marine Managed Areas Improvement Act
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MSLT	MPA Statewide Leadership Team
NFMP	Nearshore Fishery Management Plan
NGO	Non-Governmental Organization
CINMS	Channel Islands National Marine Sanctuary
NOAA	National Oceanic and Atmospheric Administration
NRDC	Natural Resources Defense Council
OPC	California Ocean Protection Council
OST	California Ocean Science Trust
PISCO	Partnership for Interdisciplinary Study of Coastal Oceans
RLF	Resources Legacy Fund
SAT	Science Advisory Team
SCC	State Coastal Conservancy
SCP	Scientific Collecting Permit
SLC	State Lands Commission
SMCA	State Marine Conservation Area
SMP	State Marine Park
SMR	State Marine Reserve
SMRMA	State Marine Recreational Management Area
SIG	Statewide Interests Group
SWQPA	State Water Quality Protection Area
SWQPA-GP	State Water Quality Protection Area- General Protection
SWRCB	State Water Resources Control Board
US	United States

Executive Summary

Purpose and Approach

California's coastal ocean waters are among the most biologically productive in the world, and California's living marine resources are vital to the state's coastal economy and provide numerous ecosystem benefits. In response to threats to marine ecosystems from human impacts and natural fluctuations, California has taken a proactive approach by managing marine resources for long-term sustainability. Since the 1990s, California has a history of numerous pieces of legislation, programs, and plans that chart a course for ocean management, including through marine protected areas (MPAs). In 1999, California Legislature passed the Marine Life Protection Act (MLPA) requiring California to reevaluate all existing MPAs, which were at that time largely ineffective and disconnected, and design new MPAs that together function as an interconnected statewide network. The goals of the MLPA are:

1. Protect the natural diversity and abundance of marine life, and the structure, function and integrity of marine ecosystems.
2. Help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.
3. Improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and manage these uses in a manner consistent with protecting biodiversity.
4. Protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic values.
5. Ensure California's MPAs have clearly defined objectives, effective management measures, and adequate enforcement and are based on sound scientific guidelines.
6. Ensure the state's MPAs are designed and managed, to the extent possible, as a network.

The MLPA required the California Department of Fish and Wildlife (CDFW) to develop, and the California Fish and Game Commission (Commission) to adopt, a master plan that guides the implementation of the Marine Life Protection Program (MLPP) to redesign the state's MPA network. The MLPP includes all state MPA governance and management mechanisms and institutions as well as California's MPA network itself. A master plan framework was developed in 2005, and the Commission formally adopted the draft *California Marine Life Protection Act Master Plan for Marine Protected Areas* in 2008 following the implementation of the Central Coast MPAs. The 2008 Master Plan guided the three following regional siting and design processes, whereas this 2015 Master Plan sets a statewide foundation for MPA management moving forward to meet the goals of the MLPA.

The MPA network depends on the participation and support of numerous entities that provide specialized knowledge, ensure cost-effective management of the MPA network, and ensure participation from a wide array of stakeholders. Partners in MPA management have signed several memoranda of understanding (MOUs) committing to collaborative planning and management of the MPA network, including an updated 2015 MOU between 15 government and non-governmental entities. The Commission is the primary regulatory decision-making authority for California's MPA network, CDFW is the primary managing agency and implements and enforces regulations set by the Commission and provides scientific expertise, and the California Ocean Protection Council (OPC) is responsible for the direction of policy of the state's MPAs. The MLPP also seeks input from bodies including California Tribes and Tribal governments, an MPA Statewide Leadership Team (MSLT) that is

comprised of agencies and partners that have significant authority related to MPAs or marine sanctuaries, and partners in the California Collaborative Approach.

MPA Network Design and Siting Process

The six goals of the MLPA recognize the importance of protecting marine resources for various purposes, and therefore it is important to use multiple types of marine managed areas (MMAs) to achieve these distinct goals. MPAs are a subset of MMAs and include three MPA classifications (State Marine Reserve [SMR], State Marine Conservation Area [SMCA], and State Marine Park [SMP] and one MMA classification (State Marine Recreational Management Area [SMRMA]). Special Closures are not MMAs, but also contribute to the goals of the MLPA. Each of these classifications includes varying levels and types of protection such as allowed take, scientific research, and recreational and commercial harvest.

The MLPA Initiative was a science-based and stakeholder-driven MPA planning process that utilized the best readily available science in a comprehensive, highly collaborative, and transparent process to establish MPAs. The MLPA Initiative directed and informed four iterative regional siting and design processes (Central Coast, North Central Coast, South Coast, and North Coast, in chronological order) between 2004 and 2012. Three planning bodies – the Blue Ribbon Task Force (BRTF), Science Advisory Team (SAT), and Stakeholder Advisory Group – supported the design and siting of each region. The overall aim of the process was for the BRTF to select a set of alternative MPA proposals, including a preferred alternative, for each region and for the Commission to adopt one of the alternatives.

Completed in 2012, California's MPA network generally reflects the integration of the science and science-based MPA design guidelines from the MLPA, the 2008 Master Plan, and SAT guidance. For example, compared to California's 63 MPAs in 1999, the existing network of 124 MPAs and 15 special closures represents increased proportion of state waters protected, number and size of all MPA types, and representation and replication of marine habitats within MPAs.

Management

The MLPA emphasizes the importance of effective management for California's MPAs, which consists of strong oversight and a process for implementing the legal mandate; comprehensive management planning and permitting; effective enforcement, research, monitoring, evaluation, and outreach; and strong social capital and long-term sustainable financing that is enhanced by partnerships. Another key component of management, discussed later, is a process for adaptive management. To manage California's MPA network, the MLPP is focusing on a variety of management activities related to the components of effective management.

Outreach and Education

Educating the public about the MPA network is one of the MLPP goals identified in the MLPA. CDFW is committed to work with partners throughout the state to build public awareness and understanding of California's MPA network, including the identification of priorities, approaches, and coordinated efforts. The dissemination of MPA based regulatory, interpretive, and educational materials can improve outreach efforts statewide by reaching out to California's diverse public in a consistent, cohesive and multi-faceted outreach approach.

Enforcement

The MLPA emphasizes the importance of adequate enforcement as a goal of the MLPP, and identifies CDFW as the primary agency responsible for MPA enforcement. With the key intent of ensuring compliance with regulations, the objectives of enforcement revolve around operational ability (e.g., identify of areas of high priority, hire personnel, etc.); cooperative efforts (e.g., coordinate with allied agencies, utilize judicial system, etc.); and public awareness, outreach, and education (e.g., establish an outreach program, hold public forums, etc.).

CDFW is responsible for enforcing marine resource management laws and regulations, including MPAs, over a vast area spanning California's coastline out to three nautical miles, and will therefore emphasize patrol of priority areas. CDFW also enforces or shares jurisdiction for some federal laws and regulations. Given CDFW's broad enforcement mandates, additional personnel and assets will be needed to effectively enforce the entire MPA network.

Regional MPA Background and Priorities Documents

To help achieve the management goals of the MLPA, Regional MPA Background and Priorities documents provide historical planning information and regional MPA design considerations and priorities moving forward; which together provide important context to base informed statewide MPA management decisions upon. They are not meant to contain specific details for management protocols and methodologies; and instead are intended as living documents that are readily accessible for reference and adaptive management, and serve as a logical starting place for guiding regionally-based activities. Each Regional MPA Background and Priorities document includes unique regional features and considerations taken into account when designing the MPAs, regional goals and objectives, summaries of regional MPAs, and regional plans for scientific and enforcement considerations.

Aligning MPAs and Other Marine Resource Management Efforts

Collaborative efforts will be crucial for taking an ecosystem-based approach in which managers across agencies and jurisdictions recognize the numerous interactions within an ecosystem, including humans, instead of focusing on a specific issue, species, or ecosystem service. The MLPA is aligning or could align with management of fisheries, water quality, climate change, marine debris, invasive species, and other existing and emerging marine management efforts. The effort to align MPA management with other marine resource management efforts is largely unprecedented and may lead to lessons learned regarding cooperative management.

ADAPTIVE MANAGEMENT

Adaptive Management and Management Objectives of the MLPP

The MLPP is coordinating with partners to develop a process of adaptive management. Adaptive management, required by the MLPA, is a process that facilitates learning from program actions helps evaluate whether the MPA network is making progress toward achieving the six goals of the MLPA. Adaptive management will help improve management and provide a way to broadly share information about the effectiveness of the MPA network.

To inform the adaptive management process, the MLPP established a formal 10-year cycle of review for California's MPA network. The 10-year reviews will serve to evaluate network efficacy and for the Commission to determine whether changes in management are warranted. This timescale was chosen based on recent scientific findings on the time scales needed to demonstrate ecological change,

lessons drawn from regional MPA implementation, and administrative feasibility. The formal 10-year management review will emphasize ecological, socioeconomic, and governance aspects of the network, including scientific assessment of MPA monitoring results.

The MLPP has defined six management objectives, constructed from the MLPA goals, that will determine whether the mandates of the MLPA are being met and thus help guide adaptive management. The management objectives include themes such as protecting and improving native marine life and ensuring MPA functioning as a network, while allowing sustainable opportunities for human use. These management objectives may be modified as part of the adaptive management process or in response to changing ocean conditions and threats.

Statewide Monitoring Program

The need for long-term monitoring is described in the MLPA, requiring monitoring, research, and evaluation at selected sites to facilitate adaptive management and ensure that the MPA network meets its goals. Monitoring seeks to understand ecosystem condition and trends and to scientifically evaluate MPA design and to inform adaptive management. As such, long-term monitoring will form an important component of the formal 10-year management reviews.

Effective monitoring requires a partnership-based approach that leverages existing capacity across the state. CDFW partnered with OST to develop a scientifically rigorous statewide MPA monitoring framework, in the form of regional MPA monitoring plans and a statewide framework diagram. This approach was adopted by the Commission and to date, the framework has been used primarily to guide baseline monitoring efforts and provide a foundation for regional monitoring plans. Moving forward, OST, in partnership with OPC and CDFW, is leading a process to develop a statewide MPA monitoring program based on the statewide monitoring framework and regional monitoring plans. This will be coordinated with the MSLT. Statewide MPA monitoring is composed of three interconnected components; the first two components satisfy the requirements of the MLPA, and thus take precedence over the third component, which goes beyond the scope of the MLPA.

1. **Network Scientific Evaluation Questions and Metrics:** CDFW, OST, and partners are committed to developing scientific network evaluation questions and metrics to be integrated in a statewide MPA monitoring plan. The regional MPA monitoring plans provide a starting point for developing network evaluation questions and metrics.
2. **Regional MPA Monitoring:** The state has launched a two-phase approach to MPA monitoring in each region: 1) baseline monitoring and 2) long-term monitoring. Data and information collected during baseline monitoring in the first five years of implementation describes the benchmark state from which to measure MPA performance during long-term monitoring. To date, regional monitoring plans for three regions have been developed and baseline monitoring has begun in all four regions. Long-term monitoring will be implemented at selected sites for selected metrics in each region, with the built-in ability to look at ecosystem conditions and trends at a statewide network scale.
3. **Beyond the MLPA:** While long-term MPA network monitoring is primarily informed by the requirements of the MLPA, it can also provide useful information for other aspects of California's ocean resource management, such as fisheries, climate change, marine debris, and invasive species.

To supplement monitoring, cutting-edge research and development can realize new possibilities for MPA monitoring and adaptive management. Research consists of scientific exploration to address relevant questions that are outside the goals and objectives of long-term monitoring. Development can

advance scientific knowledge and technological capacity, such as through the development of new methods or technical solutions for data collection.

Adaptive Management Process

The MLPP has defined a process for adaptive management, described below.

1. **Identify and Update Objectives:** The MLPP will select statewide objectives that work toward the goals of the MLPA and other relevant policy and statutes. Baseline monitoring takes place based on the statewide goals and objectives.
2. **Long-Term Monitoring:** Following baseline monitoring and an associated five-year review, long-term monitoring takes place. Concurrently, additional information may be collected to inform interim evaluation and assessment activities between 10-year reviews.
3. **10-Year Management Review:** Scientific evaluation, public scoping meetings, panel discussions, and other forums will draw on monitoring information to shed light on the status, function, and possible changes to the network for the Commission to consider at the 10-year reviews. Findings from the 10-year reviews may feed back into adaptive management of the objectives or the approach to long-term monitoring.

Throughout the entire adaptive management process, there will be the need for learning, communicating lessons, and developing and carrying out targeted research and development projects that can support monitoring and inform adaptive management.

Program Partners and Operations

The MLPP depends on collaboration to leverage existing human and financial resources, and CDFW and its partners are committed to working together to identify ways to continue to achieve the goals of the state in an efficient and effective way. The MLPP can work with partners to identify opportunities that consider jurisdictions and mandates to leverage core competencies related to MPA management. Based on their strengths and abilities, partners from different sectors will also have different roles relating to identifying, assessing, and securing funding sources. OPC, CDFW, and partners developed and updated a list of potential funding sources for the 2015 Master Plan, and will continually reevaluate existing and new potential funding sources to secure a diversified funding portfolio that ensures long-term financial sustainability.

Setting a Path Forward

To operationalize the elements of the 2015 Master Plan, the MLPP will implement a number of steps relating to its core MPA management responsibilities. Throughout the steps outlined below, the overall goal is statewide coordination to achieve effective adaptive management of California's MPA network to meet the goals and objectives of the MLPA.

- **Monitoring, Research, and Evaluation:** Select statewide metrics and evaluation questions, update and adapt regional monitoring plans as necessary, report results, link MPA and other monitoring efforts, and identify and support key MPA related research needs
- **Enforcement:** Identify tools to support enforcement
- **Partnership Coordination:** Build partnerships
- **Outreach and Education:** Prioritize outreach efforts
  Identification of Long-Term Funding Sources: Enhance capacity for CDFW's MPA project and prioritize potential funding sources

CHAPTER 1
Purpose and Approach

California's coastal ocean waters are among the most biologically productive in the world, enriched by seasonally persistent upwelling zones associated with coastal currents such as the California Current. California's living marine resources are vital to the state's coastal economy and support a variety of economic sectors, including commercial and recreational fisheries, tourism, and non-consumptive recreation that together contribute tens of billions of dollars to California's gross domestic product.[1] These sectors provide services and benefits that enhance human well-being, including healthy sources of high-quality protein, recreational experiences, and employment and revenue in coastal communities. California's coastal ocean waters not only provide natural resources, but also spectacular scenery and aesthetic values enjoyed by Californians and visitors alike.

In the past century, humans and natural fluctuations have increased threats to marine ecosystems, which affect ocean habitats from the local to global scales. In response to these threats, California has set itself apart as a leader by taking a proactive approach to managing marine resources for long-term sustainability, thereby helping to ensure their existence for future generations. For example, the California Ocean Resources Management Act (CORMA), passed in 1990,[2] created an Ocean Resources Task Force[3] to prepare a report regarding existing ocean resources management activities and impacts.[4] In 1997, the California Resources Agency (now called the California Natural Resources Agency [CNRA]) released *California's Ocean Resources: An Agenda for the* Future (Ocean Agenda)[5]. The Ocean Agenda recommended the state evaluate its array of over 20 coastal managed area classifications to develop a more effective and less complicated statewide system (Baird et al. 1999). Between 1998 and 2000, the California Legislature passed the Marine Life Management Act (MLMA, 1998),[6] the Marine Life Protection Act (MLPA, 1999),[7] and the Marine Managed Areas Improvement Act (MMAIA, 2000).[8] These foundational pieces of legislation have charted the course for ocean management, specifically regarding sustainable fisheries management and ecosystem conservation and protection, in California. In addition, the California Ocean Resources Stewardship Act (CORSA), and the California Ocean Protection Act (COPA) were integral in paving the way for the partnership-based approach to managing California's marine resources. These pieces of legislation all set the stage for the Marine Life Protection Act (MLPA), from which this Master Plan originates. Table 1 provides a list and descriptions of relevant legislation, programs, and plans enacted in California since 1990 (see Appendix A, Section 2 for more historical information on California's marine management policies and regulations).

[1] National Ocean Economics Program. (2015). *Ocean Economy Data*. Retrieved Sept 21, 2015 from http://www.oceaneconomics.org/Market/ocean/oceanEcon.asp
[2] California Public Resource Code (PRC) §36000-36003
[3] PRC §36300
[4] PRC §36500
[5] CNRA. (1997). *California's Ocean Resource: An Agenda for the Future*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/mlpa/pdfs/agenda011005_8.pdf
[6] California Fish and Game Code (FGC) §90-99.5, 105, 7050-7090, 8585-8589.7, 8842, and 9001.7
[7] FGC §2850-2863
[8] PRC §36600-36900

Table 1. Summary of Recent Ocean and Coastal State Legislation, Programs, and Plans in California

Policy and Year	Overview
California Ocean Resources Management Act - 1990	Declares state policy for ocean resource planning and management[9]
Marine Life Management Act - 1998	Requires ecosystem-based management of ocean fisheries and establishes a process for such management[10]
Marine Life Protection Act - 1999	Requires California to reevaluate all existing MPAs and design new MPAs that together function as a statewide network;[11] amended by the legislature in 2013 to grant the California Ocean Protection Council (OPC) the responsibility for the direction of policy of MPAs[12]
Marine Managed Areas Improvement Act - 2000	Establishes a new, simplified classification system for state marine managed areas (MMAs)[13,14]
California Ocean Resources Stewardship Act - 2000	Aims to improve the coordination of ocean resource management science in California[15]
Coastal Non-Point Source Pollution Program - 2000	Provides a single unified, coordinated statewide approach to dealing with non-point source pollution[16]
California Ocean Protection Act - 2004	Improves integration and coordination of the state's efforts to protect and conserve ocean resources[17]
California's Ocean Action Plan - 2004	Guides the state's future resources protection and management efforts and seeks to maintain California's role as a national leader in ocean affairs[18]
West Coast Governors' Agreement on Ocean Health - 2006	Constitutes a proactive regional collaboration, which protects and manages the ocean and coastal resources along the entire West Coast[19]

Recognizing the importance of California's diverse marine species and ecosystems to public health and well-being, ecological health, and ocean-dependent industries, the California Legislature passed the MLPA in 1999. Prior to the MLPA and the ensuing MPA design and siting process, California's existing MPAs were largely ineffective and disconnected rather than a system designed to function as an interconnected network that could enhance conservation returns for Californians.

The MLPA requires the California Department of Fish and Game (now California Department of Fish and Wildlife [CDFW]) to develop, and the California Fish and Game Commission (Commission) to

[9] Gurish, J. *Overview of California Ocean and Coastal Laws with Reference to the Marine Environmen*t. Prepared for OPC. Retrieved Sept 21, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/docs/Documents_Page/Noteworthy/Overview_Ocean_Coastal_Laws.pdf
[10] Ibid.
[11] FGC §2853(a). See CDFW's website for more information: https://www.wildlife.ca.gov/Conservation/Marine/MPAs/FAQs
[12] FGC §2850.5
[13] Ibid.
[14] MPAs are a subset of MMAs, however throughout this document the more common term "MPA" is used as an umbrella to refer to all types of protected areas (see Chapter 2.1)
[15] Ibid.
[16] California Coastal Commission. Water Quality Program Statewide Nonpoint Source (NPS) Program Information. Retrieved Sept 21, 2015 from http://www.coastal.ca.gov/nps/npsndx.html
[17] Ibid.
[18] Ibid.
[19] West Coast Governors Alliance on Ocean Health. *WCGA Overview*. Retrieved Sept 21, 2015 from http://www.westcoastoceans.org/wcga-overview

adopt, a master plan that guides the implementation of a Marine Life Protection Program (MLPP)[20] to address the siting of new MPAs and modifications of existing MPAs - thereby redesigning the state's MPA network.[21] To improve the design and management of California's MPAs, the MLPA guides the Commission to adopt the MLPP[22]. The MLPP has statewide goals that focus on protecting, sustaining, and conserving marine life; improving socioeconomic activities and marine heritage provided by marine ecosystems; and ensuring that the state's MPAs are designed and managed to the extent possible as a network and have clearly defined objectives, are based on scientific guidelines, and have effective management measures and enforcement.[23] Through extensive collaboration with partners, CDFW developed a master plan framework in 2005 and then a full master plan document following the adoption of the Central Coast MPAs. The Commission formally adopted the draft *California Marine Life Protection Act Master Plan for Marine Protected Areas* (2008 Master Plan)[24] as a "living" document in February 2008. The 2008 Master Plan integrated the 2005 framework, memorialized the guidance used to develop alternative MPA proposals in the Central Coast planning region, and successively guided the development of alternative MPA proposals in the North Central Coast, South Coast, and North Coast planning regions (see Chapter 2.2 and Appendix A).

Developed through partner collaboration, this 2015 Master Plan is a programmatic guidance document that describes how the MLPP will undertake tasks and activities to manage California's MPAs to the best of its ability to meet the goals of the MLPA and MMAIA.[25] Whereas the 2008 Master Plan described the process for designing and siting MPAs through a regional approach, the 2015 Master Plan focuses instead on setting a statewide foundation for MPA management, moving forward that will include regional components. Thus, the 2008 Master Plan and the 2015 Master Plan are complementary documents reflecting the continuing evolution of the MLPP. The 2015 Master Plan is intended to provide guidance to the MLPP and other natural resource management agencies, California Tribes and Tribal governments, the California Legislature, and the general public. The 2015 Master Plan is also complemented by *The California Collaborative Approach: Marine Protected Area Partnership Plan* (the Partnership Plan [see Chapter 1.1]).[26]

The 2015 Master Plan includes background information on California's heritage and a high-level description of California's MPA design and siting process; readers can refer to Appendix A and the 2008 Master Plan for more detailed information on these topics. The 2015 Master Plan primarily shares the operational and contextual information for management of the MPA network to meet the MLPA goals and objectives. This includes statewide guidance relative to the management and adaptive management – including monitoring, research, and development – as well as operations and funding of the MPA network and next steps to take for MPA management. In this document, management and adaptive management are discussed separately because, while the MLPP has defined its general approach to management of California's MPA network, the MLPA emphasizes the importance of an adaptive and evolving approach to management. This adaptive management process, while closely tied to existing MPA management, is a distinct process meant to build upon and feed back into MPA management. For a more detailed historical description of MPA planning through the California Marine Life Protection Act Initiative (MLPA Initiative) that led to the designation of California's MPAs pursuant to the MLPA, see Appendix A. Also appended to the 2015 Master Plan are four Regional MPA

[20] FGC §2853(b)
[21] FGC §2855
[22] FGC §2853(b)
[23] FGC §2853(b) – (c)
[24] CDFW. (2008). *Draft Master Plan for Marine Protected Areas*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan
[25] FGC §2861(a)
[26] OPC. (2014).*The California Collaborative Approach: Marine Protected Areas Partnership Plan*. Retrieved Sept 22, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/docs/mpa/APPROVED_FINAL_MPA_Partnership_Plan_12022014.pdf

Background and Priorities documents that capture region-specific MPA planning considerations and priorities moving forward; which together provide important context to base future informed statewide MPA management decisions upon (see Appendices C-F).

To enhance the effectiveness of California's MPAs, the MLPA has six primarily ecosystem-based goals that guided the design and siting, and continue to guide the management, of MPAs:

1. Protect the natural diversity and abundance of marine life, and the structure, function and integrity of marine ecosystems.

2. Help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.

3. Improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and manage these uses in a manner consistent with protecting biodiversity.

4. Protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic values.

5. Ensure California's MPAs have clearly defined objectives, effective management measures, and adequate enforcement and are based on sound scientific guidelines.

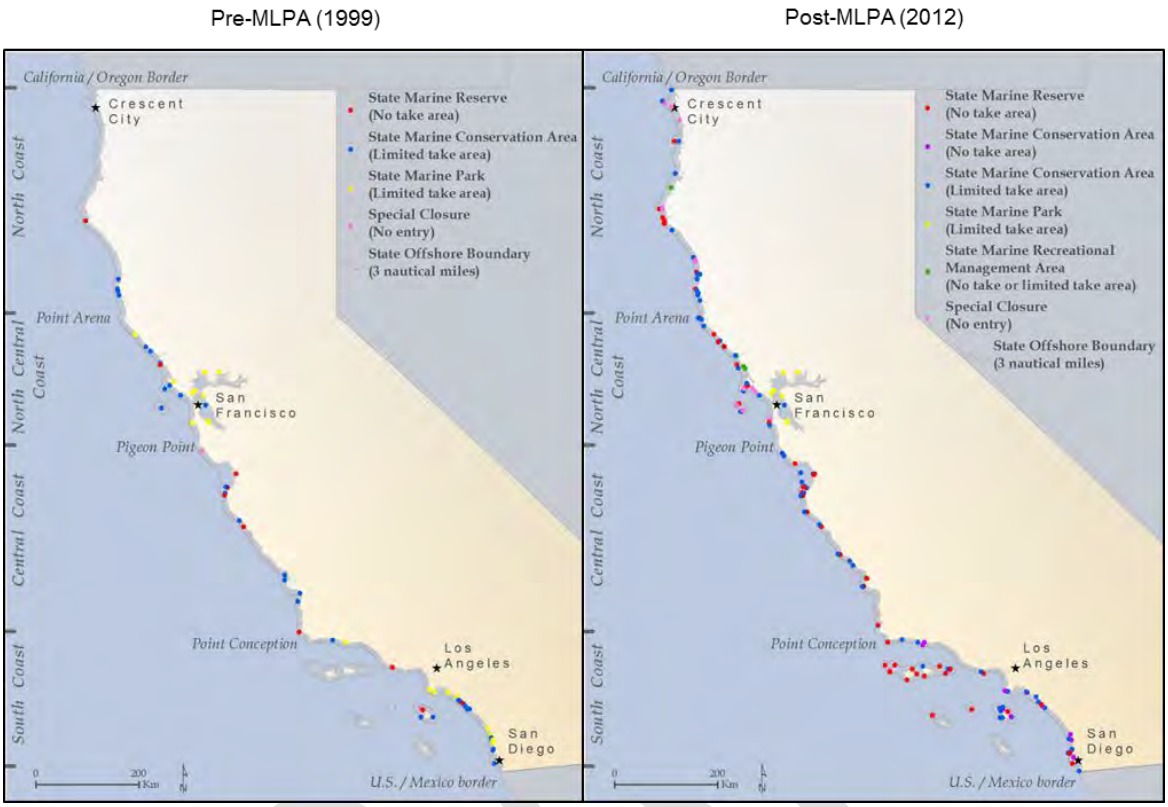
6. Ensure the state's MPAs are designed and managed, to the extent possible, as a network.

Guided by these six goals, the MPA design and siting process (see Chapter 2.2) resulted in the creation of a true network of 124 MPAs (Figure 1).[27] Together, this network makes up 60% of the total MPA coverage in the contiguous United States (US), placing California as a leader on MPAs both nationally and globally (Saarman & Carr 2013). Furthermore, the actions undertaken to fulfill the mandates of the MLPA, MLMA, and MMAIA put California on track to help meet the vision of the US National Ocean Policy of stewardship that "ensures that the ocean, our coasts, and the Great Lakes are healthy and resilient, safe and productive, and understood and treasured so as to promote the well-being, prosperity, and security of present and future generations."[28]

[27] Total number of MPAs includes 111 new or redesigned MPAs and 13 MPAs previously established in 2003 at the northern Channel Islands that were retained without change. Total number of MPAs does not include previously existing San Francisco Bay MPAs.

[28] The White House Office of the Press Secretary. (2010). *Executive Order: Stewardship of the Ocean, our Coasts, and the Great Lakes.* Retrieved Sept 22, 2015 from http://www.whitehouse.gov/files/documents/2010stewardship-eo.pdf

Figure 1. Map of California's MPA Network before and after Implementation of the MLPA[29]



1.1 Natural and Human Dimensions of California's Coastal Resources

California's MPA network is situated in a geography of rich ecological and human heritage. The combination of California's bathymetry, ocean currents, and seasonal wind patterns provide the necessary conditions that lead to significant abundance and richness of its coastal ocean waters. California's shallow continental shelf is quite narrow, yet includes features such as underwater canyons, islands, offshore rocks, and rocky reefs (Johnson & Sandell 2014). Beyond this coastal zone two major currents meet around Point Conception, creating a rich transition zone that supports vast amounts of life. California's waters host a diversity of species of invertebrates, fish, reptiles, birds, mammals, marine plants, and algae, which can be found in a wide variety of habitats ranging from rocky intertidal shores to deep submarine canyons. For approximately 30,000 years, California's inhabitants have depended on the state's marine and coastal resources (Nies 2012). For countless generations, California Tribes have utilized marine resources and stewarded marine and coastal ecosystems across California's approximately 1,100-mile coastline. Today, California's inhabitants and visitors continue gain significant benefits from the state's oceans and coasts, including economic, nutritional, recreational, cultural, spiritual, and educational, as well as climate regulation and protection from coastal hazards. Many California Tribes continue to regularly harvest marine resources within their ancestral territories and maintain relationships with the coast for ongoing cultural uses, including spiritual and ceremonial purposes.

[29] In the pre-MLPA map, three ecological reserves, one state park and one natural preserve are shown as State Marine Conservation Areas (SMCAs) for comparative purposes. Regulations are consistent with current SMCAs.

California has the nation's second largest ocean economy and largest non-oil and/or gas economy,[30] with oceans contributing more than $44 billion to California's 2012 gross domestic product.[31] Ocean sectors that depend on marine and coastal ecosystems, including tourism, recreation, and fisheries, contributed nearly $18 billion. California's oceans also have direct impacts on the job market, producing almost 490,000 jobs in 2012, more than 365,000 of which were within the ocean and coastal tourism and recreation sectors alone.[32] The coasts also provide extensive recreational opportunities; beachgoers make more than 150 million trips to California' beaches per year[33] and in 2013 registered over 820,000 recreational vessels.[34]

A wide range of natural and human-caused factors directly and indirectly influence the abundance and diversity of populations of marine life and the habitats where they live, including shifts in oceanographic conditions (e.g., El Niño and La Niña) and numerous human activities (National Research Council 1995; Parrish & Tegner 2001; Sheehan & Tasto 2001). The development and growth of California's population and economy leads to stresses including chemical pollution and urban runoff, ocean acidification, alteration of physical habitat, invasion of exotic species, and harvest of living marine resources (National Research Council 1995; Jackson et al. 2001; Sheehan & Tasto 2001, Doney et al. 2012; Samhouri & Levin 2012; Kelly et al. 2013). Climate change also poses a significant risk to California's marine resources (Ruckelshaus et al. 2008; Chen et al. 2014). While MPAs may not be appropriate for reducing the impacts of all the threats mentioned above, they can provide a tool for addressing and mitigating many of these threats.

1.2 Collaborative MPA Governance and Policy

To protect California's marine natural and cultural heritage, the MPA network depends on the participation and support of numerous entities. Throughout the world, the creation of management partnerships has been shown to greatly enhance the effectiveness of MPA network planning and implementation (Kelleher 1999).[35] By tapping into the specialized knowledge of state and federal agencies, California Tribes and Tribal governments, non-governmental organizations (NGOs), academic institutions, and community-based user groups, managing agencies can leverage existing capacities and increase efficiencies on activities such as outreach and education; monitoring, research, and evaluation; building compliance through enforcement; and policy and permitting. Leveraging existing human and financial resources can help ensure cost-effective management of the MPA network. Furthermore, the inclusion of a large and diverse group of stakeholders increases public knowledge, participation, and support for the network (Kelleher 1999).

As the science-based and stakeholder driven process to redesign the state's MPA network progressed in each region from design to designation and implementation (see Chapter 2.2), it became increasingly

[30] Texas has the largest ocean economy in the nation at $121 billion; however, $113 billion is contributed by the minerals sector.
[31] National Ocean Economics Program. (2015). Ocean Economy Data. Retrieved Sept 21, 2015 from http://www.oceaneconomics.org/Market/ocean/oceanEcon.asp
[32] Ibid.
[33] Kildow, J. & Colgan, C. S. (2005). *California's Ocean Economy: Report to the Resources Agency, State of California*. http://www.opc.ca.gov/webmaster/ftp/pdf/docs/Documents_Page/Reports/CA_Ocean_Econ_Report.pdf
[34] US Department of Homeland Security, U.S. Coast Guard office of Auxiliary and Boating Safety. (2014). *2013 Recreational Boating Statistics*. Retrieved Sept 22, 2015 from http://www.uscgboating.org/assets/1/AssetManager/2013RecBoatingStats.pdf
[35] Blue Earth Consultants, LLC. (2012). *From Design to Action: Key Elements and Innovations for Effective Marine Protected Area Network Implementation - Lessons from Successful Case Studies*. Retrieved Sept 21, 2015 from http://www.blueearthconsultants.com/wp-content/uploads/2012/11/From_Design_to_Action_Key_Elements_for-Implementing_Californias_MPA_Network.pdf

clear that the scale and scope of the redesign process required the state to revisit how management responsibilities were allocated. Although the primary management of the state MPA network is assigned by statute to CDFW,[36,37,38] no one agency or group has the authority, capacity, or resources to successfully manage the MPA network in isolation. The state has therefore committed to a partnership-based approach to fulfill its management obligations, which requires a sustained focus on implementing policies that facilitate communication and collaboration among both state and private partners in supporting MPA management.

To memorialize this approach, partner entities have signed several memoranda of understanding (MOUs) committing to collaborative planning and management of the MPA network. In August 2004, CNRA, CDFW, and the Resources Legacy Fund Foundation (now Resources Legacy Fund [RLF]) signed an MOU that launched an effort to implement the MLPA. The 2004 MOU established the MLPA Initiative, a public-private partnership, in all four planning regions (see Appendix A). The 2004 MOU was followed by amended MOUs in 2006/2007 and 2008. In 2010, a separate MOU was signed by 11 government and non-governmental entities to memorialize their commitments to effective management of California's MPA network. The 2010 MOU is titled "Memorandum of Understanding for Implementation of the California Marine Life Protection Act." The 2010 MOU was amended in 2015 to include additional federal signatories, signed by 15 government and non-governmental entities (see Box 1).

Box 1. Signatories of the 2015 MOU for MPA Management

- California Coastal Commission
- California Department of Fish And Wildlife
- California Department of Parks And Recreation
- California Environmental Protection Agency
- California Fish and Game Commission
- California Natural Resources Agency
- California Ocean Protection Council
- California Ocean Science Trust
- California State Lands Commission
- Resources Legacy Fund
- State Water Resources Control Board
- US Coast Guard
- US Department of Defense
- US National Oceanic and Atmospheric Administration
- US National Park Service

The MLPP's philosophy on governance and policy of the MPA network, as well as further activities and entities that are focused on a collaborative approach to management of California's MPA network, are described below.

MPA Governance and Policy

Governance includes the interactions among structures, processes, and traditions that determine how and by whom decisions are made, and how stakeholders have a say in the process (Lockwood et al. 2010). MPA governance in California is comprised of three general categories of regulatory authority, management, and policy that interact to facilitate the design, implementation, and adaptive

[36] FGC §2855(b)(1)-2863
[37] PRC §36600-3690
[38] Pursuant to PRC §36725: California State Parks and Recreation (State Parks) may designate, delete, or modify State Marine Reserves (SMRs), State Marine Parks (SMPs), State Marine Conservation Areas (SMCAs), state marine cultural preservation areas, and State Marine Recreation Management Areas (SMRMAs). State Parks may not designate, delete, or modify a SMR, SMP, or SMCA without the concurrence of the Commission on any proposed restrictions upon, or change in, the use of living marine resources. State Parks may manage SMRs, SMPs, state marine cultural preservation areas, and SMRMAs. The State Water Resources Control Board (SWRCB) may designate, delete, or modify state water quality protection areas. The SWRCB and the California regional water quality control boards may take appropriate actions to protect state water quality protection areas. The SWRCB may request the Department or State Parks to take appropriate management action.

management of the MPA network to achieve the goals of the MLPA. These components are led by the Commission, DFW, and OPC, respectively.

The Commission is the primary regulatory decision-making authority for regulations related to California's MPAs. The Commission provides a venue for public comment and formal review to act upon MPA proposals, stakeholder petitions, and regulatory changes.

CDFW is responsible for implementing and enforcing the regulations set by the Commission, as well as providing biological data and expertise to inform the Commission's decision-making process.[39] CDFW manages California's MPAs through enforcement; monitoring, research, and evaluation; and outreach and education.

In 2013, Senate Bill 96 delegated to the OPC the responsibility for the direction of policy of the state's MPAs.[40] To fulfill this mandate, OPC works with both agency and private partners to identify areas that would benefit from policy development. Recommendations are developed collaboratively and then brought to the OPC for consideration. Once adopted, these policies direct all agencies under CNRA in their actions related to MPAs. This approach is grounded in the foundational agency relationship between OPC, CDFW, and the Commission that informs actions in support of the MPA network. This support takes several forms, from formalizing and leading coordination bodies like the MPA Statewide Leadership Team (MSLT) to actively engaging private partners in collaborative dialogues with state agencies.

Marine Life Protection Program

Core to the MPA design and siting process, as well as to the ongoing management of California's MPA network, is the MLPP, established pursuant to the MLPA. The MLPP is a diverse program that includes groups involved in MPA policy and permitting, enforcement and compliance, research and monitoring, and outreach and education. The MLPP also encompasses the California's MPA network itself, as designated under the MLPA and MMAIA. Therefore, the MLPP constitutes a wide range of entities and activities that all contribute to achieving the goals of the MLPA. Importantly, the components of the MLPP are described in statute[41] and may change based on evolving needs and the outcomes of the ongoing adaptive management process.

Consultation with California Tribes and Tribal Governments

As the traditional users and stewards of California's marine resources, partnership with California Tribes and Tribal governments is particularly important to the state government and the MLPP for MPA management. The state is committed to engaging in meaningful collaborations with California Tribes and Tribal governments, and Tribes can participate in many facets of MPA management, including, but not limited to, education and outreach, stewardship, research and monitoring, and compliance and enforcement. CNRA,[42] CDFW,[43] and the Commission[44] all have approved Tribal consultation policies to guide effective cooperation, communication, and consultation with Tribes and to enable California

[39] Commission. (2012). *About the Fish and Game Commission.* Retrieved Sept 21, 2015 from http://www.fgc.ca.gov/public/information/
[40] FGC §2850.5
[41] FGC §2853 - 2856
[42] CNRA. (2012). *California Natural Resources Agency Adoption of Final Tribal Consultation Policy*. Retrieved Sept 21, 2015 from http://resources.ca.gov/docs/tribal_policy/Final_Tribal_Policy.pdf
[43] CDFW. (2014). *Department of Fish and Wildlife Tribal Communication and Consultation Policy*.
[44] Commission. (2015). *Tribal Consultation Policy*. Retrieved Oct 23, 2015 from http://www.fgc.ca.gov/meetings/2015/Jun/Exhibits/0610_Item_3_Tribal_Consultation_Policy.pdf

Tribes and Tribal governments to provide meaningful input for natural resource management (see Appendix B).

MPA Statewide Leadership Team

California's MSLT, led by OPC and nested within the larger MLPP, currently includes agencies and partners that have significant authority related to MPAs or marine sanctuaries. The MSLT was convened with the goal of increasing communication and collaboration among agencies and partners to ensure the state is effectively managing the statewide MPA network. The MSLT has in effect been active through collaborations on organically occurring projects and products, but was formalized in 2015. Further formalizing a commitment to communication and collaboration for MPA management, the MSLT finalized its two-year workplan in September 2015.[45] The MSLT's work is also informed by discussions with key non-profit organizations, Tribes, fishermen, academics, and other federal agencies that play a direct or support role in the management of the MPA Network. The MSLT has identified four focal areas around which to organize its work:

- Outreach and education
- Research and monitoring
- Enforcement and compliance
- Policy and permitting

Partnership and the California Collaborative Approach

Partnership is a common theme and core strategy underlying the MLPP and the ongoing management of California's MPA network. This section specifically highlights the MLPP's approach to partnership and collaboration, which forms the foundation of all aspects of the state's MPA network, including siting and design, management and adaptive management, monitoring, operations, and other emerging aspects as the MLPP evolves.

Building on momentum from the publically-driven design and siting phase of California's network of MPAs (see Chapter 2.2 and Appendix A), CDFW, OPC, and other partners recognized the need to institutionalize an organized and mutually beneficial approach to partnership around management of the MPA network. Therefore, CDFW, OPC, and partners developed and agreed upon an experimental partnership model – the California Collaborative Approach. The California Collaborative Approach, which is documented in the Partnership Plan,[46] takes advantage of overlapping government mandates, public interest, and science to provide support and create opportunities for the management and governance of the MPA network across sectors and geographic and political scales. Because it is the first partnership model of its kind focused on MPA network management, it will be adapted as needed as new priorities, needs, and information arise.

Table 2 describes a sample of past and ongoing collaborations among diverse entities including agencies, researchers, citizen scientists, and more, that work toward achieving the Partnership Plan objectives. Each of these partnerships has or will potentially inform MPA management as the MLPP evolves. MLPP partners and others will continue to identify and build new partnerships as opportunities and needs arise.

[45] OPC. (2015). *Marine Protected Area (MPA) Statewide Leadership Team Work Plan FY 15/16-17/18*. Retrieved Sept 21, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20150922/Item5_Attach2_MPALeadershipTeam_Workplan_FINALv2.pdf

[46] OPC. (2014).*The California Collaborative Approach: Marine Protected Areas Partnership Plan*. Retrieved Sept 22, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/docs/mpa/APPROVED_FINAL_MPA_Partnership_Plan_12022014.pdf

Table 2. Examples of Past and Ongoing MPA Collaborations Aimed to Inform MPA Management

Partners	Description of Collaborative Effort
CDFW, Channel Islands National Marine Sanctuary (CINMS)	• Developed Channel Islands MPA network and federal extension (see Appendix A, Section 2.3 and 3.3)
CDFW, CNRA, RLF	• MLPA Initiative (see Chapter 2 and Appendix A)
CDFW, Channel Islands National Park, CINMS, Partnership for Interdisciplinary Study of Coastal Oceans (PISCO)	• Collaborated to produce a Channel Islands MPAs 5-year monitoring report[47]
CDFW, California Ocean Science Trust (OST), OPC	• Developing and implementing a long-term statewide MPA Monitoring Program
California Sea Grant (CASG), CDFW, OST, State Coastal Conservancy (SCC)	• Developed and implemented Central Coast MPA Baseline Monitoring Program (see Appendix E for more detail)
CASG, CDFW, OST, OPC	• Developed and implemented MPA Baseline Monitoring Programs for North Central Coast, South Coast, and North Coast (see Appendix D, Appendix F, and Appendix C, respectively, for more detail)
CDFW, OPC, OST, Collaborative Network	• Agency staff and partners attend meetings and regularly engage with the Collaborative Network
OPC, OST, CDFW, citizen science groups	• Volunteer citizen scientists collect scientific data on coastal and marine resource use
CDFW, OPC	• Policy coordination for California Environmental Quality Act process on MPAs with California Coastal Commission (CCC), State Lands Commission (SLC), State Water Resources Control Board (SWRCB), and other permitting agencies
OPC, CDFW, California Sanctuary Foundation	• CDFW and OPC funding supported the production and installation of MPA interpretive panels, regulatory signs, brochures, and kiosks
CDFW, OPC-Science Advisory Team (SAT)	• Integrating technical support from University of California Santa Cruz staff and SAT members to analyze impacts from scientific collecting within MPAs and how to best manage those impacts while using a more structured, objective, and quantifiable approach when reviewing permit applications for scientific collecting within MPAs
CDFW, Natural Resources Defense Council (NRDC), WiLDways	• Developed "You Are Here Signs" with NRDC that were placed along the coast and Spanish translation of materials and "You Are Here Signs" with a South Coast emphasis with WiLDways
CDFW, Ocean Communicators Alliance	• Statewide docent guides and general MPA education
CDFW, California Department of Parks and Recreation (State Parks)	• Developed an educational module on MPAs that is utilized in classrooms throughout the state through the PORTS program
CDFW, US Department of Defense	• Developed military safety zones around Channel Islands (see Appendix A, Section 3.3: *MPA Design and Management Considerations*)

[47] CDFW, PISCO, CINMS, and Channel Islands National Park. (2008). *Channel Islands Marine Protected Areas First 5 Years of Monitoring: 2003-2008*. Airamé, S. and J. Ugoretz (Eds.). 20 pp. Retrieved Aug 7, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=31325&inline=true

The MSLT created four overarching management objectives that span the entire network, linked to the six MLPA goals, and complement the regional objectives. The four management objectives, as described in the Partnership Plan, include the following:

1. Governance and management process is effective and adaptive.
2. Objective, reliable, and timely scientific information and enforcement data are used in management decisions for stewardship of the statewide network.
3. Compliance with the regulations and participation in management and stewardship of the statewide MPA network is high due to effective enforcement, education, and broad awareness of the MPAs across sectors and by all key stakeholder groups.
4. State MPA network is effectively financed and sustainable over the long term.

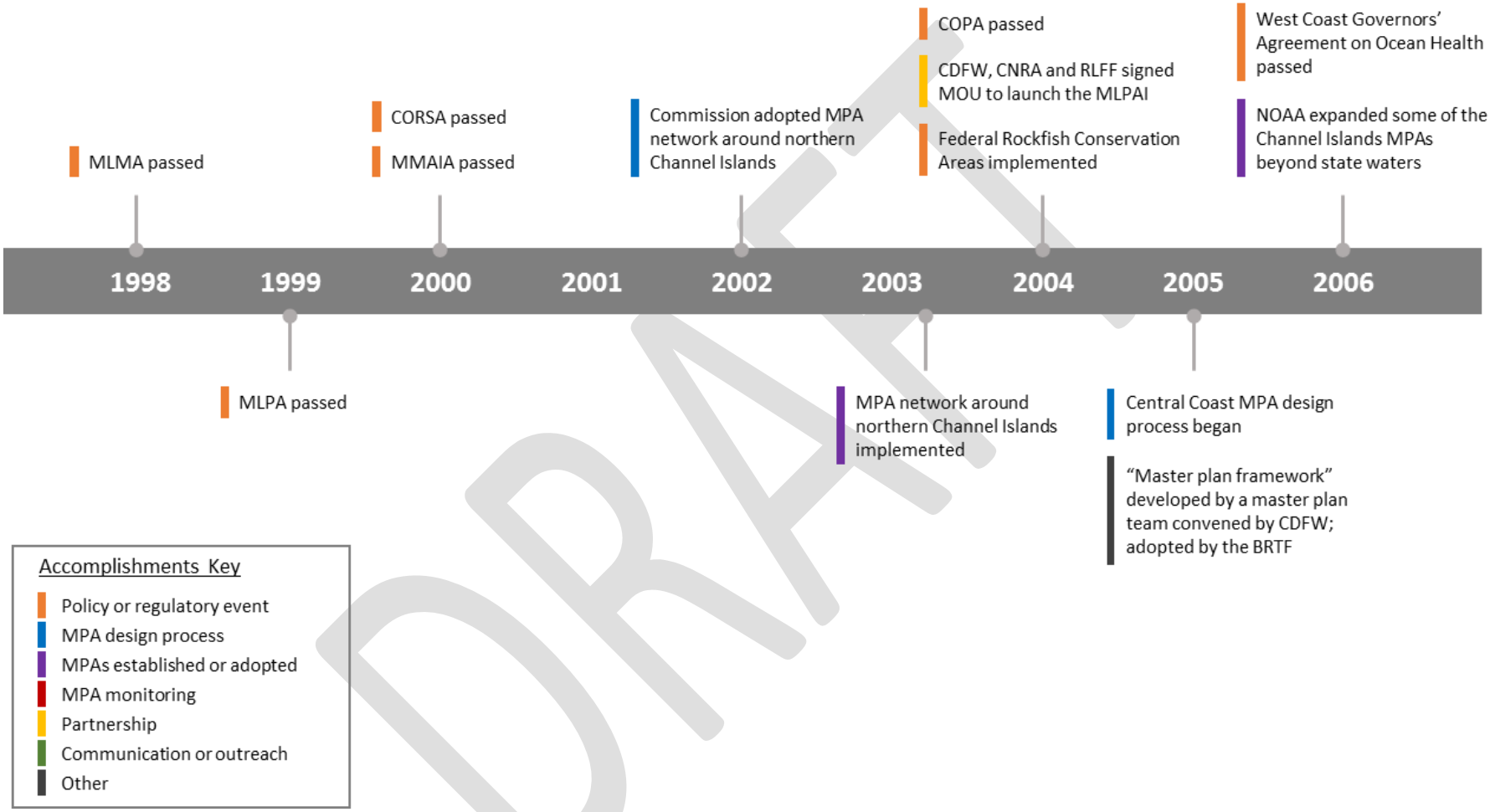
In working together to achieve these management objectives, partners will seek to follow the guiding principles of the California Collaborative Approach, including leveraging resources, ensuring transparency, and engaging in partnerships.

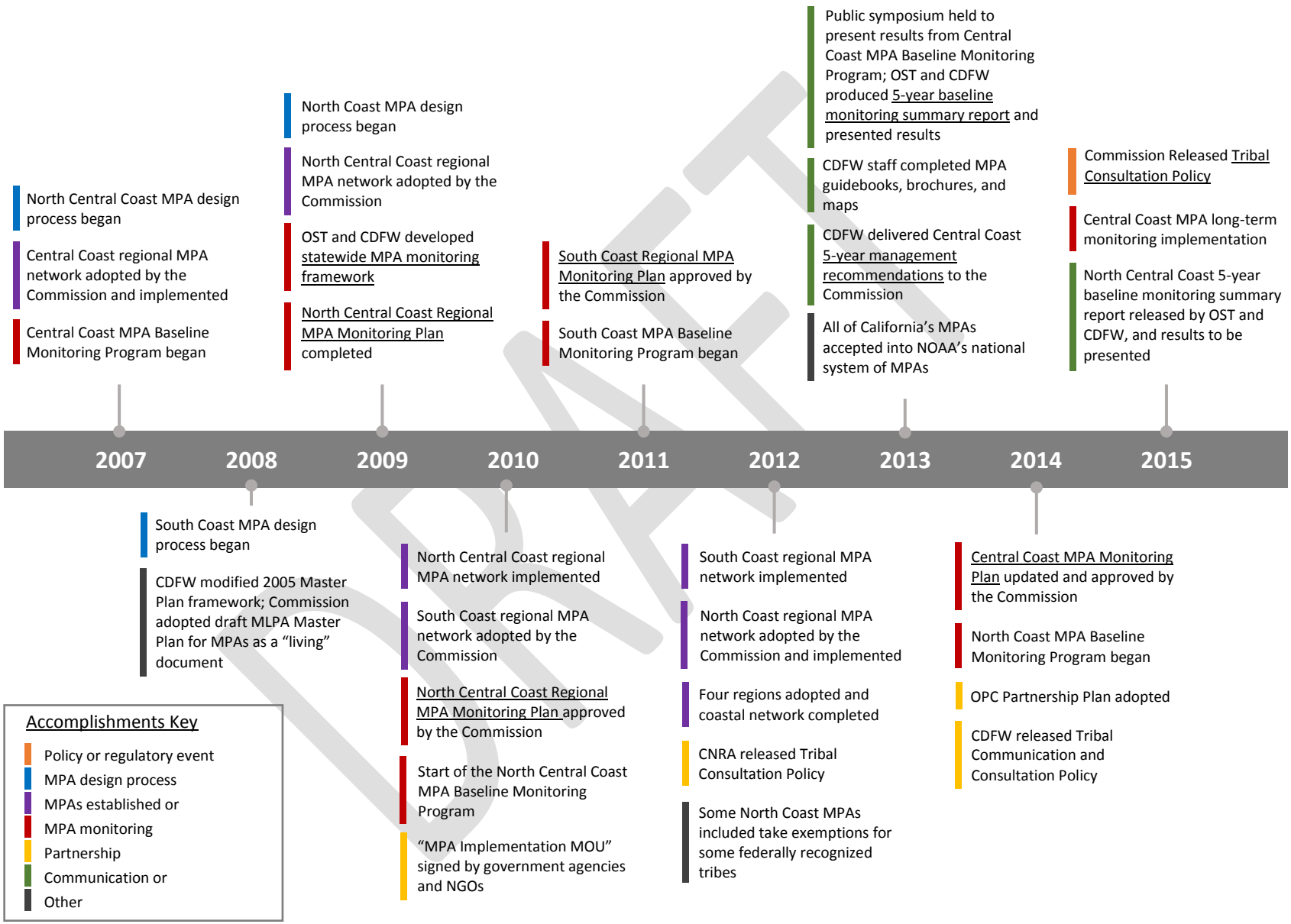
As one component of the Collaborative Approach, Community Collaboratives (Collaboratives) reflect the local-scale community focus of the approach. There are currently 14 Collaboratives, together comprising the Collaborative Network. Each Collaborative offers local partners and stakeholders an opportunity to engage with and have an active voice and participation to potentially inform MPA management in a way that reflects their unique community's priorities and needs. The Collaboratives are designed to be self-sufficient and provide a platform for locally-based stakeholders to organize around and support their local MPAs, while supporting the MSLT to achieve the network-wide management objectives and the MLPA goals.

1.3 California's Marine Management Policies and MPA Milestones

Since the passage of the MLPA, the MLPA Initiative, MLPP, and the state achieved a number of accomplishments. These accomplishments relate to policies and regulation, MPA design and establishment, MPA monitoring, partnerships, communication and outreach, and other achievements. Figure 2 illustrates a timeline of some of these milestones between 1998 and 2015.

Figure 2. California's Key MPA-Related Milestones




2007
North Central Coast MPA design process began
Central Coast regional MPA network adopted by the Commission and implemented
Central Coast MPA Baseline Monitoring Program began
2008
South Coast MPA design process began
CDFW modified 2005 Master Plan framework; Commission adopted draft MLPA Master Plan for MPAs as a "living" document
2009
North Coast MPA design process began
North Central Coast regional MPA network adopted by the Commission
OST and CDFW developed statewide MPA monitoring framework
North Central Coast Regional MPA Monitoring Plan completed
2010
North Central Coast regional MPA network implemented
South Coast regional MPA network adopted by the Commission
North Central Coast Regional MPA Monitoring Plan approved by the Commission
Start of the North Central Coast MPA Baseline Monitoring Program
"MPA Implementation MOU" signed by government agencies and NGOs
2011
South Coast Regional MPA Monitoring Plan approved by the Commission
South Coast MPA Baseline Monitoring Program began
2012
South Coast regional MPA network implemented
North Coast regional MPA network adopted by the Commission and implemented
Four regions adopted and coastal network completed
CNRA released Tribal Consultation Policy
Some North Coast MPAs included take exemptions for some federally recognized tribes
2013
Public symposium held to present results from Central Coast MPA Baseline Monitoring Program; OST and CDFW produced 5-year baseline monitoring summary report and presented results
CDFW staff completed MPA guidebooks, brochures, and maps
CDFW delivered Central Coast 5-year management recommendations to the Commission
All of California's MPAs accepted into NOAA's national system of MPAs
2014
Central Coast MPA Monitoring Plan updated and approved by the Commission
North Coast MPA Baseline Monitoring Program began
OPC Partnership Plan adopted
CDFW released Tribal Communication and Consultation Policy
2015
Commission Released Tribal Consultation Policy
Central Coast MPA long-term monitoring implementation
North Central Coast 5-year baseline monitoring summary report released by OST and CDFW, and results to be presented
Accomplishments Key
Policy or regulatory event
MPA design process
MPAs established or
MPA monitoring
Partnership
Communication or
Other

CHAPTER 2
MPA Network Design and Siting Process

The MLPA, expertise provided by advisory groups, and rigorous stakeholder engagement processes informed the design and siting process for California's MPA network. Throughout the siting and design process, decision-makers used the best readily available science to designate MPAs with varying degrees of protection (i.e., no-take or limited take) and to integrate MPAs into a statewide network. This chapter describes the types of MPAs that comprise California's MPA network, the MLPA Initiative design and siting process, and summary statistics describing California's MPA network.

2.1 TYPES OF MARINE MANAGED AREAS

The six goals of the MLPA recognize the importance of protecting marine resources for various purposes (protecting natural diversity and abundance of marine life, sustaining and rebuilding species of economic value, and improving recreational and educational opportunities in areas subject to minimal disturbance). Thus, it is important to use multiple types of MMAs, as defined in the MMAIA, to achieve these distinct goals.[48] MPAs are a subset of MMAs (however throughout this document the more common term "MPA" is used as an umbrella to refer to all types of protected areas), and include three MPA classifications (State Marine Reserve [SMR], State Marine Conservation Area [SMCA], State Marine Park [SMP][49]) and one MMA classification (State Marine Recreational Management Area [SMRMA]). The special closure designation, which is not an MPA, is used by the Commission for relatively small, discrete marine areas to also contribute to the goals of the MLPA through protections complementary to MPAs.[50] General definitions for these classifications of the protected areas adopted pursuant to the MLPA are described in Table 3 below. For regulations pertaining to areas declared by the Commission to be MPAs, MMAs, and special closures, see California Code of Regulations (CCR), Title 14, Section 632[51,52] and the descriptions of California's MPAs on CDFW's website.[53]

To date, there has been relatively little direct comparison between the relative benefits of multiple use areas such as marine parks and marine conservation areas compared to no-take marine reserves (Lester & Halpern 2008; Coleman et al. 2013; Kelaher et al. 2014). Because approximately 42% of California's MPA area (or 6.5% of California's total state waters[54]) is in SMCAs, SMCA/SMPs, and SMRMAs – which allow multiple uses including limited take – California's MPA network will provide an opportunity to build scientific knowledge about the effects of different types of MMAs.

[48] FGC §2852[c]
[49] The State Park and Recreation Commission has purview over the addition of SMPs.
[50] Special closures derive from the ecological reserve authority in FGC 1583 to protect terrestrial resources such as nesting sites and pup haul-out areas
[51] CCR. Retrieved Mar 4, 2015 from https://govt.westlaw.com/calregs/
[52] CCR, Title 14, Section 632 defines provisions for a number of prohibitions and allowances on topics such as access, anchoring, transit or drifting through MPAs or other MMAs, public safety, and Tribal take
[53] Descriptions of California's MPAs are provided on the CDFW website: https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Network
[54] The boundary of state waters is from mean high tide to three nautical miles offshore of all intertidal rocks and mouths of embayments, including large open bays. This method of measurement creates instances where the state water boundary is further offshore than three nautical miles (e.g., Monterey Bay and the area around Reading Rock)

The MLPP recognizes that designating a network that includes multiple types of MPAs may prove to be problematic relative to enforcement and public understanding of different regulations within contiguous areas. Differences in regulations in MMAs can lead to unintentional infractions and a degradation of the function of MPA network. Therefore, as regulations are developed and continually updated, care must be taken to ensure that regulations are understandable, observed by the public, and enforced as necessary.

2.2 MLPA Initiative Process and Outcomes

The MLPA passed in 1999, followed by the MMAIA in 2000. Following two unsuccessful attempts to implement the MLPA due to lack of funding and resources, CDFW entered into a public-private partnership called the MLPA Initiative to undertake implementation of the MLPA. This section describes the MLPA Initiative and the design, siting, and implementation process that was carried out between 2004 and 2012 (see Appendix A). In addition, this section shares the results of this process at the statewide and regional scales.

Following the statewide goals, the MLPA outlined guidelines for the design and siting of the MPA network. The MLPA required the network to comprise areas with various levels of protection, including the following elements:[55]

1) An improved marine life reserve component [known as the backbone of the network] consistent with the guidelines for the preferred siting alternative (see Appendix A, Boxes 1 and 3).
2) Specific identified objectives, and management and enforcement measures, for all MPAs in the system.
3) Provisions for monitoring, research, and evaluation at selected sites to facilitate adaptive management of MPAs and ensure that the system meets the goals stated in this chapter.
4) Provisions for educating the public about MPAs, and for administering and enforcing MPAs in a manner that encourages public participation.
5) A process for the establishment, modification, or abolishment of existing MPAs or new MPAs established pursuant to this program.

MLPA Initiative: Establishment and Design and Siting Process

The MLPA Initiative was a comprehensive, highly collaborative, transparent, and iterative process guided by MOUs and enhanced by the advice of stakeholders, scientists, resource managers, and interested members of the public. Over the course of 2004 to 2012, the MLPA Initiative worked together to match public and private resources to direct and inform four regional science-based, stakeholder-driven processes (see Figure 3).

[55] FGC §2853(c)

Table 3. Definitions and Overview of MMA Classifications

Classification	Definition	Summary	Additional Information
State Marine Reserve (SMR)	In a **state marine reserve**, it is unlawful to injure, damage, take, or possess any living geological, or cultural marine resource, except under a permit or specific authorization from the managing agency for research, restoration, or monitoring purposes. While, to the extent feasible, the area shall be open to the public for managed enjoyment and study, the area shall be maintained to the extent practicable in an undisturbed and unpolluted state. Access and use for activities including, but not limited to, walking, swimming, boating, and diving may be restricted to protect marine resources. Research, restoration, and monitoring may be permitted by the managing agency. Educational activities and other forms of nonconsumptive human use may be permitted by the designating entity or managing agency in a manner consistent with the protection of all marine resources.[56]	• Prohibits all take and consumptive use (commercial and recreational, living or geologic); scientific research and non-consumptive uses are allowed[57] • Definition is consistent with "marine life reserve" in MLPA	• Scientific collecting permits (SCP) may be issued by CDFW pursuant to Section 650 of the CCR, Title 14, or specific authorization from the Commission for research, restoration, or monitoring purposes • Boating, diving, research, and education may be allowed, to the extent feasible, as long as the area is maintained "to the extent practicable in an undisturbed and unpolluted state," but activities may be restricted to protect marine resources, including non-extractive activities[15] • Restrictions must be based on specific objectives for an individual site and the goals and guidelines of the MLPA[58] • Does not imply that navigation will necessarily be restricted though MPAs or that other non-extractive activities will be regulated
State Marine Conservation Area (SMCA)	In a **state marine conservation area**, it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource for commercial or recreational purposes, or a combination of commercial and recreational purposes that the designating entity or managing agency determines would compromise protection of the species of interest, natural community, habitat, or geological features. The designating entity or managing agency may permit research, education, and recreational activities, and certain commercial and recreational harvest of marine resources.[59]	• May allow select recreational and commercial harvest to continue; scientific research and non-consumptive uses are allowed	• SCPs may be issued by CDFW pursuant to Section 650 of the CCR, Title 14, or specific authorization from the Commission for research, education, or recreational purposes and certain commercial and recreational harvest, provided it does not compromise protection • Fishing restrictions may vary by focal species, fishing gear, habitats, and goals and objectives of individual MPA[60]

[56] PRC §36710(a)
[57] PRC §36710(a)
[58] FGC §2852(c)
[59] PRC §36710(c)

Classification	Definition	Summary	Additional Information
No-Take State Marine Conservation Area (no-take SMCA)	See SMCA definition.	• Prohibits all take and consumptive use, except for the take incidental to existing permitted activities such as infrastructure maintenance or water quality operations	• Pre-existing activities and artificial structures including, but not limited to, wastewater outfalls, piers and jetties, maintenance dredging, and beach nourishment occur throughout heavily urbanized areas • Activities are regulated by other federal, state, and local agencies whose jurisdiction cannot be pre-empted through designation of MPAs pursuant to the MLPA[61] • The Commission identified MPAs with existing structures, and designated them as no-take SMCAs and *only* these regulated activities are allowed to continue under current permits
State Marine Park (SMP)	In a **state marine park**, it is unlawful to injure, damage, take, or possess any living or nonliving marine resource for commercial exploitation purposes. Any human use that would compromise protection of the species of interest, natural community or habitat, or geological, cultural, or recreational features, may be restricted by the designating entity or managing agency. All other uses are allowed, including scientific collection with a permit, research, monitoring, and public recreation, including recreational harvest, unless otherwise restricted. Public use, enjoyment, and education are encouraged, in a manner consistent with protecting resource values.[62]	• Prohibits commercial take, but may allow select recreational harvest to continue; scientific research and non-consumptive uses are allowed • Prohibits injuring, damaging, taking, or possessing for commercial use any living or non-living marine resources[63]	• Other uses that would compromise the protection of living resources, habitat, geological, cultural, or recreational features may be restricted, while all other uses are allowed, consistent with protecting resources • SCPs may be issued by CDFW pursuant to Section 650 of the CCR, Title 14, or specific authorization from the Commission for research, monitoring, and education and certain recreational harvest in a manner consistent with protecting resources • State Parks Commission designates SMPs • Fishing restrictions may vary by focal species, habitats, and goals and objectives of individual MPAs[64]

[60] At present, the large fishery closures known as the Cowcod Conservation Areas and the Rockfish Conservation Area may function as *de facto* SMCAs in that bottom fishing for finfishes is prohibited but other types of fishing are allowed, though the specific regulations in these areas are subject to change dependent on stock assessments

[61] For example, wastewater discharge permitted by the SWQCB is not considered to involve take within MPAs, and for the purposes of MPA management, the relation of wastewater discharge to allowable take is at the discretion and jurisdiction of the State and Regional Water Quality Control boards.

[62] PRC §36710(b)

[63] PRC §36700-36900

[64] At present, the large fishery closures known as the Cowcod Conservation Areas and the Rockfish Conservation Area may function as *de facto* SMCAs in that bottom fishing for finfishes is prohibited but other types of fishing are allowed, though the specific regulations in these areas are subject to change dependent on stock assessments

Classification	Definition	Summary	Additional Information
State Marine Conservation Area / State Marine Park (SMCA/SMP)	See SMP definition.	• MPA designated as SMCA by the Commission and SMP by California State Park and Recreation Commission	• Only one MPA (Cambria SMCA/SMP) currently has this dual designation, as it was adopted by both Commissions at separate times with the same set of regulations and boundaries (Pope 2014) • Cambria SMCA/SMP is jointly managed by CDFW and State Parks
State Marine Recreational Management Area (SMRMA)	In a **state marine recreational management area**, it is unlawful to perform any activity that, as determined by the designating entity or managing agency, would compromise the recreational values for which the area may be designated. Recreational opportunities may be protected, enhanced, or restricted, while preserving basic resource values of the area. No other use is restricted.[65] The Fish and Game Commission may designate, delete, or modify state marine recreational management areas for hunting purposes.[66]	• Provides subtidal protection equivalent to an MPA while allowing legal waterfowl hunting, scientific research, and non-consumptive uses	• MMA designation • Recreational opportunities may be protected, enhanced, or restricted while preserving basic resource values of the area
Special Closure	A special closure is an area designated by the Commission that prohibits access or restricts boating activities in waters adjacent to seabird rookeries or marine mammal haul-out sites.	• This designation, which is not categorized as an MMA, is used by the Commission for relatively small, discrete marine areas to also achieve the goals of the MLPA	• Integrated into the MLPA process and used to reduce disturbance of nesting or roosting seabirds or hauled out or breeding marine mammals that would not otherwise be protected by MPA designation within the same geographical region • Special closures provide an exception to allow CDFW employees and employees of other specified government agencies to enter the area • Special closures also include an allowance for CDFW to grant permission to access the area at its discretion

[65] PRC §36710(e)
[66] PRC §36725(a)

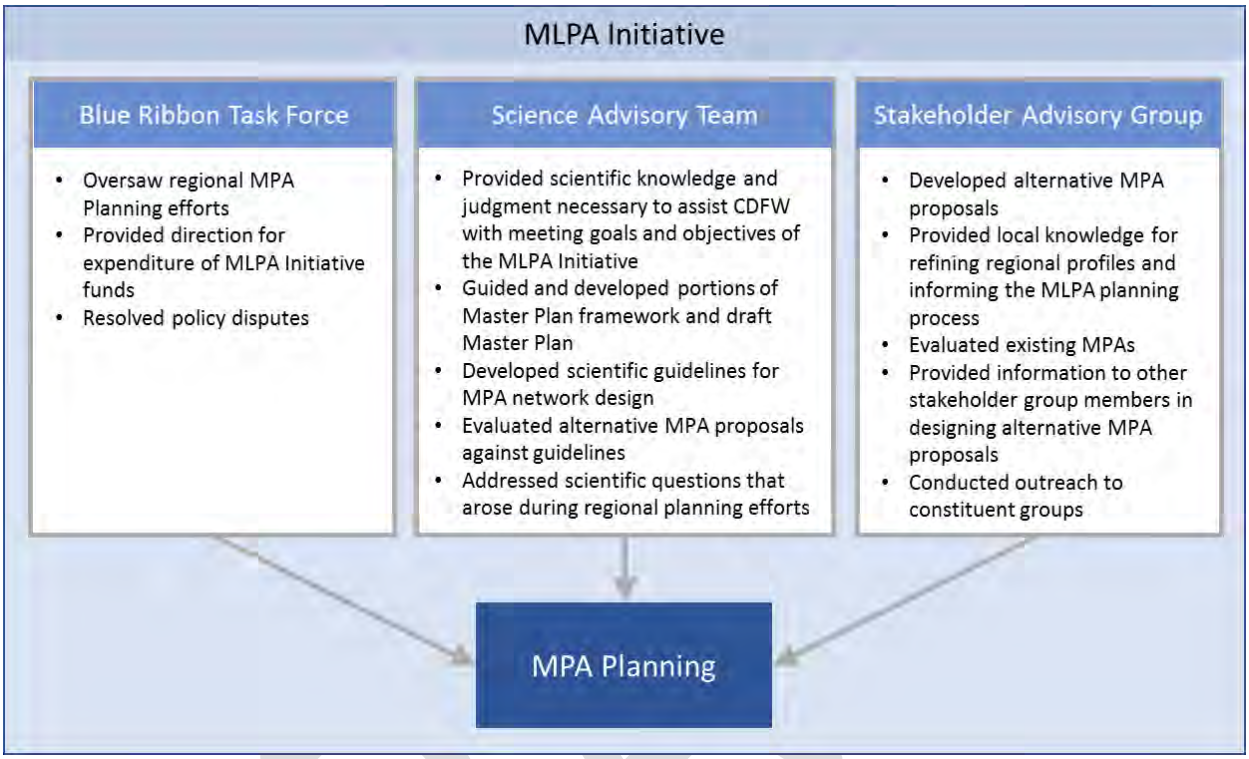
MLPA Initiative staff varied among planning regions, and worked with CDFW staff with scientific expertise and/or knowledge of state policy and resource management, CDFW enforcement staff, California Department of Parks and Recreation (State Parks) staff, Regional Stakeholder Groups, Master Plan Science Advisory Team (SAT) members, the Statewide Interests Group (SIG), and/or professional contract staff with other required skills to accomplish MPA planning, project management, decision support tool development, facilitation, and mediation. The MLPA Initiative established an MLPA Blue Ribbon Task Force (BRTF), together with a SAT and a stakeholder advisory group (Stakeholder Group) to oversee the achievement of several initial objectives for overall MPA planning in each region.[67] See Figure 4 for a description of the primary roles of each of the three main MLPA Initiative bodies.

Figure 3. Map Highlighting the Five Planning Areas and Planning Periods

The first of the planning objectives for the MLPA Initiative was to complete a master plan framework, adopted by the BRTF in 2005, which included guidance based on the MLPA for the development of alternative MPA proposals statewide. Other important early objectives included establishing a timeline, organizational structure, requirements, work products, and funding for MPA planning. Rather than attempting to design a single MPA network for the entire state at one time, the MLPA Initiative called for the redesign of a statewide network of MPAs by 2011 through a series of geographic planning regions. The state was split into five distinct regions – North Coast, North Central Coast, Central Coast, South Coast, and the San Francisco Bay (see Figure 3). Each region held its own regional MPA public planning process, except the San Francisco Bay. MPA planning in San Francisco Bay will be influenced by the results of the Sacramento-San Joaquin Rivers Delta process and, therefore, MPA planning will occur once that process is complete (see Appendix A).

[67] Complete lists of BRTF, SIG, SAT, and Stakeholder Group (or Regional Stakeholder Group [RSG]) members can be found on CDFW's website: https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Planning-Process

Figure 4. Description of Three Planning Bodies that Supported the Design and Siting Phase for Each Planning Region



Scientific Foundation for MPA Network Design

In order to prepare the master plan and take full advantage of scientific expertise on MPAs, the MLPA directed CDFW to appoint a Master Plan Team, including science advisors, for advice and assistance.[68] CDFW staff and Master Plan Team scientists played a significant role in guiding and developing components of both the master plan framework adopted by the BRTF in 2005 and the draft Master Plan adopted by the Commission in 2008, resulting in: 1) more specific guidelines for how to implement the broad guidance in the MLPA, and 2) detailed guidance on a variety of scientific considerations in the design of MPAs (see the 2008 Master Plan, Chapter 3). The overall MPA network design guidance addressed statutory requirements for MPA network design and provided a foundation for the SAT to apply a methodology to evaluate alternative MPA proposals in each planning region (Kirlin et al. 2013). The MLPA Initiative was a science-based and stakeholder-driven MPA planning process that utilized the best readily available science,[69] and accordingly, the MPA planning process drew from an existing body of work on both the science underlying MPA design and siting as well as previous MPA management efforts from around the world. Throughout the MPA design process, some of

[68] FGC §2853(c)

[69] For more information on CDFW's approach to using the best readily available science, see the California Fish and Game Commission, *Final Statement of Reasons for Regulatory Action* documents:
http://www.fgc.ca.gov/regulations/2007/165_632fsor.pdf for the Central Coast (2007);
http://www.fgc.ca.gov/regulations/2009/632fsor.pdf for the North Central Coast (2010);
http://www.fgc.ca.gov/regulations/2010/632fsor.pdf for the South Coast (2011); and
http://www.fgc.ca.gov/regulations/2012/632ncfsor.pdf for the North Coast (2012)

the top MPA scientists worldwide played active roles in both the development and review of regional proposals. To pave the way for positive outcomes of California's MPA network, the MLPP utilized three primary sources of scientific guidance to guide MPA network design: the MLPA, the 2008 Master Plan, and the SAT (see Appendix A, Section 4).

Influence of Science in California's MPA Network

California's MPA network generally reflects the integration of the science and science-based MPA design guidelines from the MLPA, the 2008 Master Plan, and SAT guidance. When compared to California's MPAs in 1999 (prior to the MLPA), there is a dramatic increase in the proportion of state waters protected and an increase in the number and size of all MPA types (see Table 4). The redesigned MPA network represents a substantial increase in the representation and replication of marine habitats within MPAs, including sandy beaches, rocky shores, kelp, shallow rocky reef/kelp forest (0-30m), mid-depth rocky reef (30-100m), deep rocky reef (100-3000m), shallow sand 0-30m, mid-depth sand (30-100m), deep sand (100-3000m), estuaries, marsh, and eelgrass habitats. There is also a reduction in the distance between habitats protected in MPAs (Saarman et al. 2013; see Tables 1-4 in Appendices C-F, Section 4 for more detailed statistics on each region).

Table 4. Comparison of Protected Areas prior to the MLPA in 1999 and Present

	Pre-MLPA (1999)[70,71]					Post-MLPA (2015)[72]				
Protected Area	Count	Min Size	Max Size	Total Area	Mean Size	Count	Min Size	Max Size	Total Area	Mean Size
No-Take[73]	10	0.04	2.5	12.1	1.2	61	0.01	40.7	497.4	8.2
Limited Take[74,75]	53	0.01	30.8	129.8	2.4	63	0.06	23	354.7	5.6
Special Closure	2	0.64	2.2	2.8	1.4	15	0.01	1	3.3	0.2

While science guidelines strongly influenced the design of California's MPA network, the nature of the highly participatory, stakeholder-driven process led to some tradeoffs between ecosystem protection and socioeconomic considerations in California's MPA network (Gleason et al. 2013; Saarman et al. 2013). For example, one third of the MPAs considered sufficiently protective to contribute to the conservation goals of the MLPA fell below the minimum MPA size recommended by the SAT (Saarman et al. 2013). Examples like this, where science guidelines were not universally followed, highlight the multiple considerations taken into account during MPA planning, which encompass both ecological and socioeconomic priorities.

Iterative Development of Alternative Regional MPA Proposals

[70] Includes only coastal MPAs (excludes existing San Francisco Bay MPAs); area units are in square miles
[71] Pre-dates MMAIA; areas included are more variable in designation but are included due to similarity to current MPA take regulations
[72] Includes only coastal MPAs; area units are in square miles.
[73] For the purposes of this table comparison, "No-Take" includes SMRs, SMRMAs, and no-take SMCAs
[74] Limited take includes SMRMAs, SMCAs, SMPs, State Parks, State Marine Natural Preserves, and Ecological Reserves
[75] Restrictions are highly variable across all designations, however pre-MLPA areas are generally less restrictive compared to post-MLPA areas

The BTRF selected the Central Coast region as the initial planning region from which to launch the MLPA Initiative (2005-2007).[76] The Central Coast planning region was followed by the North Central Coast (2007-2010), South Coast (2008-2012), North Coast (2009-2012), and the San Francisco Bay (timing to be determined).[77] The same general iterative process for MPA design was used in each planning region (see Box 2 below), most of which the stakeholder groups and SATs undertook. The overall aim was for the BRTF to select a set of alternative MPA proposals, including a preferred alternative, for each region and for the Commission to adopt one of the alternatives (see Appendix A).[78]

Box 2. Process for Regional MPA Planning

1. **Regional Planning:** Preparation of a regional profile;[a] engagement of Stakeholder Group and SAT; development of additional advice; and identification of alternative approaches to networks and potential MPA sites.
2. **MPA Planning:** Stakeholder Group development of proposals for MPAs after evaluation of existing and new MPAs and other management activities.
3. **Evaluating Proposals:** SAT, BRTF, and CDFW analysis and evaluations; SAT evaluation of MPA proposals developed by the stakeholder group against the goals of the MLPA; BRTF evaluation of proposals based on factors including SAT guidelines, CDFW feasibility criteria, socioeconomic impacts, and cross-interest support[b] and forwarding a preferred alternative and other alternatives to the Commission; CDFW feasibility analysis, comments on alternatives, and development of initial regulatory documents based on Commission direction.
4. **Commission Action on Alternative MPA Proposals:** Preparation of regulatory analyses, including California Environmental Quality Act review; public testimony; and action by the Commission.

[a] Regional profiles for each planning region can be found on the CDFW website: https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Planning-Process

[b] MLPA Initiative. (2010). *Updated Summary of Key Guidance Provided in Previous Marine Life Protection Act Study Regions for the Development of Marine Protected Area Proposals*. Retrieved Sept 21, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=17238&inline=true

Alternative MPA proposal development in each planning region was an adaptive, flexible, and iterative process that incorporated multiple rounds of MPA design, evaluation, feedback, and redesign (Figure 5). While the same general MPA planning process structure was used throughout the four coastal planning regions, specific details regarding alternative MPA proposal development varied and the iterative nature of the process allowed for adaptation based on lessons learned and unique characteristics of each region. For example, in the North Coast MPA planning process, due mostly to relatively small population size and strength of public involvement, external groups were supported to develop MPA proposals for the first round prior to convening the stakeholder group. Multiple rounds of MPA proposal development also

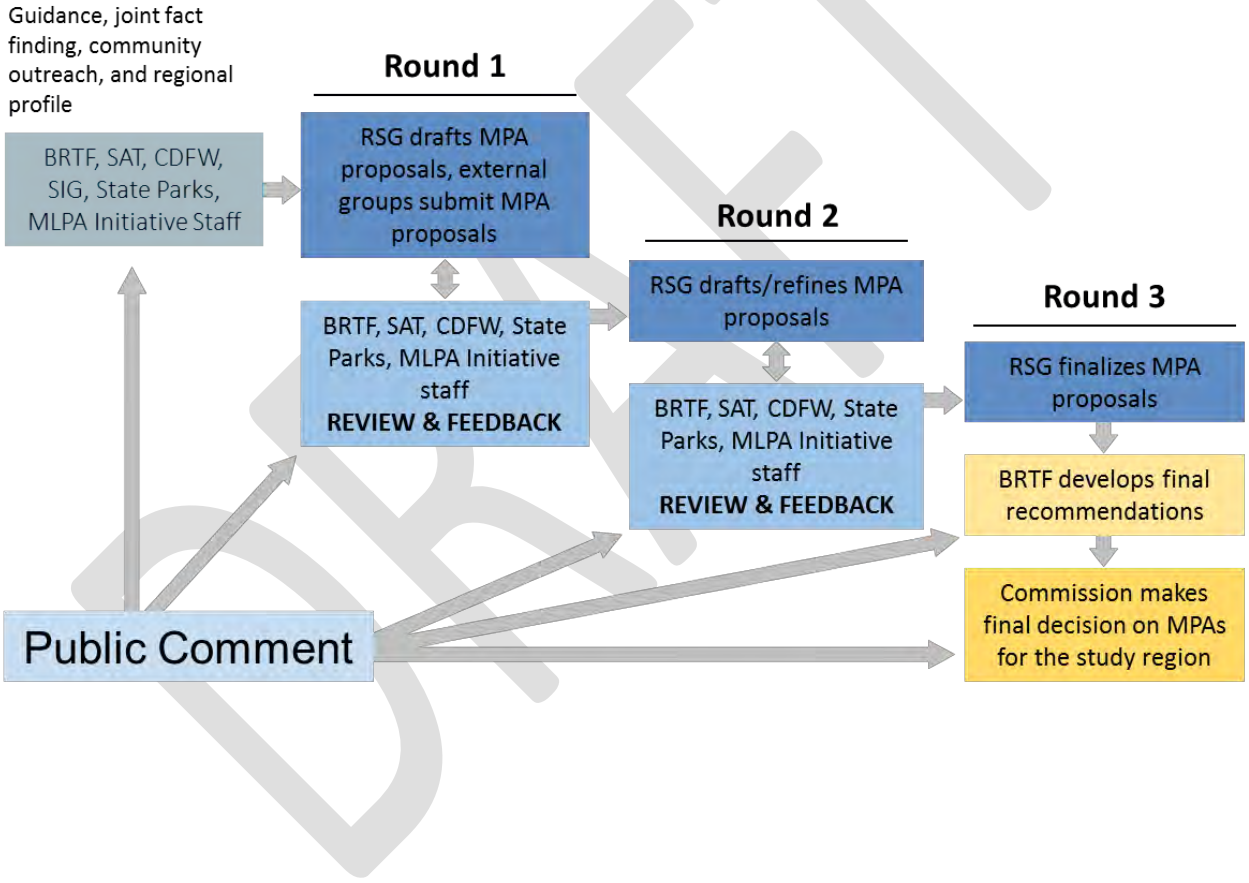
[76] MLPA Initiative. (2005). *California MLPA Blue Ribbon Task Force Selects Central Coast Study Region for Developing Alternative Network Components of Marine Protected Areas*. Retrieved July 22, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=78000

[77] Options for a planning process in the fifth region, San Francisco Bay, have been developed for consideration at a future date. See Appendix A and CDFW's website for more information: http://www.wildlife.ca.gov/Conservation/Marine/MPAs/Network/San-Francisco-Bay

[78] CDFW. (2015). *Overview of Alternative Marine Protected Area Proposals: The Marine Life Protection Act Initiative (2004 – 2012).* Retrieved Sept 21, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=107532&inline

provided stakeholder groups with evaluations of the extent to which their draft proposals would meet science and feasibility design guidelines, built trust among stakeholders, increased awareness of constituencies' particular interests, allowed the stakeholder group to develop improved cross-interest proposals, accommodated decision support-tools such as MarineMap that allowed stakeholders to collaboratively develop MPA designs, and increased and facilitated interactions between MLPA Initiative bodies and interested members of the public (Gleason et al. 2010; Fox et al. 2013a, b; Merrifield et al. 2013). In addition, in the South Coast and North Coast planning regions, State Parks and MLPA Initiative staff evaluated MPA proposals for recreation and public access opportunities. All alternative MPA proposals that were considered and reviewed by the Commission, but ultimately not selected for each planning region, can be found on the CDFW website.[79]

Figure 5. General Process Used by the MLPA Initiative to Develop Alternative MPA Proposals in Each Regional MPA Planning Process or Planning Region



[79] CDFW. (2015). *Overview of alternative marine protected area proposals: The Marine Life Protection Act Initiative (2004-2012). CDFW, Marine Region, Statewide MPA Management Project. Informational Report*. Retrieved Sept 23, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=107532&inline

MPAs Adopted Pursuant to the MLPA

Drawing from science guidance and expert advice, California redesigned its system of MPAs into a more cohesive statewide network (see Figure 1 above). Completed in December 2012, California's MPA network currently represents the largest scientifically-based network in the contiguous US to date, and thus the MLPA Initiative process may offer valuable insights for MPA network planning elsewhere in the US and around the world (Gleason et al. 2013).

Statewide MPA Summary

California's 63 existing MPAs prior to the MLPA were primarily established in an ad hoc manner, were mostly small (covering 2.7% of state waters with less than 0.25% in no-take MPAs), and were considered to be ineffective. Since the passage of the MLPA and the completed redesign of California's MPA network, California now has 124 MPAs (covering about 16% of state waters, approximately 9.4% of which in no-take MPAs) and 15 special closures. The majority of MPAs are in SMCAs and SMRs, with substantially less area in no-take SMCAs, SMRMAs, and SMCA/SMPs, respectively (see Figure 6).

Figure 6. Percent of Each Type of MPA across California's MPA Network[80]

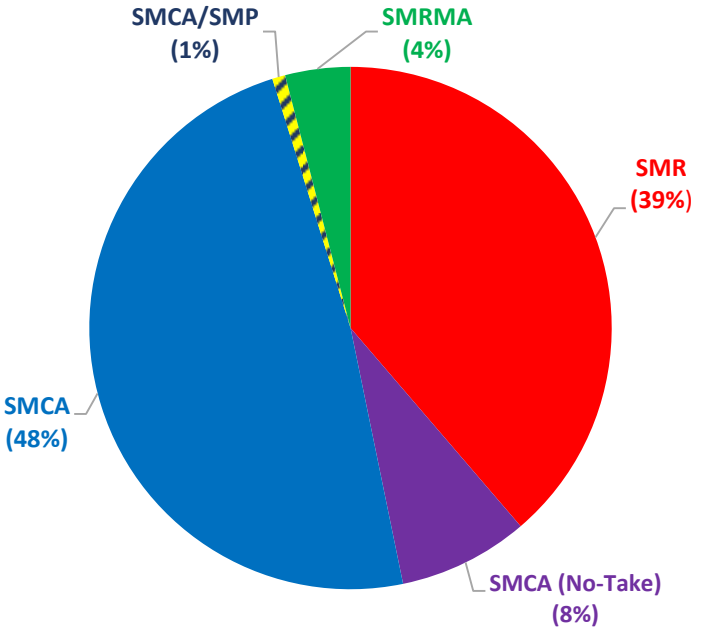
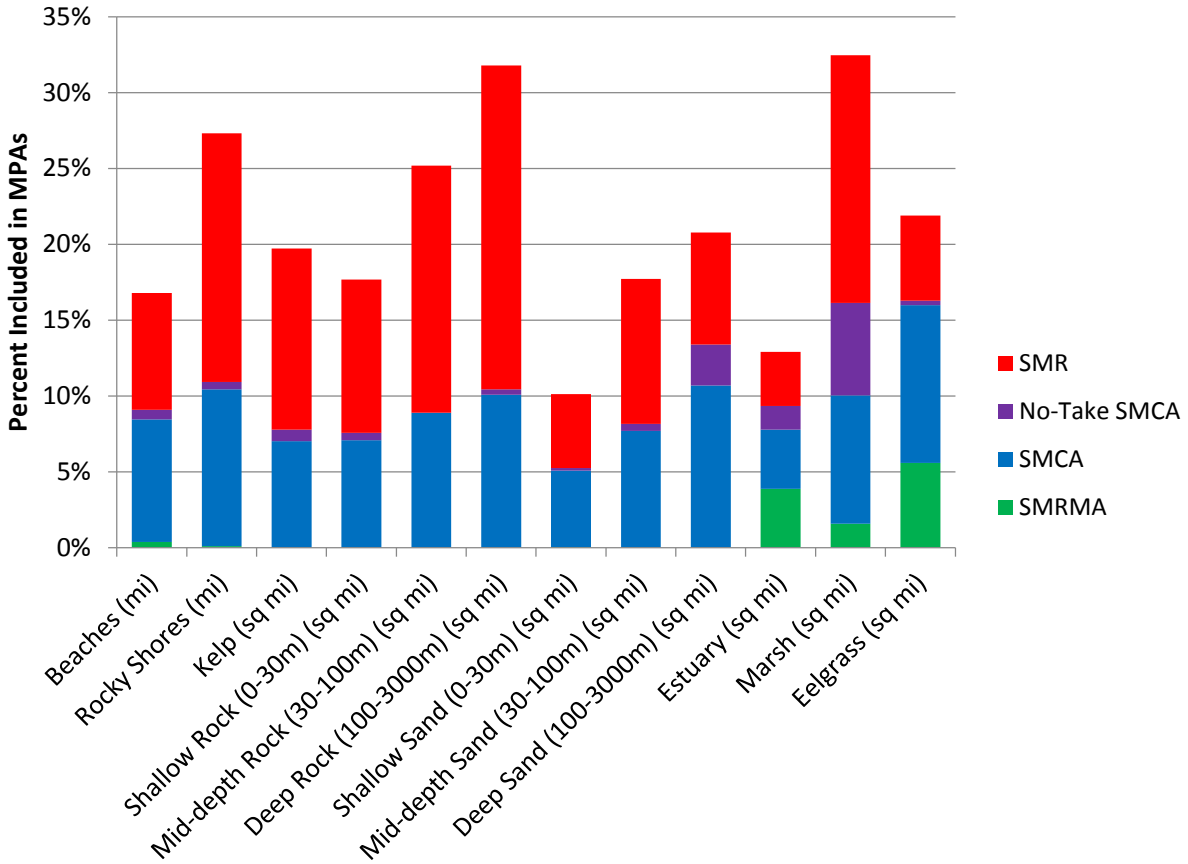


Figure 7 illustrates the percent of 12 of California's most representative habitats protected statewide in MPAs, by MPA designation type. Marsh, deep rock, and rocky shores are the most represented habitats, with shallow sand, estuary, and eelgrass showing the least representation. The majority of habitats are represented in SMRs and SMCAs. See Appendices C-F, Section 4 for detailed statistics of California's most representative habitats in individual MPAs.

[80] All numbers represent rounded values and totals include all MPAs in the North Coast, North Central Coast, Central Coast, and South Coast regions; and do not include existing San Francisco Bay MPAs or special closures

Figure 7. Percent of Representative Habitats in MPAs by Designation Type throughout the Entire State Waters of California[81]



[81] All numbers represent rounded values and totals include all MPAs in the North Coast, North Central Coast, Central Coast, and South Coast regions; and do not include existing San Francisco Bay MPAs or special closures. The single SMCA/SMP designation in California's statewide network (Cambria SMCA/SMP) is too nominal to report.

Summary of Regional MPAs Adopted

Resulting from the design and siting phase, each planning region contained a unique set of MPAs of varying types (see Table 3 for an overview of MPA types). Table 5 provides a summary of the number of MPAs in each region and the area of coverage for each type. The North Central Coast has the largest coverage of MPAs (20.0%) and the North Coast has the least (13.4%). In addition, the South Coast has the largest area of state waters under protection (355.4 square miles and 15.1% of the region). Figure 8 provides an overview of the percent of coastal area within each type of MPA for each planning region; below is additional detail on each of the four planning regions.

Table 5. Summary Statistics of MPAs within State Waters across All Planning Regions[82]

Type of MPA	North Coast		North Central Coast		Central Coast		South Coast	
	MPAs (number)	Area of State Waters (square miles)	MPAs (number)	Area of State Waters (square miles)	MPAs (number)	Area of State Waters (square miles)	MPAs (number)	Area of State Waters (square miles)
SMR	6	51.3	10	84.2	13	86.3	19	241.5
No-Take SMCA[83]	0	0.0	0	0.0	0	0.0	10	33.6
SMCA	13	85.3	12	67.6	14	111.2	21	80.4
SMCA/SMP	0	0.0	0	0.0	1	6.3	0	0.0
SMRMA	1	0.8	3	0.6	1	3.1	0	0.0
Special Closures	7	0.2	6	1.2	0	0.0	2	1.9
Total[84]	**20**	**137.4**	**25**	**152.4**	**29**	**206.8**	**50**	**355.4**

North Coast: Covers approximately 1,027 square miles of state waters from the California/Oregon border south to Alder Creek near Point Arena (Mendocino County). MPAs and closures were adopted June 6, 2012 by the Commission and went into effect on December 19, 2012.

North Central Coast: Covers approximately 763 square miles of state waters from Alder Creek near Point Arena south to Pigeon Point (San Mateo County). MPAs and closures were adopted August 5, 2009 by the Commission and went into effect May 1, 2010.

Central Coast: Covers approximately 1,144 square miles of state waters from Pigeon Point, south to Point Conception (Santa Barbara County). MPAs were adopted April 13, 2007 by the Commission and went into effect September 21, 2007.

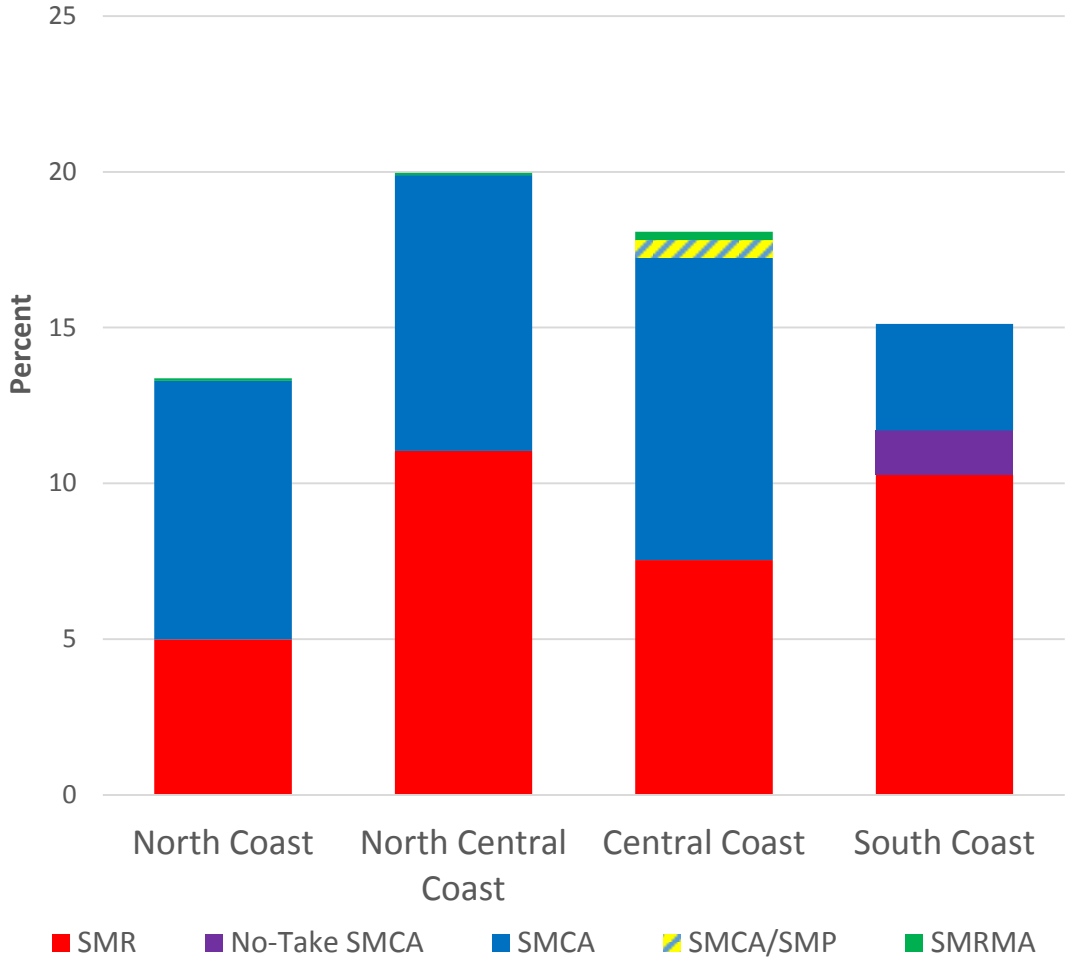
South Coast: Covers approximately 2,351 square miles of state waters from Point Conception south to the California/Mexico border, including state waters around the Channel Islands. MPAs and closures were adopted December 15, 2010 by the Commission and went into effect on January 1, 2012.

[82] Statistics are from CDFW's Marine Region Geographic Information System unit. Values are current as of January 2015 and are subject to change as improvements in geographic data become available: https://www.wildlife.ca.gov/Conservation/Marine/GIS

[83] No-take SMCA is an administrative term for an SMCA that would have been an SMR but for certain pre-existing permitted activities onsite (see Table 3)

[84] Totals do not include existing San Francisco Bay MPAs or special closures

Figure 8. Percent of Planning Region State Waters Covered by Each MPA Type[85]



[85] Totals include all MPAs in the North Coast, North Central Coast, Central Coast, and South Coast regions; and do not include existing San Francisco Bay MPAs or special closures

CHAPTER 3
Management

The MLPA emphasizes the importance of effective management measures for California's MPAs. For California's MPA network, effective management consists of an MPA network that has strong oversight and a process for implementing the legal mandate; comprehensive management planning and permitting; effective enforcement, research, monitoring, evaluation, and outreach; and strong social capital and long-term sustainable financing that is enhanced by partnerships. Another measure of effective management is a strong process for adaptive management that enables learning and course-correction based on monitoring findings and lessons learned throughout ongoing management. This chapter describes the MLPP's approach to managing California's MPA network, while Chapter 4 describes the approach and process for continually improving MPA management through adaptive management. Through these management elements, the MPA network may meet its stated goals and objectives.

The MLPA states that California's MPAs should be designed and managed, to the extent possible, as a statewide network.[86] Following this direction, significant efforts were made to ensure that MPAs were designed as science-based, stakeholder-driven, and ecologically connected statewide network during the MPA siting process (Gleason et al. 2013; Saarman et al. 2013; see Chapter 1 and Appendix A). To manage California's MPA network, the MLPP is focusing on a variety of management activities to support the MLPP and other legislated goals and requirements in the MLPA, MLMA, and MMAIA. See Table 6 for a summary of roles in MPA management, which together aim to meet the goals and objectives of the MLPA.

3.1 Outreach and Education

Building public awareness through outreach, education, communication, and interpretation efforts (collectively referred to as outreach) is an important component of an effective MLPP. Outreach has been identified as an activity that should be carried out at several levels even when other management activities (e.g., monitoring) are not yet fully implemented. Effective outreach efforts designed to inform potential user groups of MPA regulations and management requirements can have a direct bearing on MPA effectiveness. Increased compliance by an informed public that adheres to specific take regulations allows for MPAs to function in the manner they were designed.

[86] FGC §2853(b)(6)

Table 6. Overview of MPA Management Responsibilities and Roles to Support the MLPP

Responsibility	Role	Description
Enforcement	Enforcement of Regulations	• Ensure adequate enforcement of MPA regulations to increase compliance • Statutory authority to administer and enforce MPA regulations • Support the Commission through implementation of regulations • Conduct searches, inspections, and has citation authority
Identification of Long-Term Funding Sources	Secure Funding	• Continue to support the pursuit of long-term funding to adequately support MPA management activities into the future
Monitoring, Research, and Evaluation	MPA Monitoring Planning, Reporting, and Review	• Adhere to processes for MPA review and adaptive management, which are inherently linked to monitoring activities (see Chapter 4) • Continue to advance and provide oversight on all aspects of MPA monitoring, research, assessment/evaluation, and reporting to inform adaptive management • Support the Commission by reporting results of research and monitoring • Actively explore how MPAs may be incorporated into fisheries management
Partnership Coordination	Build and Participate in Partnerships	• Continue to work with the MSLT and explore potential new partnerships throughout the state • Collaborate with State Parks to manage marine parks and MPAs that are offshore of existing coastal State Park units • Engage in other partnership platforms, such as Collaboratives and/or the Collaborative Network
	Integration with Management Efforts	• Actively communicate with other agencies on how MPAs may be incorporated into other management efforts
Outreach and Education	Guidelines and Partnerships	• Continue to work with partners throughout the state to build public awareness and understanding of California's MPA network through outreach, education, communication, and interpretation activities • Set guidelines for outreach materials (e.g., color scheme, messages, etc.) • Improve compliance through education and outreach materials
Permitting	Scientific Collection Permitting	• Maintain a decision framework for issuing SCPs within MPAs
Regulation, Policy, and Decision-Making	Regulatory Support	• Provide advice and information to the Commission to help inform management decisions • Make recommendations on management decisions • Develop rulemaking packages and scoping through the Administrative Procedure Act and Office of Administrative Law • Primary statutory authority for recommending designation of and managing MPAs

A significant amount of outreach has been accomplished to date by CDFW and partners that include many of the components described in this section. Numerous regulatory guidebooks and brochures have been created and distributed to the public in printed and electronic form throughout the state. Informational kiosks, developed through a collaborative process with agencies and partners, are located in various ports and provide location specific information. A statewide signage project was completed by the MLPP and partners providing interpretive information on MPAs. In addition, no fishing signs were placed near SMRs. Partners and agencies have developed numerous posters, blogs, and videos to help disseminate information to the public about MPAs. CDFW and State Parks have also developed an MPA focused curriculum to incorporate into the Parks Online Resources for Teachers and Students (PORTS) program. To date more than 8,000 students have viewed this module.

While much has been accomplished, there is more to be done. The fundamental tools identified below include: a statewide outreach strategy with regional components, a CDFW guide to developing outreach materials, and staff support for the coordination and review of products developed by outreach participants. Together, they provide a consistent structure and approach to the development and implementation of MPA outreach materials statewide. This enables all levels of government (federal, state, Tribal, and local), the private sector, NGOs, communities, educators, and stakeholders to work together to provide reliable, efficient, and appropriately focused MPA information to the public. This section describes CDFW's responsibilities regarding MPA outreach and actions the MLPP could take to implement effective outreach.

Outreach Priorities

CDFW, through the MLPP, has the responsibility to provide MPA regulations to the public. Recognizing this responsibility, CDFW's outreach goals are to: increase MPA awareness and understanding, facilitate MPA regulatory compliance, support enforcement, and encourage informed enjoyment and stewardship of MPAs while decreasing unintentional violations. In order to meet these goals, an approach focused on informing users of regulations is CDFW's core function. In this approach to outreach, the initial focus of providing user groups the basic knowledge needed to understand and enjoy MPAs (e.g., locations, boundaries, allowed uses) is an effective measure. It is expected that this approach will support the long-term positive effects of the MPA network, as over time there will be greater voluntary compliance with MPA take regulations.

Additional outreach efforts developed at a more interpretive level, which focus on closely related marine issues and how they interact with and relate to MPAs, would serve to supplement initial regulatory-based outreach efforts. This would allow for a layered outreach approach that uses a variety of actions designed to further increase public understanding and encourage acceptance, while providing incentive for shared stewardship commitments that go beyond the requirements of the law. For achieving its effective outreach and compliance-building goals, the MLPP have prioritized the following actions:

- **Broadly and collaboratively disseminate information:** Continue to distribute information/products to the public through agencies, ocean-related organizations and businesses, and local citizen groups, to improve public understanding of regulations
- **Develop statewide, regional, and local-scale outreach projects:** Statewide and regional outreach efforts can support individual outreach projects by providing information on MPA locations, allowed uses, and benefits; providing localized input on individual MPA signs, panels, and brochures; and helping bring attention to individual

MPA habitats and living marine resources, conservation objectives, and rules intended to achieve them

- **Encourage community involvement:** Community involvement can help foster compliance, especially when working directly with CDFW enforcement and outreach staff; guidance regarding community and citizen actions can be provided to support effective involvement and accurate messaging in materials development
- **Provide targeted outreach:** Conduct directed outreach as needs arise, adapted to address special compliance and enforcement concerns and address public misconceptions; employ a combination of traditional methods and newer technologies to reach a diversity of audiences
- **Focus interpretive outreach on the purpose of MPAs:** Focus additional outreach efforts on raising understanding about the conservation goals and values identified in the law, the role of MPAs as a tool for effective resource management, and the rationale and objectives for individual MPAs, and raise awareness about the particular habitats and/or species found within the specific location

Approach to MPA Outreach

To achieve the goal of the MLPA to "ensure that the state's MPAs are designed and managed, to the extent possible, as a network,"[87] a statewide MPA outreach strategy should be developed to:

- Identify overarching outreach goals, strategies, general priorities, and standards to apply statewide
- Identify the role of partners and CDFW in outreach and education activities
- Guide the development of regional outreach, interpretation, and education plans that implement the statewide strategy at the regional scale in a manner that supports statewide consistency and coherency.
- Develop regionally-specific outreach plans

Regionally-specific outreach plans for implementing the statewide outreach strategy should be developed as components of Regional MPA Background and Priorities document. Each regional outreach plan may:

- Consider the unique outreach needs of the region and identify appropriate regional approaches
- Identify existing regional programs and assets
- Identify information gaps, priorities, and prospective strategies to fill gaps
- Identify potential partners in the region with specific outreach expertise and capacity

Coordination of Outreach Efforts

Effective regional collaboration and coordination among outreach participants has been found to be helpful for sharing information and experiences, identifying common priorities, and finding

[87] FGC §2853[b][6]

collaborative solutions.[88] Therefore, a comprehensive MPA outreach program will utilize CDFW and other MLPP partner resources and build effective outreach partnerships. Directed partner contributions can assist and supplement existing outreach activities, leverage skills, expand resources and expertise beyond those of CDFW, and help to reach new target audiences (see the Partnership Plan for more information).

However, in order for materials developed by outreach participants to effectively serve the public and supplement CDFW efforts, they should adhere to specific product standards and be developed in coordination with CDFW. Product standards developed by CDFW and provided to outreach participants through written and verbal guidance along with a defined product review process will help to ensure accurate messaging, increase regulatory compliance, and ensure the use of biologically accurate information regardless of who developed the product. An MPA outreach program should be established with this in mind and work to provide a central point for coordination of, and responsibility for, activities associated with MPA outreach and its oversight at all levels. This will include the following core actions:

- **Establish structure and procedures for coordination:** Identify processes and associated procedures that facilitate coordination and cooperation between MLPP and other partners
- **Develop outreach standards:** Develop standards including protocols for outreach information and signage to achieve reliable outcomes both internally and from partners
- **Provide written outreach and partners guide:** Issue outreach standards and guidance in written format as a "Partners Guide." Provide an additional review process to augment the written guide
- **Conduct outreach product oversight and review:** Provide individual guidance, input, and product review where possible, to ensure that partner outreach products are delivered to the public consistent with laws, regulations, policies, standards, and best practices

3.2 Enforcement

The MLPA identified enforcement as one of the chief deficiencies in California's previously existing MPAs. Therefore, the MLPA emphasizes the importance of adequate enforcement as a goal of the MLPP[89] and the inclusion of enforcement measures for all MPAs,[90] and that the Master Plan includes recommendations for improving enforcement. This section describes enforcement objectives for the MPA network and, because CDFW is the primary agency responsible for MPA enforcement, describes CDFW's responsibilities for ongoing MPA enforcement.

[88] National Marine Protected Area Center. (2014). *Updated Framework for the National System of Marine Protected Areas of the United States*. Retrieved Sept 21, 2015 from http://marineprotectedareas.noaa.gov/pdf/national-system/framework-mpa-oct14.pdf
[89] FGC 2853(b)(5)
[90] FGC 2853(c)(2)

Enforcement Plan Objectives

> **Box 3. Priority Area Identification**
>
> Enforcement priorities are developed based on the potential for resource impact, level of use, and potential for violations. High priority areas include habitats that are particularly vulnerable to damage, areas with high aggregations of critical species or species at low abundance, and areas where violations are likely to occur or have occurred at high rates in the past.

Because the main objective of an MPA enforcement plan is to ensure compliance with regulations, CDFW views outreach and education as a primary tool to support enforcement (see Chapter 3.1). Effective outreach and education of MPA regulations, including MPA boundaries, and the potential benefits of MPAs, builds understanding and buy-in for MPAs and leads people to follow regulations voluntarily, thereby helping alleviate demand on marine resources. In addition to these front-end efforts through outreach and education, compliance is enhanced through on-the-water enforcement efforts such as visible and consistent patrols. Given current CDFW resources, additional enforcement personnel and assets will be needed to effectively enforce the entire MPA network. Increased use of cooperative agreements with other agencies may be a partial solution, but additional funding for enforcement will also be necessary.

Within the primary objective of ensuring compliance with regulations, the objectives of the enforcement plan is comprised of the following categories:

Operational Ability

- Identify areas of high priority, biological sensitivity, or enforcement need (see Box 3)
- Determine MPA network enforcement needs
- Hire additional enforcement officers
- Evaluate potential remote observation technology and techniques

Cooperative Efforts

- Maintain and enhance cooperative enforcement efforts with allied agencies
- Effectively utilize judicial system resources
- Develop a standardized training program
- Seek and support ongoing and enhanced MOUs

Public Awareness, Outreach, and Education

- Establish an MPA outreach program (see Chapter 3.1)
- Develop outreach materials for enforcement staff to distribute
- Develop standardized signage protocols
- Establish an education advisory board
- Hold public forums to educate specific groups

CDFW Enforcement Responsibilities

CDFW's enforcement staff is charged with enforcing marine resource management laws and regulations over an area encompassing approximately 1,100 miles of coastline out to three nautical miles, resulting in 5,280 square miles of state waters. To do so, CDFW will emphasize patrol of areas of particular concern or at particular risk (see Box 3 above) and use advanced technology and surveillance systems, to the extent practicable, as called for in the MLPA.

In addition to enforcing MPA laws in state waters, CDFW staff also provide enforcement of federal laws and regulations within state waters as well as federal waters, which extend from three to 200 nautical miles out to sea (the US Exclusive Economic Zone). Enforcement duties include all commercial and sport fishing statutes and regulations, all California Fish and Game Code (FGC) and Title 14, CCR, respectively, marine water pollution incidents, homeland security, and general public safety. General fishing regulations and other restrictions apply within MPAs in addition to MPA-specific restrictions.

CDFW shares jurisdiction for federal regulations including the Magnuson Stevens Fishery Conservation and Management Act, the Endangered Species Act, Marine Mammal Protection Act, the National Marine Sanctuaries Act, and the Lacey Act. A significant portion of both commercial and recreational fishing effort, and subsequently CDFW enforcement effort, occurs in federal waters. Therefore, the existing patrol effort beyond state waters and outside MPAs is important to consider in the plan. How effectively state and federal regulations are enforced within and around the MPAs will affect the MPAs' effect on conserving and protecting marine resources.

Given CDFW's other broad mandates to enforce both state and federal marine resource regulations, current assets are not adequate to redirect to MPA-specific patrols.[91] The increased focus on MPAs suggested by the MLPA and the comprehensive network the act mandates will necessitate not only a detailed enforcement plan, but additional enforcement assets as well (see Appendices C-F, Section 6).

3.3 Regional MPA Background and Priorities Documents

The 2015 Master Plan focuses on statewide guidance relative to MPA management, and emphasizes the importance of an adaptive and evolving approach to management. In recognition of the science-based and stakeholder driven MPA design and siting processes that led to the completion of California's statewide MPA network (see Appendix A), Regional MPA Background and Priorities documents are included as appendices to the 2015 Master Plan to include region-specific MPA design considerations and priorities moving forward; which together provide important context to base future informed statewide MPA management decisions upon. In the 2008 Master Plan, previous iterations of these documents, then called "regional management plans," were contained in a single appendix.[92] The updated regional MPA Background and Priorities documents include unique regional features and design considerations, regional goals and objectives, summaries of regional MPAs, and regional plans

[91] Detailed information about existing enforcement assets and personnel can be found in Section 6 of each regional MPA Background and Priorities document

[92] CDFW. (2008). *Draft Master Plan for Marine Protected Areas*. *Appendix O, page O-6*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

for scientific and enforcement considerations moving forward (Table 7). Regional MPA Background and Priorities documents are not meant to contain specific details for management protocols and methodologies; they instead are intended to be living documents that are readily accessible for reference and adaptive management, and serve as a logical starting place for guiding regionally-based activities. While MPAs are actively managed at the local and regional scales, the MLPP will always consider management from the perspective of the statewide network as a whole, informed by lessons and best practices from finer scales across the state. All regional MPA Background and Priorities documents have a standardized structure and are included as separate appendices, recognizing the varying ecological, social, and economic conditions along California's coast (see Appendices C-F).

Table 7. Overview of Regional MPA Background and Priorities Documents' Standardized Structure

Section	Description
Introduction	Describes the role of Regional MPA Background and Priorities documents and their relationship to the Master Plan, and provides a brief overview of the information they contain
Description of Region	Provides a description of information unique to the region that is relevant to MPA management
Considerations for Designing Regional MPAs	Describes region-specific goals and objectives, stakeholder priorities and objectives, design considerations, and implementation considerations
Summary of Regional MPAs	Summarizes MPAs in the region, including information on area, along-shore span, depth, primary habitat types, regulations, boundaries, a summary of objectives, detailed objectives, and a map depicting the location
Scientific Information	Describes scientific information relevant to regional MPA management, including information on the regional monitoring plan, with links to the specific baseline and long-term monitoring plans, and a description of and link to a list of species most likely to benefit from MPA protection, which may inform monitoring and evaluation of MPA effectiveness
Enforcement Plan	Includes information pertaining to enforcement challenges and opportunities specific to each MPA, an inventory of personnel and equipment, and current and potential enforcement partnerships

3.4 Aligning MPAs and Other Marine Resource Management Efforts

The MLPP is coordinating to connect MPA science and management with other efforts and activities, such as fisheries, water quality, climate change, and other management efforts as they emerge. As such, collaborative efforts will be crucial for taking an ecosystem-based approach to management, in which managers recognize the numerous interactions within an ecosystem, including humans, instead of focusing on a specific issue, species, or ecosystem service (Christensen et al. 1996). Furthermore, coordination will be essential for planning and carrying out an effective approach to adaptive management.

While CDFW and the Commission retain jurisdiction over the management and take of species within state waters, including within MPAs, the MLPA cannot supersede otherwise lawful activities that are not within the authority of the Commission to regulate.[93] Regulatory agencies should take into consideration the existence of MPAs in their review of the environmental

[93] FGC §2852(d)

impacts of authorizing a given activity. CDFW may also coordinate with non-regulatory entities such as the OPC and other key partners.

The effort to align MPA management with other marine resource management efforts is largely unprecedented and therefore experimental in nature (see Fox et al. 2013b; Appendix A, Section 3.3: *MPA Design and Management Considerations*). This section shares an overview of how the MLPP is aligning or could align with management of fisheries, water quality, climate change, marine debris, invasive species, which are among some of the most pressing areas for management (Halpern et al. 2009). In addition, this section shares brief summaries of other current and emerging efforts.

Fisheries Management

Overall, while the MLPA calls for by-in-large ecosystem protection,[94] it also envisions integration of MPAs and fishery management.[95] The MLPA states that "MPAs and sound fishery management are complementary components of a comprehensive effort to sustain marine habitats and fisheries"[96] and requires that MPA management be carried out "with the advice, assistance, and involvement of participants in the various fisheries." For example, MPAs can serve as an effective conservation and recovery tool for species at risk, vulnerable species, and species with the greatest conservation need by providing protections for essential fisheries habitat and ecosystems. This connection is further reinforced in California's 2015 State Wildlife Action Plan, which includes linking MPA monitoring as a component of its Data Collection and Analysis conservation strategy.[97] Efforts have been made to align MPAs with fisheries management. For example, CDFW convened a 2011 workshop focused on MPA and fisheries integration[98] to share information and ideas, and OST and CDFW have developed options to better align fisheries monitoring and MPA monitoring through the development of regional MPA monitoring plans.[99,100,101] The MLMA Master Plan for Fisheries is slated to undergo revision by 2017, and represents an opportunity to build upon existing efforts to integrate MPAs and fisheries management.[102]

Water Quality

Water quality is closely tied to the health of California's coastal ecosystems, including within MPAs. Point-source and non-point source pollution lead to harmful algal blooms, human health issues, heavy metal sedimentation, and beach closures, which can have impacts on local

[94] FGC §2853(b)(1)
[95] FGC §2851(d). See also FGC 7059(a)(3).
[96] FGC §2850-2863
[97] CDFW. (2015). *State Wildlife Action Plan*. Draft Retrieved Sept 24, 2015 from https://www.wildlife.ca.gov/SWAP
[98] Wertz, S., D. Aseltine-Neilson, T. Barnes, J.Vasques, S. Ashcraft, K. Barsky, A. Frimodig, M. Key, T. Mason, and B. Ota. (2011). *Proceedings of the Marine Protected Areas and Fisheries Integration Worskhop*. Retrieved Aug 7, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=42306&inline=true
[99] MPA Monitoring Enterprise, OST. (2010). *North Central Coast MPA Monitoring Plan. Appendix A-1: Possible Supplemental Fisheries Monitoring Module*. Retrieved Sept 21, 2015 from http://oceanspaces.org/sites/default/files/regions/files/ncc_monitoring_plan_and_appendices.pdf
[100] MPA Monitoring Enterprise, OST. (2011). *South Coast MPA Monitoring Plan. Appendix A-1: Supplemental Fisheries Monitoring Module*. Retrieved Sept 21, 2015 from http://oceanspaces.org/sites/default/files/regions/files/sc_mpa_monitoring_plan_full.pdf
[101] MPA Monitoring Enterprise, OST. (2014). *Central Coast MPA Monitoring Plan. Appendix A: Integrating Fisheries Monitoring and MPA Monitoring*. Retrieved Sept 21, 2015 from http://oceanspaces.org/sites/default/files/regions/files/central_coast_monitoring_plan_final_october2014.pdf
[102] FGC §2851(d); see also FGC §7059(a)(3)

coastal economies (Abrahim & Parker 2000; Bay et al. 2003; Anderson et al. 2002; He & He 2008). Aquaculture effluent, once-through cooling from power plants, and brine run-off from desalination plants can also impact water quality.[103] To reduce negative impacts on water quality,[104] the SWRCB, which is named as a managing agency in the MMAIA, sited and implemented State Water Quality Protection Areas (SWQPAs) along the California coast, with the purpose of supporting biodiversity and unique species. These areas include areas of special biological significance and general protection areas (SWQPA-GP), with SWQPA-GPs being designated specifically to protect water quality within MPAs. In addition, SWRCB amended their California Ocean Plan in 2012 to address the designation of new SWQPAs and MPAs.[105] The regional MPA monitoring plans developed by OST, in partnership with CDFW, include guidance for monitoring of species that are sensitive to water quality and encourage partnerships with existing water quality monitoring programs that maintain and gather water quality data.

Climate Change

MPAs are also linked to marine management efforts related to climate change. CDFW recognizes the effects that climate change has on marine resources[106] and partners on numerous climate change-related projects and issues such as hypoxia, ocean acidification, and the State Wildlife Action Plan process. Although the MLPA does not require consideration of climate change in MPA management, the MLPP recognizes that climate change will likely have an effect on MPAs. At the same time, California's MPAs could potentially help buffer California's living marine resources against the negative impacts of climate change by providing areas of reduced pressures exerted on the resources (Micheli et al. 2012). Furthermore, MPAs can act as "living laboratories" to help scientists and decision-makers understand differences in ecosystem responses to climate change both within and outside MPAs. The MLPP is building partnerships with groups that have aligned and complementary expertise and missions regarding the impacts of climate change on California's MPAs in order to ensure coordination and reduce duplication of effort.

Marine Debris

Marine debris can lead to mortality of marine life through ingestion, entanglement, and ecosystem alteration.[107] CDFW's Office of Spill Prevention and Response maintains a Marine Wildlife Veterinary Care and Research unit that conducts opportunistic research on marine debris' impacts on marine life and is coordinating with CDFW staff to link MPA and marine debris monitoring (Rosevelt et al. 2013). Additional collaborations to address the impact of marine debris are also occurring with organizations including the University of California Davis, OPC, the SCC, the Northwest Straits Commission, and the National Oceanic and Atmospheric Administration's (NOAA) Marine Debris Program. In addition, beach clean-up programs such as the Coastal Clean-up Day managed by the CCC, while offering only temporary alleviation from marine debris, can help to reduce entry of land- and ocean-based marine debris into the

[103] California Environmental Protection Agency. *Ocean Standards: Desalination Facilities and Brine Disposal*. 25 Feb 2015. Retrieved Sept 21, 2015 from http://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/
[104] California Law. *California Water Code*. Division 7: Water Quality. Retrieved Sept 21, 2015 from http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=wat&codebody=&hits=20
[105] SWRCB. (2012). *Water Quality Control Plan – Ocean Waters of California – California Ocean Plan.* Retrieved Sept 21, 2015 from http://www.swrcb.ca.gov/water_issues/programs/ocean/docs/cop2012.pdf
[106] CDFW. *Unity – Integration – Action: CDFW's Approach to Confronting Climate Change*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/Climate_and_Energy/Climate_Change/
[107] United States Environmental Protection Agency. *Marine Debris Impacts.* Retrieved Sept 21, 2015 from http://water.epa.gov/type/oceb/marinedebris/md_impacts.cfm

oceans. Current research and monitoring of marine debris may help document the extent to which marine debris impacts MPAs and can help to inform efforts to reduce marine debris within or adjacent to MPAs.

Invasive Species

The impact of aquatic invasive species is not widely understood, especially related to MPAs. MPAs could be effective tools for limiting the spread of invasive species and providing safe harbors for native marine species within their boundaries (Francour et al. 2010). However, there is also some research indicating that invasive species thrive in MPAs, which could thereby undermine the MPAs' integrity (Otero et al. 2013). The MLPP will work to identify opportunities to link MPAs and aquatic invasive species management, both internally and with other agencies responsible for managing invasive species, such as the SLC. In addition, OSPR's Marine Invasive Species Program (MISP) conducts biological monitoring in coastal and estuarine waters to determine the level of invasion by non-native species and works to coordinate with the SLC. CDFW Marine Region staff will work to integrate MPA considerations into future biological monitoring by MISP and help to detect new introductions that may impact MPAs.

Other Marine Management Efforts

In addition to fisheries, water quality, climate change, marine debris, and invasive species, the MLPP may take into consideration the relative impacts of other activities occurring in MPAs when managing the MPA network. This section briefly describes marine management efforts related to these other activities.

- **Non-extractive Uses:** While MPAs can provide opportunities and enhance non-extractive uses of MPAs, such as scuba diving or boating, these uses should be effectively managed to avoid negative impacts caused by overuse beyond the carrying capacity of an MPAs. The MLPP is aware of the potential impact of these uses and will be available to coordinate management of non-extractive uses in MPAs in a way that is consistent with the goals, objectives, and regulations of each individual MPA. Furthermore, the MLPP will take lessons from individual cases and apply them to other sites and the broad network.
- **Oil and Gas Drilling and Transport:** There are currently federal and state moratoriums or bans on leasing of offshore areas for oil and gas mining activities.[108,109] However, offshore oil drilling in federal and state waters on existing leases and gas extraction, including hydraulic fracturing, are occurring in federal waters. Therefore, it is important to consider that potential risks from oil or chemical spills could impact MPAs if they were to occur. CDFW is not responsible for managing these operations, but routinely communicates and trains with other agencies, including the Bureau of Ocean and Energy Management, SLC, CCC, and the US Coast Guard to ensure that oil spill prevention and response plans consider catastrophic impacts to MPAs.

[108] PRC §6870 - 6879

[109] Bureau of Ocean and Energy Management. (2012). *Outer Continental Shelf Oil and Gas Leasing Program Final Programmatic EIS.* United States Department of Interior, Bureau of Ocean Energy Management. Retrieved Sept 21, 2015 from http://www.boem.gov/uploadedFiles/BOEM/Oil_and_Gas_Energy_Program/Leasing/Five_Year_Program/2012-2017_Five_Year_Program/01_Introduction_Purpose_Need.pdf

- **Hydrokinetic Power Projects:** California currently has no hydrokinetic power projects, although a past project proposed near Point Cabrillo SMR by Pacific Gas and Electric Company was denied by the Federal Energy Regulatory Commission.[110]
- **Military Exercises (including Naval Sonar):** MMA classifications may not be inconsistent with US military activities deemed mission critical by the US Military (See Appendix A, Section 3.3: *MPA Design and Management Considerations*; Appendix F, Section 3.3; and Fox et al. 2013b).[111,112]
- **Other Forms of Acoustic Pollution:** Regulatory agencies and commissions, such as the CCC, have the authority to protect and oversee coastal uses that may impact MPAs, including seismic imaging for various uses (e.g., oil and gas exploration). The CCC is now beginning to consider the impacts of acoustic pollution on MPAs in their decision-making. For example, the CCC rejected a permit application requesting use of seismic air guns in central California due to potential "damage to marine protected areas."[113] CDFW and the Commission provided consultation on this ruling by raising concerns that there could be impacts on four MPAs within or adjacent to the proposed survey area, based on the project as proposed.[114]

The MLPP will continue to work to determine if and how to link MPA management to these growing or emerging management themes in the future.

[110] Federal Energy Regulatory Commission (2012). *Order Denying Preliminary Permit Application July 19, 2012.* Retrieved Sept 22, 2015 from http://elibrary.ferc.gov/idmws/file_list.asp?document_id=14039276
[111] PRC §36711
[112] FGC §2863
[113] Dettmer, A. (2012). *Addendum to Staff Report for CDP Application E-12-005 and Consistency Certification CC-027-12, Pacific Gas & Electric Company*. California Coastal Commission. Retrieved Sept 21, 2015 from http://documents.coastal.ca.gov/reports/2012/11/W13b-11-2012.pdf
[114] Ibid.

CHAPTER 4
Adaptive Management

The MLPP is coordinating with partners to develop a process of adaptive management for California's MPA network that helps evaluate whether the MPA network is making progress toward achieving the six goals of the MLPA. This section describes the purpose and objectives of adaptive management of the MLPP; monitoring, research, and development that is used to inform adaptive management; and the process used to carry out adaptive management.

4.1 ADAPTIVE MANAGEMENT OF THE MLPP

Adaptive management, as defined by the MLPA, is a process that seeks to improve management by learning from program actions such as monitoring and evaluation of ecosystem, and management effectiveness (see Box 4). Based on this definition, the MLPP will follow a process for adaptive management of California's MPA network.

Box 4. MLPA Definition of Adaptive Management

The MLPA describes adaptive management as:

"Adaptive management," with regard to marine protected areas, means *a management policy that seeks to improve management of biological resources, particularly in areas of scientific uncertainty, by viewing program actions as tools for learning. Actions shall be designed so that, even if they fail, they will provide useful information for future actions, and monitoring and evaluation shall be emphasized so that the interaction of different elements within marine systems may be better understood* (FGC 2852[a]).

CDFW already carries out many activities that fit under the umbrella of adaptive management. For example, in 2014, CDFW proposed and the Commission adopted amendments to clarify complex regulations to improve compliance and enforceability.[115] Soon thereafter, in 2015, CDFW drafted amendments to improve boundary accuracy and clarify regulatory language to improve network compliance and enforceability. In the near future, regulatory amendments may also be drafted to address existing and emerging management issues with the network, such as extending Tribal take allowances within MPAs in all the regions.[116] As with any new program, especially of the magnitude of California's MPA network, ongoing regulatory adjustments to align MPAs with their original intent or to address management or enforcement concerns may be warranted. Collaborative MPA management, guided in part by the Partnership Plan, will support additional partnership-based adaptive management efforts into the future. The adaptive management process (outlined in Chapter 4.5 below) below will provide a framework for implementing future adaptive management measures.

[115] California Fish and Game Commission. (2014). *Marine Protected Areas Clean Up*. Approved regulatory language: http://www.fgc.ca.gov/regulations/2014/632fregs.pdf
[116] CCR, Title 14, Section 632(a)(11) and (b)(1-2, 6, 8-9, 15-16, 20-21, 25, 27)

Purpose of Adaptive Management

The MLPP recognizes that adaptive management can be appropriate in cases where there is uncertainty about the impacts of management actions[117] or about the costs and benefits of collecting different types of data and information, as in the case of California's MPAs. Adaptive management can also serve an important role in resource management by providing a framework for responsive change in management measures based on current or emerging stressors. Importantly, the MLPP also views adaptive management as a mechanism for sharing information about the effectiveness of the MPA network in reaching its goals not only with agencies, but also with Californians at large.

Ten-Year Formal MPA Management Reviews

To inform the adaptive management process (see Chapter 4.5), there is the need for a formal review cycle of California's MPA network on a time scale that is both biologically appropriate, and administratively feasible and cost effective. Furthermore, the MLPA requires California's MPAs are designed and managed, to the extent possible, as a network.[118] Significant efforts were made to ensure California's MPAs were designed to function as an ecologically connected statewide network (see Appendix A, Boxes 1-3), through four incremental science-based and stakeholder driven regional MPA planning processes resulting in the staggered adoption of MPAs across the state; the Central Coast MPAs in September 2007, North Central Coast MPAs in May 2010, South Coast MPAs in January 2012, and North Coast MPAs in December 2012 (see Chapter 2.2 and Appendix A). Prior to the completion of the statewide MPA network in 2012, the 2008 Master Plan recommended comprehensive reviews of monitoring results to the Commission every five years for each of the four regional MPA networks, in addition to annual reporting on monitoring results, and triennial MPA petition hearings scheduled by the Commission.[119] However, based on the best readily available science and lessons drawn from regional MPA implementation, an ongoing five-year MPA review cycle for incrementally adopted MPAs across four regions is not biologically appropriate or administratively sustainable. The MLPP has therefore set a 10-year cycle of formal management reviews for the statewide MPA network, and is leading the design of a statewide MPA monitoring program, which includes and draws from regional components, to gather sufficient information to evaluate network efficacy and inform the formal 10-year MPA management review (see Chapter 4.3).

The timeframe for the 10-year review is more biologically appropriate, drawing from scientific empirical research and theoretical modeling demonstrating that variables such as biomass, species density, species richness, and size of marine organisms increase with time in no-take reserves (Lester et al. 2009, McCook et al. 2010, Caselle et al. 2015), but may not be realized or easily detected on short timeframes (Babcock et al. 2010, Moffitt et al. 2013, White et al. 2013). This is particularly true in highly dynamic temperate ecosystems such as the California Current and for species such as rockfishes that are long-lived, slow growing, and late to mature (Botsford et al. 2014, Starr et al. 2015). For example, monitoring fish biomass on nearshore rocky reefs in the northern Channel Islands MPAs over the first five years of implementation did

[117] Ballard, A., Birss, H., Botta, R., Cantrell, S., Gonzales, A., Johnson, B., Spautz, H., Torres, S., & Yamamoto, J. (2014). *Incorporation of Adaptive Management into Conservation Planning and Resource Management.* Retrieved Mar 4, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=86989&inline=1
[118] FGC §2853(b)(6)
[119] FGC §2861(a)

not allow enough time to observe dramatic changes,[120] but after 10 years, Caselle et al. (2015) demonstrated that the biomass of target fish species increased consistently inside MPAs. However, monitoring nearshore fishes in Central Coast MPAs over seven years, Starr et al. (2015) determined that 20 years or more may be needed to detect significant changes due to MPA implementation. The timing (i.e., short or long response times), direction (i.e., increase, decrease, or no change), and magnitude of these changes to MPA implementation depends on factors such as MPA age (number of years implemented), size, geography (i.e., whether an MPA is located in southern California versus northern California), and degree of protection (i.e., no-take or limited take), the life history characteristics of target species (i.e., age of maturity, movement, natural mortality rate, lifespan, and larval dispersal pattern), habitat, fishing intensity outside MPAs, and other environmental factors such as complex oceanographic patterns or other indirect effects (Babcock et al. 2010, White & Rogers-Bennet 2010, Carr et al. 2011, White et al. 2011, Moffitt et al. 2013; Botsford et al. 2014, Baskett & Barnett 2015, Caselle et al. 2015, Starr et al. 2015, Young & Carr 2015). These interdependent factors may cause difficulty interpreting monitoring data on short timeframes; for example, fished species may slowly increase, decrease, or oscillate immediately after MPA implementation, even when the long-term trajectory would include an increase in abundance (White et al. 2013). In summary, both empirical evidence from California and theoretical modeling affirm the need for long-term monitoring to detect changes that are attributable to MPAs and an appropriately long timeframe, such as every 10 years, for a management review cycle. Monitoring and the ability to detect and adapt to ecological changes is key to track progress and determine whether changes in management are warranted (Lubchenco & Grorud-Colvert 2015, Schindler & Hilborn 2015). Management adjustments should be made with caution to allow sufficient time to effectively evaluate MPA effects before adjustments are made (Gleason et al. 2013, Moffitt et al. 2013).

The formal 10-year management review will emphasize ecological, socioeconomic, and governance aspects of the network and may include, but not be limited to, a scientific evaluation, public scoping meetings, and panel discussions to determine the status, function, and possible changes to the network. The scientific evaluations that inform the formal 10-year management review will encompass multiple elements, including a scientific assessment of ecological and socioeconomic MPA monitoring results (see Chapter 4.3), together with other data streams such as MPA enforcement data. Based on the 10-year reviews, the Commission may take adaptive management actions if data and information support a change. During the adaptive management cycle, the MLPP may also refine and adjust management tools, measures, and strategies based on the management review and progress made toward achieving the specified objectives. Management tools, measures, and strategies fall into three primary categories: 1) MPA Design, including size and spacing; 2) MPA Access, including permitting, take in relevant MPA types, and use; 3) Enforcement; and, 4) Outreach and Education.

4.2 MLPP Management Objectives

The six goals of the MLPA are inextricably connected and provide guidance for developing management objectives to determine how the MLPP is performing and, ultimately, if the mandates of the MLPA are being met. The MLPA goals recognize the intrinsic value of marine

[120] CDFW, PISCO, CINMS, and Channel Islands National Park. (2008). *Channel Islands Marine Protected Areas First 5 Years of Monitoring: 2003-2008*. Airamé, S. and J. Ugoretz (Eds.). 20 pp. Retrieved Aug 7, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=31325&inline=true

natural heritage for all Californians, including Tribes and Tribal governments, and establishing objectives helps take steps towards protecting these places of importance. This section outlines management objectives to effectively and adaptively manage the MLPP, which includes California's MPA network as well as all state MPA governance and management mechanisms and institutions (for information about the management activities to support the MLPP, see Table 6). Management objectives provide guidance to the MLPP and increase partner and public understanding of MPA management priorities.

These management objectives are not intended to be comprehensive, nor specific to each of the six goals of the MLPA, but rather to address the goals holistically, inform the design of the statewide monitoring program, and enable the evaluation of MPA network performance towards meeting the goals of the MLPA. Some objectives speak to the MLPA goals at a high level, while others focus on management tools, measures, and strategies available to support and advance the MLPP. Furthermore, the MLPP management objectives may change during the ongoing adaptive management cycle (see Chapter 4.5). The MLPP will also need to evaluate the objectives in the context of changing ocean conditions and multiple ocean threats, such as climate change, fishing pressure, water quality degradation, marine debris, invasive species, and other existing and emerging issues. As traditional understanding and the components of ecosystem structure (i.e. species and functional groupings) and function (i.e. ecological interactions) may change significantly in the future. Evaluating the effectiveness of the MPA network at achieving the management objectives will need to account for this reality.

Below are the management objectives that the MLPP will address to effectively manage California's MPA network and provide management recommendations to the Commission for the formal 10-year management review, as a part of the adaptive management cycle.

MLPP Management Objectives:

- Protect the structure and function of marine ecosystems
- Improve native marine life populations, including those of economic value
- Ensure minimal disturbance while allowing for sustainable opportunities for recreation, education and research
- Ensure comprehensive representation of all key habitats, including unique habitats
- Use learning acquired through administration of the MLPP to adaptively manage the objectives, management measures, enforcement efforts, and scientific guidelines to inform management decisions
- MPAs and the MLPP function as a cohesive statewide network

4.3 Statewide Monitoring Program

Knowledge about the efficacy of MPA networks that cover a geographic scale as large as California is limited due to the limited empirical data from large-scale MPA networks (Gaines et al. 2010a, b; Grorud-Colvert et al. 2011, 2014). Therefore, California's MPA network offers a unique grounds for collecting data and information to learn about the effects of a large-scale MPA network and inform management (NOAA 2013). Based on scientific findings which suggest relatively long time scales for detecting the effects of MPAs, there is the need for long-term monitoring to gather sufficient information to evaluate network efficacy and inform adaptive management (see Chapter 4.1: *Ten-Year Formal MPA Management Reviews*).

This need is described in the MLPA, which requires "monitoring, research, and evaluation at selected sites to facilitate adaptive management of MPAs and ensure that the [MPA] system meets the goals."[121] Therefore, monitoring results and additional information potentially collected from other scientific data, governance and management review, workshops, and public forums is an accumulation of information that could be used to inform adaptive management which is a response to that information (see Chapter 4.5). The MLPA, together with policy guidance including the Partnership Plan, have guided and will continue to guide the MPA monitoring approach outlined in this section, which will be used to inform adaptive management of California's MPA network.

Current Status of MPA Monitoring

CDFW partnered with OST to develop a scientifically rigorous statewide MPA monitoring framework relative to the goals of the MLPA, in the form of regional MPA monitoring plans.[122] Adopted by the Commission as an appendix to the MLPA Master Plan, this framework guides monitoring across the California's MPA network through an ecosystem-based approach. With this approach, monitoring seeks to understand ecosystem condition and trends (including human uses), and to scientifically evaluate MPA design and management decisions. Figure 9 illustrates this high-level, statewide approach to MPA monitoring. Notably, although evaluation activities are distinct from monitoring, evaluation constitutes one of the core components of the monitoring framework, as illustrated in Figure 9. Furthermore, as described in the MLPP adaptive management process (see Chapter 4.5), research and development play important roles throughout the MPA monitoring framework (see Chapter 4.4).

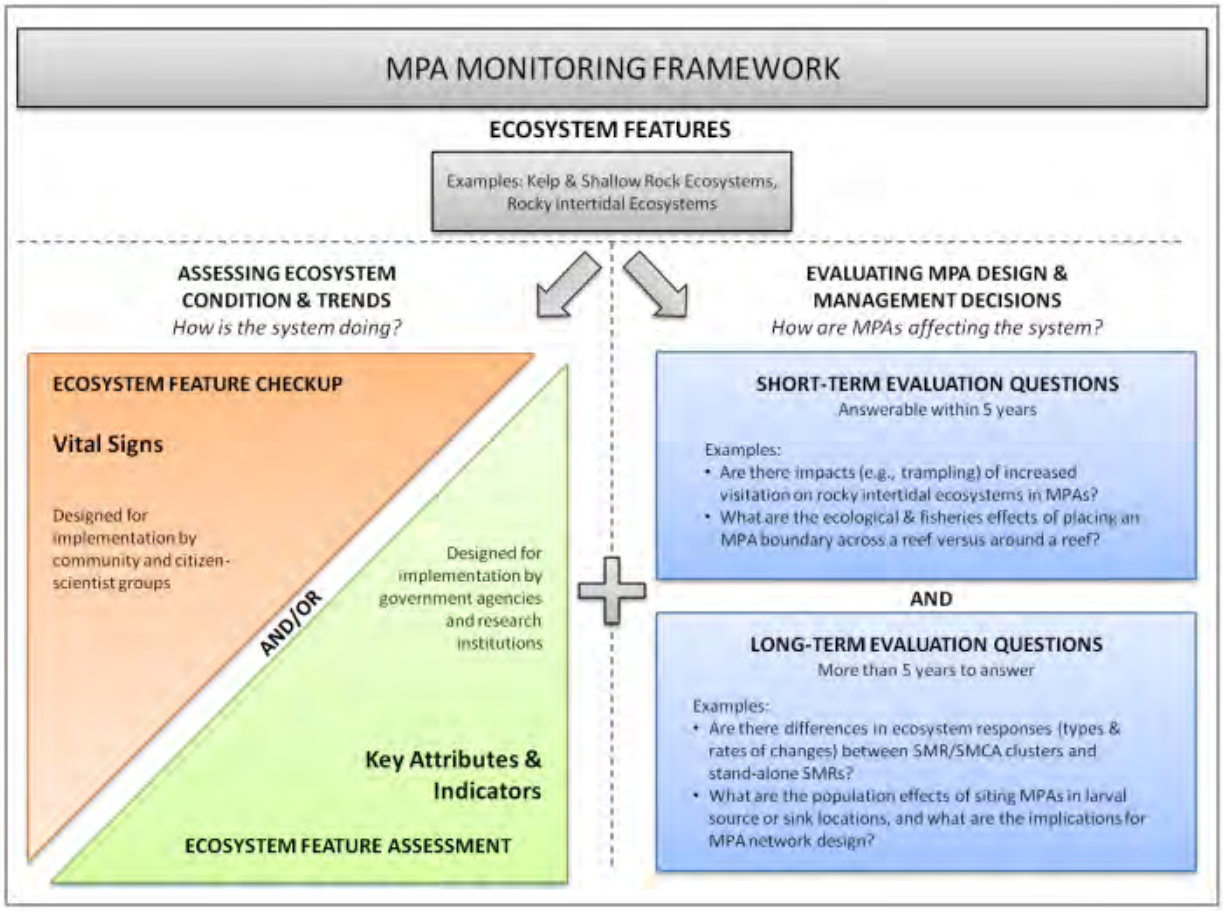
To date, the statewide monitoring framework has been used primarily to guide baseline monitoring efforts and has served as the foundation for the development of regional monitoring plans and long-term monitoring needs. Moving forward, it will inform the process of building out a more detailed plan for statewide MPA network monitoring.

CDFW, OST, and OPC have taken significant steps towards establishing a long-term, statewide MPA monitoring program based on the statewide monitoring framework and the existing regional monitoring plans. Figure 10 below illustrates the timeline and milestones of baseline monitoring activities in each region and the first formal 10-year management review, anticipated to take place in 2022. Baseline monitoring will be followed by long-term monitoring in each region, and results from monitoring will inform the formal 10-year statewide management review.

Regional monitoring plans for the North Central Coast (2010), South Coast (2011), and Central Coast (2014) regions have been developed to provide guidance on implementation of both baseline and long-term monitoring.[123] The regional monitoring plans align with the statewide MPA monitoring framework while incorporating unique characteristics of each region.[124,125,126,127]

[121] FGC §2853(c)(3), §2852(a), and §2856(a)(2)(H)
[122] The North Central Coast MPA Monitoring Plan was adopted by the Commission April 7, 2010, the South Coast MPA Monitoring Plan was adopted by the Commission on August 3, 2011, and the updated Central Coast MPA Monitoring Plan was adopted by the Commission on October 8, 2014
[123] MPA Monitoring Enterprise, OST. (2010). *North Central Coast MPA Monitoring Plan*. Retrieved Sept 21, 2015 from http://oceanspaces.org/sites/default/files/regions/files/ncc_monitoring_plan_and_appendices.pdf
[124] Ibid.
[125] MPA Monitoring Enterprise, OST. (2014). *Central Coast MPA Monitoring Plan*. Retrieved Sept 21, 2015 from http://oceanspaces.org/sites/default/files/regions/files/central_coast_monitoring_plan_final_october2014.pdf

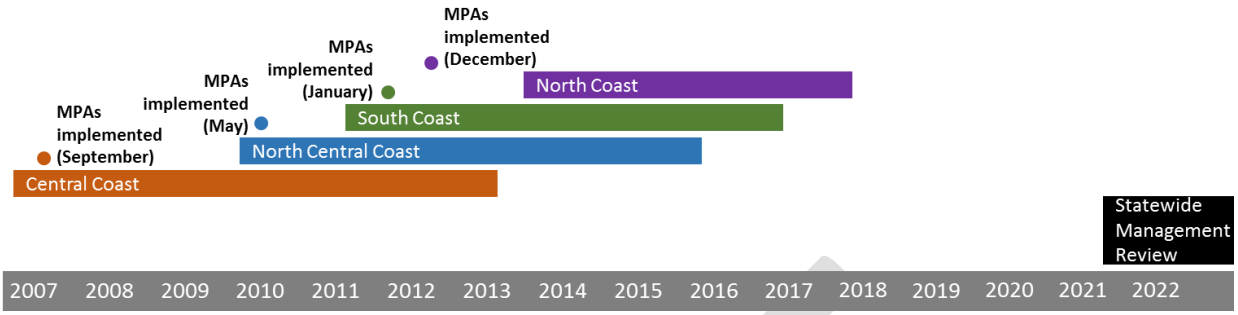
Figure 9. California's Statewide MPA Monitoring Framework[128]



Once MPAs are implemented in each planning region, baseline monitoring data is collected to inform a five-year management review of the baseline conditions, followed by a transition to long-term monitoring. At the time of development of this document, the Central Coast region is the only region to have completed its baseline data collection and five-year review of baseline conditions. Beginning in 2015, efforts are underway between OST, CDFW, and OPC to develop a Central Coast MPA Monitoring Workplan which will serve as the first example of an approach to long-term monitoring that can be adapted to other regions and scaled towards the entire state (see Chapter 4.3: *Long-Term Monitoring*).

[126] MPA Monitoring Enterprise, OST. (2011). *South Coast MPA Monitoring Plan*. Retrieved Sept 21, 2015 from http://oceanspaces.org/sites/default/files/regions/files/sc_mpa_monitoring_plan_full.pdf
[127] OST and CDFW anticipate developing a North Coast MPA Monitoring Plan by 2017 (see Appendix C, Section 5.2)
[128] MPA Monitoring Enterprise, OST. (2010). *North Central Coast MPA Monitoring Plan*. Retrieved Sept 21, 2015 from http://oceanspaces.org/sites/default/files/regions/files/ncc_monitoring_plan_and_appendices.pdf

Figure 10. Timeline for Baseline Regional Monitoring and Formal 10-Year Statewide MPA Management Review[129]



MPA monitoring results will inform the ongoing process of scientific assessment and evaluation, such as interim evaluations and assessments (see Chapter 4.5), and the evaluation and assessment of data and information for Commission consideration in the formal 10-year MPA management reviews. MPA management will therefore evolve over time through adaptive management and based on monitoring results, and MPA monitoring will likewise be adaptive to remain useful and rigorous as science advances and as management needs change.

Using a Partnership-Based Approach

The MLPA states that monitoring and evaluation shall take into account existing and planned monitoring and evaluation efforts.[130] Monitoring California's MPA network is not a small task, and thus cannot be carried out by any one agency or organization. Effective, cost-efficient monitoring requires a partnership-based approach that leverages existing capacity across the state and engages the existing wealth of expertise in data collection, analysis and synthesis, and results sharing.

California's approach of establishing a public-private partnership increased the capacity of the state to implement monitoring and builds value and durability for California beyond simply meeting the requirements of the MLPA. To complement the public-private partnership, the Partnership Plan (see Chapter 1) contributes policy guidance for MPA monitoring.[131]

To date, the partnership-based approach to MPA management has involved more than 70 agencies, California Tribes and Tribal governments, and organizations in regional baseline MPA monitoring programs. Long-term monitoring will build on this experience, continuing to leverage capacity and establish partnerships to build a cost-effective, sustainable monitoring program statewide. The MSLT has developed a workplan that emphasizes the ongoing need to build partnerships, broaden participation, include knowledge from diverse sources, and build a deeper understanding of ocean health.[132] The MSLT workplan reflects the philosophy that all

[129] Adapted from: OST. *MPA Timeline and Milestones*. Retrieved Aug 4, 2015 from http://oceanspaces.org/sites/default/files/mparegiondiagram_v2.pdf
[130] FGC §2856(a)(2)(H)
[131] OPC. (2014).*The California Collaborative Approach: Marine Protected Areas Partnership Plan*. Retrieved Sept 22, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/docs/mpa/APPROVED_FINAL_MPA_Partnership_Plan_12022014.pdf.
[132] OPC. (2015). *Marine Protected Area (MPA) Statewide Leadership Team Work Plan FY 15/16-17/18*. Retrieved Sept 21, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20150922/Item5_Attach2_MPALeadershipTeam_Workplan_FINALv2.pdf

quality science may be useful in building a robust monitoring program, including academic, local, traditional, and citizen science contributions. Citizen science programs provide monitoring support through activities such as trainings to gather biological data in key habitats and recording observations of consumptive and non-consumptive uses of MPAs.

Furthermore, a valuable source of scientific and research expertise lies in California's university systems. California is home to some of the top marine science researchers in the world, and those researchers have an important role to play in enhancing monitoring efforts. These and other top academic institutions can ideally direct their research priorities to align with marine monitoring needs.

Statewide MPA Monitoring

OST, working in partnership with OPC and CDFW, is leading the design of a collaborative process to develop a statewide monitoring program based on the existing statewide monitoring framework and regional monitoring plans. The statewide monitoring program will integrate across the existing policy and management responsibilities of multiple state partners to guide a scientifically rigorous, sustainable program that advances California's policy goals for a healthy and productive coast and ocean and fulfills the mandates of the MLPA. Many of the technical and programmatic pieces built during baseline MPA monitoring will readily support this process.

Statewide MPA monitoring is comprised of three interconnected components: 1) scientific network evaluation questions and metrics; 2) regional MPA monitoring; and 3) beyond the MLPA. The first two components satisfy the requirements of the MLPA, and thus take precedence over the third component, which goes beyond the scope of the MLPA. However, the third component may be useful in identifying how MPA monitoring can help inform other state priorities, such as fisheries, water quality, climate change, marine debris, and invasive species, thereby driving progress towards a shared vision of a healthy and productive coast and ocean. This component will also play into the adaptive management process, which will help to effectively deploy resources to achieve management goals (Douvere & Ehler 2011; Williams 2011; Steltzenmuller et al. 2012; also see Chapter 4.1).

In summary, network scientific evaluation questions and metrics inform the design of a statewide MPA monitoring plan, and regional MPA monitoring results can, to a large extent, be integrated across regions to inform network-wide evaluation. In the third component, considering the significance of MPAs within the context of other state priorities allows for greater efficiency among ocean management efforts. The three components of the statewide MPA monitoring program inform the formal 10-year management review (see Figure 11) and are described in more detail below.

Scientific Network Evaluation Questions and Metrics

To meet the MLPP management objectives, CDFW, OST, and partners are committed to developing scientific network evaluation questions and select metrics, based on network-wide objectives (see Chapter 4.2), to inform the development of a statewide MPA monitoring plan. Evaluation questions and metrics within regional monitoring plans provide a starting point for the development of network evaluation questions and metrics, specifically to gain an understanding of ecosystem condition and trends across the state and to assess network performance and thus progress towards MLPA goals.

Like other aspects of MPA management, scientific network evaluation questions and metrics are subject to the process of adaptive management, and therefore may evolve over time. To

capture a holistic view of the statewide network performance and effectively guide monitoring, network evaluation questions and metrics will focus on primarily ecological and socioeconomic information. Though the collection of new socioeconomic data is not required by the MLPA, current and future partners who are putting effort toward MPA social sciences, such as economics, management, and governance, can be engaged by incorporating their data into MPA monitoring. For example, as stated in the Partnership Plan, OPC is leading the effort to undertake a management effectiveness evaluation and will utilize data collected from long-term monitoring, including on socioeconomic, management, and governance metrics. This information can feed into the formal 10-year management review. The following are examples of metrics that could be included in the statewide MPA monitoring program:

- **Biological and ecological metrics:** Focal species (commercial and non-commercial) abundance, biomass, size frequency, diversity, and density; biogenic habitat condition; productivity; and/or community structure and composition
- **Socioeconomic metrics:** Governance and management effectiveness, use of marine resources (consumptive and non-consumptive), number of participants in MPA-related activities, geographic patterns of use in and around MPAs, and/or volunteer and community engagement in monitoring and education

Regional MPA Monitoring

Regional monitoring of MPAs helps track progress toward meeting the goals of the MLPA and provides important local-scale results to help inform regulatory and management decisions. Regional MPA monitoring plans are guided by the statewide MPA monitoring framework, and underpinned by the same basic principles and programmatic priorities. Furthermore, the process for building MPA monitoring workplans for each region will consider activities and plans in other regions as well as the need for connectivity and consistency on issues such as site selection.

The state has developed a two-phase approach to MPA monitoring in each region: 1) establishing a benchmark through baseline monitoring and 2) long-term monitoring. These two phases are explained in more detail below.

Baseline Monitoring

Data and information collected during baseline monitoring establishes a regional benchmark of the ecological and socioeconomic conditions when each regional MPA network took effect and documents any initial changes resulting from MPA implementation. As such, the baseline serves as an important set of data against which future MPA performance can be measured. Baseline programs have been launched or completed in each of the four coastal MPA regions. These programs are designed, implemented, and coordinated by CDFW, OPC, OST, and CASG. Each regional MPA baseline program is administered near MPA implementation (Figure 10), and consists of securing funding, establishing a mechanism for disbursing funds, several years of data collection, data analyses and reporting, disseminating results to as wide an audience as possible, and a five-year monitoring and management review of baseline conditions.

When all baseline programs are completed in 2018 (Figure 10), California will have an unprecedented understanding of ecological and socioeconomic conditions along the entire California coast. Results from baseline monitoring, all of which are made publicly available through OceanSpaces.org, inform the initial five-year monitoring and management reviews of the regional MPA baseline conditions. In addition, results guide the development of collaborative, efficient, and cost-effective long-term MPA monitoring program.

The model established through the first regional management review in the Central Coast includes summarizing baseline monitoring results into a five-year 'State of the Region' report shared broadly in advance of the five-year management review. This information can inform the development of management recommendations, including recommendations to continue to improve monitoring and research, education and outreach, and enforcement and compliance. If management recommendations are identified, they will be presented to the Commission during the formal 10-year management reviews.

Long-Term Monitoring

Building on existing capacity in the state and guided by the regional monitoring plans and workplans, long-term monitoring will be implemented on a regional scale with the built-in ability to look at ecosystem conditions and trends across regions at a statewide network scale. Long-term monitoring will launch first in the Central Coast and subsequently in other regions as the five-year baseline period is completed for each. In each region, the monitoring program will be designed to provide management decision support within the context of the statewide adaptive management review process.

MPA monitoring workplans specify a monitoring program for a stated duration based on available funding, partnership opportunities and capacity in the region, and priorities of CDFW and other partners. These documents include detailed information about recommended budget allocations and funding mechanisms, the specific questions that monitoring should seek to address, design features of ecosystem condition assessments such as temporal frequency and spatial sampling, and incentive structures for encouraging relevant and useful work on the part of organizations and researchers operating in the region.

Not every MPA can be monitored each year, and baseline monitoring results are useful in making strategic choices for long-term monitoring. As directed in the MLPA, long-term monitoring of the MPA network will occur in selected sites. These sites are within the subset of MPAs in the statewide network where the MLPP will focus continued monitoring efforts, and will serve as a frame of reference for assessing the effects of the network as a whole. The process for selecting sites for long-term monitoring is built into workplan development, and balances rigorous scientific design with additional considerations including local priorities and funding availability, management priorities, and opportunities to align with neighboring regions and advance statewide monitoring priorities. For example, the Central Coast workplan for long-term MPA monitoring will include prioritization of sites for tracking change in particular ecosystem features and also considers likely monitoring sites in neighboring regions towards a statewide scale.

Beyond the MLPA

California's MPAs compose a network of living laboratories from which we can gain a greater understanding of the effects of existing and emerging stressors and begin to understand how MPAs may improve resilience to various impacts. While long-term MPA network monitoring is primarily informed by the mandated requirements of the MLPA, it is also developed to provide useful information for other aspects of California's ocean resource management, such as fisheries, climate change, marine debris, and invasive species, as well as other existing and emerging marine management efforts. Comprehensive, partnership-based MPA monitoring can help realize the value of the MPA network in aligning with these other ocean issues.

The MLPP can ensure that the adaptive management process provides a responsive framework for changes in management measures by linking statewide MPA monitoring to ocean issues that go beyond the MLPA.

4.4 Research and Development

Progress in science and technology changes what is possible in MPA monitoring and adaptive management. Realizing those possibilities requires engagement with relevant cutting-edge research and innovative development (see Box 5 for an explanation of the difference between monitoring and research). Just as the design and siting process of the MPA network relied on cutting-edge science, long-term monitoring and adaptive management of the network must continue to do so as well.

Given the size and scope of MPAs in California's statewide network, research activities will be needed to gain a better understanding of the underlying biological, chemical, and physical phenomena and human dimensions (such as socioeconomic effects and effectiveness of governance and management measures) relevant to particular MPAs or the network as a whole. Information gleaned from regional and statewide monitoring about a specific ecosystem or metric may raise questions that can only be addressed through a program of focused research. In addition, research will almost certainly make use of the datasets collected through baseline and long-term monitoring. Applied research will be needed to develop new monitoring methods, metrics, modeling approaches, or other analytical methods as needs arise during the adaptive management process.

To complement research, development can play an important role in learning about marine ecosystems and the effects of MPAs. While research can gain information about MPAs through the use of systematic hypothesis testing, development can advance scientific knowledge and technological capacity beyond the scope of traditional research endeavors. This can include the development of new or improved methods and approaches for increasing accuracy, efficiency, and effectiveness of data and information collection. Development can play an important role in supporting research, such as by creating technological solutions that enable researchers to carry out

Box 5. Making the Distinction between Monitoring and Research

While monitoring and research can be closely linked and inter-related, they can serve distinct purposes for natural resource management. For the purposes of the 2015 Master Plan, monitoring and research are defined as follows:

Monitoring: An ongoing process, sometimes directed by law, of data collection to inform evaluation of changes and progress over time toward goals and objectives. Monitoring can take place on a set of key metrics at representative sites. Consistent monitoring at an appropriate frequency can shed light on the effectiveness of management actions, and this information can inform adaptive management efforts.

Research: Scientific exploration that addresses emerging or otherwise relevant questions that are outside the goals and objectives of long-term MPA monitoring. Research questions can be driven by monitoring gaps or findings and feed into monitoring, such as by testing new scientific methods or providing insight on emerging threats that could affect management. Research can provide pure science to continue learning about MPAs, but is not necessary for ongoing monitoring and evaluation.

projects more effectively or efficiently. Research can similarly support monitoring; for example, new developments in technology for monitoring ocean chemistry could be implemented to increase monitoring capacity of the MLPP (Boehm et al. 2015).

Existing partnerships, especially with academic institutions including the University of California and California State University can be drawn upon to assess research and monitoring gaps and technological development needs, and identify and carry out focused research programs or development projects to fill those gaps. Funding can provide specific incentives to conduct relevant and useful research and development that includes engagement with natural resource managers and other ocean users.

Through these activities, CDFW, OST, OPC, and state partners will continue to foster the naturally occurring overlap and feedback between monitoring, research, and development and the evaluation and adaptive management processes at the individual MPA, regional, and statewide levels. The results of each of these activities will help ensure that the statewide MPA monitoring program utilizes the best readily available science, as required by the MLPA.

Both research and monitoring, as well as potentially development, if unregulated and unchecked, have the potential to have negative impacts on marine environments, such as through collection of specimens. In an effort to prevent negative impacts, CDFW has a process for evaluating and coordinating the permitting of scientific collection activities, as described in Box 6. Some MPAs also require a scientific collection permit (SCP) from State Parks, in addition to CDFW's requirements.[133] High-level planning by the MSLT and individual state partners will focus on increasing coordination between these two permitting processes.

Box 6. Scientific Collection in Marine Protected Areas

CDFW uses a decision tree to determine whether to approve or deny SCP requests within MPAs. CDFW reviews proposals for scientific collection and educational activities on an individual, case-by-case basis, but it does not resolve potential cumulative impacts from the effects of multiple activities permitted within an MPA. Therefore, CDFW and OPC's SAT are developing an ecological impact assessment tool to identify potential cumulative impacts prior to issuing an SCP. The ecological impact assessment tool will be used by CDFW to objectively evaluate SCP requests within MPAs.

4.5 Adaptive Management Process

The MLPA goals and statutory directives, MPA objectives, and design considerations will serve as the cornerstone for adaptive management actions, in a manner that recognizes the original intent identified through the science-based and stakeholder driven process by which California's MPAs were developed. For example, in recognition that individual MPA goals and objectives are not static, a review of whether an MPA's stated goals and objectives are still relevant or may need to be adjusted is an appropriate adaptive management action.

The adaptive management process for the MLPP is illustrated in Figure 11 below. The process begins with the selection of statewide objectives (step 1 in Figure 11; also see Chapter 4.2) that work toward the goals of the MLPA and other relevant policy and statutes. Informed by the

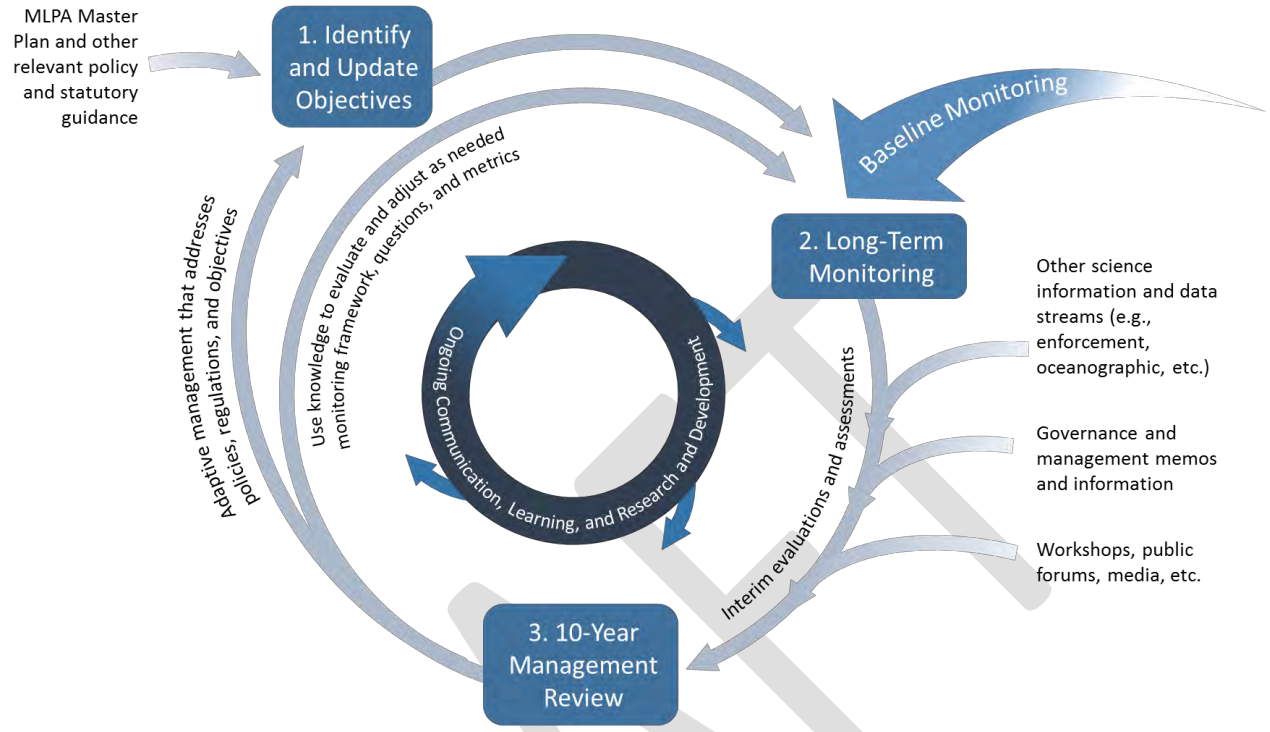
[133] California State Parks. *Crystal Cove State Park*. Retrieved Aug 10, 2015 from http://www.crystalcovestatepark.org/research-in-the-park/

statewide goals and objectives, the MLPP developed and is implementing a program of baseline monitoring for the four regions. After the baseline monitoring period concludes for each region, long-term monitoring, which will be based on the regional and statewide objectives, will begin and continue into the future (step 2 in Figure 11; also see Chapter 4.3). Long-term monitoring results, as well as additional information potentially collected from other scientific data, governance and management review, workshops, and public forums could be used to inform interim evaluation and assessment activities. These activities may take place at the regional scale and serve to inform the public about the state of the network and build understanding support for the MPAs. These assessments and evaluation can also feed into the formal 10-year management review (step 3 in Figure 11, and this Chapter 4.5).

A process for MPA management review is an important component of adaptive management. Therefore, the Commission will initiate a formal management review of statewide MPA network performance at least once every decade (step 3 in Figure 11; also see Chapter 4.1: *Ten-Year Formal MPA Management Reviews*). This review will emphasize ecological, socioeconomic, and governance aspects of the network and may include, but not be limited to, a scientific evaluation, public scoping meetings, and panel discussions to determine the status, function, and possible changes to the network. In addition, the Commission receives petitions for the additions, modifications, or deletions of MPAs on a continual basis,[134] favoring those petitions that are compatible with the goals and guidelines of the MLPA. Meritorious petitions at the discretion of the Commission may be incorporated into the decadal review unless circumstances dictate addressing the petition earlier.[135] Exceptions to the decadal review process may be considered if a petitioner makes a substantial case that not taking immediate action will cause significant harm to public safety or public welfare, or identifies scientific or technical issues that significantly impact MPA management or compromise MPA performance. Based on the findings of the Commission's formal 10-year management review, there may be the need for adaptive management actions, such as refining management objectives, policies, and strategies or revising long-term monitoring questions and metrics.

[134] FGC §2861a
[135] CCR, Title 14, Section 660.1

Figure 11. MLPP Adaptive Management Process



Throughout the entire adaptive management process, there will be the need for learning, communicating lessons, and developing and carrying out targeted research and development projects that can support monitoring and inform adaptive management (see Chapter 4.4). Learning serves an important role in the adaptive management process, specifically by sharing findings with and engaging a broader audience beyond scientists and management bodies. The MLPP can increase public knowledge about California's MPA network by translating and sharing the results of the evaluation, assessment, and review process and providing opportunities for partners to be involved in MPA management. Toward this end, the MLPP can identify and develop platforms for broader learning, which could include workshops, symposia, public forums, or web and print media. In addition to building knowledge, learning can help support the MPA network further by building public interest and compliance with MPA regulations. Increasing the reach of knowledge about the state's MPAs can also lead to new collaborations and partnerships that will build on monitoring and research capabilities. Due to the unprecedented nature of California's MPA network, the MLPP's approach to monitoring, evaluation, and adaptive management is accordingly a pioneering effort that will inevitably lead to significant learning that can help inform future efforts in California, the US, and beyond.

CHAPTER 5
Program Partners and Operations

Operational support as well as adequate funding for CDFW and partners will be crucial for leading effective management of California's MPA network. This section describes the core competencies of partners supporting ongoing management of California's MPA network, potential funding sources that CDFW and its partners could pursue, and the importance of leveraging the human and financial resources of CDFW and partners to achieve sustainable funding.

5.1 PARTNERS AND OPERATIONAL CAPACITY

Building from the roles and responsibilities described in Section 4.2 of the Partnership Plan, the MSLT workplan, and the MPA management roles and responsibilities described in Table 6. CDFW can work with partners to identify opportunities that consider jurisdictions and mandates to leverage human resources. Table 8 below provides a brief overview of CDFW's current partners in ongoing MPA management, along with a summary of their core competencies in relation to MPA management.

Table 8. Current Partners Supporting Management of California's MPA Network and Their Core Competencies Related to MPA Management

Partner	Sample of Core Competencies Related to MPA Management
CDFW[136]	• Marine science design and implementation, including MPA siting and design • Management and enforcement to implement natural resource trustee agency responsibilities including the MLPA • MPA monitoring, research, evaluation, including issuance of scientific collection permits • Outreach and education relating to MPAs
Commission[137]	• Primary regulatory decision-making authority for regulations and rules related to SMRs and SMCAs • Authority and expertise to review MPA proposals and petitions and decide on management actions • Provides venue for public comment and review of the Master Plan
CNRA[138,139]	• Restoration, protection, and management of California natural resources, including terrestrial, coastal, and marine • High-level direction to agencies including CDFW and State Parks • Oversight on state actions regarding ocean resources including through OPC, OST, West Coast Governors' Agreement on Ocean Health, Thank You Ocean Campaign, and Coastal Impact Assistance Program
State Parks[140]	• Management and enforcement of state parks, including terrestrial, coastal, and marine

[136] CDFW. *California Marine Protected Areas*. Retrieved Aug 3, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs
[137] Commission, *About the Fish and Game Commission*. Retrieved Aug 3, 2015 from http://www.fgc.ca.gov/public/information/
[138] CNRA. *California Natural Resources Agency*. Retrieved Aug 3, 2015 from http://resources.ca.gov/
[139] CNRA. *Oceans*. Retrieved Aug 3, 2015 from http://resources.ca.gov/oceans
[140] State Parks. *About Us.* Retrieved Aug 3, 2015 from http://www.parks.ca.gov/?page_id=91

Partner	Sample of Core Competencies Related to MPA Management
	• Designated management agency under the MMAIA, including designation and administration of MMAs • Administration of funds to support grants relating to state parks • Funding generation to support sustainable financing streams for ongoing management of state parks
State and Regional Water Boards[141]	• Protection of water quality through setting statewide policy and implementing the Clean Water Act • Expertise and authority to set standards, issue permits such as for waste discharge, determine compliance with permits, and enforce requirements • Compilation of information on surface water, ground water, water rights, and other programs to the public and stakeholders
OPC[142]	• Direction of policy of MPAs to support the California's MPA network • Identification of recommended changes to state and federal law relating to the oceans and coasts • Identification of opportunities to improve efficiency among agencies to achieve their mandated responsibilities including coordination and sharing of scientific data • Engagement of partners and the public through meetings, workshops, public conferences, and leading the coordination of leadership bodies including the MSLT
OST[143,144]	• As a boundary NGO mandated by CORSA, expertise in seeking and providing funds for ocean resource science projects and facilitation of ocean resource science projects and application of science to policy • MPA monitoring program development, design and implementation • Translation of scientific information for multiple audiences
MSLT[145]	• Assurance of communication and collaboration among agencies and partners participating in ongoing management of California's MPA network, including permitting activities • Ensures that team members work together on outreach and education, research and monitoring, enforcement and compliance, and policy and permitting relating to MPAs
SLC[146,147]	• Coastal hazard removal, marine invasive species, marine oil terminals, offshore oil permitting, oil spill prevention, sea level rise, renewable energy • Safe and environmentally sound development, regulation, and management of inland and offshore energy and mineral resources
CCC[148,149]	• Protection, conservation, restoration, and enhancement of environmental and human-based resources of the California coast and ocean • Planning and regulation of the use of land and water in the coastal zone through a permitting process • Implementation of the California Coastal Act

[141] SWRCB. *California Water Boards*. Retrieved Aug 3, 2015 from http://www.waterboards.ca.gov/publications_forms/publications/factsheets/docs/boardoverview.pdf
[142] OPC. *About the Council.* Retrieved Aug 3, 2015 from http://www.opc.ca.gov/about/
[143] OST. *Our Work*. Retrieved Aug 3, 2015 from http://www.oceansciencetrust.org/work/
[144] OST. *CA Ocean Science Trust Releases Progress Report*. Retrieved Aug 3, 2015 http://www.opc.ca.gov/2013/05/ca-ocean-science-trust-releases-progress-report/
[145] OPC. *Marine Protected Area Statewide Leadership Team.* Retrieved Aug 3, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20150729/Item7-OPC-July2015-MPAStatewideLeadershipTeam-Memo.pdf
[146] SLC. *California State Lands Commission*. Retrieved Aug 3, 2015 from http://www.slc.ca.gov/
[147] SLC. *About the California State Lands Commission*. Retrieved Aug 3, 2015 from http://www.slc.ca.gov/About/About.html
[148] CCC. *About Us.* Retrieved Aug 3, 2015 from http://www.coastal.ca.gov/whoweare.html
[149] Gurish, J. *Overview of California Ocean and Coastal Laws with Reference to the Marine Environmen*t. Prepared for OPC. Retrieved Mar 4, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/docs/Documents_Page/Noteworthy/Overview_Ocean_Coastal_Laws.pdf

Partner	Sample of Core Competencies Related to MPA Management
California Environmental Protection Agency[150]	• Restoration, protection, and enhancement of the environment • Environmental health, hazard assessment, toxic substances control, water resources control, emergency response, and enforcement
SCC[151]	• Protection, restoration, and enhancement of coastal resources • Expansion of public access to the shore in partnership with local governments, agencies, non-profits, and private landowners • Distribution of grant funds to improve things like public access to beaches, coastal zone restoration, protection of coastal land, and other issues that help achieve the Conservancy's goals
West Coast Regional Office of National Marine Sanctuaries[152]	• Conduct monitoring and data collection that could inform adaptive management • Maintain authority to patrol, research, inspect, and cite violations of federal regulations (NOAA office of Law Enforcement) • Foster partnerships with State, Tribal, Federal, and non-governmental organizations • Support Joint Enforcement Agreement with CDFW • Provide funding to State to enforce federal regulations in state waters, in federal offshore waters, and in bays, estuaries, rivers, and streams

5.2 Potential Funding Sources

Securing a diversified funding portfolio can help ensure long-term financial stability that is able to withstand future shifts in funding availability. Areas that have been identified as priority gaps in need of support through partners include monitoring, compliance and enforcement, engagement with Collaboratives, and Tribal collaboration and coordination.[153] The 2008 Master Plan contains a list of potential funding sources the MLPA Initiative identified (Appendix N).[154] Building on the list of potential funding sources identified in the MLPA Initiative process, OPC, CDFW, and its partners developed an updated list of potential funding sources, including federal, state, and local government; private philanthropy; and the private sector to help cover priority gaps. As funding sources are continuously changing and CDFW is now solidifying its operational needs for MPA management, there is the need to continually reevaluate existing and new potential funding sources.

5.3 Role of Partners in Leveraging Financial and Human Resources

The MLPP depends on collaboration to leverage existing human and financial resources, and CDFW and its partners are committed to working together to identify ways to continue to achieve the goals of the state in an efficient and effective way. CDFW, OPC, the Resource Legacy Fund, and the Commission have contributed human or financial resources to support

[150] California Environmental Protection Agency. *About Us.* Retrieved Aug 3, 2015 from http://www.calepa.ca.gov/About/
[151] SCC. *About the Conservancy*. Retrieved Sept 21, 2015 from http://scc.ca.gov/about/
[152] West Coast Regional Office of National Marine Sanctuaries. *About Sanctuaries*. Retrieved Sept 21, 2015 from http://sanctuaries.noaa.gov/about/
[153] See the Partnership Plan for a list of potential funding sources that could provide opportunities for supporting MPA enforcement, monitoring, and outreach.
[154] CDFW. (2008). *Draft Master Plan for Marine Protected Areas. Appendix N: Task Force Memos and Consultants' Report on Options for Funding the MLPA*. Retrieved July 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

MPA management in the past. Additional partnerships could provide more diversified funding on multiple scales and through various sectors, especially in cases where partners have access to funding sources that CDFW cannot tap into itself, such as foundation or other charitable sources. Based on their strengths and abilities, partners from different sectors will have different roles relating to identifying, assessing, and securing various funding sources.

CHAPTER 6
Setting a Path Forward

California's MPA network is unique in the world due to its size and coast-wide extent, as well as its strong emphases on science-based design principles and scientifically-informed adaptive management (see Section 2.2 and Appendix A).[155] Therefore, MPA management will involve an adaptive management approach with a continual learning process, which will provide an opportunity from which California and other states and countries can learn. The MLPP will use the adaptive management framework laid out by the MLPA, as well as their experiences in data collection, management, and governance, to address and adapt to new threats and challenges, both environmental and socioeconomic.

To operationalize the elements of the 2015 Master Plan, the MLPP will implement a number of steps to set a course for its core MPA management responsibilities including monitoring and evaluation, enforcement, and outreach and education. The following steps are built from the MPA management responsibilities outlined in Table 6 and will be implemented on either a regional or statewide basis, depending on the scope and focus of the action. Throughout all steps, the overall goal is statewide coordination to achieve effective adaptive management of California's MPA network to meet the goals and objectives of the MLPA. This section details the steps that the MLPP will take to continue to meet the goals and objectives of the MLPA.

6.1 MONITORING, RESEARCH, AND EVALUATION

- **Implement a Statewide MPA Monitoring Plan:** CDFW, OST, and other partners, will develop a statewide monitoring plan to serve as the foundation for assessing MPA network performance. A set of network evaluation questions will also be developed, which will build from the network-wide objectives described in Chapter 4.
- **Update Monitoring Plans:** The MLPP will coordinate to update and adapt regional monitoring plans as necessary based on their learning from long-term monitoring and management actions
- **Report Results:** The MLPP will develop an approach that concisely displays the results of monitoring and evaluation. This approach will be used for communicating the results of California's MPAs to broad audiences
- **Link MPA and Other Monitoring Efforts:** The MLPP will partner with other monitoring entities, such as state fisheries managers and ocean acidification researchers (e.g., West Coast Governors Alliance and the West Coast Ocean Acidification and Hypoxia Science Panel). These groups can identify data collection that is relevant to MPA monitoring and assist in efforts to integrate that data into MPA monitoring, evaluation, research, and adaptive management.

[155] Ballard, A., Birss, H., Botta, R., Cantrell, S., Gonzales, A., Johnson, B., Spautz, H., Torres, S., & Yamamoto, J. (2014). *Incorporation of Adaptive Management into Conservation Planning and Resource Management.* Retrieved Mar 4, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=86989&inline=1

- **Identify and Support Key MPA Related Research Needs:** The MLPP will identify and support research projects that focus on key science questions, including those related to network functioning as well as the effect of MPAs on fisheries

6.2 Enforcement

- **Identify Tools to Support Enforcement:** New and emerging technology options such as remote surveillance, vessel management systems, global positioning system data logger systems, and others may provide options for increased enforcement efficiency. CDFW's Law Enforcement Division would also benefit from a Records Management System as an effective way to collect, organize, and track the vast amount of information that is collected. This will help document CDFW's patrol effort and help identify any geographical or technological areas where changes are needed. Activities associated with research and development can support the identification of these tools.

6.3 Partnership Coordination

- **Build Partnerships:** Through the Partnership Plan and the MSLT, as well as other partnership tools, the MLPP and its constituent partners will renew their commitments to existing, effective partnerships and build new partnerships to help further the MLPP's objectives and fulfill the MLPA mandate. The MLPP will pursue partnerships, such as among local, state, and federal governments, California Tribes and Tribal governments, the University of California and California State University systems, NGOs, the private sector, and citizen science groups.

6.4 Outreach and Education

- **Prioritize Outreach Efforts:** CDFW, in collaboration with partners through the MLPP, will prioritize the key messages, audiences, and communication mechanisms to raise awareness, support, and participation in MPA management. CDFW will also coordinate its outreach with other outside efforts of organizations with aligned priorities.

6.5 Identification of Long-Term Funding Sources

- **Enhance Capacity for MPA Project:** To fulfill its commitment to the MLPP, CDFW established an MPA project under the Habitat Conservation Program. Through the MPA project, CDFW ensures that staff time and resources are allocated to MPA management. However, enhanced capacity will be important to meet the ongoing commitments of the MLPP, and the future needs of California, as the MLPP evolves.
- **Prioritize Potential Funding Sources:** To help secure the resources necessary for continued investment in the MPA network, the MLPP will support OPC and other appropriate partners, including CDFW, to identify the top potential funding sources to fill gaps in financial support for MPA management activities

Appendices

[THE FOLLOWING IS A DRAFT LIST OF APPENDICES TO THE MASTER PLAN AND MAY BE MODIFIED]

Appendix A: Marine Protected Area Planning through the Marine Life Protection Act Initiative

Appendix B: Communication and Consultation with California Tribes and Tribal Governments

Appendix C: North Coast: MPA Background and Priorities

Appendix D: North Central Coast: MPA Background and Priorities

Appendix E: Central Coast: MPA Background and Priorities

Appendix F: South Coast: MPA Background and Priorities

Glossary

Abundance: *Natural abundance* is the total number of individuals in a population protected from, or not subjected to, human-induced change (adapted from Department 2004 and Kelleher 1992). R*elative abundance* is an index of fish population numbers used to compare populations from year to year (Department 2002a).

Adaptive management: With regard to marine protected areas, is a management policy that seeks to improve management of biological resources, particularly in areas of scientific uncertainty, by viewing program actions as tools for learning. Actions shall be designed so that, even if they fail, they will provide useful information for future actions, and monitoring and evaluation shall be emphasized so that the interaction of different elements within marine systems may be better understood.

Biodiversity: A component and measure of ecosystem health and function. It is the number and genetic richness of different individuals found within the population of a species, of populations found within a species range, of different species found within a natural community or ecosystem, and of different communities and ecosystems found within a region (PRC §12220[b]).

Baseline monitoring: Baseline monitoring establishes a regional benchmark of the ecological and socioeconomic conditions when each regional MPA network took effect and documents any initial changes resulting from MPA implementation. As such, the baseline serves as an important set of data against which future MPA performance can be measured.

Biogeographical regions: The following oceanic or near shore areas, seaward from the high tide line or the mouth of coastal rivers, with distinctive biological characteristics, unless the master plan team establishes an alternative set of boundaries (emphasis added):

(1) The area extending south from Point Conception.
(2) The area between Point Conception and Point Arena.
(3) The area extending north from Point Arena.

Bycatch: In fishing, removal or mortality of species other than the declared target species.

Deep: Greater than 330 feet (100 meters).

Ecosystem: The physical and climatic features and all the living and dead organisms in an area that are interrelated in the transfer of energy and material, which together produce and maintain a characteristic type of biological community (Department 2002b).

Groundfish: A species or group of fish that live on or near the ocean bottom.

Habitat: The living place of an organism or community, characterized by its physical or biotic properties (Allaby 1998).

Intrinsic value: The value that that thing has "in itself," or "for its own sake," or "as such," or "in its own right" (Zimmerman 2004).

Marine life reserve: A marine protected area in which all extractive activities, including the taking of marine species, and, at the discretion of the Fish and Game Commission and within the authority of the Fish and Game Commission, other activities that upset the natural ecological functions of the area, are prohibited. While, to the extent feasible, the area shall be open to the public for managed enjoyment and study, the area shall be maintained to the extent practicable in an undisturbed and unpolluted state."

California Fish and Game Code § 2860 (b) further clarifies permissible activities in "marine life reserves": "Notwithstanding any other provision of this code, the taking of a marine species in a marine life reserve is prohibited for any purpose, including recreational and commercial fishing, except that the Fish and Game Commission may authorize the taking of a marine species for scientific purposes, consistent with the purposes of this chapter, under a scientific collecting permit issued by the Department of Fish and Wildlife." (emphasis added)

Marine managed areas: A broad group of named, discrete geographic areas along the coast that protect, conserve, or otherwise manage a variety of resources and uses, including living marine resources, cultural and historical resources, and recreational opportunities.

Marine protected area (MPA): A named, discrete geographic marine or estuarine area seaward of the high tide line or the mouth of a coastal river, including any area of intertidal or subtidal terrain, together with its overlying water and associated flora and fauna that has been designated by law, administrative action, or voter initiative to protect or conserve marine life and habitat. An MPA includes marine life reserves and other areas that allow for specified commercial and recreational activities, including fishing for certain species but not others, fishing with certain practices but not others, and kelp harvesting, provided that these activities are consistent with the objectives of the area and the goals and guidelines of this chapter. MPAs are primarily intended to protect or conserve marine life and habitat, and are therefore a subset of marine managed areas, which are broader groups of named, discrete geographic areas along the coast that protect, conserve, or otherwise manage a variety of resources and uses, including living marine resources, cultural and historical resources, and recreational opportunities.

Natural community: A distinct, identifiable, and recurring association of plants and animals that are ecologically interrelated (California Fish and Game Code subsection 2702[d]).

Natural diversity: The species richness of a community or area when protected from, or not subjected to, human-induced change (drawn from Allaby 1998 and Kelleher 1992).

Reef fish: A species or group of fish that live on or near the reef.

Shallow: 330 feet (100 meters) or less.

Glossary Works Cited

Allaby, M. (1998). *Concise Oxford dictionary of ecology*. UK: New York Oxford University Press.

Kelleher, K. & Kenchington, R. (1992). Guide-lines for establishing marine protected areas. *International Union for the Conservation of Nature.*

State of California Department of Fish and Game, Marine Region (Department 2002a). (2005). Draft Abalone Recovery and Management Plan.

State of California Department of Fish and Game, Marine Region (Department 2002b). (2002). Nearshore Fishery Management Plan.

State of California Department of Fish and Game, Marine Region (Department 2004). (2004). Draft Market Squid Fishery Management Plan.

Zimmerman, M. J. (2004). Intrinsic vs. extrinsic value., E. N. Zalta (Ed.). *The Stanford Encyclopedia of Philosophy (Fall 2004 Edition)*. Retrieved from http://plato.stanford.edu/archives/fall2004/entries/value-intrinsic-extrinsic/.

Literature Cited

Abrahim, G. M. S., & Parker, R. J. (2007). Assessment of heavy metal enrichment factors and the degree of contamination in marine sediments from Tamaki Estuary, Auckland, New Zealand. *Environmental Monitoring and Assessment 136*(1-3), 227-38.

Anderson, D. M., Glibert, P. M., & Burkholder, J. M. (2002). Harmful algal blooms and eutrophication: Nutrient sources, composition, and consequences." *Estuaries 25*(4), 704-26.

Babcock, R. C., Shears, N.T., Alcala, A.C., Barrett, N.S., Edgar, G.J., Lafferty, K.D., McClanahan, T.R., & Russ, G.R. (2010). Decadal trends in marine reserves reveal differential rates of change in direct and indirect effects. *Proceedings of the National Academy of Sciences of the United States of America, 107(43)*, 18256-18261.

Baird, B. E., Miller-Henson, M. A., & Semmens, B. X. (1999). Analyzing California's marine managed areas: Existing classifications and options for the future. CalCOFI Rep., Vol. 40: 67-70.

Baskett, M.L. & Barnett, L.A.K. (2015). The ecological and evolutionary consequences of marine reserves. *Annual Review of Ecology, Evolution, and Systematics*, published online 7 August 2015 (DOI: 10.1146/annurev-ecolsys-112414-054424)

Bay, S., Jones, B. H., Schiff, K., & Washburn, L. (2003). Water quality impacts of stormwater discharges to Santa Monica Bay. *Marine Environmental Research, 56*(1-2), 205-223.

Boehm, A.B., Jacobson, M.Z., O'Donnell, M.J., Sutula, M., Wakefield, W.W., Weisberg, S.B. & Whiteman, E. (2015). Ocean acidification science needs for natural resource managers of the North American west coast. *Oceanography*, *28*(2), 170–181.

Botsford, L.W., White, J.W.W., Carr, M.H. & Caselle, J.E. (2014). Marine protected area networks in California, USA. *Advances in Marine Biology, 69,* 205-251.

Carr, M.H., Woodson, C.B., Cheriton, O.M., Malone, D., McManus, M.A. & Raimondi, P.T. (2011). Knowledge through partnerships: integrating marine protected area monitoring and ocean observing systems. *Frontiers in Ecology and the Environment, 9*, 342-350.

Caselle, J.E., Rassweiler, A., Hamilton, S.L., & Warner, R. (2015). Recovery trajectories of kelp forest animals are rapid yet spatially variable across a network of temperate marine protected areas. *Scientific Reports, 5,* Article number 14102.

Chen, C., Lopez-Carr, D., & Endemano Walker, B. L. (2014). A framework to assess the vulnerability of California commercial sea urchin fishermen to the impact of MPAs under climate change. *GeoJournal, 79*(6), 755-773.

Christensen, N. L., Bartuska, A., Brown, J. H., Carpenter, S., D'Antonio, C., Francis, R., Franklin, J. F., MacMahon, J. A., Noss, R. F., Parsons, D. J., Peterson, C. H., Turner, M. G., & Moodmansee, R. G. (1996). The report of the Ecological Society of America Committee on the scientific basis for ecosystem management. *Ecological Applications 6*, 665-691.

Coleman, M. A., Palmer-Brodie, A., & Kelaher, B. P. (2013). Conservation benefits of a network of marine reserves and partially protected areas. *Biological Conservation, 167*, 257-264.

Doney, S. C., Muckelshaus, M., Emmett Duffy, J., Barry, J. P., Chan, F., English, C. A., Galindo, M. H., Grebmeier, J. M., Hollowed, A. B., Knowlton, N., Polovina, J., Rabalais, N. N., Sydeman, W. J., & Talley, L. D. (2012). Climate change impacts on marine ecosystems. Annual Review of Marine Science*, 4*(11), 11-37.

Douvere, F., & Ehler, C. N. (2011). The importance of monitoring and evaluation in adaptive maritime spatial planning. *Journal of Coastal Conservation, 15*, 305-311.

Fox, E., Poncelet, E., Connor, D., Vasques, J., Ugoretz, J., McCreary, S., Monié, D., Harty, M., & Gleason, M. (2013a). Adapting stakeholder processes to region-specific challenges in marine protected area network planning. *Ocean & Coastal Management*, 74, 24-33.

Fox, E., Hastings, S., Miller-Henson, M., Monié, D., Ugoretz, J., Frimodig, A., Shuman, C., Owens, B., Garwood, R., Connor, D., Serpa, P., & Gleason, M. (2013b). Addressing policy issues in a stakeholder-based and science-driven marine protected area network planning process. *Ocean & Coastal Management, 74*, 34-44.

Francour, P., Mangialajo, L., & Pastor, J. (2010). Mediterranean marine protected areas and non-indigenous fish spreading. In D. Golani & B. Appelbaum-Golani (Eds.), *Fish invasions of the Mediterranean Sea: Change and renewal.* 127-144. Sofia-Moscow: Pensoft Publishers.

Gaines, S. D., Lester, S. E., Grorud-Colvert, C., Costello, C., & Pollnac, R. (2010a). Evolving science of marine reserves: New developments and emerging research frontiers. *Proceedings of the National Academy of Sciences, 107*(43), 18251-18255.

Gaines, S. D., White, C., Carr, M. H., & Palumbi, S. (2010b). Designing marine reserve networks for both conservation and fisheries management. *Proceedings of the National Academy of Sciences, 107*(43), 18286-18293.

Gleason, M., Fox, E., Ashcraft, S., Vasques, J., Whiteman, E., Serpa, P., Saarman, E., Caldwell, M., Frimodig, A., Miller-Henson, M., Kirlin, J., Ota, B., Pope, E., Weber, M. & Wiseman, K. (2013). Designing a network of marine protected areas in California: Achievements, costs, lessons learned, and challenges ahead. *Ocean & Coastal Management, 74*, 90-101.

Gleason, M., McCreary, S., Miller-Henson, M., Ugoretz, J., Fox, E., Merrifield, M., McClintock, W., Serpa, P., & Hoffman, K. (2010). Science-based and stakeholder-driven marine protected area network planning: A successful case study from north central California. *Ocean & Coastal Management, 53*(2), 52-68.

Grorud-Colvert, K., Claudet, J., Carr, M., Caselle, J., Day, J., Friedlander, A., Lester, S., Lison de Loma, T., Tissot, B., & Malone, D. (2011). *Marine protected areas: Effects, networks and monitoring - a multidisciplinary approach* (293-321). Cambridge, UK: Cambridge University Press.

Grorud-Colvert, K., Claudet, J., Tissot, B. N., Caselle, J. E., Carr, M. H., Day, J. C., Friedlander, A. M., Lester, S. E., Thierry Lison de Loma, Malone, D., & Walsh, W. J. (2014). Marine protected area networks: Assessing whether the whole is greater than the sum of its parts. *PLOSOne, 9*(8), e102298.

Halpern, B. S., Kappel, C. V., Selkoe, K. A., Fiorenza, M., Ebert, C. M., Kontgis, C., Crain, C. M., Martone, R. G., Shearer, C., & Teck, S. J. (2009). Mapping Cumulative Human Impacts to California Current Marine Ecosystems. *Conservation Letters, 2.3*, 138-48.

He, L.-M., & He, Z.-L. (2008). Water quality prediction of marine recreational beaches receiving watershed baseflow and stormwater runoff in Southern California, USA. *Water Research, 42* (10-11), 2563-573.

Jackson, J.B.C., Kirby, M. X., Berger, W. H., Bjorndal, K. A., Botsford, L. W., Bourque, B. J., Bradbury, R. H., Cooke, R., Erlandson, J., Estes, J. A., Hughes, T. P., Kidwell, S., Lange, C. B., & Warner, R. R. (2001). Historical overfishing and the recent collapse of coastal ecosystems. *Science*, 293, 629-637.

Johnson, M. L. & Sandell, J. (2014). *Advances in marine biology: Marine managed areas and fisheries.* London, UK: Elsevier.

Kelaher, B. P., Coleman, M. A., Broad, A., Rees, M. J., Jordan, A., & Davis, A. R. (2014). Changes in fish assemblages following the establishment of a network of no-take marine reserves and partially protected areas. *PLOSOne, 9*(1),1-13.

Kelleher, G. (Ed.). (1999). *Guidelines for Marine Protected Areas*. Wales, UK: IUCN. Retrieved from *http://www.iucn.org/themes/wcpa/pubs/pdfs/mpa_guidelines.pdf.*

Kelly, R. P., Foley, M. M., Fisher, W. S., Reely, R. A., Halpern, B. S., Waldbusser, G. G., & Caldwell, M. R. (2013). Mitigating local causes of ocean acidification with existing laws. *Science 322,* 1036-1037.

fk, S. E. & Halpern, B. S. (2008). Biological responses in marine no-take reserves versus partially protected areas. *Marine Ecology Progress Series, 367*, 49-56.

Lester, S.E., Halpern, B.S., Grorud-Colvert, K., Lubchenco, J., Ruttenberg, B.I., Gaines, S.D., Airamé, S., & Warner, R.R. (2009). Biological effects within no-take marine reserves: a global synthesis. *Marine Ecology Progress Series, 384*, 33-46.

Lockwood, M., Davidson, J., Curtis, A., Stratford, E. & Griffith, R. (2010). Governance principles for natural resource management. *Society & Natural Resources: An International Journal, 23*(10), 986-1001.

Lubchenco, J. & Grorud-Colvert, K. (2015). Making waves: The science and politics of ocean protection. *Science,* published online 15 October, 2015 (DOI*:* 10.1126/science.aad5443).

McCook, L.J., Ayling, T., Cappo, M., Choat, J.H., Evans, R.D., De Freitas, D.M., Heupel, M., Hughes, T.P., Jones, G.P., Mapstone, B., Marsh, H., Mills, M., Molloy, F.J., Pitcher, C.R., Pressey, R.L., Russ, G.R., Sutton, S., Sweatman, H., Tobin, R., Wachenfield, D.R., & Williamson, D.H. (2010). *Proceedings of the National Academy of Sciences of the United States of America, 107(43)*, 18278-18285.

Merrifield, M. S., McClintock, W., Burt, C., Fox, E., Serpa, P., Steinback, C., & Gleason, M. (2013). MarineMap: A web-based platform for collaborative marine protected area planning. *Ocean & Coastal Management, 74*, 67-76.

Micheli, F., Saenz-Arroyo, A., Greenley, A., Vazquez, L., Montes, J. A. E., Rossetto, M., & De Leo, G. A. (2012). Evidence that marine reserves enhance resilience to climatic impacts." *PLoS ONE 7(7)*, E40832.

Moffitt, E. A., White, J. W., & Botsford, L, W. (2013). Accurate assessment of marine protected area success depends on metric and spatiotemporal scale of monitoring. *Marine Ecology Progress Series 487*, 17-28.

National Oceanic and Atmospheric Administration. (2013). Marine protected areas of the United States: Conserving our oceans one place at a time.

Nies, J. (2012). *Native American History.* New York: Random House Publishing Group.

National Research Council. (1995). *Understanding marine biodiversity: A research agenda for the nation*. Washington, D.C.: National Academy Press.

Otero, M., Cebrian, E., Francour, P., Galil, B., & Savini, D. (2013). Monitoring marine invasive species in Mediterranean marine protected areas (MPAs): A strategy and practical guide for managers. *IUCN*.

Parrish, R. R. & Tegner M. J. (2001). California's Variable Ocean Environment. In *California's Living Marine Resources: A status report* (pages 21-28). California Department of Fish and Game.

Pope, E. (2014). Overview of the creation and management of California's marine protected area network. *California Fish and Game, 100*(2), 343-347.

Rosevelt, C., Los Huertos, M. Garza, C. & Nevins, H.M. (2013). Marine debris in central California: Quantifying type and abundance of beach litter in Monterey Bay, CA. *Marine Pollution Bulletin, 71,* 299-306.

Ruckelshaus, M., Klinger, T., Knowlton, N., & DeMaster, D. P. (2008). Marine ecosystem-based management in practice: Scientific and governance challenges. *BioScience 58*(1), 53-63.

Saarman, E., Gleason, M., Ugoretz, J., Airamé, S., Carr, M., Fox, E., Frimodig, A., Mason, T., & Vasques, J. (2013). The role of science in supporting marine protected area network planning and design in California. *Ocean & Coastal Management, 74*, 45-56.

Saarman, E. T. & Carr, M. H. (2013). The California Marine Life Protection Act: A balance of top down and bottom up governance in MPA planning. *Marine Policy, 41*, 41-49.

Samhouri, J. F. & Levin, P. S. (2012). Linking land- and sea-based activities to risk in coastal ecosystems. *Biological Conservation, 145,* 118-129.

Schindler, D. E. & Hilborn, R. (2015). Prediction, precaution, and policy under global change. *Science, 347(6225)*, 953-954.

Sheehan, L. & Tasto, R. (2001). The status of habitats and water quality in California's coastal and marine environment. *California's Living Marine Resources: A Status Report* (pages 29-45). California Department of Fish and Game.

Starr, R. M., Wendt, D. E., Barnes, C. L., Marks, C. I., Malone, D., Waltz, G., Schmidt, K. T., Chiu, J., Launer, A. L., Hall, N. C. & Yochum, N. (2015). Variation in Responses of Fishes across Multiple Reserves within a Network of Marine Protected Areas in Temperate Waters. *PLoS ONE, 10(3),* E0118502.

Stelzenmuller, V., Breen, P., Stamford, T., Thomsen, F., Badalamenti, F., Borja, A., Buhl-Mortensen, L., Carlstrom, J., D'Anna, G., Danker, N., Degraer, S., Dujin, M., Fiorentino, F., Galparsoro, I., Giakoumi, S., Gristina, M., Johnson, K., Jones, P. J. S., Katsanevakis, S., Knittweis, L., Kyriazi, Z., Pipitone, C., Piwowarczyk, J., Rabaut, M., Sorensen, T. K., van Dalfsen, J., Vassilopoulou, V., Fernandes. T. V., Vincx, M., Voge, S., Weber, A., Wijkmark, N., Jak, R., Qiu, W., & ter Hofstede, R. (2012). Monitoring and evaluation of

spatially managed areas: A generic framework for implementation of ecosystem based marine management and its application. *Marine Policy, 37*, 149-164.

White, J.W. & Rogers-Bennett, L. (2010). Incorporating physical oceanographic proxies of recruitment into population models to improve fishery and marine protected area management. *CalCOFI Rep. 51*, 128-149.

White, J.W., Botsford, L.W., Baskett, M.L., Barnett, L.A.K., Barr, R.J., & Hastings, A. (2011). Linking models with monitoring data for assessing performance of no-take marine reserves. *Front. Ecol. Environ, 9(7)*, 390-399.

White, J.W., Botsford, L.W., Hastings, A., Baskett, M.L., Kaplan, D.M. & Barnett, L.A.K. (2013). Transient responses of fished populations to marine reserve establishment. *Conservation Letters, 6,* 180-191.

Williams, B. K. (2011). Adaptive management of natural resources – framework and issues. *Journal of Environmental Management, 92*, 1346-1353.

Wilson, J. R., Prince, J. D., & Lenihan, H. S. (2010). A management strategy for sedentary nearshore species that uses marine protected areas as a reference. *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science, 2(1)*, 14-27.

Wilson-Vandenberg, D., Larinto, T., & Key, M. (2014). Implementing California's Nearshore Fishery Management Plan – twelve years later. *California Fish and Game, 100(2)*, 186-217.

Young, M. & Carr, M. (2015). Assessment of habitat representation across a network of marine protected areas with implications for the spatial design of monitoring. *PLoS One, 10(3)*, e0116200.

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November 11, 2015

Fish and Game Commission
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REQUEST FOR EXTENSION OF TIME TO TRANSFER THOMAS L. PTAK'S TRANSFERRABLE SOUTH COAST REGION NEARSHORE FISHERY PERMIT

Dear Fish and Game Commission:

At its meeting on December 3, 2014, in Van Nuys, the California Fish and Game Commission (the "Commission") approved a request for extension of time to transfer Thomas L. Ptak's transferrable South Coast Region Nearshore Fishery Permit. The Commission extended the time in which this permit could be transferred to December 15, 2015. This is a formal request to the Commission for an additional one year extension of time to transfer Thomas L. Ptak's transferrable South Coast Region Nearshore Fishery Permit.

I.

Background

Thomas L. Ptak died on March 13, 2012. Christine Allen, Mr. Ptak's partner of 16 years immediately retained the law firm Greenman, Lacy, Klein, Hinds, Weiser & Heffron (hereinafter "Attorneys") to assist her in administering Mr. Ptak's affairs. This included getting Christine Allen appointed as Executor of Mr. Ptak's probate estate and communicating with the Department of Fish and Wildlife regarding Mr. Ptak's commercial fishing permits. The probate estate of Mr. Ptak is still open today and Christine Allen remains the duly appointed Executor by order of the Superior Court of California, County of San Diego.

Attorneys began communication with the California Department of Fish and Wildlife upon Mr. Ptak's death regarding the procedure in which to transfer Mr. Ptak's commercial fishing permits, including the transferrable Nearshore South Coast Region Nearshore Fishery Permit that is the subject of this request for additional time to transfer.

Attorneys stayed in regular communication with Ms. Debbie Noriega at the Department of Fish and Wildlife from the time Mr. Ptak died and relied on the information and instruction Ms. Noriega provided regarding the transferability of Mr. Ptak's permits. On June 5, 2014, the probate estate of Mr. Ptak followed transfer instructions provided by Ms. Noriega and sold Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit. The Department of Fish and Wildlife approved the transfer and issued the permit in the name of the buyer.

On June 22, 2014, Christine Allen, the buyer of the permit, and Attorneys were notified that the successful transfer of Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit was rescinded. Attorneys immediately contacted Ms. Noriega who informed Attorneys that the transfer was rescinded because more than one year had passed since Mr. Ptak's death. Ms. Norriega stated she "felt horrible and was as surprised as we were."

Attorneys filed an Appeal of Denial of Application to Transfer Thomas L. Ptak's Transferrable South Coast Region Nearshore Fishery Permit with the Commission on August 22, 2014. The main grounds for the appeal was that Attorneys began communicating and working with Ms. Noriega within six (6) days of Mr. Ptak's death, were in regular communication with Ms. Noriega since March 13, 2012, and followed the advice and instruction Ms. Noriega provided regarding the transferability of Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit.

A copy of the Appeal for Denial of Application to Transfer Thomas L. Ptak's transferrable South Coast Region Nearshore Fishery Permit, including all exhibits filed with said appeal is attached to this Request for Extension of time as **Exhibit "A"** and incorporated herein.

On December 19, 2014, Attorneys and Executor Christine Allen received a letter from the Commission approving an extension of time until December 15, 2015 to transfer Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement. A copy of this letter from the Commission is attached to this Request for Extension of time as **Exhibit "B"** and incorporated herein.

II.

Estate of Thomas L. Ptak Puts Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement Up For Sale

Christine Allen, in her capacity as Executor of the probate estate of Thomas L. Ptak, began marketing Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit

immediately after receiving the Commissions approval extending the time of transfer to December 15, 2015.

Christine Allen also continued to operate Mr. Ptak's commercial fishing business as an on ongoing business concern of the Estate of Thomas L. Ptak as she had done since Mr. Ptak's death. The goal or continuing to operate the commercial fishing business was to attempt to generate sufficient income to pay of the creditor of the Estate of Thomas L. Ptak.

In order for Christine Allen to continue operating Mr. Ptak's commercial fishing business as an ongoing business concern of The Estate of Thomas L. Ptak, she continued to enlist the services of Eric Allen. Eric Allen is Mr. Ptak's long time crew member and an experienced commercial fisherman who has been involved in assisting the Estate of Thomas L. Ptak since Mr. Ptak died.

When Mr. Ptak died, the Superior Court of California, County of San Diego, appointed Eric Allen as the Special Administrator of the Estate of Thomas L. Ptak. Eric was appointed due to his familiarity of Mr. Ptak's commercial fishing business and due to his long history of working with Mr. Ptak. Eric Allen held the role of Special Administrator of the Estate of Thomas L. Ptak until the Court appointed Christine Allen Executor or the Estate of Thomas L. Ptak on September 18, 2012. At all times since, Christine Allen has enlisted the services of Eric Allen to operate Mr. Ptak's commercial fishing business as an on ongoing business concern of the Estate of Thomas L. Ptak with the goal of generating sufficient income to pay off the creditors of the estate.

III.

Department of Fish and Wildlife Seizes Mr. Ptak's Commercial Fishing Permits

On March 18, 2015, Eric Allen was fishing on behalf of the probate Estate of Thomas L. Ptak aboard the vessel Donna Marie, a vessel that was an asset of probate estate. Mr. Allen was fishing using a General Gill/Trammel Net Permit that was current and issued in the name of Thomas L. Ptak. This permit is an asset of probate Estate of Thomas L. Ptak and has been listed and valued on an Inventory and Appraisal filed with the Superior Court of California, County of San Diego, on February 6, 2013.

It is important to know that on March 18, 2015, Eric Allen was not fishing with the transferrable South Coast Region Nearshore Fishery Permit or Transferrable South Coast Region Nearshore Fishery Trap Endorsement in which the Commission granted the extension of time to transfer until December 15, 2015.

While fishing on March 18, 2015, Eric Allen was boarded by the Department of Fish and Game. The Department of Fish and Game escorted Eric Allen and the vessel Donna Marie back to the vessel's slip in Oceanside Harbor and issued Eric a citation for the following: No Commercial Fishing License; Permitee (Thomas L. Ptak) required to be on vessel;

Department of Fish and Game Boat Registration Required; and Department of Fish and Game Boat Registration required aboard at all times.

Once at Oceanside Harbor Eric Allen went to his truck to obtain the following documents and permits, all of which were seized by the Department of Fish and Game: one transferrable South Coast Region Nearshore Fishery Permit issued in the name of Thomas Ptak; one transferrable South Coast Region Nearshore Trap Endorsement issued in the name of Thomas Ptak; one General Gill/Trammel Net Permit issued in the name of Thomas Ptak; one Lobster Operator Permit issued in the name of Thomas Ptak; one Southern Rock Crab Permit issued in the name of Thomas Ptak; the boat registration for the vessel Donna Marie; and one current Commercial Fishing License issued in the name of Thomas Ptak.

All permits seized were assets of the probate Estate of Thomas L. Ptak and were listed as such with the Superior Court of California, County of San Diego, and valued by a probate referee in an Inventory and Appraisal of assets owned by the probate Estate of Thomas L. Ptak filed with said Court on February 6, 2013.

Eric Allen being boarded by the Department of Fish and Game on March 18, 2015 resulted in two pending misdemeanor charges against Eric Allen. The first is for Fishing Without a Commercial License. The second is for Failure to Apply for Commercial Boat Registration.

The misdemeanor charges are not the subject of this request for extension of time. However, the events that have transpired are directly relevant to the reason the Estate of Thomas L. Ptak is requesting additional time to transfer Mr. Ptak's transferrable South Coast Region Nearshore Fishery Report.

Christine Allen, as the Executor of the Estate of Thomas L. Ptak has not been able to market or sell Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit since March 18, 2015 because the Department of Fish and Game seized the permits on March 18, 2015 and the Department of Fish and Wildlife will not return the permit to Christine Allen or the Estate of Thomas L. Ptak.

The result is that Christine Allen was granted a one year extension of time to transfer Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit but has been deprived of approximately nine (9) months of this one year extension because the permit has been held by the Department of Fish and Wildlife rather than being in the possession of Christine Allen.

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IV.

Estate of Thomas L. Ptak Attempts To Regain Permits From Department of Fish and Wildlife

Attorneys, on behalf of Christine Allen, Executor of the Estate of Thomas L. Ptak, contacted David Kiene at the California Department of Fish and Wildlife, Office of the General Counsel on April 3, 2015. Attorneys discussed with Mr. Kiene the seizure of Mr. Ptak's permits that are assets of the probate Estate of Thomas L. Ptak. In particular, Attorneys requested that Mr. Ptak's transferrable South Coast Region Nearshore Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement be returned to the Estate of Thomas L. Ptak so these permits could be marketed and sold by December 15, 2015, the time in which the Commission granted their extension for transfer.

Mr. Kiene stated that he would look into the matter but that the permits may not be able to be returned to the Estate of Thomas L. Ptak because they have potential evidentiary value for the citations issued against Eric Allen. Attorneys explained that The Estate of Thomas L. Ptak was no longer fishing, would not fish the permits if returned, and that the vessel Donna Marie (the fishing boat owned by the Estate of Thomas L. Ptak) was parked and listed for sale. Attorneys again requested return of Mr. Ptak's transferrable South Coast Region Nearshore Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement so these permits could be sold before the extension of time granted by the Commission expired. Attorneys explained to Mr. Kiene that they did not understand how the transferrable South Coast Region Nearshore Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement had evidentiary value that was any different or more substantive than a copy of the permits would have.

Mr. Kiene informed Attorneys he would discuss the issue with his enforcement division and get back to Attorneys regarding Attorneys request for the return of the transferrable South Coast Region Nearshore Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement. Mr. Kiene never responded to Attorneys or to Christine Allen via telephone, letter, email, or any other form of communication.

Attorneys followed up with Mr. Kiene via telephone but never received a call back. To date, Attorneys and Christine Allen have received no communication, written or otherwise, from the Department of Fish and Wildlife since April 3, 2015.

V.

Why The Estate of Thomas L. Ptak Needs Additional Time to Transfer Permit

The probate Estate of Thomas L. Ptak has not been afforded sufficient opportunity to transfer the transferrable South Coast Region Nearshore Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement because these permits have been held by the Department of Fish and Wildlife since March 18, 2015.

VI.

Additional Pertinent Information

The Estate of Thomas L. Ptak sold the vessel Donna Marie and is no longer fishing. The Estate of Thomas L. Ptak has not fished since March 18, 2015 and has no plans to fish. The Estate of Thomas L. Ptak sold the vast majority of the commercial fishing equipment owned by the Estate of Thomas L. Ptak. Any remaining fishing equipment owned by the Estate of Thomas L. Ptak is for sale. The probate of the Estate of Thomas L. Ptak is still an open case with the Superior Court of California, County of San Diego. Christine Allen is still the duly appointed Executor of the Estate of Thomas L. Ptak.

In addition to Mr. Ptak's transferrable South Couth Coast Region Nearshore Fishery Permit and Mr. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement, The California Department of Fish and Wildlife is holding the following permits that are assets of the Estate of Thomas L. Ptak: one General Gill/Trammel Net Permit; one Lobster Operator Permit; and one Southern Rock Crab Permit (collectively referred to hereafter as "The Five Permits"). All of The Five Permits were seized by the Department of Fish and Wildlife on March 18, 2015 and have not been returned to the Estate of Thomas L. Ptak, thus depriving the Estate of Thomas L. Ptak the ability to transfer these permits by following the advice and instruction Ms. Noriega provided Attorneys and the Estate of Thomas L. Ptak beginning six (6) days following the death of Mr. Ptak.

VII.

Request for Additional Extension of time

Based on the information addressed in this Request For Extension of Time To Transfer Thomas L. Ptak's transferrable South Coast Region Nearshore Fishery Permit, the Estate of Thomas L. Ptak respectfully requests from the Commission an additional one (1) year extension of time to transfer Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit.

VIII.

Request for Right to Renew Permits

The Estate of Thomas L. Ptak requests the Commission issue an instruction to the Department of Fish and Wildlife to allow the Estate of Thomas L. Ptak to renew The Five Permits so The Five Permits will not expire and so the Estate of Thomas L. Ptak has the opportunity to transfer the permits by following the advice and instruction Ms. Noriega provided Attorneys and the Estate of Thomas L. Ptak beginning six (6) days following the death of Mr. Ptak.

IX.

Request for Return of Permits

The Estate of Thomas L. Ptak requests the Commission issue an instruction to the Department of Fish and Wildlife to return The Five Permits to the Estate of Thomas L. Ptak. Return of these permits is necessary because the Estate of Thomas L. Ptak cannot transfer the permits by following the advice and instruction Ms. Noriega provided Attorneys and the Estate of Thomas L. Ptak beginning six (6) days following the death of Mr. Ptak unless the Estate of Thomas L. Ptak is in possession of these permits. The instruction should direct The Five Permits be returned to Christine Allen, Executor, The Estate of Thomas L. Ptak,

X.

Final Comments

Thank you for your time and consideration in reviewing the Estate of Thomas L. Ptak's requests contained in this document.

Very Truly Yours,

GREENMAN, LACY, KLEIN,
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CHRIS SHOURDS, ESQ.

ESTATE OF THOMAS L. PTAK

CHRISTINE ALLEN, Executor of the
Estate of Thomas L. Ptak

Exhibit A

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August 22, 2014

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APPEAL OF DENIAL OF APPLICATION TO TRANSFER THOMAS L. PTAK'S TRANSFERABLE SOUTH COAST REGION NEARSHORE FISHERY PERMIT

Dear Fish and Game Commission:

This appeal is in response to the July 3, 2014 Notice of Denial of Application to Transfer Thomas L. Ptak's Transferable South Coast Region Nearshore Fishery Permit addressed to Christine Allen as Executor of the Estate of Thomas L. Ptak. A copy of this Notice of Denial is attached to and incorporated herein as Exhibit A.

I.

Reason Given for Denial

The application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit was denied because the application was submitted more than one year after Mr. Ptak's date of Death.

II.

Basis for Appeal

Thomas Leonard Ptak died on March 13, 2012. A copy of his death certificate is attached to and incorporated herein as Exhibit B.

Christine Allen, Mr. Ptak's partner of 16 years, immediately retained the law firm Greenman, Lacy, Klein, O'Harra & Heffron (hereinafter "Attorneys") to assist her in administering Mr. Ptak's affairs. This included communicating with the California Department of Fish and Wildlife regarding Mr. Ptak's commercial fishing permits and handling the Probate of Mr. Ptak's Estate.

Attorneys enlisted the assistance of commercial fisherman Ken Bates due to his understanding of the unique nature of the commercial fishing permits owned by Mr. Ptak. On behalf of Attorneys, Ken Bates first contacted Debbie Noriega at the Department of Fish and Wildlife on March 19, 2012 only six (6) days following Mr. Ptak's death. Ken Bates notified Ms. Noriega that Mr. Ptak died, confirmed that Mr. Ptak owned five commercial fishing permits, obtained information on how Mr. Ptak's permits could be transferred, and obtained instruction on how Mr. Ptak's personal representative Christine Allen could apply for the transfer of Mr. Ptak's commercial fishing permits. Ms. Noriega provided invaluable assistance and shared extensive knowledge regarding the permits owned by Mr. Ptak. However, at no time did Ms. Noriega explain to Mr. Bates that there was a time frame in which Mr. Ptak's permits must be transferred.

Attorney Kurt Weiser of the law firm Greenman, Lacy, Klein, O'Harra & Heffron spoke directly to Ms. Noriega two times within one year of Mr. Ptak's death. Attorney Weiser's first conversation with Ms. Noriega took place on or about May 16, 2012. His second conversation with Debbie Noriega took place on or about August 22, 2012. The purpose of these conversations was to discuss the procedure for transferring Mr. Ptak's commercial fishing permits.

Attorney Weiser explained that Mr. Ptak's estate was subject to Probate with the Superior Court of California, County of San Diego and therefore Mr. Ptak's commercial fishing permits would become probate assets. Under the California Probate Code assets, including the permits, can not transfer prior to the time the Probate Court's order to distribute estate assets is issued.

Attorney Weiser informed Ms. Noriega that the Probate of Mr. Ptak's estate would be a lengthy process because no probate can be completed until creditors of the estate are paid. Ms. Noriega informed Attorney Weiser that Mr. Ptak's commercial fishing permits could be retained in Mr. Ptak's probate estate and could be transferred once the probate was complete. Attorneys were appreciative of Ms. Noriega's analysis. However, Ms. Noriega analysis of the transfer of Mr. Ptak's permits never included reference to time frames in which applications to transfer Mr. Ptak's permits must be submitted to the Department of Fish and Wildlife. All of Mr. Ptak's commercial fishing permits are still assets of Mr. Ptak's Probate Estate as of the date of this appeal.

Attorney Weiser and Christine Allen relied on Ms. Noriega's instruction and expertise as a Department of Fish and Wildlife analyst. Attorney Weiser relied on Ms. Noriega's thorough analysis and advice (and lack of any mention of a time limitation). On that basis Attorney Weiser understood that the time frames in which Mr. Ptak's permits could be transferred would be tolled during the probate. A declaration by Attorney Weiser is attached to and incorporated herein as Exhibit C.

III.

Summary of the Probate of The Estate of Thomas Ptak

Attorneys, on behalf of Petitioner Christine Allen, promptly filed a Petition for Probate of Mr. Ptak's Last Will and Testament and for Letters Testamentary with the Superior Court of California, County of San Diego, on June 1, 2012.

The Superior Court issued an order appointing Christine Allen as the Executor of Mr. Ptak's Will and issued Letters Testamentary to Christine Allen as the Executor of the Will of Mr. Ptak with full authority to administer Mr. Ptak's Probate Estate on September 18, 2012.

Multiple creditors filed creditor's claims against Mr. Ptak's Probate Estate. Claims by creditors of the decedent are very common in probates and occur when the decedent dies with legitimate debt. Attorneys and Christine Allen have worked diligently with these creditors to plan for the payoff of Mr. Ptak's debt so that Mr. Ptak's Probate Estate can generate enough income to pay off these creditors. Attorneys also maintained frequent communication with Ms. Noriega from Mr. Ptak's date of death until present day. These communications include Attorneys providing Ms. Noriega with frequent status updates on the probate of Mr. Ptak's estate. Ms. Noriega continued to provide Attorneys with advice and guidance.

Ms. Noriega advice to hold Mr. Ptak's permits in Mr. Ptak's Probate Estate until the close of probate never wavered. As recently as April 28, 2014, Ms. Noriega advised attorney Weiser that Mr. Ptak's commercial permits could be transferred once the probate of Mr. Ptak's estate is completed. Specifically, Ms. Noriega confirmed with attorney Weiser and attorney Christopher Shourds of Greenman, Lacy, Klein, O'Harra & Heffron that the best way to transfer Mr. Ptak's commercial permits was to continue to hold the permits in Mr. Ptak's probate estate until the probate is complete. Ms. Noriega stated that Attorneys should wait until they receive a court order for distribution of Mr. Ptak's probate assets issued by a Judge of the Superior Court and then submit the court order along with an application to transfer Mr. Ptak's permits to Eric Allen to the Department of Fish and Wildlife.

Further, Ms. Noriega stated that she had communicated with her supervisor and advised Attorneys that this process would result in the successful transfer of Mr. Ptak's permits to Eric Allen. A declaration by attorney Shourds is attached to and incorporated herein as Exhibit D.

IV.

Attorneys Sought Additional Ways to Transfer Permits to Eric Allen Prior to the Close of Mr. Ptak's Probate Estate

Attorney Weiser informed Ms. Noriega that Christine Allen desired to transfer Mr. Ptak's

Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Eric Allen, Mr. Ptak's long time deckhand and crew member, without the requirement that Eric Allen need to purchase any ancillary permits or endorsements. Ms. Noriega informed Attorney Weiser that this could not be accomplished because Eric Allen was not a blood relative of Mr. Ptak and because the owner of the permits was not a commercial entity in which Eric Allen possessed an ownership interest. Again, Ms. Noriega was cooperative and knowledgeable. Attorneys appreciate the assistance and insight she provided.

On October 7, 2013 attorney Weiser submitted a letter to Ms. Noriega asking the Department of Fish and Wildlife to consider allowing the transfer of Mr. Ptak's permits to Eric Allen, without the need for Eric Allen to acquire any ancillary permits, under the theory that Mr. Ptak and Eric Allen operated the fishing business as a general partnership entity. A general partnership can be legally recognized as a commercial entity in the state of California.

Attorney Weiser's letter informed Ms. Noriega that Eric Allen was paid a "crew share" for the past twelve years. It also explained that Mr. Ptak and Eric Allen split profits, each contributed to expenses, shared equally in the responsibility of maintaining the boat and the rest of the fishing operation, and had the ability to bind each other to contracts and other liabilities. Under these circumstances, attorney Weiser urged the Department of Fish and Wildlife that Mr. Ptak's Probate Estate should be able to transfer the permits to Eric Allen prior to the close of probate without the requirement that Eric Allen purchase any ancillary permits.

Attorneys never received a definitive response to attorney Weiser's October 7th letter despite placing numerous follow up calls to Ms. Noriega between December 16, 2013 and December 30, 2013. Ms. Noriega was supportive in trying to obtain a written response from her supervisors to attorney Weiser's letter. On December 30, 2013, attorney Shourds reached Ms. Noriega via telephone. Ms. Noriega still did not have a response to attorney Weiser's letter. However, Ms. Noriega stated that one or more of Mr. Ptak's permits could be sold prior to the close of probate if the Department of Fish and Wildlife did not approve the transfer of Mr. Ptak's permits to Eric Allen based on the theory that Mr. Ptak and Eric Allen were operating as a general partnership.

Attorneys relayed Ms. Noriega's comments to Christine Allen. Upon hearing Ms. Noriega's statement that one or more of Mr. Ptak's permits could be sold out of Mr. Ptak's Probate Estate, Christine Allen decided that the quickest way to generate income necessary to pay off creditors and close Mr. Ptak's Probate Estate would be to sell one or more of Mr. Ptak's permits.

Four months passed and Attorneys still did not receive a definitive response to their request to transfer Mr. Ptak's permits to Eric Allen based on the theory that Mr. Ptak and Eric Allen were operating as a general partnership. Attorney Weiser left a voicemail for Ms. Noriega on April 7, 2014 expressing Christine Allen's desire to sell Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement. Attorneys never received a response to this voicemail.

V.

Department of Fish and Wildlife's Approval of Transfer

On or about April 16, 2014 Christine Allen began working with a broker to sell Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement. Christine Allen was introduced to buyer Brian Kiyohara on or about April 21, 2014. On or about April 28, 2014, Attorneys Weiser and Shourds spoke to Ms. Noriega to inform her that Christine Allen was selling Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement.

Attorney Weiser informed Ms. Noriega that the sale of these permits would generate enough income to pay off the creditors of Mr. Ptak's Probate Estate so that the probate could be closed. Again, Ms. Noriega stated that any unsold permits could be held in Mr. Ptak's Probate Estate and transferred to Eric Allen at the close of probate by submitting a court order for distribution issued by a Judge of the Superior Court along with applications to transfer Mr. Ptak's remaining permits to Eric Allen to the Department of Fish and Wildlife.

Christine Allen relied on the information provided by Debbie Noriega and sold Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Brian Kiyohara.

The Department of Fish and Wildlife approved the transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Brian Kiyohara on June 5, 2014 and re-issued the permits in the name of Brian Kiyohara. Copies of the Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement issued to Brian Kiyohara are attached to and incorporated herein as Exhibit E.

The sale of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement generated enough proceeds that Christine Allen was less than one week away from issuing payment in full to all creditors of Mr. Ptak's Probate Estate. Issuing these payments to creditors would have allowed Christine Allen to close Mr. Ptak's Probate Estate.

VI.

Department of Fish and Wildlife's Recission of Transfer

On June 12, 2014, Christine Allen, Brian Kiyohara, and Attorneys were notified that the successful transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement was rescinded by the Department of Fish and Wildlife even though transferee Brian Kiyohara

was already in possession of newly issued permits.

Attorney Weiser immediately contacted Ms. Noriega who informed him that the transfer of the permits was rescinded because more than one year had passed since Mr. Ptak's death. Ms. Norriega stated that she "felt terrible and was surprised as we were."

Christine Allen had already deposited the proceeds from the sale of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement into the bank account for Mr. Ptak's Probate Estate and wrote checks to pay off the creditors of Mr. Ptak's Probate Estate. Fortunately, the checks to the creditors were not yet mailed and were able to be voided.

Christine Allen refunded transferee Brian Kiyohara the full amount that Mr. Kiyohara paid for Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement.

VII.

Additional Pertinent Information

The Probate of the Estate of Mr. Ptak is still ongoing as of the date of this Appeal of Denial of Application to Transfer Thomas L. Ptak's Transferable South Coast Region Nearshore Fishery Permit.

Attorneys began communicating and working with Ms. Noriega within six (6) days of Mr. Ptak's death. Attorneys and Christine Allen have not delayed or neglected to attempt to transfer Mr. Ptak's commercial fishing permits. Attorneys have been in regular communication with Ms. Noriega since March 19, 2012 and have followed the advice and instruction Ms. Noriega provided regarding the transferability of Mr. Ptak's permits.

The Estate of Mr. Ptak owns one Transferrable South Coast Region Nearshore Fishery Permit, one Transferrable South Coast Region Nearshore Fishery Trap Endorsement, one General Gill/Trammel Net Permit, one Lobster Operator Permit, and one Southern Rock Crab Trap Permit. All of these permits have exceeded the time frame for approval of transfer due to the probate of Mr. Ptak's estate and the same facts contained in this appeal.

Attorneys are hopeful the Fish and Game Commission will approve the request for extension of time (below) and apply it to all permits owned by the Estate of Mr. Ptak. Attorneys are prepared to apply for transfer of each permit owned by the Estate of Mr. Ptak and to appeal any denial to the maximum extent possible.

Attorneys are hopeful this situation can be resolved and the extension of time requested below can be granted without the need to appear at a hearing in front of the Fish and Game Commission.

Attorneys sincerely appreciate the time and resources the Fish and Game Commission put

into reading and investigating this Appeal of Denial of Application to Transfer Thomas L. Ptak's Transferable South Coast Region Nearshore Fishery Permit.

VIII.

Request for Relief

Attorneys and Christine Allen, Executor of the Estate of Thomas L. Ptak, hereby request an extension of time to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit. Specifically, Attorneys and Christine Allen, Executor of the Estate of Thomas L. Ptak, formally request from the Fish and Game Commission a nine (9) month extension to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit with the extension beginning on the date that Attorneys and Christine Allen are notified by the Fish and Game Commission that the extension of time has been granted.

Christine Allen plans to use this extension of time to sell Mr. Ptak's Transferable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement. This sale will generate enough proceeds that creditors of Mr. Ptak's Probate Estate can be paid off and Attorneys' can file a petition with the Superior Court to close the probate and distribute Mr. Ptak's remaining assets.

Christine Allen, at the time probate can be closed, plans to transfer all of Mr. Ptak's remaining permits to Eric Allen so the fishing business can be maintained. The inability to transfer Mr. Ptak's permits by selling one or more permit and transferring the remaining permits at the close of probate will irreparably harm Christine Allen and Eric Allen. Christine and Eric's main source of income comes from the operation of the fishing business Mr. Ptak spent his life developing with the help of Eric Allen as his crew member and deckhand. If the Fish and Game Commission does not grant an extension of time to allow Christine Allen to transfer Mr. Ptak's permits then the Allen family will likely lose everything, including but not limited to the house they live in and the income source they live off of. The extension of time requested above is the best foreseeable way to save the Allen family from financial hardship that would occur if Mr. Ptak's permits become non-transferrable due to the passage of time following Mr. Ptak's Death.

Respectfully Submitted,

GREENMAN, LACY, KLEIN,
O'HARRA & HEFFRON

CHRIS SHOURDS, ESQ. — Date 8/25/14

KURT WEISER, ESQ. — Date 8/25/14

ESTATE OF THOMAS L. PTAK

CHRISTINE ALLEN, Executor of the
Estate of Thomas L. Ptak

8/25/14
Date

Enclosures:

Exhibit A - Notice of Denial of Application to Transfer Thomas L. Ptak's Transferrable South Coast Region Nearshore Fishery Permit.
Exhibit B - Death Certificate for Thomas L. Ptak
Exhibit C - Declaration by Attorney Kurt Weiser
Exhibit D - Declaration by Attorney Christopher Shourds
Exhibit E - Copy of Transferrable South Coast Region Nearshore Fishery Report and Transferrable South Coast Region Nearshore Fishery Trap Endorsement Issued to Transferee Brian Kiyohara

Exhibit A

State of California -The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
License and Revenue Branch
1740 N. Market Blvd
Sacramento, CA 95834
http://www.wildlife.ca.gov

EDMUND G. BROWN JR. Governor
CHARLTON H. BONHAM, Director

Certified Mail

July 3, 2014

Ms. Christine Allen

SUBJECT: NOTICE OF DENIAL OF AN APPLICATION TO TRANSFER TRANSFERABLE SOUTH COAST REGION NEARSHORE FISHERY PERMIT

Dear Ms. Allen:

This letter is in response to your application to transfer a 2014-2015 Transferable South Coast Region Nearshore Fishery Permit (TSCRNFP), Permit Number NST033, from Mr. Thomas L. Ptak (L30798) to Mr. Brian Kiyohyara (L74934). You are the executor of Mr. Ptak's estate.

Authority-Nearshore Fishery Permit

Pursuant to Section 150(g)(1)(A), Title 14, of the California Code of Regulations (CCR), a transferable Nearshore Fishery Permit (NFP) may be transferred from one person to another. If the number of NFPs in a regional management area is greater than the capacity goal for the regional management area, one additional transferable NFP for the same regional management area must be surrendered to the Department of Fish and Wildlife (Department) for cancellation at the same time the application for transfer is submitted. The capacity goal for the South Coast Region is 18 permits. As of June 5, 2014, 43 SCRNFPs have been issued, therefore two TSCRNFPs must be surrendered.

Pursuant to Section 150(g)(3), Title 14, of the CCR, a transferable NFP may be transferred to the estate of a permittee who has died only for the purpose of transferring the NFP to another person.

Nearshore Fishery Permit Transfer Requirements

- The NFP(s) must be valid at the time of application for transfer.
- The transferee must have a valid California Commercial Fishing License.
- The transferee must have never been convicted of a violation of any provision of these regulations or the Fish and Game Code (FGC) pertaining to the commercial take of nearshore fish stocks.

Required Documentation

- The request for the transfer must be submitted within one year of the date of death of the permit holder as listed on the death certificate.
- Transfer application in the form of a notarized letter which identifies the deceased permit holder, transferee, and transferable NFP for the regional management area.
- Copy of the permittee's death certificate.
- Copy of the permittee's California Commercial Fishing License and original NFP(s).
- Copy of the transferee's California Commercial Fishing License.
- Nonrefundable NFP transfer fee of $500.

Documentation Submitted

- A notarized letter dated May 9, 2014, received May 23, 2014, from Ms. Christine Allen, Executor of the Estate of Thomas L. Ptak requesting to transfer Mr. Ptak's TSCRNFP and Transferable South Coast Region Nearshore Fishery Trap Endorsement (TSCRNFTE) to Mr. Kiyohara.
- A notarized letter dated May 9, 2014, received May 23, 2014, from Eric A. Kramer, requesting to transfer his TSCRNFP to Mr. Kiyohara.
- A notarized letter dated May 9, 2014, received May 23, 2014, from Brian Klyohara, stating that one the TSCRNFPs will be retired to complete the transfer process.
- Copy of the Certificate of Death from County of San Diego, stating Mr. Ptak's date of death was on March 13, 2012.
- Copy of Letter of Testamentary filed January 31, 2014, for the estate of Thomas L. Ptak, appointing Christine Allen as executor.
- Mr. Ptak's original 2014-2015 TSCRNFP.
- Mr. Kramer's original 2014-2015 TSCRNFP.
- A copy of Mr. Kiyohara's 2014-2015 California Commercial Fishing License and Commercial General Trap Permit.
- Nonrefundable transfer fee $500.

Department of Fish and Wildlife's Recommendation

The Department is denying your application to transfer Mr. Ptak's TSCRNFP, because the application must be submitted within one year of the date of death of the permit holder as listed on the death certificate. The application was received more than 26 months after the date of death listed on the death certificate.

Deadline to File an Appeal

You may appeal to the Department in writing describing the basis for the appeal. The appeal shall be reviewed and decided by the Department. The decision of the Department may be appealed in writing to the Commission at 1416 Ninth Street,

Sacramento, California 95814. Pursuant to Section 150(m)(3), Title 14, of the CCR, your appeal of the Department's decision must be received within 60 days of this letter.

Your application to transfer a Transferable South Coast Region Nearshore Fishery Trap endorsement was addressed under separate cover.

If you have any questions or require further assistance, please contact Ms. Debbie Noriega of my staff, at the letterhead address, by telephone at (916) 928-5817, or e-mail Debbie.Noriega@wildlife.ca.gov.

Sincerely,

James Fong, Chief
License and Revenue Branch

cc: Mr. Sonke Mastrup
Fish and Game Commission
Sacramento, California

Ms. Debbie Noriega
Department of Fish and Wildlife
Sacramento, California

Exhibit B

STATE OF CALIFORNIA

CERTIFICATION OF VITAL RECORD

COUNTY OF SAN DIEGO

3052012050234 — CERTIFICATE OF DEATH — 3201237004299

STATE FILE NUMBER — LOCAL REGISTRATION NUMBER

DECEDENT'S PERSONAL DATA

1. NAME OF DECEDENT: FIRST (GIVEN)	2. MIDDLE	3. LAST (FAMILY)	SUFFIX
THOMAS	LEONARD	PTAK	

3a. AKA: FIRST, MIDDLE, LAST	3b. AGE: LAST BIRTHDAY	UNDER 1 YEAR: MONTHS	UNDER 1 DAY: HOURS	UNDER 1 DAY: MINUTES	4. SEX
					M

5. BIRTH (STATE OR FOREIGN COUNTRY)	5a. TYPE OF RESIDENCE IN NUMBER	11. EVER IN U.S. ARMED FORCES?	6. MARITAL STATUS AT TIME OF DEATH	7. DATE OF DEATH (MONTH/DAY/YEAR)	8. YEAR
CALIFORNIA		☐ YES ☒ NO	DIVORCED		0625

9. EDUCATION: HIGHEST GRADE COMPLETED	10a. WAS DECEDENT OF HISPANIC ORIGIN?	10. DECEDENT'S RACE
HS GRADUATE	☐ YES ☒ NO	WHITE

12. USUAL OCCUPATION	13. KIND OF BUSINESS OR INDUSTRY	14. YEARS IN OCCUPATION
COMMERCIAL FISHERMAN	COMMERCIAL FISHING	30

USUAL RESIDENCE

15. DECEDENT'S RESIDENCE

a. CITY	b. COUNTY	c. ZIP CODE	d. YEARS IN COUNTY	e. STATE OR FOREIGN COUNTRY
FALLBROOK	SAN DIEGO	92028	30	CALIFORNIA

INFORMANT

16. INFORMANT'S NAME, RELATIONSHIP

CHRISTINE ALLEN, COMPANION

SPOUSE/PARENT INFORMATION

17a. NAME OF SURVIVING SPOUSE: FIRST	17b. MIDDLE	17c. LAST (BIRTH NAME)	17d. BIRTH STATE
-	-	-	

18. NAME OF FATHER/PARENT: FIRST	18b. MIDDLE	18c. LAST (BIRTH NAME)	18d. BIRTH STATE
LEONARD	THOMAS	PTAK	PA

19. NAME OF MOTHER/PARENT: FIRST	19b. MIDDLE	19c. LAST (BIRTH NAME)	19d. BIRTH STATE
DONNA	JOANNE	HAMLIN	CA

FUNERAL DIRECTOR/LOCAL REGISTRAR

20. DISPOSITION: METHOD	21. PLACE OF FINAL DISPOSITION
03/20/2012	AT SEA OFF THE COAST OF SAN DIEGO COUNTY

22. TYPE OF ESTABLISHMENT	23. SIGNATURE OF EMBALMER	24. LICENSE NUMBER
CR/SEA		

25. NAME OF FUNERAL DIRECTOR	26. LICENSE NUMBER	27. SIGNATURE OF LOCAL REGISTRAR	28. DATE FILED
	FD1528	WILMA WOOTEN, MD	03/19/2012

PLACE OF DEATH

29. PLACE OF DEATH	30. IF HOSPITAL OR INSTITUTION: INPATIENT	ER/OUTPATIENT	DOA
HOME	☐	☐	☒

30a. COUNTY	30b. FACILITY NAME (IF NOT INSTITUTION, GIVE STREET AND NUMBER)	30c. CITY
SAN DIEGO		

CAUSE OF DEATH

31. CAUSES OF DEATH	APPROXIMATE INTERVAL: ONSET TO DEATH	32. WAS CASE REFERRED TO CORONER?	33. AUTOPSY PERFORMED?
I(a) DROWNING	UNK	☒ YES ☐ NO	12-00589
I(b)	UNK	☐ YES ☒ NO	
I(c)	UNK	☒ YES ☐ NO	
II	YEARS	☒ YES ☐ NO	

34. OTHER SIGNIFICANT CONDITIONS CONTRIBUTING TO DEATH BUT NOT RESULTING IN THE UNDERLYING CAUSE GIVEN IN PART I: NONE

35. WAS MEDICAL EXAMINATION PERFORMED FOR ANY CONDITION IN ITEM I OR II? NO — 36. IF FEMALE: PREGNANCY IN LAST YEAR? ☐ YES ☐ NO ☐ UNK

PHYSICIAN'S CERTIFICATION

37. I CERTIFY THAT THE CAUSE OF DEATH(S) IS/ARE AS STATED ABOVE	37a. SIGNATURE AND TITLE OF CERTIFIER	37b. LICENSE NUMBER	37c. DATE SIGNED

38. NAME AND ADDRESS OF FACILITY	39. NAME, ADDRESS, AND ZIP CODE OF PERSON COMPLETING CAUSE OF DEATH

CORONER'S USE ONLY

40. WERE ANY OF THE FOLLOWING CIRCUMSTANCES PRESENT?	41. DATE OF INJURY	42. HOUR OF INJURY
MANNER OF DEATH: ☒ NATURAL ☐ ACCIDENT ☐ HOMICIDE ☐ SUICIDE ☐ PENDING INVESTIGATION ☐ COULD NOT BE DETERMINED		

43. PLACE OF INJURY (e.g., home; construction site; wooded area, etc.)

44. DESCRIBE HOW INJURY OCCURRED (Were activities described in Item 43?)

45. LOCATION OF INJURY (Street and number or rural route number; city or town; state; zip code)

46. SIGNATURE OF CORONER, DEPUTY CORONER	47. DATE SIGNED	48. TYPED NAME, TITLE OF CORONER, DEPUTY CORONER
OTHON J MENA MD	03/16/2012	OTHON J MENA MD, DEP MED EXAMINER

C	D	F	FAX AUTH#	CENSUS TRACT

0150210CC017605

A002401545

County of San Diego – Department of Health Services – 3851 Rosecrans Street. This is to certify that, if bearing the OFFICIAL SEAL OF THE STATE OF CALIFORNIA, the OFFICIAL SEAL OF SAN DIEGO COUNTY AND THEIR DEPARTMENT OF HEALTH SERVICES EMBOSSED SEAL, this is a true copy of the ORIGINAL DOCUMENT FILED. Required fee paid.

DATE ISSUED: March 22, 2012

Wilma J. Wooten, M.D.

WILMA J. WOOTEN, MD
REGISTRAR OF VITAL RECORDS
County of San Diego

This copy not valid unless prepared on engraved border displaying seal and signature of Registrar

ANY ALTERATION OR ERASURE VOIDS THIS CERTIFICATE

Exhibit C

KURT WEISER, ESQ.
GREENMAN, LACY, KLEIN,
O'HARRA & HEFFRON
900 Pier View Way, P.O. Box 299
Oceanside, California 92049-0299
(760)722-1234

Attorneys for Christine Allen,
Executor of the Estate of Thomas L. Ptak,

CALIFORNIA FISH AND GAME COMMISSION

IN THE MATTER OF:	**"EXHIBIT C"**
APPEAL OF DENIAL OF APPLICATION TO TRANSFER THOMAS L. PTAK'S TRANSFERRABLE SOUTH COAST REGION NEARSHORE FISHERY PERMIT	DECLARATION OF KURT WEISER IN SUPPORT OF APPEAL OF DENIAL OF APPLICATION TO TRANSFER THOMAS L. PTAK'S TRANSFERRABLE SOUTH COAST REGION NEARSHORE FISHERY PERMIT

I, KURT WEISER, declare as follows:

1. I am an attorney duly licensed to practice law in the State of California. I am a partner in the law firm of Greenman, Lacy, Klein, O'Harra & Heffron (hereinafter "Attorneys"), the attorneys-of-record for Christine Allen, Executor of the Estate of Thomas L. Ptak. I have personal knowledge to the following facts, except to those matters which I so indicate that are based on information and belief.

2. Thomas Leonard Ptak died on March 13, 2012. I was retained by Christine Allen immediately following Mr. Ptak's death. Christine Allen informed me that Mr. Ptak owned five (5) commercial fishing permits issued by the California Department of Fish and Wildlife.

3. I enlisted the assistance of commercial fisherman Ken Bates to contact the California Department of Fish and Wildlife on my behalf to notify the Department that Mr. Ptak died, confirm that Mr. Ptak owned five commercial fishing permits, obtain information on how Mr. Ptak's permits could be transferred, and obtain instructions on how Mr. Ptak's personal representative Christine Allen could apply for the transfer of Mr. Ptak's permits.

4. Ken Bates contacted Debbie Noriega at the California Department of Fish and Wildlife on March 19, 2012, only six (6) days following Mr. Ptak's death. Mr. Bates notified Ms. Noriega of Mr. Ptak's death and obtained information regarding the transferability of Mr. Ptak's permits. I spoke with Mr. Bates following his conversation with Ms. Norriega and Mr. Bates provided me with the notes he took during his conversation with Ms. Noriega. Based on my information and belief, Ms. Noriega never informed Mr. Bates that there was a time frame in which an application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit must be submitted to the California Department of Fish and Wildlife.

5. I personally spoke to Ms. Noriega two times within one year of Mr. Ptak's death to discuss the procedure for transferring Mr. Ptak's permits. I informed Ms. Noriega that Mr. Ptak's estate was subject to probate with the Superior Court of California, County of San Diego and that Mr. Ptak's commercial fishing permits were subject to the estate and like any estate assets could not be transferred to Eric Allen without closing the probate.

6. I explained to Ms. Noriega that Mr. Ptak's Probate Estate can not be closed until the creditors of the probate estate are paid. Ms. Noriega informed me that Mr. Ptak's commercial fishing permits could be retained in Mr. Ptak's Probate Estate and could be transferred once the probate was complete. I relied on this information provided by Ms.

Noriega. Ms. Noriega never informed me that there was a time frame in which an application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit must be submitted to the California Department of Fish and Wildlife.

7. As recently as April 28, 2014, Ms. Noriega informed me that an acceptable way to transfer Mr. Ptak's permits was to continue to hold the permits in Mr. Ptak's Probate Estate until the probate estate is complete. Ms. Noriega stated that I should wait to receive a court order for distribution of Mr. Ptak's probate assets issued by a Judge of the Superior Court and then submit the court order along with an application to transfer Mr. Ptak's permits to the California Department of Fish and Wildlife.

8. On or about April 28, 2014, Ms. Noriega informed me that one or more of Mr. Ptak's permits could be sold out of Mr. Ptak's Probate Estate in order to generate enough proceeds to pay off the estate's creditors so that the probate could be closed. In reliance on this information, I assisted Christine Allen, Executor of the Estate of Thomas Ptak in selling Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit to Brian Kiyohara. The California Department of Fish and Wildlife approved the transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit to Brian Kiyohara and issued the permit in the name of Brian Kiyohara. The California Department of Fish and Wildlife then rescinded the transfer because the application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit was submitted more than one year after Mr. Ptak's death.

9. I spoke to Ms. Noriega on June 6, 2014 when I learned that the transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit to Brian Kiyohara had been rescinded. Ms. Noriega stated that she felt terrible and was taken by surprise.

10. The probate of the Estate of Thomas L. Ptak is still ongoing as of the date of this declaration.

11. I have been in regular communication with Ms. Noriega, with initial assistance from Mr. Bates, since the date of Mr. Ptak's death. I followed the advice and instruction Ms. Noriega provided regarding the transferability of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit . It was my belief based on my conversations with Ms. Noriega that the time frame in which an application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit must be submitted to the California Department of Fish and Wildlife was tolled while Mr. Ptak's Estate was being probated.

I declare under penalty of perjury of the laws of the State of California that the foregoing is true and correct.

Dated: August 25, 2014

GREENMAN, LACY, KLEIN
O'HARRA, & HEFFRON

BY: _____
KURT WEISER

Exhibit D

CHRISTOPHER SHOURDS, ESQ.
GREENMAN, LACY, KLEIN,
O'HARRA & HEFFRON
900 Pier View Way, P.O: Box 299
Oceanside, California 92049-0299
(760)722-1234

Attorneys for Christine Allen,
Executor of the Estate of Thomas L. Ptak,

CALIFORNIA FISH AND GAME COMMISSION

IN THE MATTER OF: APPEAL OF DENIAL OF APPLICATION TO TRANSFER THOMAS L. PTAK'S TRANSFERRABLE SOUTH COAST REGION NEARSHORE FISHERY PERMIT	**"EXHIBIT D"** DECLARATION OF CHRISTOPHER SHOURDS IN SUPPORT OF APPEAL OF DENIAL OF APPLICATION TO TRANSFER THOMAS L. PTAK'S TRANSFERRABLE SOUTH COAST REGION NEARSHORE FISHERY PERMIT

I, CHRISTOPHER SHOURDS, declare as follows:

1. I am an attorney duly licensed to practice law in the State of California. I am a associate attorney in the law firm of Greenman, Lacy, Klein, O'Harra & Heffron (hereinafter "Attorneys"), the attorneys-of-record for Christine Allen, Executor of the Estate of Thomas L. Ptak. I have personal knowledge to the following facts, except to those matters which I so indicate that are based on information and belief.

2. My first communication with Debbie Noriega at the California Department of Fish and Wildlife was on December 16, 2013. I contacted Ms. Norriega to follow up to a letter attorney Weiser sent Ms. Noriega on October 7, 2013. Mr. Weiser's letter inquired as to whether Mr. Ptak's commercial fishing permits could be transferred to Eric Allen under

the theory that Mr. Ptak operated his commercial fishing operation as a general partnership entity. Under California law a general partnership is formed whenever two or more people join in a business for profit and share responsibility for management, profits, and liabilities for the debts of the general partners. Mr. Ptak shared profits with Mr. Allen by paying Mr. Allen a "crew share" that was a percentage of their net income. In addition to Mr. Ptak and Mr. Allen splitting profits, they each contributed to expenses, shared equally in the responsibility of maintaining the boat and the rest of the fishing operating, and had the ability to bind each other to contracts and other liabilities.

3. Ms. Noriega was cooperative in telling me she would attempt to have her supervisor prepare a written response to attorney Weiser's letter. No written response or definitive oral response to attorney Weiser's letter was ever received.

4. On December 30, 2014, Ms. Noriega informed me via telephone that one or more of Mr. Ptak's permits could be sold prior to the close of probate if the Department of Fish and Wildlife did not approve the transfer of Mr. Ptak's permits to Mr. Allen based on the theory that Mr. Ptak and Mr. Allen were operating as a general partnership.

5. In April of 2014 I began working to assist Christine Allen in the sale of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement.

6. On or about April 28, 2014, I participated in a telephone call with Ms. Noriega and attorney Weiser. Attorney Weiser informed Ms. Noriega that Christine Allen was selling Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement. Attorney Weiser also informed Ms. Noriega that the sale of these permits would generate enough income to pay off the

creditors of Mr. Ptak's Probate Estate so that the probate could be closed. Ms. Noriega stated that any unsold permits could remain in Mr. Ptak's Probate Estate and be transferred to Eric Allen at the close of probate by submitting a court order for distribution issued by a Judge of the Superior Court along with applications to transfer Mr. Ptak's remaining permits to Eric Allen to the Department of Fish and Wildlife.

7. The California Department of Fish and Wildlife approved the transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Brian Kiyohara on June 5, 2014, and re-issued the permits in the name of transferee Brian Kiyohara.

8. I was notified on June 12, 2014 that the California Department of Fish and Wildlife was rescinding the successful transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Brian Kiyohara because more than one year had passed since Mr. Ptak's death.

9. My numerous conversation with Ms. Noriega between December 16, 2013 and June 12, 2014 and the information and analysis Ms. Noriega provided me regarding the transferability of Mr. Ptak's permits lead me to believe any time frame in which an application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit must be submitted to the California Department of Fish and Wildlife was tolled while Mr. Ptak's estate was being probated.

//

//

//

I declare under penalty of perjury of the laws of the State of California that the foregoing is true and correct.

Dated: August 25, 2014

GREENMAN, LACY, KLEIN
O'HARRA, & HEFFRON

BY: _____
CHRISTOPHER SHOURDS

Exhibit E

14 CLE

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE
NEARSHORE TRAP ENDORSEMENT - SOUTH COAST
Valid only when in possesion of a Commercial Fishing License for the same license year.

D-0011064277-8

Nearshore Trap Endorsement - South Coast (Transferable)
Permit Number: TST022

Commercial Fishing License ID: L74934
GO ID:
STATE ID:
BRIAN KIYOHARA

SEX: M HAIR: Black EYES: Brown
HT:

Resident: I have resided in California continuously for the past 6 months

Doc No: D-0011064277-8
Trans: 0000000008246185
155591444

Outlet No: 310001-002
6/5/2014 10:49:53 AM

Item	Fee*
Nearshore Trap - S Coast (T)	$106.35

Total: $106.35

*Includes any applicable application fees, agent handling fees and license buyer surcharge.

I certify under penalty of perjury under the laws of the State of California that all information on this document is true and correct and that I meet the requirements for these licenses. I understand it is unlawful to make any false statement in this application or to use or possess a license obtained by fraud or deceit (Fish and Game Code §§1052(b) and 1054).

X

Signature

NOT VALID UNLESS SIGNED
LICENSE AND PHOTO IDENTIFICATION MUST BE IN IMMEDIATE POSSESSION WHILE FISHING

----- End of Document D-0011064277-8 -----

14 CLE

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE
NEARSHORE FISHERY PERMIT - SOUTH COAST
Valid only when in possesion of a Commercial Fishing License for the same license year.

D-0011064275-6

Nearshore - South Coast (Transferable)
Permit Number: NST066

Commercial Fishing License ID: L74934
GO ID:
STATE ID:
BRIAN KIYOHARA

SEX: M HAIR: Black EYES: Brown
HT:

Resident: I have resided in California continuously for the past 6 months

Doc No: D-0011064275-6
Trans: 0000000008246185
155591444

Outlet No: 310001-002
6/5/2014 10:49:52 AM

Item	Fee*
Nearshore Fish - S Coast (T)	$696.25

Total: $696.25

*Includes any applicable application fees, agent handling fees and license buyer surcharge.

I certify under penalty of perjury under the laws of the State of California that all information on this document is true and correct and that I meet the requirements for these licenses. I understand it is unlawful to make any false statement in this application or to use or possess a license obtained by fraud or deceit (Fish and Game Code §§1052(b) and 1054).

X

Signature

NOT VALID UNLESS SIGNED
LICENSE AND PHOTO IDENTIFICATION MUST BE IN IMMEDIATE POSSESSION WHILE FISHING

----- End of Document D-0011064275-6 -----

Doc No: D-0011064276-7
Trans: 0000000008246185
155591444

Outlet No: 310001-002
6/5/2014 10:49:53 AM

Item	Fee
2for1 Nearshore Transfer Offset Fee	$696.2
Nearshore Fish Pmt Transfer Fee	$500.0
Nearshore Trp Endrsmt Transfer Fee	$75.0

Total: $1,271.2

*Includes any applicable application fees, agent handling fees and license buyer surcharge.

----- End of Document D-0011064276-7 -----

14 CLE

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE
RECEIPT ONLY
This is not a license.

D-0011064276-7

GO ID:
STATE
BRIAN KIYOHARA

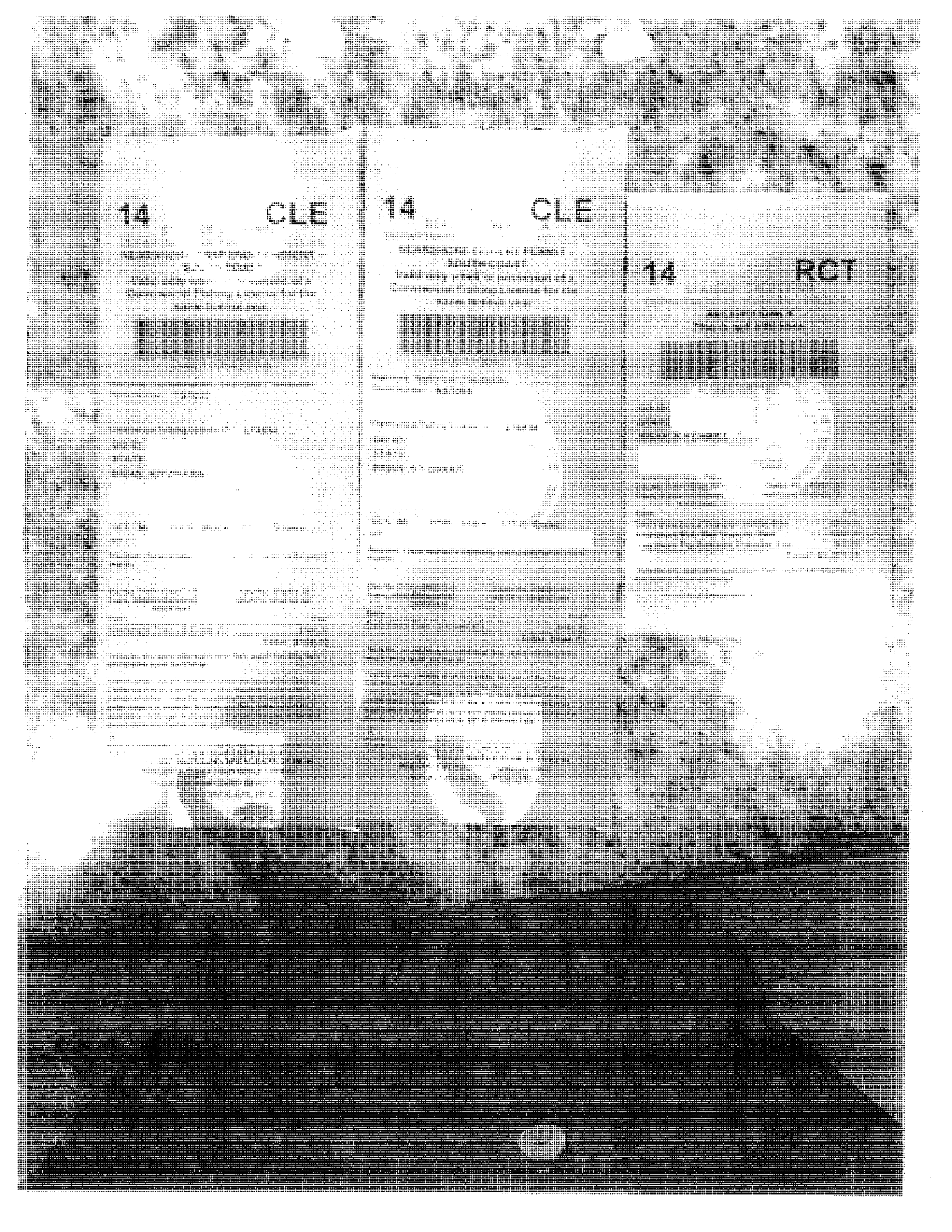
14 CLE
14 CLE
14 RCT

Exhibit B

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814
(916) 653-4899
(916) 653-5040 Fax
www.fgc.ca.gov

CERTIFIED MAIL

December 19, 2014

Mr. Chris Shourds, Esq.
Mr. Kurt Weiser, Esq.
Greenman, Lacy, Klein, O'Harra & Heffron
900 Pier Way
Oceanside, CA 92049-0299

Ms. Christine Allen, Executor
Estate of Thomas L. Ptak

Dear Messrs. Shourds and Weiser and Ms. Allen:

At its meeting on December 3 in Van Nuys, the California Fish and Game Commission (Commission) considered your request for an extension of time to transfer Thomas L. Ptak's transferable Nearshore Fishery Permit and Nearshore Fishery Trap Endorsement for the South Coast Management Area.

The Commission approved an extension until December 15, 2015 to transfer Mr. Ptak's permit and endorsement. Please contact the California Department of Fish and Wildlife's License and Revenue Branch for more information about how to proceed.

If you have any questions about the Commission's action, please contact Melissa Miller-Henson of my staff at 916.653.6184 or Melissa.Miller-Henson@fgc.ca.gov.

Sincerely,

Sonke Mastrup
Executive Director

ec: Christopher Ames, Office of the Attorney General, California Department of Justice, Christopher.Ames@doj.ca.gov
David Kiene, Office of the General Counsel, California Department of Fish and Wildlife, David.Kiene@wildlife.ca.gov
David Bess, Law Enforcement Division, California Department of Fish and Wildlife, David.Bess@wildlife.ca.gov
James Fong, License and Revenue Branch, California Department of Fish and Wildlife, James.Fong@wildlife.ca.gov

GREENMAN, LACY, KLEIN,
HINDS, WEISER & HEFFRON
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MICHAEL L. KLEIN
KAREN M. HEFFRON **‡
KELLY L. HINDS*
KURT WEISER*

KENNETH L. GREENMAN, JR.*
OF COUNSEL

* PROFESSIONAL CORPORATION
** CERTIFIED SPECIALIST, FAMILY LAW, THE STATE BAR OF CALIFORNIA BOARD OF LEGAL SPECIALIZATION
‡ FELLOW, AMERICAN ACADEMY OF MATRIMONIAL LAWYERS

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KATIE A. ANDERSON**
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(858) 459-9282

November 12, 2015

Fish and Game Commission
1416 Ninth Street
Sacramento, California 95814

REQUEST FOR EXTENSION OF TIME TO TRANSFER THOMAS L. PTAK'S TRANSFERRABLE SOUTH COAST REGION NEARSHORE FISHERY TRAP ENDORSEMENT

Dear Fish and Game Commission:

At its meeting on December 3, 2014, in Van Nuys, the California Fish and Game Commission (the "Commission") approved a request for extension of time to transfer Thomas L. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement. The Commission extended the time in which this trap endorsement could be transferred to December 15, 2015. This is a formal request to the Commission for an additional one year extension of time to transfer Thomas L. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement.

I.

Background

Thomas L. Ptak died on March 13, 2012. Christine Allen, Mr. Ptak's partner of 16 years immediately retained the law firm Greenman, Lacy, Klein, Hinds, Weiser & Heffron (hereinafter "Attorneys") to assist her in administering Mr. Ptak's affairs. This included getting Christine Allen appointed as Executor of Mr. Ptak's probate estate and communicating with the Department of Fish and Wildlife regarding Mr. Ptak's commercial fishing permits. The probate estate of Mr. Ptak is still open today and Christine Allen

remains the duly appointed Executor by order of the Superior Court of California, County of San Diego.

Attorneys began communication with the California Department of Fish and Wildlife upon Mr. Ptak's death regarding the procedure in which to transfer Mr. Ptak's commercial fishing permits, including the transferrable Nearshore South Coast Region Nearshore Fishery Trap Endorsement that is the subject of this request for additional time to transfer.

Attorneys stayed in regular communication with Ms. Debbie Noriega at the Department of Fish and Wildlife from the time Mr. Ptak died and relied on the information and instruction Ms. Noriega provided regarding the transferability of Mr. Ptak's permits. On June 5, 2014, the probate estate of Mr. Ptak followed transfer instructions provided by Ms. Noriega and sold Mr. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement. The Department of Fish and Wildlife approved the transfer and issued the permit in the name of the buyer.

On June 22, 2014, Christine Allen, the buyer of the permit, and Attorneys were notified that the successful transfer of Mr. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement was rescinded. Attorneys immediately contacted Ms. Noriega who informed Attorneys that the transfer was rescinded because more than one year had passed since Mr. Ptak's death. Ms. Norriega stated she "felt horrible and was as surprised as we were."

Attorneys filed an Appeal of Denial of Application to Transfer Thomas L. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement with the Commission on August 22, 2014. The main grounds for the appeal was that Attorneys began communicating and working with Ms. Noriega within six (6) days of Mr. Ptak's death, were in regular communication with Ms. Noriega since March 13, 2012, and followed the advice and instruction Ms. Noriega provided regarding the transferability of Mr. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement.

A copy of the Appeal for Denial of Application to Transfer Thomas L. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement, including all exhibits filed with said appeal is attached to this Request for Extension of time as **Exhibit "A"** and incorporated herein.

On December 19, 2014, Attorneys and Executor Christine Allen received a letter from the Commission approving an extension of time until December 15, 2015 to transfer Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement. A copy of this letter from the Commission is attached to this Request for Extension of time as **Exhibit "B"** and incorporated herein.

II.

Estate of Thomas L. Ptak Puts Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement Up For Sale

Christine Allen, in her capacity as Executor of the probate estate of Thomas L. Ptak, began marketing Mr. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement immediately after receiving the Commissions approval extending the time of transfer to December 15, 2015.

Christine Allen also continued to operate Mr. Ptak's commercial fishing business as an on ongoing business concern of the Estate of Thomas L. Ptak as she had done since Mr. Ptak's death. The goal or continuing to operate the commercial fishing business was to attempt to generate sufficient income to pay of the creditor of the Estate of Thomas L. Ptak.

In order for Christine Allen to continue operating Mr. Ptak's commercial fishing business as an ongoing business concern of The Estate of Thomas L. Ptak, she continued to enlist the services of Eric Allen. Eric Allen is Mr. Ptak's long time crew member and an experienced commercial fisherman who has been involved in assisting the Estate of Thomas L. Ptak since Mr. Ptak died.

When Mr. Ptak died, the Superior Court of California, County of San Diego, appointed Eric Allen as the Special Administrator of the Estate of Thomas L. Ptak. Eric was appointed due to his familiarity of Mr. Ptak's commercial fishing business and due to his long history of working with Mr. Ptak. Eric Allen held the role of Special Administrator of the Estate of Thomas L. Ptak until the Court appointed Christine Allen Executor or the Estate of Thomas L. Ptak on September 18, 2012. At all times since, Christine Allen has enlisted the services of Eric Allen to operate Mr. Ptak's commercial fishing business as an on ongoing business concern of the Estate of Thomas L. Ptak with the goal of generating sufficient income to pay off the creditors of the estate.

III.

Department of Fish and Wildlife Seizes Mr. Ptak's Commercial Fishing Permits

On March 18, 2015, Eric Allen was fishing on behalf of the probate Estate of Thomas L. Ptak aboard the vessel Donna Marie, a vessel that was an asset of probate estate. Mr. Allen was fishing using a General Gill/Trammel Net Permit that was current and issued in the name of Thomas L. Ptak. This permit is an asset of probate Estate of Thomas L. Ptak and has been listed and valued on an Inventory and Appraisal filed with the Superior Court of California, County of San Diego, on February 6, 2013.

It is important to know that on March 18, 2015, Eric Allen was not fishing with the transferrable South Coast Region Nearshore Fishery Permit or Transferrable South Coast

Region Nearshore Fishery Trap Endorsement in which the Commission granted the extension of time to transfer until December 15, 2015.

While fishing on March 18, 2015, Eric Allen was boarded by the Department of Fish and Game. The Department of Fish and Game escorted Eric Allen and the vessel Donna Marie back to the vessel's slip in Oceanside Harbor and issued Eric a citation for the following: No Commercial Fishing License; Permitee (Thomas L. Ptak) required to be on vessel; Department of Fish and Game Boat Registration Required; and Department of Fish and Game Boat Registration required aboard at all times.

Once at Oceanside Harbor Eric Allen went to his truck to obtain the following documents and permits, all of which were seized by the Department of Fish and Game: one transferrable South Coast Region Nearshore Fishery Permit issued in the name of Thomas Ptak; one transferrable South Coast Region Nearshore Trap Endorsement issued in the name of Thomas Ptak; one General Gill/Trammel Net Permit issued in the name of Thomas Ptak; one Lobster Operator Permit issued in the name of Thomas Ptak; one Southern Rock Crab Permit issued in the name of Thomas Ptak; the boat registration for the vessel Donna Marie; and one current Commercial Fishing License issued in the name of Thomas Ptak.

All permits seized were assets of the probate Estate of Thomas L. Ptak and were listed as such with the Superior Court of California, County of San Diego, and valued by a probate referee in an Inventory and Appraisal of assets owned by the probate Estate of Thomas L. Ptak filed with said Court on February 6, 2013.

Eric Allen being boarded by the Department of Fish and Game on March 18, 2015 resulted in two pending misdemeanor charges against Eric Allen. The first is for Fishing Without a Commercial License. The second is for Failure to Apply for Commercial Boat Registration.

The misdemeanor charges are not the subject of this request for extension of time. However, the events that have transpired are directly relevant to the reason the Estate of Thomas L. Ptak is requesting additional time to transfer Mr. Ptak's transferrable South Coast Region Nearshore Fishery Report.

Christine Allen, as the Executor of the Estate of Thomas L. Ptak has not been able to market or sell Mr. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement since March 18, 2015 because the Department of Fish and Game seized the permits on March 18, 2015 and the Department of Fish and Wildlife will not return the permit to Christine Allen or the Estate of Thomas L. Ptak.

The result is that Christine Allen was granted a one year extension of time to transfer Mr. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement but has been deprived of approximately nine (9) months of this one year extension because the permit has been held by the Department of Fish and Wildlife rather than being in the possession of Christine Allen.

IV.

Estate of Thomas L. Ptak Attempts To Regain Permits From Department of Fish and Wildlife

Attorneys, on behalf of Christine Allen, Executor of the Estate of Thomas L. Ptak, contacted David Kiene at the California Department of Fish and Wildlife, Office of the General Counsel on April 3, 2015. Attorneys discussed with Mr. Kiene the seizure of Mr. Ptak's permits that are assets of the probate Estate of Thomas L. Ptak. In particular, Attorneys requested that Mr. Ptak's transferrable South Coast Region Nearshore Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement be returned to the Estate of Thomas L. Ptak so these permits could be marketed and sold by December 15, 2015, the time in which the Commission granted their extension for transfer.

Mr. Kiene stated that he would look into the matter but that the permits may not be able to be returned to the Estate of Thomas L. Ptak because they have potential evidentiary value for the citations issued against Eric Allen. Attorneys explained that The Estate of Thomas L. Ptak was no longer fishing, would not fish the permits if returned, and that the vessel Donna Marie (the fishing boat owned by the Estate of Thomas L. Ptak) was parked and listed for sale. Attorneys again requested return of Mr. Ptak's transferrable South Coast Region Nearshore Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement so these permits could be sold before the extension of time granted by the Commission expired. Attorneys explained to Mr. Kiene that they did not understand how the transferrable South Coast Region Nearshore Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement had evidentiary value that was any different or more substantive than a copy of the permits would have.

Mr. Kiene informed Attorneys he would discuss the issue with his enforcement division and get back to Attorneys regarding Attorneys request for the return of the transferrable South Coast Region Nearshore Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement. Mr. Kiene never responded to Attorneys or to Christine Allen via telephone, letter, email, or any other form of communication.

Attorneys followed up with Mr. Kiene via telephone but never received a call back. To date, Attorneys and Christine Allen have received no communication, written or otherwise, from the Department of Fish and Wildlife since April 3, 2015.

V.

Why The Estate of Thomas L. Ptak Needs Additional Time to Transfer Permit

The probate Estate of Thomas L. Ptak has not been afforded sufficient opportunity to transfer the transferrable South Coast Region Nearshore Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement because these permits have been held by the Department of Fish and Wildlife since March 18, 2015.

VI.

Additional Pertinent Information

The Estate of Thomas L. Ptak sold the vessel Donna Marie and is no longer fishing. The Estate of Thomas L. Ptak has not fished since March 18, 2015 and has no plans to fish. The Estate of Thomas L. Ptak sold the vast majority of the commercial fishing equipment owned by the Estate of Thomas L. Ptak. Any remaining fishing equipment owned by the Estate of Thomas L. Ptak is for sale. The probate of the Estate of Thomas L. Ptak is still an open case with the Superior Court of California, County of San Diego. Christine Allen is still the duly appointed Executor of the Estate of Thomas L. Ptak.

In addition to Mr. Ptak's transferrable South Couth Coast Region Nearshore Fishery Permit and Mr. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement, The California Department of Fish and Wildlife is holding the following permits that are assets of the Estate of Thomas L. Ptak: one General Gill/Trammel Net Permit; one Lobster Operator Permit; and one Southern Rock Crab Permit (collectively referred to hereafter as "The Five Permits"). All of The Five Permits were seized by the Department of Fish and Wildlife on March 18, 2015 and have not been returned to the Estate of Thomas L. Ptak, thus depriving the Estate of Thomas L. Ptak the ability to transfer these permits by following the advice and instruction Ms. Noriega provided Attorneys and the Estate of Thomas L. Ptak beginning six (6) days following the death of Mr. Ptak

VII.

Request for Additional Extension of time

Based on the information addressed in this Request For Extension of Time To Transfer Thomas L. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement, the Estate of Thomas L. Ptak respectfully requests from the Commission an additional one (1) year extension of time to transfer Mr. Ptak's transferrable South Coast Region Nearshore Fishery Trap Endorsement.

VIII.

Request for Right to Renew Permits

The Estate of Thomas L. Ptak requests the Commission issue an instruction to the Department of Fish and Wildlife to allow the Estate of Thomas L. Ptak to renew The Five Permits so The Five Permits will not expire and so the Estate of Thomas L. Ptak has the opportunity to transfer the permits by following the advice and instruction Ms. Noriega provided Attorneys and the Estate of Thomas L. Ptak beginning six (6) days following the death of Mr. Ptak.

IX.

Request for Return of Permits

The Estate of Thomas L. Ptak requests the Commission issue an instruction to the Department of Fish and Wildlife to return The Five Permits to the Estate of Thomas L. Ptak. Return of these permits is necessary because the Estate of Thomas L. Ptak cannot transfer the permits by following the advice and instruction Ms. Noriega provided Attorneys and the Estate of Thomas L. Ptak beginning six (6) days following the death of Mr. Ptak unless the Estate of Thomas L. Ptak is in possession of these permits. The instruction should direct The Five Permits be returned to Christine Allen, Executor, The Estate of Thomas L. Ptak,

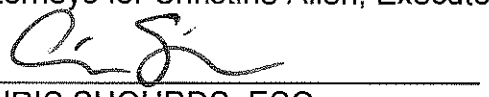
X.

Final Comments

Thank you for your time and consideration in reviewing the Estate of Thomas L. Ptak's requests contained in this document.

Very Truly Yours,

GREENMAN, LACY, KLEIN,
HINDS, WEISER & HEFFRON,
Attorneys for Christine Allen, Executor



CHRIS SHOURDS, ESQ.

ESTATE OF THOMAS L. PTAK

CHRISTINE ALLEN, Executor of the
Estate of Thomas L. Ptak

Exhibit A

GREENMAN, LACY, KLEIN,
O'HARRA & HEFFRON

KENNETH L. GREENMAN, JR.*
JANET BLEDSOE LACY
MICHAEL L. KLEIN
KAREN M. HEFFRON ** †
KELLY L. HINDS
KURT WEISER

KATIE A. ANDERSON **
JEFFREY BLEDSOE LACY
JENNIFER BLEDSOE LACY
KIMBERLY A. DAWSON
MARIANNE LALEUF-THOM
CHRISTOPHER SHOURDS
* A Professional Corporation
** Certified Specialist, Family Law, The State Bar of California Board of Legal Specialization
† Fellow, American Academy of Matrimonial Lawyers

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August 22, 2014

Fish and Game Commission
1416 Ninth Street
Sacramento, California 95814

APPEAL OF DENIAL OF APPLICATION TO TRANSFER THOMAS L. PTAK'S TRANSFERABLE SOUTH COAST REGION NEARSHORE FISHERY TRAP ENDORSEMENT

Dear Fish and Game Commission:

This appeal is in response to the July 3, 2014 Notice of Denial of Application to Transfer Thomas L. Ptak's Transferable South Coast Region Nearshore Fishery Trap Endorsement addressed to Christine Allen as Executor of the Estate of Thomas L. Ptak. A copy of this Notice of Denial is attached to and incorporated herein as Exhibit A.

I.

Reason Given for Denial

The application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement was denied because the application was submitted more than one year after Mr. Ptak's date of Death.

II.

Basis for Appeal

Thomas Leonard Ptak died on March 13, 2012. A copy of his death certificate is attached to and incorporated herein as Exhibit B.

Christine Allen, Mr. Ptak's partner of 16 years, immediately retained the law firm Greenman, Lacy, Klein, O'Harra & Heffron (hereinafter "Attorneys") to assist her in administering Mr. Ptak's affairs. This included communicating with the California Department of Fish and Wildlife regarding Mr. Ptak's commercial fishing permits and handling the Probate of Mr. Ptak's Estate.

Attorneys enlisted the assistance of commercial fisherman Ken Bates due to his understanding of the unique nature of the commercial fishing permits owned by Mr. Ptak. On behalf of Attorneys, Ken Bates first contacted Debbie Noriega at the Department of Fish and Wildlife on March 19, 2012 only six (6) days following Mr. Ptak's death. Ken Bates notified Ms. Noriega that Mr. Ptak died, confirmed that Mr. Ptak owned five commercial fishing permits, obtained information on how Mr. Ptak's permits could be transferred, and obtained instruction on how Mr. Ptak's personal representative Christine Allen could apply for the transfer of Mr. Ptak's commercial fishing permits. Ms. Noriega provided invaluable assistance and shared extensive knowledge regarding the permits owned by Mr. Ptak. However, at no time did Ms. Noriega explain to Mr. Bates that there was a time frame in which Mr. Ptak's permits must be transferred.

Attorney Kurt Weiser of the law firm Greenman, Lacy, Klein, O'Harra & Heffron spoke directly to Ms. Noriega two times within one year of Mr. Ptak's death. Attorney Weiser's first conversation with Ms. Noriega took place on or about May 16, 2012. His second conversation with Debbie Noriega took place on or about August 22, 2012. The purpose of these conversations was to discuss the procedure for transferring Mr. Ptak's commercial fishing permits.

Attorney Weiser explained that Mr. Ptak's estate was subject to Probate with the Superior Court of California, County of San Diego and therefore Mr. Ptak's commercial fishing permits would become probate assets. Under the California Probate Code assets, including the permits, can not transfer prior to the time the Probate Court's order to distribute estate assets is issued.

Attorney Weiser informed Ms. Noriega that the Probate of Mr. Ptak's estate would be a lengthy process because no probate can be completed until creditors of the estate are paid. Ms. Noriega informed Attorney Weiser that Mr. Ptak's commercial fishing permits could be retained in Mr. Ptak's probate estate and could be transferred once the probate was complete. Attorneys were appreciative of Ms. Noriega's analysis. However, Ms. Noriega analysis of the transfer of Mr. Ptak's permits never included reference to time frames in which applications to transfer Mr. Ptak's permits must be submitted to the Department of Fish and Wildlife. All of Mr. Ptak's commercial fishing permits are still assets of Mr. Ptak's Probate Estate as of the date of this appeal.

Attorney Weiser and Christine Allen relied on Ms. Noriega's instruction and expertise as a Department of Fish and Wildlife analyst. Attorney Weiser relied on Ms. Noriega's thorough analysis and advice (and lack of any mention of a time limitation). On that basis

Attorney Weiser understood that the time frames in which Mr. Ptak's permits could be transferred would be tolled during the probate. A declaration by Attorney Weiser is attached to and incorporated herein as Exhibit C.

III.

Summary of the Probate of The Estate of Thomas Ptak

Attorneys, on behalf of Petitioner Christine Allen, promptly filed a Petition for Probate of Mr. Ptak's Last Will and Testament and for Letters Testamentary with the Superior Court of California, County of San Diego, on June 1, 2012.

The Superior Court issued an order appointing Christine Allen as the Executor of Mr. Ptak's Will and issued Letters Testamentary to Christine Allen as the Executor of the Will of Mr. Ptak with full authority to administer Mr. Ptak's Probate Estate on September 18, 2012.

Multiple creditors filed creditor's claims against Mr. Ptak's Probate Estate. Claims by creditors of the decedent are very common in probates and occur when the decedent dies with legitimate debt. Attorneys and Christine Allen have worked diligently with these creditors to plan for the payoff of Mr. Ptak's debt so that Mr. Ptak's Probate Estate can generate enough income to pay off these creditors. Attorneys also maintained frequent communication with Ms. Noriega from Mr. Ptak's date of death until present day. These communications include Attorneys providing Ms. Noriega with frequent status updates on the probate of Mr. Ptak's estate. Ms. Noriega continued to provide Attorneys with advice and guidance.

Ms. Noriega advice to hold Mr. Ptak's permits in Mr. Ptak's Probate Estate until the close of probate never wavered. As recently as April 28, 2014, Ms. Noriega advised attorney Weiser that Mr. Ptak's commercial permits could be transferred once the probate of Mr. Ptak's estate is completed. Specifically, Ms. Noriega confirmed with attorney Weiser and attorney Christopher Shourds of Greenman, Lacy, Klein, O'Harra & Heffron that the best way to transfer Mr. Ptak's commercial permits was to continue to hold the permits in Mr. Ptak's probate estate until the probate is complete. Ms. Noriega stated that Attorneys should wait until they receive a court order for distribution of Mr. Ptak's probate assets issued by a Judge of the Superior Court and then submit the court order along with an application to transfer Mr. Ptak's permits to Eric Allen to the Department of Fish and Wildlife.

Further, Ms. Noriega stated that she had communicated with her supervisor and advised Attorneys that this process would result in the successful transfer of Mr. Ptak's permits to Eric Allen. A declaration by attorney Shourds is attached to and incorporated herein as Exhibit D.

IV.

Attorneys Sought Additional Ways to Transfer Permits to Eric Allen Prior to the Close of Mr. Ptak's Probate Estate

Attorney Weiser informed Ms. Noriega that Christine Allen desired to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Eric Allen, Mr. Ptak's long time deckhand and crew member, without the requirement that Eric Allen need to purchase any ancillary permits or endorsements. Ms. Noriega informed Attorney Weiser that this could not be accomplished because Eric Allen was not a blood relative of Mr. Ptak and because the owner of the permits was not a commercial entity in which Eric Allen possessed an ownership interest. Again, Ms. Noriega was cooperative and knowledgeable. Attorneys appreciate the assistance and insight she provided.

On October 7, 2013 attorney Weiser submitted a letter to Ms. Noriega asking the Department of Fish and Wildlife to consider allowing the transfer of Mr. Ptak's permits to Eric Allen, without the need for Eric Allen to acquire any ancillary permits, under the theory that Mr. Ptak and Eric Allen operated the fishing business as a general partnership entity. A general partnership can be legally recognized as a commercial entity in the state of California.

Attorney Weiser's letter informed Ms. Noriega that Eric Allen was paid a "crew share" for the past twelve years. It also explained that Mr. Ptak and Eric Allen split profits, each contributed to expenses, shared equally in the responsibility of maintaining the boat and the rest of the fishing operation, and had the ability to bind each other to contracts and other liabilities. Under these circumstances, attorney Weiser urged the Department of Fish and Wildlife that Mr. Ptak's Probate Estate should be able to transfer the permits to Eric Allen prior to the close of probate without the requirement that Eric Allen purchase any ancillary permits.

Attorneys never received a definitive response to attorney Weiser's October 7th letter despite placing numerous follow up calls to Ms. Noriega between December 16, 2013 and December 30, 2013. Ms. Noriega was supportive in trying to obtain a written response from her supervisors to attorney Weiser's letter. On December 30, 2013, attorney Shourds reached Ms. Noriega via telephone. Ms. Noriega still did not have a response to attorney Weiser's letter. However, Ms. Noriega stated that one or more of Mr. Ptak's permits could be sold prior to the close of probate if the Department of Fish and Wildlife did not approve the transfer of Mr. Ptak's permits to Eric Allen based on the theory that Mr. Ptak and Eric Allen were operating as a general partnership.

Attorneys relayed Ms. Noriega's comments to Christine Allen. Upon hearing Ms. Noriega's statement that one or more of Mr. Ptak's permits could be sold out of Mr. Ptak's Probate Estate, Christine Allen decided that the quickest way to generate income necessary to pay off creditors and close Mr. Ptak's Probate Estate would be to sell one or more of Mr. Ptak's permits.

Four months passed and Attorneys still did not receive a definitive response to their request to transfer Mr. Ptak's permits to Eric Allen based on the theory that Mr. Ptak and Eric Allen were operating as a general partnership. Attorney Weiser left a voicemail for Ms. Noriega on April 7, 2014 expressing Christine Allen's desire to sell Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement. Attorneys never received a response to this voicemail.

V.

Department of Fish and Wildlife's Approval of Transfer

On or about April 16, 2014 Christine Allen began working with a broker to sell Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement. Christine Allen was introduced to buyer Brian Kiyohara on or about April 21, 2014. On or about April 28, 2014, Attorneys Weiser and Shourds spoke to Ms. Noriega to inform her that Christine Allen was selling Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement.

Attorney Weiser informed Ms. Noriega that the sale of these permits would generate enough income to pay off the creditors of Mr. Ptak's Probate Estate so that the probate could be closed. Again, Ms. Noriega stated that any unsold permits could be held in Mr. Ptak's Probate Estate and transferred to Eric Allen at the close of probate by submitting a court order for distribution issued by a Judge of the Superior Court along with applications to transfer Mr. Ptak's remaining permits to Eric Allen to the Department of Fish and Wildlife.

Christine Allen relied on the information provided by Debbie Noriega and sold Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Brian Kiyohara.

The Department of Fish and Wildlife approved the transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Brian Kiyohara on June 5, 2014 and re-issued the permits in the name of Brian Kiyohara. Copies of the Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement issued to Brian Kiyohara are attached to and incorporated herein as Exhibit E.

The sale of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement generated enough proceeds that Christine Allen was less than one week away from issuing payment in full to all creditors of Mr. Ptak's Probate Estate. Issuing these payments to creditors would have allowed Christine Allen to close Mr. Ptak's Probate Estate.

VI.

Department of Fish and Wildlife's Recission of Transfer

On June 12, 2014, Christine Allen, Brian Kiyohara, and Attorneys were notified that the successful transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement was rescinded by the Department of Fish and Wildlife even though transferee Brian Kiyohara was already in possession of newly issued permits.

Attorney Weiser immediately contacted Ms. Noriega who informed him that the transfer of the permits was rescinded because more than one year had passed since Mr. Ptak's death. Ms. Norriega stated that she "felt terrible and was surprised as we were."

Christine Allen had already deposited the proceeds from the sale of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement into the bank account for Mr. Ptak's Probate Estate and wrote checks to pay off the creditors of Mr. Ptak's Probate Estate. Fortunately, the checks to the creditors were not yet mailed and were able to be voided.

Christine Allen refunded transferee Brian Kiyohara the full amount that Mr. Kiyohara paid for Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement.

VII.

Additional Pertinent Information

The Probate of the Estate of Mr. Ptak is still ongoing as of the date of this Appeal of Denial of Application to Transfer Thomas L. Ptak's Transferable South Coast Region Nearshore Fishery Trap Endorsement.

Attorneys began communicating and working with Ms. Noriega within six (6) days of Mr. Ptak's death. Attorneys and Christine Allen have not delayed or neglected to attempt to transfer Mr. Ptak's commercial fishing permits. Attorneys have been in regular communication with Ms. Noriega since March 19, 2012 and have followed the advice and instruction Ms. Noriega provided regarding the transferability of Mr. Ptak's permits.

The Estate of Mr. Ptak owns one Transferrable South Coast Region Nearshore Fishery Permit, one Transferrable South Coast Region Nearshore Fishery Trap Endorsement, one General Gill/Trammel Net Permit, one Lobster Operator Permit, and one Southern Rock Crab Trap Permit. All of these permits have exceeded the time frame for approval of transfer due to the probate of Mr. Ptak's estate and the same facts contained in this appeal.

Attorneys are hopeful the Fish and Game Commission will approve the request for extension of time (below) and apply it to all permits owned by the Estate of Mr. Ptak. Attorneys are prepared to apply for transfer of each permit owned by the Estate of Mr. Ptak and to appeal any denial to the maximum extent possible.

Attorneys are hopeful this situation can be resolved and the extension of time requested below can be granted without the need to appear at a hearing in front of the Fish and Game Commission.

Attorneys sincerely appreciate the time and resources the Fish and Game Commission put into reading and investigating this Appeal of Denial of Application to Transfer Thomas L. Ptak's Transferable South Coast Region Nearshore Fishery Permit.

VIII.

Request for Relief

Attorneys and Christine Allen, Executor of the Estate of Thomas L. Ptak, hereby request an extension of time to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement. Specifically, Attorneys and Christine Allen, Executor of the Estate of Thomas L. Ptak, formally request from the Fish and Game Commission a nine (9) month extension to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement with the extension beginning on the date that Attorneys and Christine Allen are notified by the Fish and Game Commission that the extension of time has been granted.

Christine Allen plans to use this extension of time to sell Mr. Ptak's Transferable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement. This sale will generate enough proceeds that creditors of Mr. Ptak's Probate Estate can be paid off and Attorneys' can file a petition with the Superior Court to close the probate and distribute Mr. Ptak's remaining assets.

Christine Allen, at the time probate can be closed, plans to transfer all of Mr. Ptak's remaining permits to Eric Allen so the fishing business can be maintained. The inability to transfer Mr. Ptak's permits by selling one or more permit and transferring the remaining permits at the close of probate will irreparably harm Christine Allen and Eric Allen. Christine and Eric's main source of income comes from the operation of the fishing business Mr. Ptak spent his life developing with the help of Eric Allen as his crew member and deckhand. If the Fish and Game Commission does not grant an extension of time to allow Christine Allen to transfer Mr. Ptak's permits then the Allen family will likely lose everything, including but not limited to the house they live in and the income source they live off of. The extension of time requested above is the best foreseeable way to save the Allen family from financial hardship that would occur if Mr. Ptak's permits become non-transferrable due to the passage of time following Mr. Ptak's Death.

Respectfully Submitted,

GREENMAN, LACY, KLEIN,
O'HARRA & HEFFRON

CHRIS SHOURDS, ESQ. — Date 8/25/14

KURT WEISER, ESQ. — Date 8/25/14

ESTATE OF THOMAS L. PTAK

CHRISTINE ALLEN, Executor of the
Estate of Thomas L. Ptak — Date 8/25/14

Enclosures:

Exhibit A - Notice of Denial of Application to Transfer Thomas L. Ptak's Transferrable South Coast Region Nearshore Fishery Permit.
Exhibit B - Death Certificate for Thomas L. Ptak
Exhibit C - Declaration by Attorney Kurt Weiser
Exhibit D - Declaration by Attorney Christopher Shourds
Exhibit E - Copy of Transferrable South Coast Region Nearshore Fishery Report and Transferrable South Coast Region Nearshore Fishery Trap Endorsement Issued to Transferee Brian Kiyohara

Exhibit A

State of California - The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
License and Revenue Branch
1740 N. Market Blvd
Sacramento, CA 95834
http://www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

Certified Mail

July 3, 2014

Ms. Christine Allen

SUBJECT: NOTICE OF DENIAL TO TRANSFER TRANSFERABLE SOUTH COAST REGION NEARSHORE FISHERY TRAP ENDORSEMENT

Dear Ms. Allen:

This letter is in response to your application to transfer a 2014-2015 Transferable South Coast Region Nearshore Fishery Trap Endorsement (TSCRNFTE), Permit Number TST022, from Mr. Thomas L. Ptak (L30798). You are the executor of executor of the estate.

Authority- Nearshore Fishery Trap Endorsement
Pursuant to Section 150.03(d), Title 14, of the California Code of Regulations (CCR), a Nearshore Fishery Trap Endorsement (NFTE) may be transferred to another commercial fisherman if the transferee possesses a valid transferable Nearshore Fishery Permit (NFP) for the same regional management area.

Section 150.03(d), Title 14, of the CCR, states a nonrefundable transfer fee of $75 is required.

Nearshore Fishery Trap Endorsement Requirements
- The NFTE must be valid at the time of application for transfer.
- The transferee must have a valid NFP and Commercial General Trap Permit.
- The transferee must have never been convicted of a violation of any provision of these regulations or the FGC pertaining to the commercial take of nearshore fish stocks.

Required Documentation
- The request for the transfer must be submitted within one year of the date of death of the permit holder as listed on the death certificate.
- Transfer application in the form of a notarized letter which identifies the current permit holder, transferee, and transferable NFTE for the regional management area.
- Copy of the permittee's death certificate.
- Copy of the permittee's valid NFP.
- The permittees' NFTE.
- Copy of the transferee's California Commercial Fishing License and Commercial General Trap Permit.
- Nonrefundable NFTE transfer fee of $75.

Documentation Submitted
- A notarized letter dated May 9, 2014, received May 23, 2014, from Ms. Christine Allen, Executor of the Estate of Thomas L. Ptak requesting to transfer Mr. Ptak's TSCRNFP and Transferable South Coast Region Nearshore Fishery Trap Endorsement (TSCRNFTE) to Mr. Kiyohara.

- Copy of the Certificate of Death from County of San Diego, stating Mr. Ptak's date of death was on March 13, 2012.
- Copy of Letter of Testamentary filed January 31, 2014, for the estate of Thomas L. Ptak, appointing Christine Allen as executor.
- Mr. Ptak's original 2014-2015 TSCRNFTE.
- A copy of Mr. Kiyohara's 2014-2015 California Commercial Fishing License and Commercial General Trap Permit.
- Nonrefundable transfer fee of $75.

Department of Fish and Wildlife's Recommendation
The Department is denying your application to transfer Mr. Ptak's TSCRNFTE, because the application must be submitted within one year of the date of death of the permit holder as listed on the death certificate. The application was received more than 26 months after the date of death listed on the death certificate.

Deadline to File an Appeal
You may appeal to the Department in writing describing the basis for the appeal. The appeal shall be reviewed and decided by the Department. The decision of the Department may be appealed in writing to the Commission at 1416 Ninth Street, Sacramento, California 95814. Pursuant to Section 150(m)(3), Title 14, of the CCR, your appeal of the Department's decision must be received within 60 days of this letter.

If you have any questions or require further assistance, please contact Ms. Debbie Noriega, of my staff, at the letterhead address, by telephone at (916) 928-5817, or e-mail Debbie.Noriega@wildlife.ca.gov.

Sincerely,

James Fong, Chief
License and Revenue Branch

cc: Mr. Sonke Mastrup
Fish and Game Commission
Sacramento, CA

Ms. Debbie Noriega
Department of Fish and Wildlife
Sacramento, CA

Exhibit B

CERTIFICATION OF VITAL RECORD

COUNTY OF SAN DIEGO

CERTIFICATE OF DEATH

3052012050234 — STATE FILE NUMBER

3201237004299 — LOCAL REGISTRATION NUMBER

DECEDENT'S PERSONAL DATA

1. NAME OF DECEDENT - FIRST	2. MIDDLE	3. LAST (Family)
THOMAS	LEONARD	PTAK

4a. AKA (ALSO KNOWN AS - maiden for AKA) (FIRST, MIDDLE, LAST) — 4b. DATE OF BIRTH (mm/dd/ccyy) — 4c. AGE (Years / Months / Days / Hours / Minutes) — 5. SEX: M

6. BIRTH STATE/FOREIGN COUNTRY	7a. SOCIAL SECURITY NUMBER	7b. EVER IN U.S. ARMED FORCES?	8. MARITAL STATUS/DOMESTIC PARTNERSHIP (at time of death)	9. DATE OF DEATH (mm/dd/ccyy)	10. HOUR (military)
CALIFORNIA		☐ YES ☒ NO ☐ UNK		03/13/2012	0625

11. EDUCATION (Highest level completed before death)	12a-12b. WAS DECEDENT HISPANIC/LATINO/SPANISH? (If yes, see instructions for box)	13. DECEDENT'S RACE (Up to 5 races may be listed; see instructions for box)
HS GRADUATE	☐ YES ☒ NO	WHITE

14. USUAL OCCUPATION (Type of work done during most of working life. DO NOT USE RETIRED)	15. KIND OF BUSINESS OR INDUSTRY	16. YEARS IN OCCUPATION
COMMERCIAL FISHERMAN	COMMERCIAL FISHING	30

USUAL RESIDENCE

17a. DECEDENT'S RESIDENCE (Street and number, or rural route)

17b. CITY	17c. COUNTY/PROVINCE	17d. ZIP CODE	17e. YEARS IN COUNTY	17f. STATE/FOREIGN COUNTRY
	SAN DIEGO		30	CALIFORNIA

INFORMANT

18a. INFORMANT'S NAME, RELATIONSHIP — 18b. MAILING ADDRESS (Street and number, or rural route; City or town; State; ZIP code)

CHRISTINE ALLEN, COMPANION

SPOUSE AND PARENT INFORMATION

19a. NAME OF SURVIVING SPOUSE (If wife, give maiden name)	19b. MIDDLE	19c. LAST (Birth name)
-	-	-

20a. NAME OF FATHER/PARENT (FIRST)	20b. MIDDLE	20c. LAST (BIRTH NAME)	20d. BIRTH STATE
LEONARD	THOMAS	PTAK	PA

21a. NAME OF MOTHER/PARENT (FIRST)	21b. MIDDLE	21c. LAST (BIRTH NAME)	21d. BIRTH STATE
DONNA	JOANNE	HAMLIN	CA

FUNERAL DIRECTOR/LOCAL REGISTRAR

22a. DISPOSITION DATE (mm/dd/ccyy)	22b. PLACE OF FINAL DISPOSITION
03/20/2012	AT SEA OFF THE COAST OF SAN DIEGO COUNTY

23. TYPE OF DISPOSITION	24. SIGNATURE OF EMBALMER	25. LICENSE NUMBER
CR/SEA		-

26. NAME OF FUNERAL FACILITY (Name)	27. LICENSE NUMBER	28. SIGNATURE OF LOCAL REGISTRAR	29. DATE (mm/dd/ccyy)
	FD1528	WILMA WOOTEN, MD	03/19/2012

PLACE OF DEATH

30a. PLACE OF DEATH — 30b. IF HOSPITAL, SPECIFY ONE: ☐ IP ☐ ERDEP ☐ ODP — 30c. IF OTHER THAN HOSPITAL, SPECIFY ONE: ☐ Hospice, Inpatient ☒ Residence ☐ Other

30d. COUNTY	30e. FACILITY NAME (If not institution, give street number and name)	30f. CITY OR TOWN
SAN DIEGO	FOUND (Street and number, or location)	FALLBROOK

CAUSE OF DEATH

31a. CAUSE OF DEATH — Enter only one cause per line for a, b, and c. For additional causes, enter them in box 32.

	Interval between onset and death	31c. Autopsy performed?	31d. Used in determining cause?
a. IMMEDIATE CAUSE (Final disease or condition resulting in death)	UNK	☐ YES ☒ NO	☐ YES ☐ NO
b. Sequentially list conditions, if any, leading to the cause in 31a. Enter UNDERLYING CAUSE (disease or injury that initiated the events resulting in death) LAST	UNK	☐ YES ☒ NO	☐ YES ☐ NO
c.	UNK	☐ YES ☒ NO	☐ YES ☐ NO
d.	YEARS	☐ YES ☒ NO	☐ YES ☐ NO

31e. If female, was pregnancy contributory? ☐ YES ☐ NO ☐ UNK

31f. If decedent was less than 1 year old, enter age: ☐ Days ☐ Months ☐ Years

31g. If Medical Examiner was consulted, enter case number: ☒ YES ☐ NO — 12-00589

32. OTHER SIGNIFICANT CONDITIONS CONTRIBUTING TO DEATH BUT NOT RESULTING IN THE UNDERLYING CAUSE GIVEN IN 31a: NONE

33. WAS OPERATION PERFORMED FOR ANY CONDITION IN ITEM 31a OR 31b? (If yes, list type of operation and date): NO

34. If female, pregnant in last year? ☐ YES ☐ NO ☐ UNK

PHYSICIAN'S CERTIFICATION

35. I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE DEATH OCCURRED AT THE HOUR, DATE AND PLACE STATED FROM THE CAUSES STATED. — 36. SIGNATURE AND TITLE OF CERTIFIER — 37. LICENSE NUMBER — 38. DATE (mm/dd/ccyy)

39a. Certifier Completing Death (mm/dd/ccyy)	39b. Decedent Last Seen Alive (mm/dd/ccyy)	40. TIME ATTENDING PHYSICIAN'S NAME, MAILING ADDRESS, ZIP CODE

CORONER'S USE ONLY

41. I CERTIFY THAT IN MY OPINION DEATH OCCURRED AT THE HOUR, DATE, AND PLACE STATED FROM THE CAUSES STATED. — 42. INJURED AT WORK? — 43. INJURY DATE (mm/dd/ccyy) — 44. HOUR (Military)

MANNER OF DEATH: ☒ Natural ☐ Accident ☐ Homicide ☐ Suicide ☐ Pending Investigation ☐ Could not be determined

45. PLACE OF INJURY (e.g., home; construction site; wooded area; etc.)

46. DESCRIPTION OF INJURY OCCURRENCE (Events which resulted in injury)

47. LOCATION OF INJURY (Street and number, or location; and city or town)

48. SIGNATURE OF CORONER OR DEPUTY CORONER	49. DATE (mm/dd/ccyy)	50. TYPE NAME, TITLE OF CORONER OR DEPUTY CORONER
OTHON J MENA MD	03/16/2012	OTHON J MENA MD, DEP MED EXAMINER

A	B	C	D	E	1010C0100705176D5	FAX AUTH.#	CENSUS TRACT

A002401545

County of San Diego – Department of Health Services – 3851 Rosecrans Street. This is to certify that, if bearing the OFFICIAL SEAL OF THE STATE OF CALIFORNIA, the OFFICIAL SEAL OF SAN DIEGO COUNTY AND THEIR DEPARTMENT OF HEALTH SERVICES EMBOSSED SEAL, this is a true copy of the ORIGINAL DOCUMENT FILED. Required fee paid.

DATE ISSUED: March 22, 2012

Wilma J. Wooten, M.D.

WILMA J. WOOTEN, MD
REGISTRAR OF VITAL RECORDS
County of San Diego

This copy not valid unless prepared on engraved border displaying seal and signature of Registrar

ANY ALTERATION OR ERASURE VOIDS THIS CERTIFICATE

Exhibit C

KURT WEISER, ESQ.
GREENMAN, LACY, KLEIN,
O'HARRA & HEFFRON
900 Pier View Way, P.O. Box 299
Oceanside, California 92049-0299
(760)722-1234

Attorneys for Christine Allen,
Executor of the Estate of Thomas L. Ptak,

CALIFORNIA FISH AND GAME COMMISSION

IN THE MATTER OF: APPEAL OF DENIAL OF APPLICATION TO TRANSFER THOMAS L. PTAK'S TRANSFERRABLE SOUTH COAST REGION NEARSHORE FISHERY TRAP ENDORSEMENT	**"EXHIBIT C"** DECLARATION OF KURT WEISER IN SUPPORT OF APPEAL OF DENIAL OF APPLICATION TO TRANSFER THOMAS L. PTAK'S TRANSFERRABLE SOUTH COAST REGION NEARSHORE FISHERY TRAP ENDORSEMENT

I, KURT WEISER, declare as follows:

1. I am an attorney duly licensed to practice law in the State of California. I am a partner in the law firm of Greenman, Lacy, Klein, O'Harra & Heffron (hereinafter "Attorneys"), the attorneys-of-record for Christine Allen, Executor of the Estate of Thomas L. Ptak. I have personal knowledge to the following facts, except to those matters which I so indicate that are based on information and belief.

2. Thomas Leonard Ptak died on March 13, 2012. I was retained by Christine Allen immediately following Mr. Ptak's death. Christine Allen informed me that Mr. Ptak owned five (5) commercial fishing permits issued by the California Department of Fish and Wildlife.

3. I enlisted the assistance of commercial fisherman Ken Bates to contact the California Department of Fish and Wildlife on my behalf to notify the Department that Mr. Ptak died, confirm that Mr. Ptak owned five commercial fishing permits, obtain information on how Mr. Ptak's permits could be transferred, and obtain instructions on how Mr. Ptak's personal representative Christine Allen could apply for the transfer of Mr. Ptak's permits.

4. Ken Bates contacted Debbie Noriega at the California Department of Fish and Wildlife on March 19, 2012, only six (6) days following Mr. Ptak's death. Mr. Bates notified Ms. Noriega of Mr. Ptak's death and obtained information regarding the transferability of Mr. Ptak's permits. I spoke with Mr. Bates following his conversation with Ms. Norriega and Mr. Bates provided me with the notes he took during his conversation with Ms. Noriega. Based on my information and belief, Ms. Noriega never informed Mr. Bates that there was a time frame in which an application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement must be submitted to the California Department of Fish and Wildlife.

5. I personally spoke to Ms. Noriega two times within one year of Mr. Ptak's death to discuss the procedure for transferring Mr. Ptak's permits. I informed Ms. Noriega that Mr. Ptak's estate was subject to probate with the Superior Court of California, County of San Diego and that Mr. Ptak's commercial fishing permits were subject to the estate and like any estate assets could not be transferred to Eric Allen without closing the probate.

6. I explained to Ms. Noriega that Mr. Ptak's Probate Estate can not be closed until the creditors of the probate estate are paid. Ms. Noriega informed me that Mr. Ptak's commercial fishing permits could be retained in Mr. Ptak's Probate Estate and could be transferred once the probate was complete. I relied on this information provided by Ms.

Noriega. Ms. Noriega never informed me that there was a time frame in which an application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement must be submitted to the California Department of Fish and Wildlife.

7. As recently as April 28, 2014, Ms. Noriega informed me that an acceptable way to transfer Mr. Ptak's permits was to continue to hold the permits in Mr. Ptak's Probate Estate until the probate estate is complete. Ms. Noriega stated that I should wait to receive a court order for distribution of Mr. Ptak's probate assets issued by a Judge of the Superior Court and then submit the court order along with an application to transfer Mr. Ptak's permits to the California Department of Fish and Wildlife.

8. On or about April 28, 2014, Ms. Noriega informed me that one or more of Mr. Ptak's permits could be sold out of Mr. Ptak's Probate Estate in order to generate enough proceeds to pay off the estate's creditors so that the probate could be closed. In reliance on this information, I assisted Christine Allen, Executor of the Estate of Thomas Ptak in selling Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Brian Kiyohara. The California Department of Fish and Wildlife approved the transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Brian Kiyohara and issued the permit in the name of Brian Kiyohara. The California Department of Fish and Wildlife then rescinded the transfer because the application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement was submitted more than one year after Mr. Ptak's death.

9. I spoke to Ms. Noriega on June 6, 2014 when I learned that the transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Brian Kiyohara had been rescinded. Ms. Noriega stated that she felt terrible and was taken by

surprise.

10. The probate of the Estate of Thomas L. Ptak is still ongoing as of the date of this declaration.

11. I have been in regular communication with Ms. Noriega, with initial assistance from Mr. Bates, since the date of Mr. Ptak's death. I followed the advice and instruction Ms. Noriega provided regarding the transferability of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement. It was my belief based on my conversations with Ms. Noriega that the time frame in which an application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement must be submitted to the California Department of Fish and Wildlife was tolled while Mr. Ptak's Estate was being probated.

I declare under penalty of perjury of the laws of the State of California that the foregoing is true and correct.

Dated: August 25, 2014

GREENMAN, LACY, KLEIN
O'HARRA, & HEFFRON

BY: _____
KURT WEISER

Exhibit D

CHRISTOPHER SHOURDS, ESQ.
GREENMAN, LACY, KLEIN,
O'HARRA & HEFFRON
900 Pier View Way, P.O. Box 299
Oceanside, California 92049-0299
(760)722-1234

Attorneys for Christine Allen,
Executor of the Estate of Thomas L. Ptak,

CALIFORNIA FISH AND GAME COMMISSION

IN THE MATTER OF:	**"EXHIBIT D"**
APPEAL OF DENIAL OF APPLICATION TO TRANSFER THOMAS L. PTAK'S TRANSFERRABLE SOUTH COAST REGION NEARSHORE FISHERY TRAP ENDORSEMENT	DECLARATION OF CHRISTOPHER SHOURDS IN SUPPORT OF APPEAL OF DENIAL OF APPLICATION TO TRANSFER THOMAS L. PTAK'S TRANSFERRABLE SOUTH COAST REGION NEARSHORE FISHERY TRAP ENDORSEMENT

I, CHRISTOPHER SHOURDS, declare as follows:

1. I am an attorney duly licensed to practice law in the State of California. I am a associate attorney in the law firm of Greenman, Lacy, Klein, O'Harra & Heffron (hereinafter "Attorneys"), the attorneys-of-record for Christine Allen, Executor of the Estate of Thomas L. Ptak. I have personal knowledge to the following facts, except to those matters which I so indicate that are based on information and belief.

2. My first communication with Debbie Noriega at the California Department of Fish and Wildlife was on December 16, 2013. I contacted Ms. Norriega to follow up to a letter attorney Weiser sent Ms. Noriega on October 7, 2013. Mr. Weiser's letter inquired as to whether Mr. Ptak's commercial fishing permits could be transferred to Eric Allen under

the theory that Mr. Ptak operated his commercial fishing operation as a general partnership entity. Under California law a general partnership is formed whenever two or more people join in a business for profit and share responsibility for management, profits, and liabilities for the debts of the general partners. Mr. Ptak shared profits with Mr. Allen by paying Mr. Allen a "crew share" that was a percentage of their net income. In addition to Mr. Ptak and Mr. Allen splitting profits, they each contributed to expenses, shared equally in the responsibility of maintaining the boat and the rest of the fishing operating, and had the ability to bind each other to contracts and other liabilities.

3. Ms. Noriega was cooperative in telling me she would attempt to have her supervisor prepare a written response to attorney Weiser's letter. No written response or definitive oral response to attorney Weiser's letter was ever received.

4. On December 30, 2014, Ms. Noriega informed me via telephone that one or more of Mr. Ptak's permits could be sold prior to the close of probate if the Department of Fish and Wildlife did not approve the transfer of Mr. Ptak's permits to Mr. Allen based on the theory that Mr. Ptak and Mr. Allen were operating as a general partnership.

5. In April of 2014 I began working to assist Christine Allen in the sale of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement.

6. On or about April 28, 2014, I participated in a telephone call with Ms. Noriega and attorney Weiser. Attorney Weiser informed Ms. Noriega that Christine Allen was selling Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement. Attorney Weiser also informed Ms. Noriega that the sale of these permits would generate enough income to pay off the

creditors of Mr. Ptak's Probate Estate so that the probate could be closed. Ms. Noriega stated that any unsold permits could remain in Mr. Ptak's Probate Estate and be transferred to Eric Allen at the close of probate by submitting a court order for distribution issued by a Judge of the Superior Court along with applications to transfer Mr. Ptak's remaining permits to Eric Allen to the Department of Fish and Wildlife.

7. The California Department of Fish and Wildlife approved the transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Brian Kiyohara on June 5, 2014, and re-issued the permits in the name of transferee Brian Kiyohara.

8. I was notified on June 12, 2014 that the California Department of Fish and Wildlife was rescinding the successful transfer of Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Permit and Transferrable South Coast Region Nearshore Fishery Trap Endorsement to Brian Kiyohara because more than one year had passed since Mr. Ptak's death.

9. My numerous conversation with Ms. Noriega between December 16, 2013 and June 12, 2014 and the information and analysis Ms. Noriega provided me regarding the transferability of Mr. Ptak's permits lead me to believe any time frame in which an application to transfer Mr. Ptak's Transferrable South Coast Region Nearshore Fishery Trap Endorsement must be submitted to the California Department of Fish and Wildlife was tolled while Mr. Ptak's estate was being probated.

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I declare under penalty of perjury of the laws of the State of California that the foregoing is true and correct.

Dated: August 25, 2014

GREENMAN, LACY, KLEIN
O'HARRA, & HEFFRON

BY: _____
CHRISTOPHER SHOURDS

Exhibit E

14 CLE

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE
NEARSHORE TRAP ENDORSEMENT - SOUTH COAST
Valid only when in possesion of a Commercial Fishing License for the same license year.

D-0011064277-8

Nearshore Trap Endorsement - South Coast (Transferable)
Permit Number: TST022

Commercial Fishing License ID: L74934
GO ID:
STATE
BRIAN KIYOHARA

SEX: M HAIR: Black EYES: Brown

Resident: I have resided in California continuously for the past 6 months

Doc No: D-0011064277-8
Trans: 000000008246186
155591444

Outlet No: 310001-002
6/5/2014 10:49:53 AM

Item	Fee*
Nearshore Trap - S Coast (T)	$106.35

Total: $106.35

*Includes any applicable application fees, agent handling fees and license buyer surcharge.

I certify under penalty of perjury under the laws of the State of California that all information on this document is true and correct and that I meet the requirements for these licenses. I understand it is unlawful to make any false statement in this application or to use or possess a license obtained by fraud or deceit (Fish and Game Code §§1052(b) and 1054).

X

Signature NOT VALID UNLESS SIGNED
LICENSE AND PHOTO IDENTIFICATION MUST BE IN IMMEDIATE POSSESSION WHILE FISHING

----- End of Document D-0011064277-8 -----

14 CLE

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE
NEARSHORE FISHERY PERMIT - SOUTH COAST
Valid only when in possesion of a Commercial Fishing License for the same license year.

D-0011064275-6

Nearshore - South Coast (Transferable)
Permit Number: NST066

Commercial Fishing License ID: L74934
GO ID:
STATE
BRIAN KIYOHARA

SEX: M HAIR: Black EYES: Brown

Resident: I have resided in California continuously for the past 6 months

Doc No: D-0011064275-6
Trans: 000000008246186
155591444

Outlet No: 310001-002
6/5/2014 10:49:52 AM

Item	Fee*
Nearshore Fish - S Coast (T)	$696.25

Total: $696.25

*Includes any applicable application fees, agent handling fees and license buyer surcharge.

I certify under penalty of perjury under the laws of the State of California that all information on this document is true and correct and that I meet the requirements for these licenses. I understand it is unlawful to make any false statement in this application or to use or possess a license obtained by fraud or deceit (Fish and Game Code §§1052(b) and 1054).

X

Signature NOT VALID UNLESS SIGNED
LICENSE AND PHOTO IDENTIFICATION MUST BE IN IMMEDIATE POSSESSION WHILE FISHING

----- End of Document D-0011064275-6 -----

Doc No: D-0011064276-7
Trans: 000000008246186
155591444

Outlet No: 310001-002
6/5/2014 10:49:53 AM

Item	Fee
2for1 Nearshore Transfer Offset Fee	$696.2
Nearshore Fish Pmt Transfer Fee	$500.0
Nearshore Trp Endrsmt Transfer Fee	$75.0

Total: $1,271.2

*Includes any applicable application fees, agent handling fees and license buyer surcharge.

----- End of Document D-0011064276-7 -----

14 RCT

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE
RECEIPT ONLY
This is not a license.

D-0011064276-7

GO ID:
STATE
BRIAN KIYOHARA

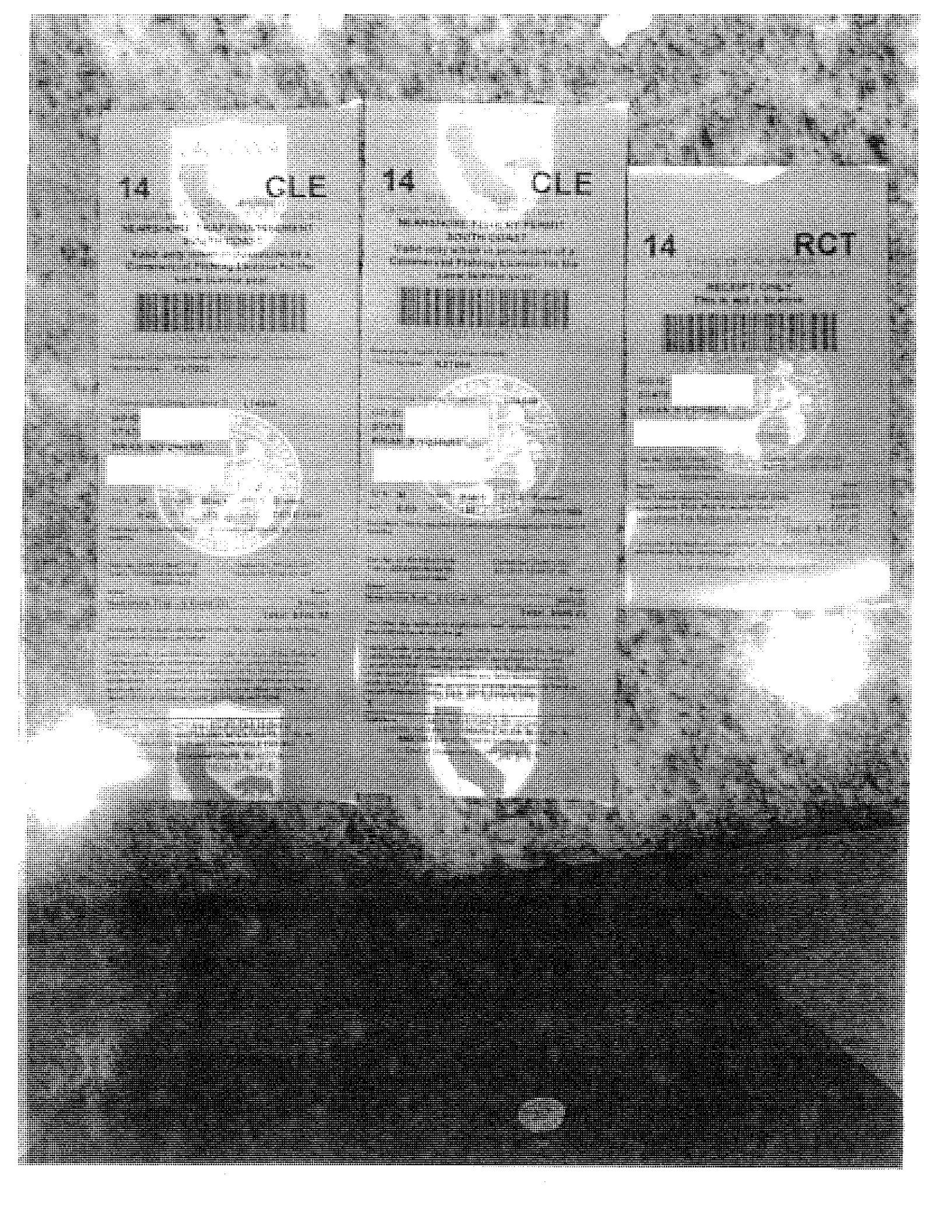
14 CLE
14 CLE
14 RCT

Exhibit B

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814
(916) 653-4899
(916) 653-5040 Fax
www.fgc.ca.gov

CERTIFIED MAIL

December 19, 2014

Mr. Chris Shourds, Esq.
Mr. Kurt Weiser, Esq.
Greenman, Lacy, Klein, O'Harra & Heffron
900 Pier Way
Oceanside, CA 92049-0299

Ms. Christine Allen, Executor
Estate of Thomas L. Ptak

Dear Messrs. Shourds and Weiser and Ms. Allen:

At its meeting on December 3 in Van Nuys, the California Fish and Game Commission (Commission) considered your request for an extension of time to transfer Thomas L. Ptak's transferable Nearshore Fishery Permit and Nearshore Fishery Trap Endorsement for the South Coast Management Area.

The Commission approved an extension until December 15, 2015 to transfer Mr. Ptak's permit and endorsement. Please contact the California Department of Fish and Wildlife's License and Revenue Branch for more information about how to proceed.

If you have any questions about the Commission's action, please contact Melissa Miller-Henson of my staff at 916.653.6184 or Melissa.Miller-Henson@fgc.ca.gov.

Sincerely,

Sonke Mastrup
Executive Director

ec: Christopher Ames, Office of the Attorney General, California Department of Justice, Christopher.Ames@doj.ca.gov
David Kiene, Office of the General Counsel, California Department of Fish and Wildlife, David.Kiene@wildlife.ca.gov
David Bess, Law Enforcement Division, California Department of Fish and Wildlife, David.Bess@wildlife.ca.gov
James Fong, License and Revenue Branch, California Department of Fish and Wildlife, James.Fong@wildlife.ca.gov

State of California – Natural Resources Agency
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
1416 9th Street, Ste. 1341
Sacramento, CA 95814
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

November 20, 2015

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Subject: Thomas Ptak Estate's requests

Dear Commissioners:

This letter is in regards to a letter by Chris Shourds dated November 11, 2015 ("Letter"), written on behalf of the Estate of Thomas Ptak ("Estate"), to the Fish and Game Commission ("Commission"), in which the Estate asks the Commission to waive deadlines in regulations and the Fish and Game Code ("Waiver Requests"). These deadlines pertain to the transfer of a nearshore fishery permit (South Coast Region) and nearshore trap endorsement (South Coast Region), and renewal of a southern rock crab trap permit, lobster operator permit, general gill/trammel net permit, nearshore fishery permit, and nearshore trap endorsement that Mr. Ptak had owned (collectively, "Permits"). The Estate is also asking the Department to return the Permits, which it seized earlier this year because of fishing violations committed by a representative of the Estate. Because there is no authority to waive these deadlines, and because the Estate has used the Permits after Mr. Ptak's death to illegally catch over $135,000 worth of lobsters and crabs, the Department of Wildlife ("Department") objects to the Waiver Requests and request to return the Permits, and asks that the Commission remove these requests as an agenda item.

I. Background

Mr. Ptak possessed a southern rock crab trap permit, lobster operator permit, general gill/trammel net permit, nearshore fishery permit (South Coast Region), and nearshore trap endorsement (South Coast Region). Mr. Ptak died on March 13, 2012. As explained below, each permit has rules and deadlines applying to its transfer after the death of a permittee. Furthermore, each permit could only be used by Mr. Ptak unless they were lawfully transferred after his death: none have been transferred.

With respect to southern rock crab trap permits, California Code of Regulations, title 14 ("Title 14"), section 125, subdivision (a) ("Section 125(a)") states in part that "any person using traps to take, possess aboard a vessel, use as bait, or land rock crab…for commercial purposes shall have a valid general trap permit issued pursuant to Fish and Game Code Section 9001 and either a northern or southern rock crab trap permit…" Upon death of a permittee, an estate "may renew the permit, for the purpose of maintaining its validity, for a period of two (2) years from

the date of death of the permit holder as stated on the death certificate." (Section 125, subd. (f)(5).) This authorization does not allow anyone to fish for crabs until the transfer is complete. Accordingly, the Estate could not renew the southern rock crab trap permit after March 13, 2014, although it did so on March 28, 2014 and March 12, 2015.[1] (Exhibit A, which is a list printed from the Department's Automated License Data System showing all of the Permits and the dates that they have been renewed.) The Estate has never submitted an application to transfer the southern rock crab trap permit.

Lobster operator permits have similar restrictions. When taking lobsters, each "operator and crewmember permittee shall have his/her permit in possession." (Title 14, Section 122 ("Section 122"), subdivision(b).) Upon a permittee's death, the estate of a lobster operator "may renew that permit as provided for in these regulations if needed to keep it valid" for up to one year, but may not fish with it. (Section 122, subdivision (r)(2).) Thus, the Estate could not renew the lobster operator permit after March 13, 2013, although it did so on March 28, 2014 and March 12, 2015. (Exhibit A.) The Estate has never submitted an application to transfer the lobster operator permit.

Likewise, for a general gill/trammel net permit transfer, "The application for transfer by that person's estate shall be received by the department…within one year of the date of death of the permitholder." (Fish & G. Code, § 8681.5, subd. (d) ("Section 8681.5(d)").) An estate may renew a permit only once. If no transfer application is submitted within one year of the death of the permittee, "the permit shall revert to the department for disposition pursuant to Section 8681." (Section 8681.5(d).) Therefore, the Estate could not renew the gill/trammel net permit after March 13, 2013. Nonetheless, the Estate renewed Mr. Ptak's general gill/trammel net permit on March 28, 2014 and March 12, 2015. (Exhibit A.) The Estate has never submitted an application to transfer this permit.

Title 14, section 150, subdivision (g)(3) ("Section 150"), which addresses the transfer of a nearshore fishery permit and nearshore fishery endorsement after the death of a permittee, states in part:

> A transferable Nearshore Fishery Permit issued pursuant to this section may be transferred to the estate of a permittee who has died only for the purpose of transferring the Nearshore Fishery Permit to another person.

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[1] Mr. Ptak's commercial fishing license was also illegally renewed after his death on these dates and on March 26, 2012.

(A) Such transfer may be considered if the estate makes application, in the form of a notarized letter, for the transfer within one year of the date of death as listed on the death certificate.

...

Since Mr. Ptak's death occurred on March 13, 2012, the Estate was required to submit an application by March 13, 2013.

According to the Estate, Eric Allen, a commercial fisherman and former crewmember of Mr. Ptak, was enlisted by the Executor of the Estate, Christine Allen, "to continue operating Mr. Ptak's commercial fishing business," which was "an ongoing business concern of The Estate of Thomas L. Ptak." (Letter, p. 3.) Mr. Allen has assisted the Estate with Mr. Ptak's fishing business since Mr. Ptak's death. Furthermore, Mr. Allen was formally recognized by the Superior Court of California, County of San Diego, as the Special Administrator of the Estate of Thomas L. Ptak, a title which he held until September 18, 2012. Since that time, according to the Estate, "Christine Allen has enlisted the services of Eric Allen to operate Mr. Ptak's commercial fishing business as an on ongoing business concern of the Estate of Thomas L. Ptak with the goal of generating sufficient income to pay off the creditors of the estate." (Letter, p. 3.)

On May 23, 2014, over two years after Mr. Ptak's death, and over a year after the deadline, the Estate submitted documents to transfer the nearshore fishery permit and nearshore trap endorsement. Because the deadline had passed, the Department denied the transfer application on July 3, 2014. (Exhibit B.)

On August 22, 2014, the Estate submitted a request to the Commission to appeal the Department's denial, and waive Section 150, subdivision (g)(3)(A)'s one-year deadline by extending the deadline by nine months. In support of the Estate's appeal request, attorneys for the Estate, Kurt Weiser and Mr. Shourds, each submitted a declaration, attached to the Letter, claiming that Governmental Program Analyst Debbie Noriega, who has no knowledge or training regarding probate matters, advised them on various probate issues.[2] They also allege

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[2] Mr. Weiser and Mr. Shourds claim Ms. Noriega told them: "Mr. Ptak's commercial fishing permits could be retained in Mr. Ptak's Probate Estate and could be transferred once the probate was complete." (Weiser Dec., paragraph 6, p. 2.); "...one or more of Mr. Ptak's permits could be sold out of Mr. Ptak's Probate Estate in order to generate enough proceeds to pay off the estate's creditors so that the probate could be closed." (Weiser Dec., paragraph 8, p. 3.); "...one or more of Mr. Ptak's permits could be sold prior to the close of probate if the Department of Fish and Wildlife did not approve the transfer of Mr. Ptak's permits to Mr. Allen based on the theory that Mr. Ptak and Mr. Allen were operating as a general partnership." (Shourds Dec., paragraph 4, p. 2); and "...any unsold permits could remain in Mr. Ptak's Probate Estate and be transferred to Eric Allen at the close of probate by

that she failed to advise them of a deadline to submit a transfer application, although neither attorney asked her about deadlines, and the transfer deadlines are clearly stated in the regulations. Ms. Noriega vigorously denies making such statements regarding probate, and does not recall discussing any probate matter with them. Even though their law firm, Greenman, Lacy, Klein, Hinds, Weiser & Heffron, has, according to its website, "attorneys specializing in the following practice areas: family law, probate, estate planning...," they maintain that they relied on Ms. Noriega for advice on probate issues.

In lieu of an appeal hearing, on December 3, 2014, the Commission granted the Estate a twelve month extension to complete the transfer—i.e., until December 15, 2015. Since Mr. Ptak died on March 13, 2012, and the deadline to apply for a transfer had already passed on March 13, 2013, this waiver actually extended the deadline from 12 to 45 months. These latest Waiver Requests would again extend the deadlines to submit transfer applications, and renew the Permits, by another twelve months to December, 2016—57 months after Mr. Ptak's death. Specifically, the deadlines would be extended as follows:

- Southern rock crab trap permit renewal deadline: from March 13, 2014 to December 15, 2016 (33 month extension).
- Lobster operator permit renewal deadline: from March 13, 2013 to December 15, 2016 (45 month extension).
- General gill/trammel net permit renewal deadline: from March 13, 2013 to December 15, 2016 (45 month extension).
- Nearshore fishery permit and nearshore trap endorsement renewal and transfer submission deadlines: from March 13, 2013 to December 15, 2016 (45 month extension).

II. Argument

A. No Authority Exists to Grant the Extension.

There is no authority in the Fish and Game Code or regulations adopted pursuant to the Fish and Game Code allowing the Commission to waive the deadlines for renewing or transferring the Permits. Moreover, the Commission does not have any obligation to even consider the Waiver Requests.

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submitting a court order for distribution issued by a Judge of the -Superior Court along with applications to transfer Mr. Ptak's remaining permits to Eric Allen to the Department of Fish and Wildlife." (Shourds Dec., paragraph 6, pp. 2-3).

B. The Estate Has Received $135,000 from Illegal Fishing.

Even if the Commission considers the Waiver Requests, the Estate does not deserve any waivers of the rules because it has continually engaged in illegal fishing since Mr. Ptak's death, including illegally fishing for three months after the Commission granted that waiver. The Estate also repeatedly renewed the southern rock crab trap permit, lobster operator permit, and general gill/trammel net permits in violation of Sections 122, subdivision (r)(2), 125 (f)(5), and 8681.5(d), despite an instruction not to do so.

For three years after Mr. Ptak's death, from March 27, 2012 through March 18, 2015, Mr. Allen fished on behalf of the Estate "to continue operating Mr. Ptak's commercial fishing business." (Letter, p. 3.) During that time, Mr. Allen made over 200 landings and caught 5,772.7 pounds of lobsters and 2,211 pounds of southern rock crabs, totaling over **17,000 pounds,** and valued at **$135,136.52.** Exhibit C is a spreadsheet showing lobster and southern rock crab landings that were made after Mr. Ptak's death while using his southern rock crab trap and lobster operator permits. As explained above, since the lobster operator and southern rock crab trap permits were not transferred, they may not be used. Thus, **all of this fishing was conducted illegally**. Exhibit D is a receipt dated January 27, 2014, that is an example of a landing Mr. Allen made after Mr. Ptak's death while using Mr. Ptak's commercial fishing license (L30798) and lobster permit. In other instances, a fisherman forged Mr. Ptak's signature. Exhibit E is a landing receipt from January 17, 2014, supposedly signed by "TP" even though Thomas Ptak had died nearly two years earlier.

The illegal fishing continued until March 18, 2015, when Department enforcement personnel contacted Mr. Allen while he was fishing and seized the Permits as evidence. There is currently a criminal case pending against Mr. Allen in the Superior Court of San Diego County. As explained previously, the southern rock crab trap permit could not be renewed after March 13, 2014 and the general gill/trammel net and lobster operator permits could not be legally renewed after March 13, 2013. Thus, the Estate lost all interest in them several years ago.

Moreover, on February 18, 2015, the Department warned the Estate in an e-mail that "because Thomas Ptak is deceased, the Estate cannot renew the lobster operator, gill trammel and rock crab permits (although the Estate might have already received renewal applications for these permits)." On March 12, 2015, the Estate renewed all of these Permits anyway. (Exhibit F.)

III. Conclusion

There is no authority in the Fish and Game Code or regulations that allows the Commission to waive the transfer or renewal deadlines, nor is there any legal obligation for the Commission to even consider any of the Estates' requests. And certainly, there is no equitable reason to extend the deadlines another 12 months, from 12 or 24 months to 57 months, since the Estate continued to illegally fish even after the Commission extended the nearshore fishery permit and nearshore fishery endorsement transfer deadline last December. The Estate has already received an enormous benefit--$135,000--from illegally using the Permits. The Estate's rampant illegal fishing should not be further rewarded by bending the rules to allow it to transfer them.

For these reasons, the Department objects to the Waiver Requests and respectfully requests that the Commission completely remove the Estates various requests as an agenda item.

Sincerely,

DAVID KIENE
Senior Staff Counsel

Exhibit A

2015	2010	Commercial Fishing License (R)	3/12/2015	1	Active	Sold	3/12/2015	0	
2015	2280	Commercial Fishing Ocean Enhancement Stamp	3/12/2015	1	Active	Sold	3/12/2015	0	
2015	2190	Commercial Trap Permit	3/12/2015	1	Active	Sold	3/12/2015	0	
2015	2220	General Gill/Trammel Net Permit (LE Permit: GGN012)	3/12/2015	1	Active	Sold	3/12/2015	0	
2015	2120	Lobster Operator Permit (Transferrable) (LE Permit: LOT104)	3/12/2015	1	Active	Sold	3/12/2015	0	
2015	5480	Nearshore Fishery Permit - South Coast (T) (LE Permit: NST033)	3/12/2015	1	Active	Sold	3/12/2015	0	
2015	5510	Nearshore Trap Endorsement - South Coast (T) (LE Permit: TST022)	3/12/2015	1	Active	Sold	3/12/2015	0	
2015	5710	Southern Rock Crab Trap Permit (LE Permit: SRC082)	3/12/2015	1	Active	Sold	3/12/2015	0	
2014	5480	Nearshore Fishery Permit - South Coast (T) (LE Permit: NST033)	6/13/2014	1	Active	Sold	6/13/2014	0	
2014	0540	Nearshore Fishing Permit Transfer Fee (LE Permit: TST022)	6/13/2014	1	Active	Sold	6/13/2014	0	
2014	5510	Nearshore Trap Endorsement - South Coast (T) (LE Permit: TST022)	6/13/2014	1	Active	Sold	6/13/2014	0	
2014	0550	Nearshore Trap Endorsement Transfer Fee (LE Permit: TST022)	6/13/2014	1	Active	Sold	6/13/2014	0	
2014	2010	Commercial Fishing License (R)	3/28/2014	1	Active	Sold	3/28/2014	0	
2014	2280	Commercial Fishing Ocean Enhancement Stamp	3/28/2014	1	Active	Sold	3/28/2014	0	
2014	2190	Commercial Trap Permit	3/28/2014	1	Active	Sold	3/28/2014	0	
2014	2220	General Gill/Trammel Net Permit (LE Permit: GGN012)	3/28/2014	1	Active	Sold	3/28/2014	0	
2014	2120	Lobster Operator Permit (Transferrable) (LE Permit: LOT104)	3/28/2014	1	Active	Sold	3/28/2014	0	
2014	5480	Nearshore Fishery Permit - South Coast (T) (LE Permit: NST033)	3/28/2014	1	Inactive	Void	5/5/2014	0	
2014	5510	Nearshore Trap Endorsement - South Coast (T) (LE Permit: TST022)	3/28/2014	1	Inactive	Void	5/5/2014	0	
2014	5710	Southern Rock Crab Trap Permit (LE Permit: SRC082)	3/28/2014	1	Active	Sold	3/28/2014	0	
2013	2010	Commercial Fishing License (R)	4/2/2013	1	Active	Sold	4/2/2013	0	
2013	2280	Commercial Fishing Ocean Enhancement Stamp	4/2/2013	1	Active	Sold	4/2/2013	0	
2013	2190	Commercial Trap Permit	4/2/2013	1	Active	Sold	4/2/2013	0	
2013	2220	General Gill/Trammel Net Permit (LE Permit: GGN012)	4/2/2013	1	Active	Sold	4/2/2013	0	
2013	2120	Lobster Operator Permit (Transferrable) (LE Permit: LOT104)	4/2/2013	1	Active	Sold	4/2/2013	0	
2013	5480	Nearshore Fishery Permit - South Coast (T) (LE Permit: NST033)	4/2/2013	1	Active	Sold	4/2/2013	0	
2013	5510	Nearshore Trap Endorsement - South Coast (T) (LE Permit: TST022)	4/2/2013	1	Active	Sold	4/2/2013	0	
2013	5710	Southern Rock Crab Trap Permit (LE Permit: SRC082)	4/2/2013	1	Active	Sold	4/2/2013	0	
2012	2010	Commercial Fishing License (R)	3/26/2012	1	Active	Sold	3/26/2012	0	
2012	2280	Commercial Fishing Ocean Enhancement Stamp	3/26/2012	1	Active	Sold	3/26/2012	0	
2012	2190	Commercial Trap Permit	3/26/2012	1	Active	Sold	3/26/2012	0	
2012	2220	General Gill/Trammel Net Permit (LE Permit: GGN012)	3/26/2012	1	Active	Sold	3/26/2012	0	
2012	2120	Lobster Operator Permit (Transferrable) (LE Permit: LOT104)	3/26/2012	1	Active	Sold	3/26/2012	0	
2012	5480	Nearshore Fishery Permit - South Coast (T) (LE Permit: NST033)	3/26/2012	1	Active	Sold	3/26/2012	0	
2012	5510	Nearshore Trap Endorsement - South Coast (T) (LE Permit: TST022)	3/26/2012	1	Active	Sold	3/26/2012	0	
2012	5710	Southern Rock Crab Trap Permit (LE Permit: SRC082)	3/26/2012	1	Active	Sold	3/26/2012	0	
2011	2010	Commercial Fishing License (R)	3/22/2011	1	Active	Sold	3/22/2011	0	
2011	2280	Commercial Fishing Ocean Enhancement Stamp	3/22/2011	1	Active	Sold	3/22/2011	0	
2011	2190	Commercial Trap Permit	3/22/2011	1	Active	Sold	3/22/2011	0	
2011	2220	General Gill/Trammel Net Permit (LE Permit: GGN012)	3/22/2011	1	Active	Sold	3/22/2011	0	
2011	2120	Lobster Operator Permit (Transferrable) (LE Permit: LOT104)	3/22/2011	1	Active	Sold	3/22/2011	0	
2011	5480	Nearshore Fishery Permit - South Coast (T) (LE Permit: NST033)	3/22/2011	1	Active	Sold	3/22/2011	0	
2011	5510	Nearshore Trap Endorsement - South Coast (T) (LE Permit: TST022)	3/22/2011	1	Active	Sold	3/22/2011	0	
2011	5710	Southern Rock Crab Trap Permit (LE Permit: SRC082)	3/22/2011	1	Active	Sold	3/22/2011	0	

Exhibit B

State of California -The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
License and Revenue Branch
1740 N. Market Blvd
Sacramento, CA 95834
http://www.wildlife.ca.gov

EDMUND G. BROWN JR. Governor
CHARLTON H. BONHAM, Director

Certified Mail

July 3, 2014

Ms. Christine Allen

SUBJECT: NOTICE OF DENIAL OF AN APPLICATION TO TRANSFER TRANSFERABLE SOUTH COAST REGION NEARSHORE FISHERY PERMIT

Dear Ms. Allen:

This letter is in response to your application to transfer a 2014-2015 Transferable South Coast Region Nearshore Fishery Permit (TSCRNFP), Permit Number NST033 from Mr. Thomas L. Ptak (L30798) to Mr. Brian Kiyohara (L74934). You are the executor of Mr. Ptak's estate.

Authority-Nearshore Fishery Permit

Pursuant to Section 150(g)(1)(A), Title 14, of the California Code of Regulations (CCR), a transferable Nearshore Fishery Permit (NFP) may be transferred from one person to another. If the number of NFPs in a regional management area is greater than the capacity goal for the regional management area, one additional transferable NFP for the same regional management area must be surrendered to the Department of Fish and Wildlife (Department) for cancellation at the same time the application for transfer is submitted. The capacity goal for the South Coast Region is 18 permits. As of June 5, 2014, 43 SCRNFPs have been issued, therefore two TSCRNFPs must be surrendered.

Pursuant to Section 150(g)(3), Title 14, of the CCR, a transferable NFP may be transferred to the estate of a permittee who has died only for the purpose of transferring the NFP to another person.

Nearshore Fishery Permit Transfer Requirements

- The NFP(s) must be valid at the time of application for transfer.
- The transferee must have a valid California Commercial Fishing License.
- The transferee must have never been convicted of a violation of any provision of these regulations or the Fish and Game Code (FGC) pertaining to the commercial take of nearshore fish stocks.

Required Documentation

- The request for the transfer must be submitted within one year of the date of death of the permit holder as listed on the death certificate.
- Transfer application in the form of a notarized letter which identifies the deceased permit holder, transferee, and transferable NFP for the regional management area.
- Copy of the permittee's death certificate.
- Copy of the permittee's California Commercial Fishing License and original NFP(s).
- Copy of the transferee's California Commercial Fishing License.
- Nonrefundable NFP transfer fee of $500.

Documentation Submitted

- A notarized letter dated May 9, 2014, received May 23, 2014, from Ms. Christine Allen, Executor of the Estate of Thomas L. Ptak requesting to transfer Mr. Ptak's TSCRNFP and Transferable South Coast Region Nearshore Fishery Trap Endorsement (TSCRNFTE) to Mr. Kiyohara
- A notarized letter dated May 9, 2014, received May 23, 2014, from Eric A. Kramer requesting to transfer his TSCRNFP to Mr. Kiyohara.
- A notarized letter dated May 9, 2014, received May 23, 2014, from Brian Kiyohara, stating that one the TSCRNFPs will be retired to complete the transfer process
- Copy of the Certificate of Death from County of San Diego, stating Mr. Ptak's date of death was on March 13, 2012.
- Copy of Letter of Testamentary filed January 31, 2014, for the estate of Thomas L. Ptak, appointing Christine Allen as executor.
- Mr. Ptak's original 2014-2015 TSCRNFP
- Mr. Kramer's original 2014-2015 TSCRNFP
- A copy of Mr. Kiyohara's 2014-2015 California Commercial Fishing License and Commercial General Trap Permit.
- Nonrefundable transfer fee $500.

Department of Fish and Wildlife's Recommendation

The Department is denying your application to transfer Mr. Ptak's TSCRNFP, because the application must be submitted within one year of the date of death of the permit holder as listed on the death certificate. The application was received more than 26 months after the date of death listed on the death certificate.

Deadline to File an Appeal

You may appeal to the Department in writing describing the basis for the appeal. The appeal shall be reviewed and decided by the Department. The decision of the Department may be appealed in writing to the Commission at 1416 Ninth Street,

Sacramento, California 95814. Pursuant to Section 150(m)(3), Title 14, of the CCR, your appeal of the Department's decision must be received within 60 days of this letter.

Your application to transfer a Transferable South Coast Region Nearshore Fishery Trap endorsement was addressed under separate cover.

If you have any questions or require further assistance, please contact Ms. Debbie Noriega of my staff, at the letterhead address, by telephone at (916) 928-5817, or e-mail Debbie.Noriega@wildlife.ca.gov.

Sincerely,

James Fong, Chief
License and Revenue Branch

cc: Mr. Sonke Mastrup
Fish and Game Commission
Sacramento, California

Ms. Debbie Noriega
Department of Fish and Wildlife
Sacramento, California

Exhibit C

California Department of Fish and Wildlife
Landing Receipts From 03/01/2012 To 11/01/2015

Commercial Fishermen: L30798 THOMAS LEONARD PTAK

Year	Serial#	Land Date	Port	Origin	Fish Bus	CFL#	FG#	Market	Rptd Catch	Unit Price	Catch Amt	Use	Cond	Gear	Units
2012															LBS
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Commercial Fishermen: L30798 THOMAS LEONARD PTAK

Year	Serial#	Land Date	Port	Origin	Fish Bus	CFL#	FG#	Market	Rptd Catch	Unit Price	Catch Amt	Use	Cond	Gear	Units
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Commercial Fishermen: L30798 THOMAS LEONARD PTAK

Year	Serial#	Land Date	Port	Origin	Fish Bus	CFL#	FG#	Market	Rptd Catch	Unit Price	Catch Amt	Use	Cond	Gear	Units
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Commercial Fishermen: L30798 THOMAS LEONARD PTAK

Year	Serial#	Land Date	Port	Origin	Fish Bus	CFL#	FG#	Market	Rptd Catch	Unit Price	Catch Amt	Use	Cond	Gear	Units
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Commercial Fishermen: L30798 THOMAS LEONARD PTAK

Year	Serial#	Land Date	Port	Origin	Fish Bus	CFL#	FG#	Market	Rptd Catch	Unit Price	Catch Amt	Use	Cond	Gear	Units
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Commercial Fishermen: L30798 THOMAS LEONARD PTAK

Year	Serial#	Land Date	Port	Origin	Fish Bus	CFL#	FG#	Market	Rptd Catch	Unit Price	Catch Amt	Use	Cond	Gear	Units
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Commercial Fishermen: L30798 THOMAS LEONARD PTAK

Year	Serial#	Land Date	Port	Origin	Fish Bus	CFL#	FG#	Market	Rptd Catch	Unit Price	Catch Amt	Use	Cond	Gear	Units
2013															LBS
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Commercial Fishermen: L30798 THOMAS LEONARD PTAK

Year	S	[illegible]	[illegible]	[illegible]	Fish Rpts	CFL#	FG#	Market	Rptd Catch	Unit Price	Catch Amt	Use	Cond	Gear	Units
2014	P														LBS
2014	P														LBS
2014	F														LBS
2014	F														LBS
2014	F														LBS
2014	F														LBS
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2014	F														LBS
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Commercial Fishermen: L30796 THOMAS LEONARD PTAK

Year	Serial#	Land Date	Port	Origin	Fish Bus	CFL#	FG#	Market	Rptd Catch	Unit Price	Catch Amt	Use	Cond	Gear	Units
2014															LBS
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Commercial Fishermen: L30798 THOMAS LEONARD PTAK

Year	Serial#	Land Date	Port	Origin	Fish Bus	CFL#	FG#	Market	Rptd Catch	Unit Price	Catch Amt	Use	Cond	Gear	Units
															LBS
2015															
															LBS
2015															

tal Landing Rec...

Exhibit D

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

MONTH DAY YEAR

1 27 13

PERMIT # O 433493

SEE 2ND PAGE

FISHERMAN LAST NAME	F. I.	ID NUMBER	PORT OF FIRST LANDING	LOCATION WHERE FISH WERE CAUGHT

R

UP

RAP

LINE #	FISH CODE	POUNDS	PRICE	CONDITION	GEAR	
		, .	$.			CHANGES ON BACK
		, .	$.			
		, .	$.			

CORRECTIONS - FOR FIELD BIOLOGIST USE ONLY

RECEIVED
FEB 13 2014
NO WILDLIFE - STATS
SALAMITOS, CA

FISHERMAN/PERMITTEE SIGNATURE _____ RECEIVED BY _____

CERTIFIED UNDER PENALTY OF PERJURY AS TRUE AND CORRECT

FSW 625 -O (4/13) GREEN = DEPT. OF FISH & WILDLIFE COPY ***** YELLOW = FISHERMAN COPY ***** PINK / GOLDENROD = FISH BUSINESS COPY (2)

Exhibit E

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

MONTH DAY YEAR

PERMIT #

1 7 14 O 433459

SEE 2ND PAGE

FISHERMAN LAST NAME	F.I.	ID NUMBER	PORT OF FIRST LANDING	LOCATION WHERE FISH WERE CAUGHT

PRIMARY GEAR USED

27

GEAR LEGEND

21 FISH TRAP
22 PRAWN TRAP
27 CRAB / LOBSTER TRAP
OTHER

(BIOLOGIST USE)
FISH CODE

ITE PAD

LINE #	FISH CODE	POUNDS	PRICE	CONDITION	GEAR	
		, .	$.			CHANGES ON BACK
		, .	$.			
		, .	$.			

FISHERMAN/PERMITTEE SIGNATURE

RECEIVED BY

CERTIFIED UNDER PENALTY OF PERJURY AS TRUE AND CORRECT

F&W 825-O (4/13) GREEN = DEPT. OF FISH & WILDLIFE COPY ***** YELLOW = FISHERMAN COPY ***** PINK / GOLDENROD = FIRM PURCHASE ***

Exhibit F

Kiene, David@Wildlife

From: Kiene, David@Wildlife
Sent: Wednesday, February 18, 2015 2:23 PM
To: 'Chris Shourds'
Subject: RE: Estate of Thomas Ptak Transfer of Nearshore Permit and Trap Endorsement.

Chris,

Below are answers to several questions you have asked.

1. Can the two for one to the buyer be accomplished considering both sellers have and will be surrendering full Nearshore Fishery Permits and Nearshore Trap Endorsements?
   A: **Yes.** The second trap endorsement will become null and void once the second Nearshore Fishery Permit is transferred. If the second permit holder would like to transfer his/her endorsement to another party, the second permit holder should submit a request to transfer his/her endorsement at the same time the transfer request for the Nearshore Fishery Permits is submitted.

2. Can the Estate sell its Nearshore Fishery Permit to the buyer now, and the other seller sell his/her Nearshore Fishery Permit later (with the understanding that the transfer would not be effective until the second sale occurs)?
   A: **No.** The Department cannot review a transfer request unless two permits are surrendered by the transferors at the same time. The request must include two Transferable Nearshore Fishery Permits for the same regional management area.

3. With respect to the lobster operator, gill trammel and rock crab permits:
   - Does the Estate need to pay transfer application fees before the Department can review transfer applications for these permits?
     A: **Yes.** The transfer fees are as follows:
     Lobster Operator Permit nonrefundable transfer fee is $500.
     General Gill Net /Trammel Net Permit nonrefundable transfer fee is $100.
     Southern Rock Crab Trap Permit nonrefundable transfer is $1,000.

   - Assuming the transfer requests are denied, the Estate appeals the denials to the Commission, and the Estate prevails, can these transfer application fees apply to future transfer application fees for these permits?
     A: **Yes.** In fact, under this scenario, the Estate would not have to pay additional transfer application fees later as long as the proposed permittees are the same.

Please keep in mind that because Thomas Ptak is deceased, the Estate cannot renew the lobster operator, gill trammel and rock crab permits (although the Estate might have already received renewal applications for these permits).

David Kiene
Senior Staff Counsel
Office of the General Counsel

California Department of Fish and Wildlife
(916) 651-7646
(916) 654-3805 (fax)

From: Chris Shourds [mailto:Chris@glkohlaw.com]
Sent: Wednesday, February 18, 2015 9:28 AM
To: Kiene, David@Wildlife
Subject: RE: Estate of Thomas Ptak Transfer of Nearshore Permit and Trap Endorsement.

Dear David,

Do you have any answer as to whether we can transfer our Southern Region Nearshore Permit and Trap Endorsement to the buyer now and then put the burden on the buyer to obtain the other Nearshore Permit before the buyer can fish the permit?

Also, do you have an answer as to whether we can do the two-for-one transfer if both sellers have a full Southern Region Nearshore Permit and Trap Endorsement (instead of the normal deal where we transfer our permit and trap endorsement to the buyer and the second seller transfers only a Nearshore Permit)?

Any info would be much appreciated as we have a buyer who still seems interested but is a little concerned that our permits are owned and being transferred out of a probate estate.

We want to make sure everything is done proper when we enter negotiations with the buyer so that the transaction will be smooth and not voided this time.

Thanks in advance. I look forward to hearing from you.

Sincerely,

Chris Shourds
Attorney at Law – Estate Planning, Probate, Decedent's Affairs
Greenman, Lacy, Klein, O'Harra & Heffron
PO Box 299, 900 Pier View Way
Oceanside, CA 92049
Office: 760-722-1234
Fax: 760-722-5860
Chris@glkohlaw.com

From: Kiene, David@Wildlife [mailto:David.Kiene@wildlife.ca.gov]
Sent: Tuesday, February 10, 2015 4:03 PM
To: Chris Shourds
Subject: RE: Estate of Thomas Ptak Transfer of Nearshore Permit and Trap Endorsement.

I received your message—thanks, that answers my question.

David Kiene
Senior Staff Counsel
Office of the General Counsel
California Department of Fish and Wildlife

(916) 651-7646
(916) 654-3805 (fax)

From: Chris Shourds [mailto:Chris@glkohlaw.com]
Sent: Tuesday, February 10, 2015 12:26 PM
To: Kiene, David@Wildlife
Subject: Estate of Thomas Ptak Transfer of Nearshore Permit and Trap Endorsement.

Dear Mr. Kiene,

Thank you for reaching out to me last week to discuss some of the issues surrounding the transfer of Thomas Ptak's permits. I am dropping you this quick line so you have all of my contact info (below in my signature).

It looks like we have a buyer for Mr. Ptak's Southern Region Nearshore Fishery Permit and Nearshore Fishery Trap Endorsement. In addition to the Mr. Ptak's Estate and the buyer there is another seller involved to so the two for one can be accomplished. The other seller also has a Nearshore Fishery Permit and Nearshore Trap Endorsement.

Can the two for one to the buyer be accomplished considering both sellers have and will be surrendering full Nearshore Fishery Permits and Nearshore Trap Endorsements?

We are hoping to move forward with the transaction as soon as we hear from you regarding this issue and the other questions we discussed on the telephone last week.

Again, I thank you for your time. I look forward to hearing from you.

Sincerely,

Chris Shourds
Attorney at Law – Estate Planning, Probate, Decedent's Affairs
Greenman, Lacy, Klein, O'Harra & Heffron
PO Box 299, 900 Pier View Way
Oceanside, CA 92049
Office: 760-722-1234
Fax: 760-722-5860
Chris@glkohlaw.com

GREENMAN, LACY, KLEIN,
HINDS, WEISER & HEFFRON
ATTORNEYS AT LAW

JANET BLEDSOE LACY
MICHAEL L. KLEIN
KAREN M. HEFFRON **‡
KELLY L. HINDS*
KURT WEISER*

KENNETH L. GREENMAN, JR.*
OF COUNSEL

* PROFESSIONAL CORPORATION
** CERTIFIED SPECIALIST, FAMILY LAW, THE STATE BAR OF CALIFORNIA BOARD OF LEGAL SPECIALIZATION
‡ FELLOW, AMERICAN ACADEMY OF MATRIMONIAL LAWYERS

A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

900 PIER VIEW WAY
POST OFFICE BOX 299
OCEANSIDE, CA 92049-0299
(760) 722-1234 • FAX: (760) 722-5860

KATIE A. ANDERSON**
JEFFREY BLEDSOE LACY
KIMBERLY A. DAWSON
CHRISTOPHER SHOURDS
ANGELA JENKINS

LA JOLLA OFFICE
7825 FAY AVENUE
SUITE 200
LA JOLLA, CA 92037
(858) 459-9282

November 25, 2015

Fish and Game Commission
1416 Ninth Street
Sacramento, California, 95814

Re: The Estate of Thomas L. Ptak
Response to California Department of Fish and Wildlife's Letter dated November 20, 2015

Dear Fish and Game Commission:

This serves as the response to the letter the California Department of Fish and Wildlife (the "Department") wrote to the California Fish and Game Commission (the "Commission") dated November 20, 2015 (the "Department's Letter").

The Department's Letter is creative, yet it is misplaced. The Estate of Thomas L. Ptak has not conducted any illegal fishing. Thomas Ptak died. Christine Allen was duly appointed the Executor of the Estate of Thomas L. Ptak by the Superior Court of California, County of San Diego. The California Probate Code grants Christine Allen the right to continue to operate the decedent's business. In continuing to operate the decedent's business, she has the right to enlist an agent who has the knowledge and expertise necessary to properly carry out the business operations.

Christine Allen's operation of Mr. Ptak's fishing business is legal under the probate code. The Estate of Thomas L. Ptak never tried to take advantage of Department regulations and has never tried to hide information or activity from the Department. Rather, the Estate has been open and transparent with the Department beginning in 2012, only six days following Thomas' death.

In 2014, the Department admitted to Attorneys that the Department really needs to update their permit transfer regulations to account for the death of permit holders whose affairs end up in the probate court system. If this hearing were being held in a court of law, the Department would likely argue this statement is hearsay. However, this statement falls under an exception to the rules of hearsay because it is an admission that the Department's permit transfer regulations are broken and do not provide a fair opportunity for the probate estate of a decedent to transfer the decedent's permits. An admission such as the one made by the Department is not made inadmissible by California hearsay rules. Attorneys understand and respect that the December 9, 2015 Commission meeting is not a hearing in the court of law. However, Attorneys ask the Commission to carefully consider the issue of the transfer of a decedent's permits when the death of a permit holder's affairs find their way into the probate court system.

The Estate of Thomas L. Ptak is on the Commission's agenda for December 9, 2015 because the Estate has not been afforded a fair opportunity to transfer the permits owned by Mr. Ptak. Depriving the Estate of a fair opportunity to transfer Mr. Ptak's permits is inequitable in that it harms the beneficiaries of his Estate. It is unclear to Attorneys and Christine Allen why the Department would desire to harm beneficiaries of the Estate of an individual who dedicated his life to the business of commercial fishing, especially when this deceased individual's estate is being formally conducted as probate in the Superior Court of California, County of San Diego. Depriving the Estate the ability to transfer Mr. Ptak's permits will leave the beneficiaries of his estate in financial hardship.

I.

Clarifications Regarding Background

The Department's Letter states the law firm Greenman, Lacy, Klein, Hinds, Weiser, & Heffron (the "Attorneys") relied on Ms. Noriega for advice on probate issues. The Department's incorrect characterization of Attorneys regular communications with Ms. Noriega lead one to believe Attorneys relied on Ms. Noriega help carry out the probate of the Estate of Thomas L. Ptak. This is not correct. Attorneys never sought advice on probate issues from Ms. Noriega.

Rather, Attorneys did consult with Ms. Noriega on a regular basis regarding the steps required to transfer the Permits. Ms. Noriega provided interpretation of the Department's rules and regulations that apply to the permits owned by the Estate. Attorney also consulted with David Kiene regarding the same. This can be seen in Exhibit F to the Departments Letter. Exhibit F shows open communication between Attorneys and the Department. The email exchange shown is Exhibit F to the Department's Letter clearly show Attorneys were not soliciting probate advice from the Department but openly communicating with the Department regarding the transferability of Mr. Ptak's permits.

The permits are a valuable asset of the Estate. Accordingly, Attorneys sought guidance from the Department on their rules and regulations. This is a prudent and professional

thing to do. Attorneys could not have predicted that relying on the Department's guidance would lead to such peril.

II.

Legal Authority Does Exist To Grant The Extensions

The Department's statement that "No Authority Exists to Grant the Extension" is incorrect and therefore misleading. Attorneys did receive an extension of time from the Commission on December 3, 2014. This shows that authority does exist to grant the extensions requested and that the Commission possesses this authority.

Further, legal authority in the following widely accepted equitable doctrines of law apply.

1) Promissory Estoppel:

Promissory Estoppel, also known as Detrimental Reliance, is an equitable doctrine that states that once a party makes a promise significant enough to cause another party to act on it to their own detriment, relief can only come in the form of the promisor fulfilling the promise.

Here, Attorneys began communicating with the Department within six (6) days of Mr. Ptak's death. At that time Attorneys received detailed instructions from Ms. Noriega on how the estate could transfer the permits. Attorneys relied on Ms. Noriega's instructions and complied with them. Thereafter, attorneys maintained regular communication with the Department. The Department was aware of Mr. Ptak's death and aware that a probate was being conducted for the Estate of Thomas L. Ptak. The Department was aware that aware that Christine Allen was the court appointed Executor of the Probate Estate and that Attorneys represented Christine Allen in her capacity as Executor of the Estate of Thomas L. Ptak.

Each year, from 2013 through 2015, the Department mailed applications to Christine Allen's address of record for the renewal of Mr. Ptak's permits. Each year Christine Allen completed these renewal applications, paid the required renewal fees to the Department, and renewed Mr. Ptak's permits so she could continue to operate the business of the Decedent (discussed above) for the purposes of generating income to pay off the creditors of the probate estate.

The Department had actual knowledge of Mr. Ptak's death and actual knowledge that Mr. Ptak's permits were being fished by his Estate. The Department admits their actual knowledge in their Letter by discussing Landing Receipts for the years 2012 through 2015 and actually submitting these landing receipts as Exhibit C to their Letter.

In addition, the Department's actual knowledge that Mr. Ptak's permits were renewed and up to date is shown by the fact that Ms. Noriega worked with Attorneys to successfully transfer Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit and Trap

Endorsement on June 5, 2014. After consulting with Ms. Noriega from Mr. Ptak's date of death until June 5, 2014 and following Ms. Noriega's exact instructions on transferring Mr. Ptak's permits, the Department then rescinded the transfer by stating too much time had passed since Mr. Ptak's death.

Attorneys appealed the rescission of the successful transfer of Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit and Trap Endorsement and were granted an extension of time by the Commission until December 15, 2015. David Kiene improperly attempted to prevent the estate from renewing the permits prior to their 2015 renewal date and the Department then improperly seized all of Mr. Ptak's permits on March 18, 2015. The Department has been holding all Mr. Ptak's permits since March 18, 2015 including the permits the Commission granted the estate an extension to transfer until December 15, 2015. This is why the Estate now needs an additional extension of time.

Prior to the recision of the successful transfer on June 5, 2015, the Department, Ms. Noriega, and Mr. Kiene were open and willing to communicate with Attorneys. Since Attorneys were successful in their appeal and granted an extension by the Commission on December 3, 2014, the Department has retaliated by thwarting all attempts by Attorneys to transfer Mr. Ptak's permits.

By sending renewal applications for Mr. Ptak's permits, accepting payments for renewal, and continuing to renew the permits, the Department was clearly making a promise to Christine Allen and the Estate of Thomas L. Ptak that permits would remain valid and be transferrable by sale or at the close of probate. Christine Allen and the Estate of Thomas L. Ptak relied on this promise by continuing to make renewal payments to the Department. This reliance worked to the detriment of Christine Allen and the Estate of Thomas L. Ptak because the Department is now stating that the permits should not have been renewed and should not be transferred, contrary to the advise Christine Allen and Attorneys received from Ms. Noriega when communicating with Ms. Noriega about the transferability of the permits.

It is patently unfair to the Estate of Thomas L. Ptak not to grant an extension on all permits after the Estate relied to its detriment on each annual renewal and the advise the Department provided as to the transferability of the permits.

2) Waiver:

Waiver is an equitable doctrine that states that an act of a person or entity voluntarily giving up a legal right, either by an express statement or by conduct such as not enforcing that right, waives their ability to enforce that legal right.

Attorneys began communicating with the Department within six (6) days of Mr. Ptak's death. At that time Attorneys received detailed instructions from Ms. Noriega on how the estate could transfer the permits. Thereafter, attorneys maintained regular communication with the Department. The Department was aware of Mr. Ptak's death and aware that a probate was being conducted for the Estate of Thomas L. Ptak. The Department was

aware that aware that Christine Allen was the court appointed Executor of the Probate Estate and that Attorneys represented Christine Allen in her capacity as Executor of the Estate of Thomas L. Ptak.

Each year, from 2013 through 2015, the Department mailed applications to Christine Allen's address of record for the renewal of Mr. Ptak's permits. Each year Christine Allen completed these renewal applications, paid the required renewal fees to the Department, and renewed Mr. Ptak's permits so she could continue to operate the business of the Decedent (discussed above) for the purposes of generating income to pay off the creditors of the probate estate.

In her efforts as Executor continuing to operate the business of Mr. Ptak pursuant to the California Probate Code, Christine Allen completed all the proper renewal paperwork for the permits, paid all renewal fees for the permits, and ensured the agent she enlisted to assist in the operation of the business submitted Landing Receipts to the Department.

The Department had actual knowledge that the Estate of Thomas L. Ptak had current permits and was fishing these permits because of the renewal fees, the issuance of current permits annually, and the landing receipts being submitted by Eric Allen to the Department on behalf of the Estate.

The Department had direct contact information for Attorneys and for Christine Allen. Yet, the Department never told Attorneys or Christine Allen that the Estate needed to stop fishing the permits or stop renewing the permits with the exception of one sentence buried in the bottom of an email from David Kiene to Attorneys in 2015. The Department now hinges a major portion of its argument for non-renewal on this one sentence that is likely the only communication that contradicts the actions the Department has taken since 2012, the advice the Department provided regarding the transferability of the permits since 2012, the sending of renewal applications to Christine Allen since 2013, and the collecting of renewal fees since 2013.

Even more egregious, the Department hinges one of its main arguments for non-renewal of the permits on this one sentence. This appears retaliatory. The Commission granted an extension to transfer two permits until December 15, 2015. The Department gladly accepted renewal payments from the Estate for all Mr. Ptak's permits in March of 2015, and issued current permits in March of 2015. It is not logical that the Commission grant an extension to transfer the permits only to have the Department deny the Estate's ability to renew them.

The Department could have contacted Attorneys or Christine Allen at any time. Instead of doing so to discuss the issue of Mr. Ptak's permits, the Department sent a vessel containing armed officers to board the Donna Marie (as asset of the Estate) on the water, arrest Eric Allen, escort Eric Allen to Oceanside Harbor, and then seized all of Mr. Ptak's permits. This all occurred as retaliation after the Commission granted an extension of time on December 3, 2014. This was unnecessary. The Department could have simply called

Attorneys to discuss the permits. By seizing and then keeping the permits, the Department further hampered Christine Allen's ability to facilitate their transfer.

The Department claims the permits should not be renewed because too much time has passed. However, the Department's actions tell a completely different story. The Department sent an application for renewal in 2015, collected renewal fees in 2015, and issued current permits in 2015. The department failed to enforce its right to not issue permits in 2015, continued to tell Attorneys the permits were transferrable and even allowed the Estate to transfer two permits in 2014 before rescinding the transfer by saying too much time had passed.

Based on the Department's actions, they have waived their right to interfere with our extension request.

III.

Additional Pertinent Information

The Department refers to $135,136.52 worth of landing receipts as if they are ill-gotten earned by Christine Allen and the Estate of Thomas L. Ptak. This dollar amount constitutes nothing more than an estimate of gross receipts. As stated above, the Estate has the right under the probate code to generate sufficient funds necessary to pay off legitimate creditors of the probate. Christine Allen and the beneficiaries of the estate did not walk away with these funds.

These funds first went to pay expenses necessary for the operation of the business including but not limited to fuel, boat repair and maintenance, license renewal, slip rental, bait, and taxes. The net funds after these expenses were deposited into the probate estate bank account to be saved and to pay costs associated with the probate such as court filing fees. Please note that Christine Allen, the beneficiaries of the Estate of Thomas L. Ptak, and Attorneys have not been paid out of these funds. The Department's labeling this an illegal fishing operation is incorrect and prejudicial.

The Department's new allegations that the Estate has been rewarded by rampant illegal fishing and should not be rewarded by bending the rules to allow the Estate to transfer permits is appalling and should be disregarded by the Commission because the Department had knowledge of the Estate's fishing activities, willingly renewed the permits each year, gladly accepted payment for the renewal of the permits, and advised Attorneys on the procedure to transfer the permits beginning six (6) days following Mr. Ptak's death.

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V.

Prayer for Relief

1) Request for Additional Extension of Time

The Estate of Thomas L. Ptak respectfully requests from the Commission an additional one (1) year extension of time to transfer Mr. Ptak's transferrable South Coast Region Nearshore Fishery Permit and transferrable South Coast Region Nearshore Fishery Trap Endorsement.

2) Request for Right to Renew Permits

The Estate of Thomas L. Ptak requests the Commission issue an instruction to the Department of Fish and Wildlife to allow the Estate of Thomas L. Ptak to renew Mr. Ptak's transferrable South Couth Coast Region Nearshore Fishery Permit, transferrable South Coast Region Nearshore Fishery Trap Endorsement, General Gill/Trammel Net Permit, Lobster Operator Permit, and Southern Rock Crab Permit (collectively referred to hereafter as "The Five Permits").

3) Request for Return of Permits

The Estate of Thomas L. Ptak requests the Commission issue an instruction to the Department of Fish and Wildlife to return The Five Permits to the Estate of Thomas L. Ptak. Return of these permits is necessary because the Estate of Thomas L. Ptak cannot transfer the permits by following the advice and instruction Ms. Noriega provided Attorneys and the Estate of Thomas L. Ptak beginning six (6) days following the death of Mr. Ptak unless the Estate of Thomas L. Ptak is in possession of these permits. The Estate of Thomas L. Ptak requests the instruction should direct The Five Permits be returned to Christine Allen, Executor, The Estate of Thomas L. Ptak,
California, .

V.

Final Comments

Thank you for your time and consideration in reviewing the Estate of Thomas L. Ptak's requests contained in this document.

Very Truly Yours,

GREENMAN, LACY, KLEIN, HINDS, WEISER & HEFFRON

CHRIS SHOURDS, ESQ
Attorney for The Estate of Thomas L. Ptak
and Christine Allen, Executor

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many changes

Number M-653-02

RENEWAL OF LEASE

Made this 3rd day of November, 2005 at Santa Barbara, California by and between the State of California, acting by and through its Department of Fish and Game, hereinafter referred to as "Lessor" and Santa Barbara Mariculture Company, hereinafter referred to as "Lessee."

WITNESSETH:

WHEREAS, Lessee failed to exercise an option to extend a prior lease agreement (also M-653-02) and said lease terminated on October 31, 1999, and

WHEREAS, Lessee did on January 1, 2001 enter into Lease M-653-02, for the purpose of cultivating rock scallops, and

WHEREAS, Lessee requested that title to Lease Agreement (No. M-653-02) be transferred to Santa Barbara Mariculture Company, and the Fish and Game Commission at its meeting on November 3, 2005, authorized the transfer of title of State Water Bottoms Lease M-653-02, from Pacific Seafood Industries, and

WHEREAS, Lessee indicated an interest in renewing a prior lease agreement and exercised that option by requesting Fish and Game Commission consideration of the request in correspondence dated March 29, 2005, and

WHEREAS, Lessee is presently a registered aquaculturist authorized to grow marine life for profit in the waters of the State of California as provided in Section 15101 of the Fish and Game Code, and

WHEREAS, Lessee expressed support for the Lessor's recommended approval of the requested lease renewal for the stipulated 5-year period at a lease rate of five ($5.00) dollars per acre, and.

WHEREAS, the Fish and Game Commission determined that a lease renewal was in the best interest of the State of California at the November 3, 2005, meeting in Santa Barbara, California and approved the renewal based on the renegotiated lease terms recommended by the Department of Fish and Game.

NOW, THEREFORE, THIS INDENTURE WITNESSETH:

That, in consideration of payment of the monies hereinafter stated in accordance with the renegotiated terms recommended by the Lessor and accepted at a duly called and noticed hearing of the Fish and Game Commission of the State of California, pursuant to law and in consideration of the covenants contained herein on the part of the Lessee, Lessor does hereby grant to Lessee the exclusive privilege to cultivate

approved shellfish hereon and in those certain waters of the State of California described as follows, to wit:

> All that area lying within the Santa Barbara Channel, Santa Barbara County, State of California, starting from the Santa Barbara light located at 34°23'08" North, 119°43'03" West on the Santa Barbara quadrangle, California, Santa Barbara County, 7.5 minute series, topographic, U.S. Department of the Interior, Geological Survey; southwesterly on a bearing of 256° true, 9,000 feet to the point of beginning located at coordinates 34°23'20" North, 119°45'01" West on the Goleta quadrangle, California, Santa Barbara County 7.5 minute series, topographic, U.S. Department of the Interior, Geological Survey then east 1,250 feet; then south 1,250 feet; west 2,500 feet; then north 1,250 feet; then 1,250 feet to the point of beginning.

The area described hereinbefore, containing an area of 71.74 acres more or less, comprises Aquaculture Lease M-653-02 (Appendix 1).

This lease, in accordance with provisions of Section 15400 of the Fish and Game Code, as may from time to time be amended or changed by the State Legislature, is for the sole purpose of cultivating rock scallops (*Crassadoma gigantea*, formerly *Hinnites multirugosus*), speckled scallop (*Argopectin aequisulcatus*), Japanese bay scallop (*Patinopectin yessoensis*), Pacific oyster (*Crassostrea gigas*), Kumamoto oyster (*Crassostrea sikamea*), Manila clam (*Venerupis philippinarum*), and Mediterranean mussel (*Mytilus galloprovincialis*) in the previously designated area.

The cultivation of additional species of aquatic plants and animals requires the approval of the Fish and Game Commission. Seed stock, other than those obtained from State waters, must be inspected and certified before planting in compliance with Section 15201 of the Fish and Game Code, and must be planted by Lessee in a manner and at a size approved by the Lessor. A request for certification of seed stock will be submitted by Lessee to the Lessor at least ten (10) days prior to the proposed date of inspection.

All scallops, oysters, clams, and mussels shall be cultured on buoyed submerged longlines, anchored to the bottom within the lease area. No other mode of operation or culture method is authorized unless Lessee shall first obtain approval thereof from the Fish and Game Commission. Only the designated species planted in the specified lease area may be taken.

The notice of intent to plant scallops, oysters, clams or mussels on the lease area shall be given to the Department of Fish and Game's, Marine Region aquaculture coordinator, P.O. Box 1560, Bodega Bay, California, 94923, telephone (707) 875-4261, or at such other place as Lessor may from time to time designate. In addition to the required ten (10) day notice, at least a 24-hour notice shall be given to the aquaculture coordinator or their designee, giving the details on where an observer can meet the

Lessee prior to planting.

This lease renewal is authorized for a term of five (5) years commencing on the 3rd day of November, 2005, and ending on the 2nd day of November, 2010, for the total rental of three hundred and fifty dollars and seventy cents ($358.70) per year, and a privilege tax on all products harvested as provided by Fish and Game Code Sections 8051, 18406.5, and 15406.7. Beginning January 1, 2006, said annual rental fee will be payable to Lessor on a calendar year basis, January 1 – December 31. If said annual rental fee is not paid within sixty (60) days after the close of the month in which it is due, an additional 10 percent penalty shall be paid. Lessor, at its option, may declare the lease abandoned for failure to pay such rental fees within 90 days from the beginning of the rental period; although such abandonment shall not relieve Lessee of its obligation to pay such rental and penalty which are due and owing. Lessee agrees to pay Lessor reasonable attorney fees and costs incurred in collecting any amounts and/or penalties due and owing from Lessee under the provisions of this lease. Lessee agrees to pay said fee(s) to Lessor at its office in the City of Sacramento, State of California, or at such other place as Lessor may, from time to time, designate.

Lessee expressly recognizes and acknowledges that any payments by Lessee as provided for herein are subject to the provisions of Section 15410 which states "All leases shall be subject to the power of the Legislature to increase or decrease the rents, fees, taxes, and other charges relating to the lease, but no increase in rent shall be applicable to an existing lease until it is renewed."

In accordance with actions taken by the Fish and Game Commission of the State of California, pursuant to Fish and Game Code Section 15400, Lessor does hereby renew said lease for such consideration, specific purposes and subject to covenants, terms, conditions, reservation, restrictions and limitation as are set forth herein.

This lease is made upon the following additional terms, conditions, and covenants, to wit:

A. This lease may, at the option of Lessee, be renewed for additional periods not to exceed 25 years each. If the Lessee desires to enter into a new lease for a period commencing after expiration of the initial 5-year term, Lessee shall give notice to Lessor one (1) year prior to termination of the lease. The lease may be renewed if, during the notification period, terms for a new lease are agreed upon by Lessee and the Commission. Lessor retains the right to renegotiate terms of the lease, including annual rental rates, subject to adjustment considering changes in the Consumer Price Index and current lease rates, at the Fish and Game Commission's discretion, no more often than every five (5) years during the current renewal period.

B. Lessee shall keep records as required in accordance with Fish and Game Code Section15414 on forms to be supplied by Lessor, and shall maintain adequate

accounting records sufficient to determine monies due to Lessor by the 10th day of each month for all shellfish harvested during the preceding calendar month. Lessor reserves the right to inspect Lessee's premises, equipment and all books at any time, and Lessee's records pertaining to its cultivation on the leased premises and all shellfish taken from the leased premises.

C. The lease shall be improved at no less than the minimum rate established by Commission regulations (Section 237(i)(A) - (C), Title 14, CCR). A minimum rate of planting for shellfish other than oysters shall be negotiated for option periods. A record of seed catching activity for rock scallops and mussels will be reported in the annual proof of use statement required by Section J. Planting credit will be given for catching naturally produced seed on the lease. Off-bottom improvement rate for single seed oysters is 5,000 single seed per acre per year over the allotted acreage. The annual harvest rate for oysters shall be an average of 2,000 oysters (over one year of age) over the allotted acreage effective three years after effective date of lease. Lessor may declare this lease terminated if Lessee fails to meet these specified requirements, and if Lessee at any time, is proven to be failing in good faith, to pursue the purpose of this lease.

D. The lease shall be clearly marked at all times. Minimum marking of the lease shall include: One (1) buoy anchored on each corner of the four corners of the lease, and one (1) buoy possessing radar-reflecting capability, anchored in the center of the lease. All buoys used to define the boundaries of the lease shall be marked in conformance with the International Association of Lighthouse Authorities Maritime Buoyage System Regulations (33 CFR Section 62.33 and 66.01-10). All buoys shall bear the aquaculture lease number M-653-02. Buoys marking the boundaries of the lease shall be maintained at all times. If buoys are lost, displaced, or are otherwise removed from the lease, they must be replaced within a two-week period, weather conditions permitting, or the lease may be subject to termination.

E. If, at any time subsequent to the beginning date of this lease the use of long lines authorized herein shall fall into a state of disrepair or otherwise become an environmental or aesthetic degradation, as determined by Lessor, then upon written notice by Lessor, Lessee shall have sixty (60) days to repair and correct conditions cited by Lessor. Failure to comply with the written notice shall be grounds for termination of this lease and Lessee shall, at the option of Lessor, remove all improvements located on lands covered by this lease.

As a financial guarantee of growing structure removal and/or clean-up expense in the event the lease is abandoned or otherwise terminated, Lessee shall place on deposit, pursuant to the "Escrow Agreement for Clean-up of Aquaculture Lease M-653-02, Santa Barbara Channel, California", the sum of one thousand ($1,000) dollars. Such money shall be deposited over a two-year-period, payable one-half upon entering upon the lease, and one-half upon the first anniversary of such

inception date. The escrow account shall be increased if the Fish and Game Commission determines that, if abandoned, the culture operation is likely to be more expensive to remove. The escrow account may be reduced by the Commission upon demonstration that the probable cost of removal of all improvements would be less than the deposit previously required. In its annual Proof-of Use Report, the Lessor shall advise the Commission of its best estimate of the probable cost of removal the lease operation. The escrow agreement, escrow holder, and escrow depository shall be agreed upon by the Executive Director of the Fish and Game Commission and the Lessor.

If Lessee abandons this lease without removing growing structures therefrom, the escrow deposit shall be expended to remove growing structures or otherwise clean up the lease.

In order to assure compliance with the escrow provisions of this lease, Lessee shall dedicate to the agreed upon escrow account specified in the "Escrow Agreement for Clean-up of Aquaculture Lease M-653-02, Santa Barbara Channel, California (Addendum 2)", hereby attached to and made part of this agreement, a total of five hundred dollars ($500). This amount equals one-half of the total amount, one thousand dollars ($1,000), to be deposited in the "Lease M-653-02, Santa Barbara Channel, California Escrow Account".

F. Lessee shall observe and comply with all rules and regulations now or hereinafter promulgated by any governmental agency having authority by law, including but not limited to State Water Resources Control Board, State Coastal Commission, State Lands Commission, and U.S. Army Corps of Engineers. Any other permits or licenses required by such agencies will be obtained by Lessee at his own sole cost and expense.

G. Lessee recognizes and understands in accepting this lease that his interest therein may be subject to a possible possessory interest tax that the county may impose on such interest, and that such tax payment shall not reduce any rent or royalty due the Lessor hereunder and any such tax shall be the liability of and be paid by Lessee.

H. Any modification of natural or existing features of the real property described in this lease, which are not consistent with the authorized uses under this lease are expressly prohibited without prior written consent of the Lessor.

I. As evidence of progress in aquaculture, Lessee shall submit each year to the State at the Marine Region office, P.O. Box 1560, Bodega Bay, California 94923, a written declaration under penalty of perjury, showing the date and amount of each type of aquaculture development and date and amount of designated species comprising each planting, including a diagram (map) showing area, amounts, and dates planted. Such annual proof-of-use shall be submitted on or

before February 1 of each year for the previous year, January 1 -- December 31, inclusive.

J. This lease shall be canceled at any time Lessee fails to possess a valid aquaculture registration issued pursuant to Section 15101 of the Fish and Game Code. Lessee agrees not to commit, suffer, or permit any waste on said premises or any act to be done thereon in violation of any laws or ordinances. This lease shall be subject to termination by Lessee at any time during the term hereof, by giving Lessor notice in writing at least ninety (90) days prior to the date when such termination shall become effective. In the event of such termination by Lessee, any unearned rental shall be forfeited to the Lessor.

K. This lease of State water bottoms only grants Lessee the exclusive right to cultivate marine life as described in the lease. The lease does not imply that any guarantee is given that shellfish may be grown or harvested for human consumption. The Lessor only has the statutory authority to enter into aquaculture leases (Fish and Game Code Section 15400 et. seq.). The California Department of Heath Services has the authority (Health and Safety Code Section 109875 et. seq. and 112150 et. seq.) to certify and regulate sanitary procedures followed in the harvesting, handling, processing, storage, and distribution of bivalve mollusk shellfish intended for human consumption.

Lessee must recognize that compliance by certified shellfish harvesters with the conditions and procedures set forth in the Department of Health Service's current "Management Plan for Santa Barbara Lease M-653-02, Santa Barbara Channel, California" and in the current "Contingency Plan for Marine Biotoxins in California Shellfish" is mandatory. These conditions and procedures establish classifications for certification to harvest shellfish (oysters, mussels and clams) and establish rainfall closures which may delay or prevent harvesting of cultured organisms from this lease and are a condition of the Shellfish Growing Area Certificate.

L. In addition to the conditions and restrictions herein provided for in this lease, and any right or privilege granted, conveyed or leased hereunder, shall be subject to, and Lessee agrees to comply with all applicable provisions of the California Fish and Game Code, and regulation of the Fish and Game Commission, in particular Sections 15400 - 15415, inclusive, of the Fish and Game Code, and expressly recognizes the right of the Legislature and the Fish and Game Commission to enact new laws and regulations. In the event of any conflict between the provisions of this lease and any law or regulation, the latter will control. This lease shall be deemed amended automatically upon the effective date of such conflicting law or regulation.

M. This lease is personal to the Lessee and shall not be transferred, assigned,

hypothecated or subleased, either voluntarily or by operation of law, without prior approval of the Fish and Game Commission.

N. The waiver by the Lessor of any default or breach of any term, covenant or condition shall not constitute a waiver of any other default or breach, whether of the same or any other term, covenant or condition, regardless of the Lessor's knowledge of such other defaults or breaches. The subsequent acceptance of monies hereunder by the Lessor shall not constitute a waiver of any preceding default or breach of any term, covenant or condition, other than the failure of the Lessee to pay the particular monies so accepted, regardless of the Lessor's knowledge of such preceding default or breach at the time of acceptance of such monies, nor shall acceptance of monies after termination constitute a reinstatement, extension or renewal of the agreement or revocation of any notice or other act by the Lessor. In the event of any breach by Lessee of any of the provisions hereof, other than the payment of any sum due from Lessee to Lessor hereunder, which breach is not remedied, abated and cured by Lessee within sixty (60) days after notice in writing, shall cause this lease to thereupon cease and terminate.

O. Lessee shall not assign or transfer this agreement without prior written approval. Such written approval of the assignment or transfer of lease shall be subject to any and all conditions required by the Fish and Game Commission including, without limitation by reason of the specifications herein, the altering, changing or amending of this agreement as deemed by the Commission to be in the best interest of the State.

P. All notices herein provided to be given or which may be given by either party to the other, shall be deemed to have been fully given when made in writing and deposited in the United States Mail, certified and postage prepaid and addressed as follows:

To the Lessor

DEPARTMENT OF FISH AND GAME
1416 Ninth Street
Sacramento, CA 95814

To the Lessee

MR. BERNARD FRIEDMAN
SANTA BARBARA MARICULTURE COMPANY
210 Wilson Street
Santa Barbara, CA 93101

Nothing herein contained shall preclude the giving of any such written notice by personal service. The address to which notices shall be mailed as aforesaid to either party may be changed by written notice given by such party to the other, as hereinbefore provided.

Q. Lessee hereby indemnifies and holds harmless the Lessor, its officers, agents and employees against any and all claims and demands of every kind and nature whatsoever arising out of or in any way connected with the use by the Lessee of said lease or the exercise of the privilege granted herein.

Q. The terms, provisions, and conditions hereof shall be binding upon and inure to the benefit of the parties and the successors, and assigns of the parties hereto.

R. The attached Nondiscrimination Clause (OCP-1) Is hereby made a part of this agreement.

Except as herein amended, all other terms of said lease agreement shall remain unchanged and in full force and effect.

IN WITNESS THEREOF, the parties hereto have caused this lease to be duly executed as of the day and year first above written.

APPROVED:

FISH AND GAME COMMISSION

By: _____

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

By: _____
Lessor

BERNARD FRIEDMAN
SANTA BARBARA MARICULTURE COMPANY

By: _____
Lessee

Fish and Game Commission Lease History and Timeline for State Water Bottom Lease M-653-02

Lease No: M-653-02
Company: **Santa Barbara Mariculture**
Owner: Bernard Friedman
Address: [redacted]
Lease Location: Open Ocean off Santa Barbara

Action	Action Start	Action Expiration	Notes
Original Lease granted to Jeff Young (under Pacific Seafood Industries)	2/15/1984	2/14/1989	
Lease transferred to SB Mariculture	11/3/2005	11/2/2010	Fish and Game Commission at its meeting on 11/3/2005 authorized the transfer of the title of Lease from Pacific Seafood Industries to Santa Barbara Mariculture Company.
Commission approved 90-day extension at its 10/21/10 meeting	11/2/2010	2/1/2011	
Commission approved 180-day extension at its 12/16/10 meeting	2/1/2011	7/31/2011	
Commission approved 180-day extension at its 6/30/11 meeting	7/31/2011	1/27/2012	
Commission approved one year extension at its 8/03/11 meeting	1/27/2012	1/27/2013	
Commission approved one year extension at its 8/08/12 meeting	1/27/2013	1/27/2014	
Commission approved one year extension at its 6/27/13 meeting	1/27/2014	1/27/2015	
Commission approved one year extension at its 12/3/14 meeting	1/27/2015	1/27/2016	Fish and Game Commission at its meeting on 12/3/2014 approved a lease amendment to modify boundary descriptions in lease to reflect actual location of operation.

Santa Barbara Mariculture Company
4365 Cuna Dr.
Santa Barbara, CA 93110
805 886-1283
bernard@sbmariculture.com

April 15, 2015

Fish and Game Commission
1416 Ninth St.
Sacramento, CA 95814

Dear Fish and Game Commission:

I would like to thank you for approving a one year extension of my existing Santa Barbara Mariculture Company aquaculture lease M-653-02 at the December 3, 2014 Commission meeting in Van Nuys. I would like to complete the lease approval process for this lease, and enter into a longer term lease contract with the Commission.

I would like to amend the shape of the original lease as proposed in exhibit A1. In addition, I would like to request a new lease. Exhibit A2 which will consist of 26 acres and be adjacent to lease no. 1.

The description of both lease no. 1 and lease no. 2 are attached. See exhibit A1, A2, and B.

I would like both of these leases to reflect my current aquaculture registration (number 0969) in allowing me to grow *Mytilus galloprovincialis* (Mediterranean mussel), *Crassostrea gigas* (Pacific oyster), and *Crassadoma gigantean* (Rock scallop).

Santa Barbara Mariculture Company is the leading offshore shellfish production company on the West Coast both in the number of years practicing offshore shellfish culture and quantities of shellfish produced. Both these leases will be used for research, development, and production of shellfish. The existing and proposed operation will use submerged longlines as the structure from which shellfish will be grown. The existing lease already has a conditionally approved classification from the California Department of Public Health.

Santa Barbara Mariculture Company has worked with the Department of Fish and Wildlife and the California Fish and Game Commission to further the research and development of offshore shellfish culture and wishes to continue a productive relationship with the State of California.

Sincerely,

Bernard Friedman

President of Santa Barbara Mariculture Co.

FORM A

State Of California Department Of Fish And Game Application For Lease Of State Water Bottoms For Aquaculture

Applicant Name: Santa Barbara Mariculture Co. Phone No. (805) 886-1283

Address: 4365 Cuna Dr., Santa Barbara, CA 93110

Aquaculture Registration No 0969 Expiration Date 12/31/15

Species of plant or animals to be cultured:

Mytilus galloprovincialis

Crassostrea gigas

Crassadoma gigantean

Application is hereby made to the Fish and Game Commission of the State of California for a lease of State water bottoms in the area described in the attached exhibit entitled "Exhibit A-Legal Description", and as shown on the map attached hereto marked "Exhibit B". Each exhibit bears the name of this applicant. Such lease will be for the purpose of aquaculture involving the species designated above. In support of this application, the applicant hereby submits the following explanation of the type of operation and cultural practices to be employed:

A. Purpose of operation - research and development or production

B. Plan of development and proposed production schedule – 5 year plan

C. Type of cultural method(s) to be employed: bottom, long line, buoyed habitats, etc.

D. Department of Health Services growing water classification: approved, conditionally approved, prohibited, restricted or unclassified

(Attach additional sheets for detailed explanation)

Date: 4/15/15 Signed: [signature]

Print Name: Bernard Friedman

President

Santa Barbara Mariculture Company

(See instructions on the back)

500.00

MAY 05 2015 001744

EXHIBIT A1

A portion of submerged lands within the Santa Barbara Channel, lying southerly of the Santa Barbara coast, in the County of Santa Barbara, in the State of California, described as follows.

LEASE SITE No.1

Commencing at the lighthouse near the bluff along the Pacific Ocean, at an approximate position of N 34° 23' 46.8", W 119° 43' 21.5";

thence westerly, approximately 9112 feet to a point having California State Plane Zone 5 (SPC5) grid coordinates of 1970460.00 feet North, 6032940.00 feet East, and having a geodetic position of N 34° 23' 39.231", W 119° 45' 09.832", the northeasterly corner and Point of Beginning of LEASE SITE No.1;

thence North 68°34'30" West, 2499.87 feet grid (2500.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1971373.16 feet North, 6030612.88 feet East, and having a geodetic position of N 34° 23' 47.860", W 119° 45' 37.789";

thence South 21°25'30" West, 801.46 feet grid (801.50 feet at mean sea level), to a point having SPC5 grid coordinates of 1970627.09 feet North, 6030320.12 feet East, and having a geodetic position of N 34° 23' 40.430", W 119° 45' 41.126";

thence South 68°34'30" East, 2499.87 feet grid (2500.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1969713.923 feet North, 6032647.24 feet East, and having a geodetic position of N 34° 23' 31.801", W 119° 45' 13.170";

thence North 21°25'30" East, 801.46 feet grid (801.50 feet at mean sea level), to the Point of Beginning.

The above geodetic SPC5 and geodetic positions are based on the NAD83 datum. The above described **LEASE SITE No. 1** contains 46.00 acres and is as shown on Exhibit B, attached hereto and made a part hereof for informational purposes.

This description has been prepared by me in accordance with provisions of the Professional Land Surveyors Act.

Robert J. Reese 03.20.2015

Robert J. Reese, LS 6208

EXHIBIT A2

A portion of submerged lands within the Santa Barbara Channel, lying southerly of the Santa Barbara coast, in the County of Santa Barbara, in the State of California, described as follows.

LEASE SITE No.2

Commencing at the lighthouse near the bluff along the Pacific Ocean, at an approximate position of N 34° 23' 46.8", W 119° 43' 21.5";

thence westerly, approximately 9112 feet to a point having California State Plane Zone 5 (SPC5) grid coordinates of 1970460.00 feet North, 6032940.00 feet East, and having a geodetic position of N 34° 23' 39.231", W 119° 45' 09.832";

thence North 68°34'30" West, 2499.87 feet grid (2500.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1971373.16 feet North, 6030612.88 feet East, and having a geodetic position of N 34° 23' 47.860", W 119° 45' 37.789", the northeasterly corner and Point of Beginning of LEASE SITE No.2;

thence North 68°34'30" West, 1412.93 feet grid (1413.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1971889.28 feet North, 6029297.60 feet East, and having a geodetic position of N 34° 23' 52.737", W 119° 45' 53.591";

thence South 21°25'30" West, 801.46 feet grid (801.50 feet at mean sea level), to a point having SPC5 grid coordinates of 1971143.20 feet North, 6029004.84 feet East, and having a geodetic position of N 34° 23' 45.307", W 119° 45' 56.928";

thence South 68°34'30" East, 1412.93 feet grid (1413.00 feet at mean sea level), to a point having SPC5 grid coordinates of 197062709 feet North, 6030320.12 feet East, and having a geodetic position of N 34° 23' 40.430", W 119° 45' 41.126";

thence North 21°25'30" East, 801.46 feet grid (801.50 feet at mean sea level), to the Point of Beginning.

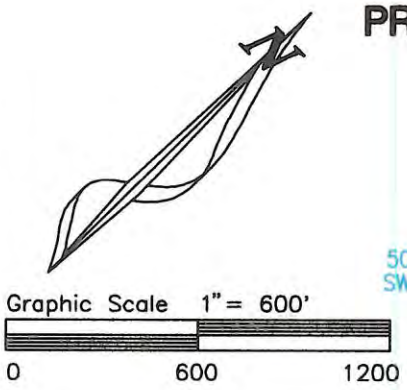
The above geodetic SPC5 and geodetic positions are based on the NAD83 datum. The above described **LEASE SITE No. 2** contains 26.00 acres and is as shown on Exhibit B, attached hereto and made a part hereof for informational purposes.

This description has been prepared by me in accordance with provisions of the Professional Land Surveyors Act.

Robert J Reese 03.20.2015

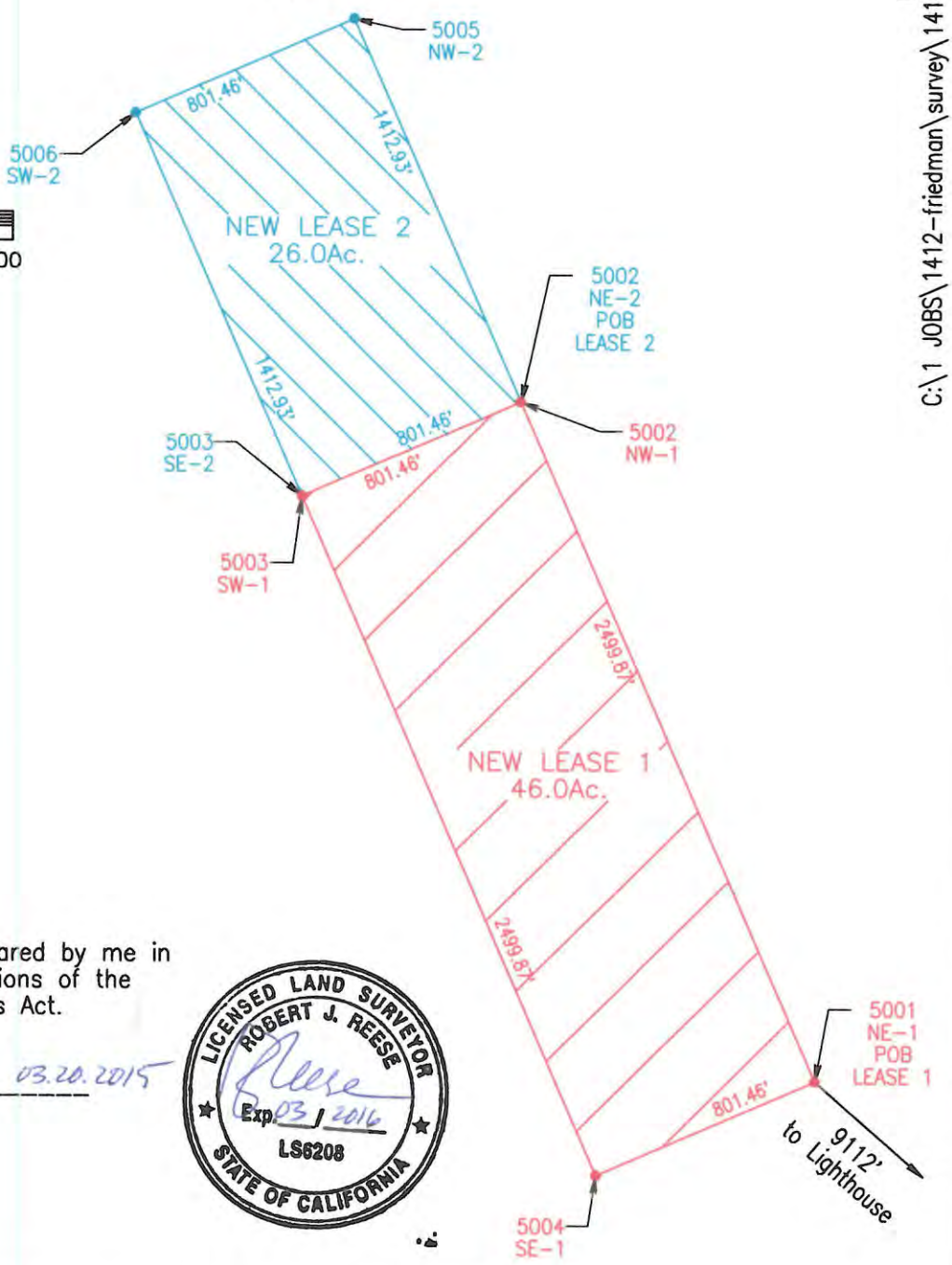
Robert J. Reese, LS 6208

EXHIBIT B
PROPOSED NEW MARICULTURE LEASES
M-653-2



Graphic Scale 1" = 600'

0 600 1200



Mar 19, 2015
C:\1 JOBS\1412-friedman\survey\1412-exhibitB.pro

This exhibit has been prepared by me in accordance with the provisions of the Professional Land Surveyors Act.

Robert J. Reese 03.20.2015

Robert J. Reese, LS 6208

LICENSED LAND SURVEYOR
ROBERT J. REESE
Exp. 03/2016
LS6208
STATE OF CALIFORNIA

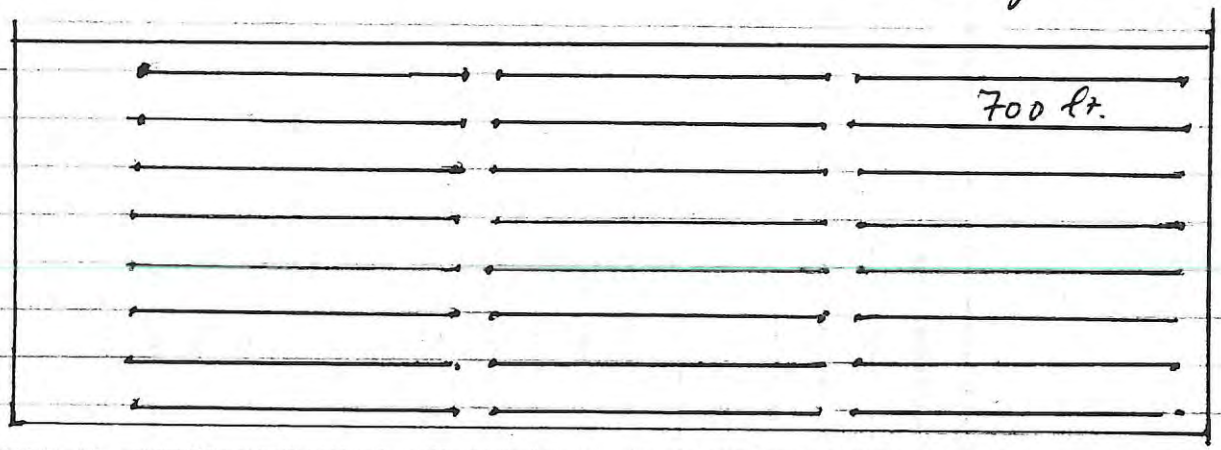
COORDINATE DATA: PROPOSED LEASE CORNERS

Pt.	Descr.	North(Y)	East(X)	N.Lat	W.Long
5001	NE-1	1970460.00	6032940.00	34°23'39.231"	119°45'09.832"
5002	NW-1	1971373.16	6030612.88	34°23'47.860"	119°45'37.789"
5003	SW-1	1970627.09	6030320.12	34°23'40.430"	119°45'41.126"
5004	SE-1	1969713.93	6032647.24	34°23'31.801"	119°45'13.170"
5005	NW-2	1971889.28	6029297.60	34°23'52.737"	119°45'53.591"
5006	SW-2	1971143.20	6029004.84	34°23'45.307"	119°45'56.928"

Santa Barbara Mariculture

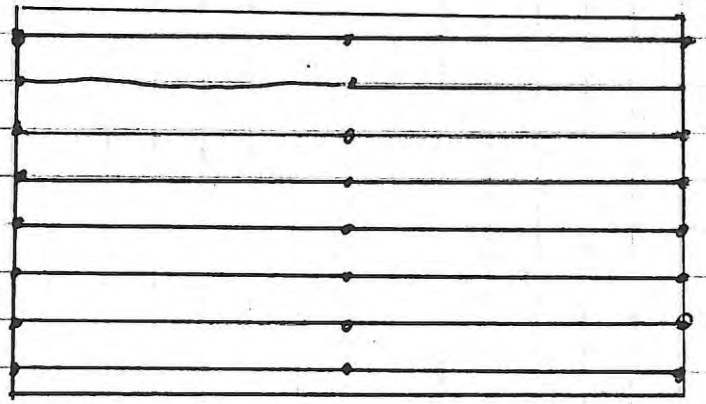
each longline = 700 ft.

Lease 1
46 acres
800 x 2500 ft



8 x 3 = 24 longlines

Lease 2
26 acres
800 x 1412 ft.



□ = 100 ft

2 x 8 = 16 longlines

Bernard Friedman
Santa Barbara Mariculture Company
4365 Cuna Dr.
Santa Barbara, CA 93110

April 7, 2015

Five Year Work Plan

Currently there are 12 longlines on two-thirds of the Eastern portion of lease 1. Each longline grows 10,000 lbs. of Mediterranean mussels per year. Together, the 12 longlines produce 120,000 lbs. annually.

At the end of year five, lease 1 will hold 24 longlines which are 700 feet long from anchor to anchor. They will be installed in 3 rows of 8 parallel to the shore. The lines will be spaced 100 feet apart and each grow 10,000 lbs. of mussels per year. The projected harvest from lease 1 will be 240,000 lbs. per year.

Also at the end of year five, lease 2 will hold 16 longlines which are 700 feet long anchor to anchor. They will be installed in 2 rows of 8 parallel to shore. The lines will be spaced 100 feet apart and each grow 10,000 lbs. per year for an annual yield of 160,000 lbs..

The combined annual yield for both leases is projected to be 400,000 lbs. at the end of year 5.

During the development of the leases, in year 1, 16 longlines in lease 2 will be established as well as 8 longlines in the Western half of lease 1. The installation of these 24 longlines will take less than a week to install and consist of putting 32 screw anchors in the seafloor and joining them with 1 ¼ inch tensioned rope. The harvest from the current 12 longlines will continue at 120,000 lbs. in year 1.

Year 2 will see an increase in yield with 8 more longlines incorporated into production with an increased yield of 200,000 lbs..

Year 3 will see an increase of 12 more longlines put into production while the original 12 longlines in the Easter half will be removed and replaced with new rope and screw anchors. Yield is expected to stay the same at 200,000 lbs. Construction of a second boat and equipment is expected to begin and be completed by the beginning of year 4.

Year 4 will see an increase in production as the new boat comes on line with a total of 30 longlines used for production of 300,000 lbs. of mussels.

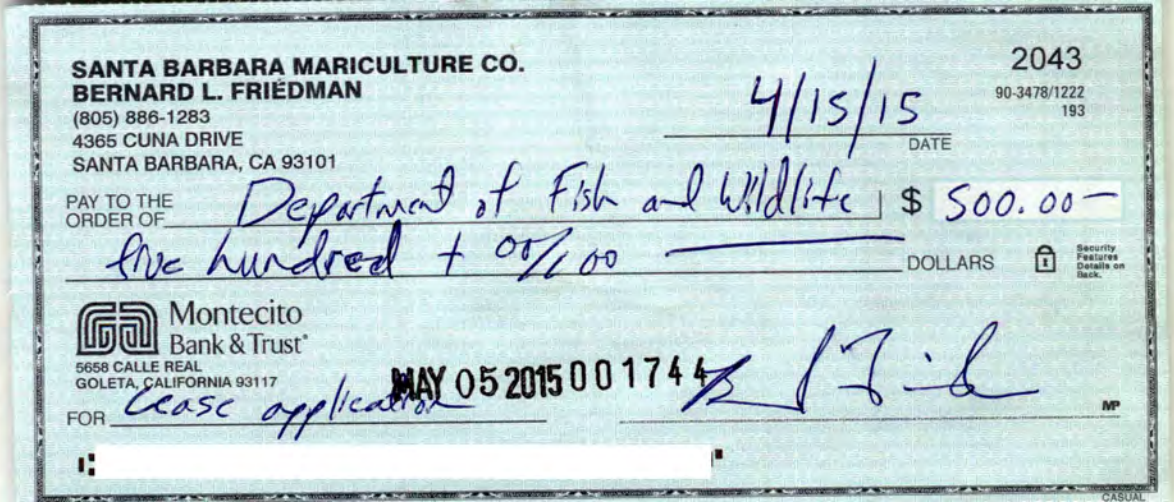
Year 5 will be in full production of all 40 longlines with two boats working the farm. Yields for each longline will also steadily increase with each longline steadily increasing to an annual yield of 20,000 lbs.

Production by year 10 could be upward of 800,000 lbs. of mussels with steady and managed growth.

If there is a production failure in any given year, the Pacific oyster will be cultivated to offset losses and create income until mussel production comes back on line.

Similarly, SBMC would like to diversify with the Purple hinged rock scallop and is looking for opportunities to develop commercial production of this species.

SBMC will be investigating production techniques of other species as the opportunities become available. Integrated multi-trophic mariculture systems may be the future for California, and SBMC will alter its work plan accordingly to create a sustainable future for the long term.



SANTA BARBARA MARICULTURE CO.
BERNARD L. FRIEDMAN
(805) 886-1283
4365 CUNA DRIVE
SANTA BARBARA, CA 93101

2043
90-3478/1222
193

4/15/15
DATE

PAY TO THE ORDER OF Department of Fish and Wildlife $ 500.00

five hundred + 00/100 DOLLARS

Security Features Details on Back.

Montecito Bank & Trust
5658 CALLE REAL
GOLETA, CALIFORNIA 93117

FOR Lease application

MAY 05 2015 001744

MP

CASUAL

State of California—Health and Human Services Agency
California Department of Public Health

MICHAEL WILKENING
Acting Director

EDMUND G. BROWN JR.
Governor

February 15, 2015

Mr. Bernard Friedman
Santa Barbara Mariculture Company
4365 Cuna Dr.
Santa Barbara, CA 93110

Dear Mr. Friedman:

SHELLFISH GROWING AREA CERTIFICATE

Your application for a Shellfish Growing Area Certificate to harvest shellfish from aquaculture Lease M-653-02 in the Santa Barbara Channel has been reviewed and approved. The following Shellfish Growing Area Certificate Number has been assigned to the Santa Barbara Mariculture Company: SGA15-614 (Lease M-653-02).

This growing area is classified as ***Conditionally Approved***. Based on our review, your shellfishing operation at this growing area is currently in compliance with the requirements of Title 17, California Code of Regulations, Sections 7706 to 7733, and Section 112150 et seq. of the California Health and Safety Code, pertaining to the culture and harvesting of shellfish for human consumption.

The enclosed Shellfish Growing Area Certificate contains the terms and conditions for maintaining compliance with regulatory requirements for your shellfish operation at this lease and certification of this growing area. If you have any questions, please call me at (510) 412-4635.

Sincerely,

Gregg W. Langlois, Chief
Preharvest Shellfish Unit
Environmental Management Branch

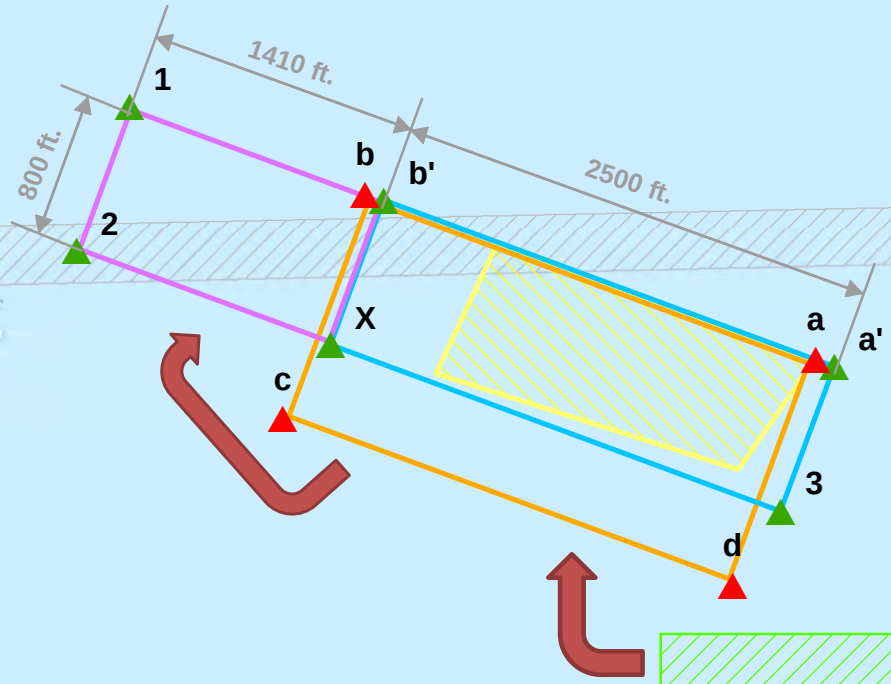
Enclosure

850 Marina Bay Parkway, MS G-165 • Richmond, CA 94804
(510) 412-4635 • (510) 412-4637 FAX • Internet address: www.cdph.ca.gov

Santa Barbara Mariculture Lease M-653-02

Legend

- Pre Nov 2014 Description (72 Acres)
- Current Location of Gear (28 Acres)
- Current Description (72 Acres)
- Proposed Lease 1 Description (46 Acres)
- Proposed Lease 2 Description (26 Acres)
- Santa Barbara City limit



Position	Latitude	Longitude
a'	34° 23' 39.231" N	119° 45' 9.832" W
a	34° 23' 39.600" N	119° 45' 10.980" W
b'	34° 23' 47.860" N	119° 45' 37.789" W
b	34° 23' 48.180" N	119° 45' 38.940" W
c	34° 23' 36.600" N	119° 45' 44.160" W
d	34° 23' 27.960" N	119° 45' 16.200" W
X	34° 23' 40.430" N	119° 45' 41.126" W
1	34° 23' 52.737" N	119° 45' 53.591" W
2	34° 23' 45.307" N	119° 45' 56.928" W
3	34° 23' 31.801" N	119° 45' 13.170" W

Map created by California Department of Fish and Wildlife, Marine Region GIS. Map is shown in the California Teale Albers NAD 83 projection. The positions listed are in geographic coordinates NAD 83.

mr_gis@wildlife.ca.gov
May 1, 2015

0 1,000 2,000 Feet

State of California
Department of Fish and Wildlife

Memorandum

Date: November 30, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Request for One-Year Extension of Santa Barbara Mariculture State Water Bottom Lease (M-653-02)**

The Department of Fish and Wildlife (Department) requests an one-year extension of Santa Barbara Mariculture's state water bottom lease #M-653-02, which will expire January 27, 2016.

Work by the applicant, and Department and Commission staffs involving CEQA and administrative reviews of a reconfigured lease shape are in progress, and will require additional time to allow for other responsible agencies' input as well as public comment prior to the Commission considering certification of the CEQA documents and its subsequent determination regarding the lease reconfiguration. An extension of the existing lease will allow the leaseholder to continue its mussel farming operations while work is completed on separate but parallel CEQA and administrative reviews of both this existing lease and a new lease parcel needed to complete the shape transformation. It is anticipated that these reviews will be completed well before the one-year extension period is complete, so that the Commission may fully resolve this reconfiguration without further extensions needed.

Background:
Department and Commission staffs are in the middle of a complex process responding to a request to re-shape the existing lease that includes a number of steps:

1. The reconciliation of an error that existed between the previous legal (narrative) description of the lease and the actual location of gear placement in the water based on the previous leaseholder's reckoning. This reconciliation has been approved by the Commission (Dec 2014), and the lease is now described by GPS coordinates, with a precision of 0.001 seconds.

2. Santa Barbara Mariculture's request to reconfigure the shape of its lease seeks to transform the existing broad, rectangular shape that has not been fully utilized (approx. 28 acres in cultivation out of 72 acres leased), into a long, linear-shape that is parallel with the coast. This reshaping of the lease would allow the operator to expand culture gear to the full extent of the lease for which he's paying, in a fashion that is more compatible with both the operator's long-line culture methods, the navigation of local boat traffic, and perhaps other environmental factors. These factors are being considered through the CEQA environmental review process currently underway.

3. The Department has determined that such a reconfiguration of the lease requires a two-step process that includes:

   a) the creation of a "new" 26-acre lease parcel that would provide sufficient additional length when adjoined next to the existing lease, without widening the culture gear footprint further into Santa Barbara Channel;

   b) An area of the existing lease equivalent to the "new" lease (26 acres) would be surrendered by the leaseholder, so that the net resulting acreage between the two parcels would remain at a total of 72 acres (see Figure 1).

4. The new lease parcel represents area upon which Mariculture activities have not yet taken place; CEQA review for this new parcel is well underway. Also in progress are the administrative reviews that include financial surety valuations and lease rate adjustments for offshore parcels like this and others anticipated in the near future.

   The existing lease renewal is also subject to CEQA review, but separately from the new parcel. However, it is the Department's recommendation that sufficient time be allowed through this extension so that the aforementioned administrative and CEQA reviews can be completed in a parallel, efficient, and comprehensive manner.

The Department recommends the Commission approve a one-year extension of lease #M-653-02 with Santa Barbara Mariculture under its current terms and conditions.

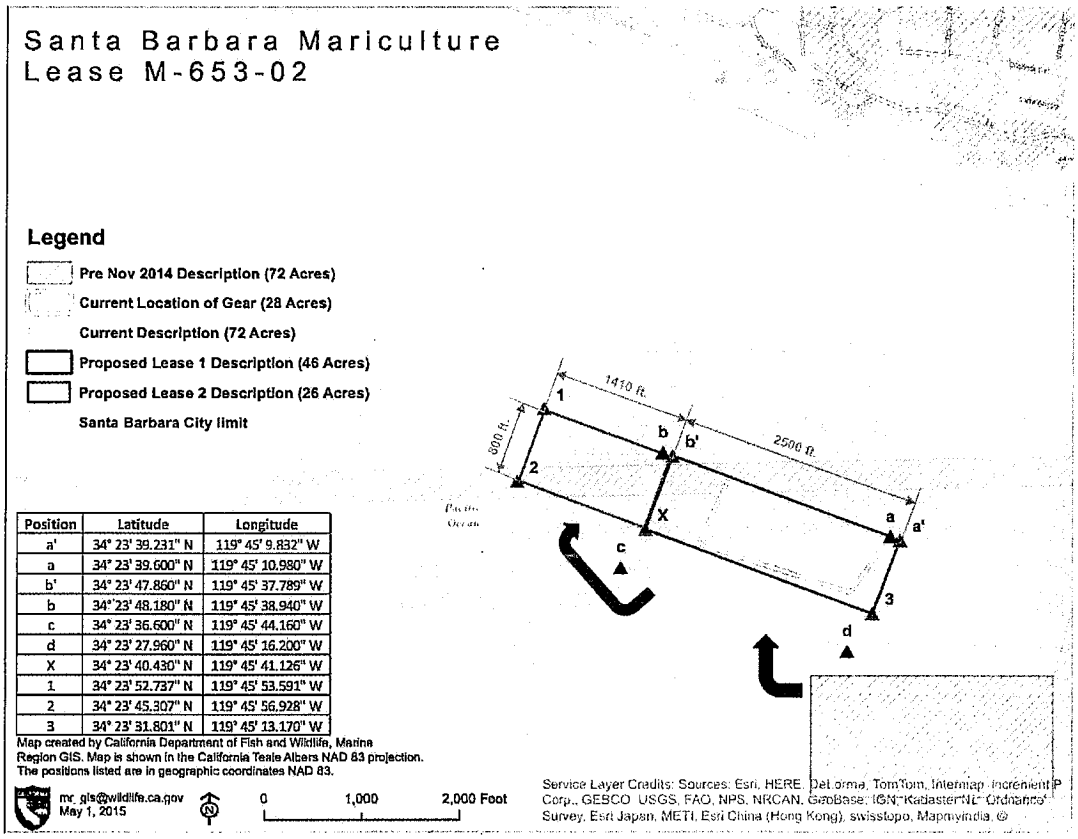
For additional information on this matter, please contact Randy Lovell, State Aquaculture Coordinator at 916-445-2008, or at randy.lovell@wildlife.ca.gov.

ec: Dan Yparraguirre, Deputy Director
Wildlife and Fisheries Division
Dan.yparraguirre@wildlife.ca.gov

Craig Shuman, D.Env., Manager
Marine Region (Region 7)
Craig.shuman@wildlife.ca.gov

Kirsten Ramey, Senior
Environmental Scientist Supervisor
Marine Region (Region 7)
Kirsten.ramey@wildlife.ca.gov

Randy Lovell,
State Aquaculture Coordinator
Randy.lovell@wildlife.ca.gov


Santa Barbara Mariculture
Lease M-653-02
Legend
Pre Nov 2014 Description (72 Acres)
Current Location of Gear (28 Acres)
Current Description (72 Acres)
Proposed Lease 1 Description (46 Acres)
Proposed Lease 2 Description (26 Acres)
Santa Barbara City limit
1410 ft.
2500 ft.
800 ft.
1
2
3
a
a'
b
b'
c
d
X
Position | Latitude | Longitude
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Map created by California Department of Fish and Wildlife, Marine Region GIS. Map is shown in the California Teale Albers NAD 83 projection. The positions listed are in geographic coordinates NAD 83.
mr_gis@wildlife.ca.gov
May 1, 2015
0
1,000
2,000 Feet
Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, @

Figure 1

Electronic Reporting Marine Log System

Katie Perry
Environmental Program Manager
Marine Region

Overview

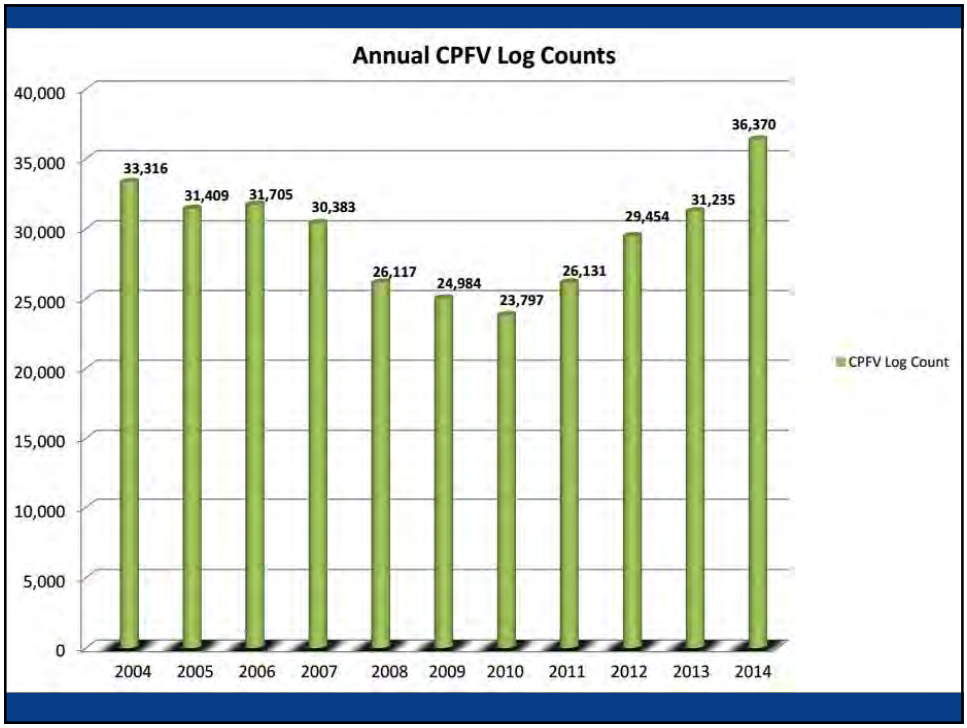
- Background
- Regulations
- Pilot Program
- Future Plans

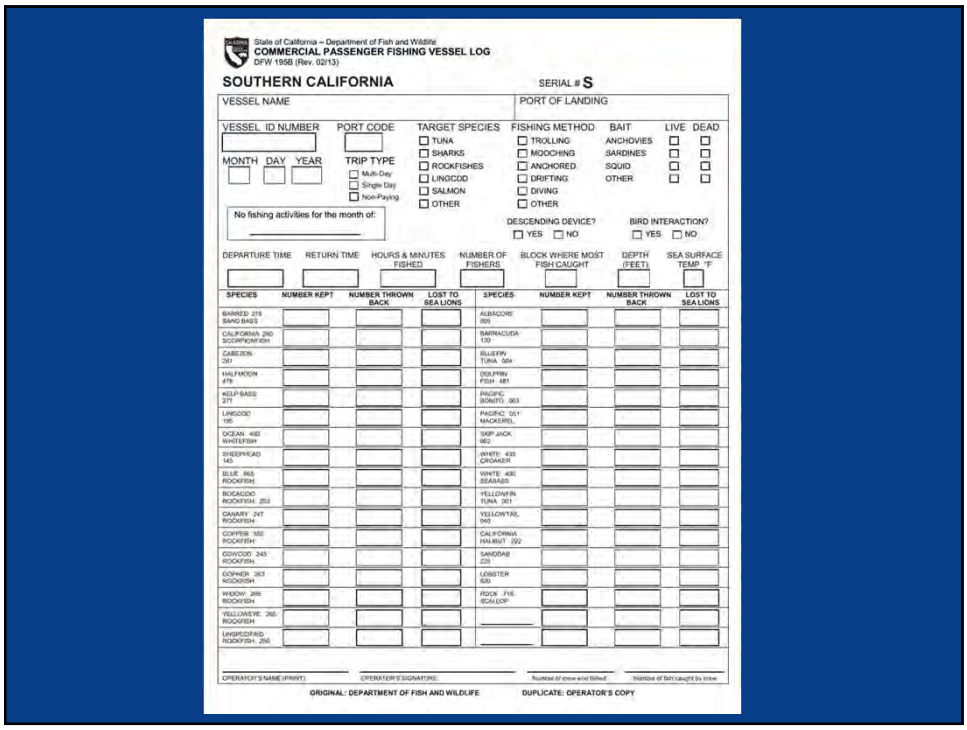
Background

- Interest in electronic reporting
- Marine Log System database
- Commercial Passenger Fishing Vessel electronic log
- Benefits: improved data quality, reduced cost, improved timeliness of data, saves time & effort for captains

Logbook Regulations

- Commercial fishers are required to use logbooks for specific fisheries
- Currently CDFW has 15 logbooks
- Each logbook is unique





State of California – Department of Fish and Wildlife
COMMERCIAL PASSENGER FISHING VESSEL LOG
DFW 195B (Rev. 02/13)

SOUTHERN CALIFORNIA SERIAL # **S**

VESSEL NAME | PORT OF LANDING

VESSEL ID NUMBER | PORT CODE | MONTH DAY YEAR

TRIP TYPE: ☐ Multi-Day ☐ Single Day ☐ Non-Paying

TARGET SPECIES: ☐ TUNA ☐ SHARKS ☐ ROCKFISHES ☐ LINGCOD ☐ SALMON ☐ OTHER

FISHING METHOD: ☐ TROLLING ☐ MOOCHING ☐ ANCHORED ☐ DRIFTING ☐ DIVING ☐ OTHER

BAIT: ANCHOVIES ☐ ☐ SARDINES ☐ ☐ SQUID ☐ ☐ OTHER ☐ ☐ (LIVE / DEAD)

No fishing activities for the month of: _____

DESCENDING DEVICE? ☐ YES ☐ NO

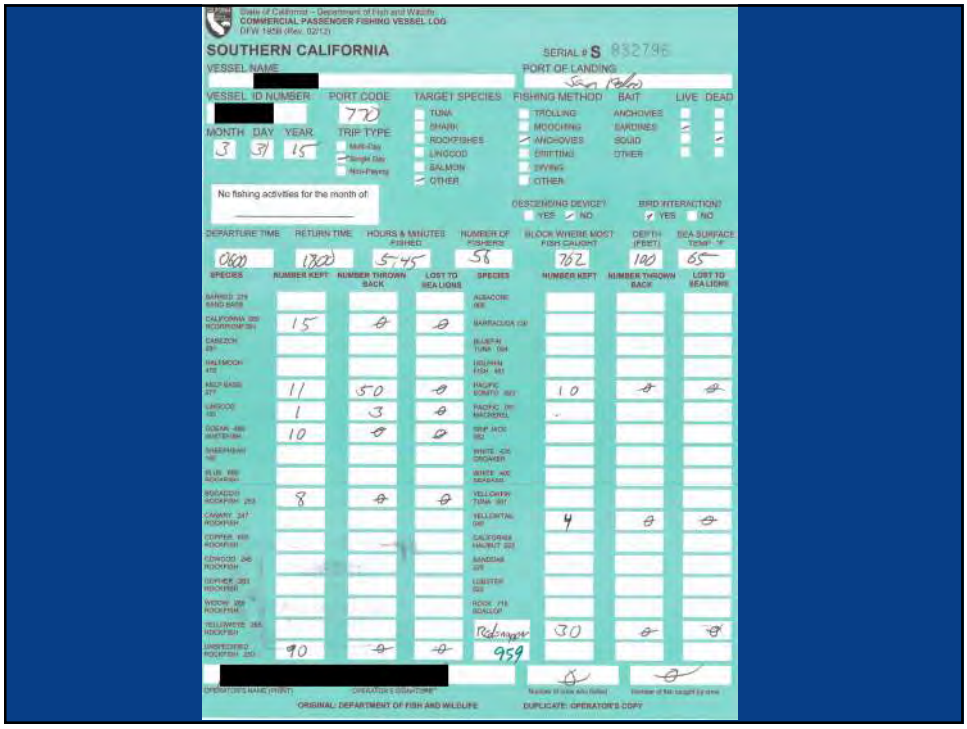
BIRD INTERACTION? ☐ YES ☐ NO

DEPARTURE TIME	RETURN TIME	HOURS & MINUTES FISHED	NUMBER OF FISHERS	BLOCK WHERE MOST FISH CAUGHT	DEPTH (FEET)	SEA SURFACE TEMP °F

SPECIES	NUMBER KEPT	NUMBER THROWN BACK	LOST TO SEA LIONS	SPECIES	NUMBER KEPT	NUMBER THROWN BACK	LOST TO SEA LIONS
BARRED 276 SAND BASS				ALBACORE 805			
CALIFORNIA 260 SCORPIONFISH				BARRACUDA 130			
CABEZON 281				BLUEFIN TUNA 684			
HALFMOON 479				DOLPHIN FISH 481			
KELP BASS 277				PACIFIC BONITO 663			
LINGCOD 195				PACIFIC (JU) MACKEREL			
OCEAN 440 WHITEFISH				SKIPJACK 982			
SHEEPHEAD 140				WHITE 435 CROAKER			
BLUE 865 ROCKFISH				WHITE 490 SEABASS			
BOCACCIO ROCKFISH 253				YELLOWFIN TUNA 901			
CANARY 247 ROCKFISH				YELLOWTAIL 540			
COPPER 555 ROCKFISH				CALIFORNIA HALIBUT 202			
COWCOD 245 ROCKFISH				SAMDAB 225			
GOPHER 383 ROCKFISH				LOBSTER 630			
WIDOW 266 ROCKFISH				ROCK FIS (SCALLOP			
YELLOWEYE 265 ROCKFISH				_____			
UNSPECIFIED ROCKFISH 256				_____			

OPERATOR'S NAME (PRINT) _____ OPERATOR'S SIGNATURE _____ Number of crew and fished _____ Number of fish caught by crew _____

ORIGINAL: DEPARTMENT OF FISH AND WILDLIFE DUPLICATE: OPERATOR'S COPY



State of California – Department of Fish and Wildlife
COMMERCIAL PASSENGER FISHING VESSEL LOG
DFW 1958 (Rev. 02/12)

SOUTHERN CALIFORNIA

SERIAL # S 832795

VESSEL NAME [redacted]

PORT OF LANDING San Pedro

VESSEL ID NUMBER [redacted]

PORT CODE 720

TARGET SPECIES: TUNA; SHARK; ROCKFISHES; LINGCOD; SALMON; OTHER ✓

FISHING METHOD: TROLLING; MOOCHING; ANCHOVIES ✓; DRIFTING; DIVING; OTHER

BAIT: ANCHOVIES; SARDINES; SQUID ✓; OTHER

LIVE ✓ DEAD

MONTH 3 DAY 31 YEAR 15

TRIP TYPE: Multi-Day; Single Day ✓; Non-Fishing

No fishing activities for the month of:

DESCENDING DEVICE? YES ✓ NO

BIRD INTERACTION? YES ✓ NO

DEPARTURE TIME	RETURN TIME	HOURS & MINUTES FISHED	NUMBER OF FISHERS	BLOCK WHERE MOST FISH CAUGHT	DEPTH (FEET)	SEA SURFACE TEMP °F
0600	1800	5:45	58	762	100	65

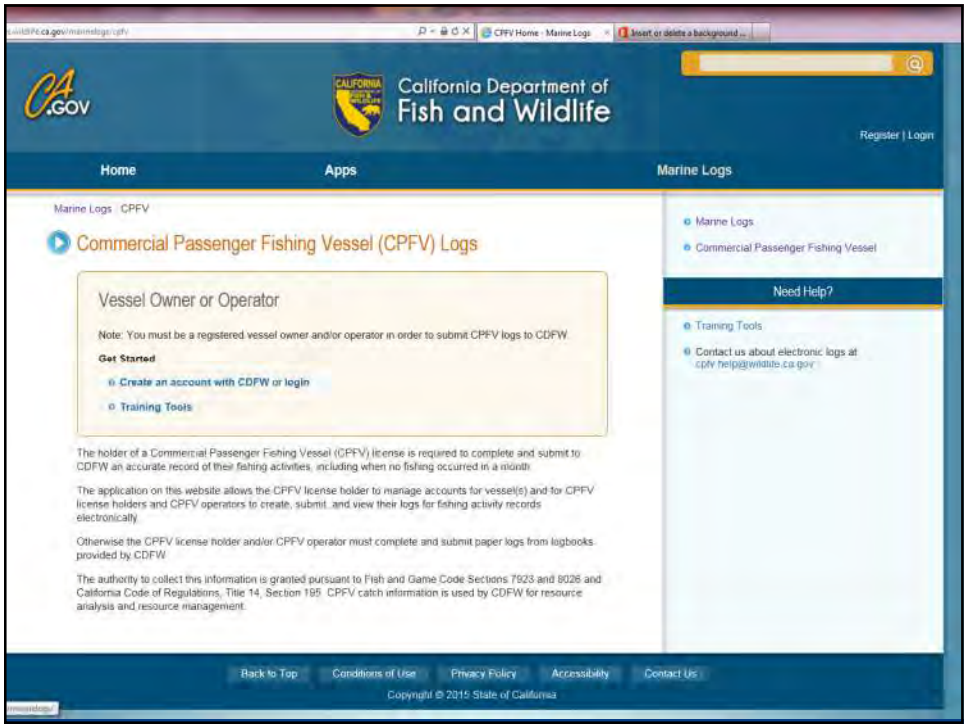
SPECIES	NUMBER KEPT	NUMBER THROWN BACK	LOST TO SEA LIONS	SPECIES	NUMBER KEPT	NUMBER THROWN BACK	LOST TO SEA LIONS
CALIFORNIA SCORPIONFISH	15	0	0	BARRACUDA			
OLIVE ROCKFISH				BLUEFIN TUNA			
VERMILION ROCKFISH				DOLPHIN FISH			
KELP BASS	11	50	0	PACIFIC BONITO	10	0	0
LINGCOD	1	3	0	PACIFIC (CHUB) MACKEREL			
OCEAN WHITEFISH	10	0	0	SHORTFIN MAKO			
SHEEPSHEAD				WHITE SEABASS			
BLUE ROCKFISH				WHITE SEABASS			
BROADBILL ROCKFISH	8	0	0	YELLOWFIN TUNA			
CANARY ROCKFISH				YELLOWTAIL	4	0	0
COPPER ROCKFISH				CALIFORNIA HALIBUT			
CONCEPCION ROCKFISH				BARRACUDA			
GOPHER ROCKFISH				LOBSTER			
WIDOW ROCKFISH				ROCK CRAB			
YELLOWEYE ROCKFISH				Rockfish	30	0	0
UNSPECIFIED ROCKFISH	90	0	0	959			

[redacted] 0

ORIGINAL: DEPARTMENT OF FISH AND WILDLIFE — DUPLICATE: OPERATOR'S COPY

Pilot Program for CPFV electronic log

- Collaboration with the Sportfishing Association of California - June 2014
- Beta testing from Feb – Mar 2015
- Accounts added though Sep 2015
- 150 vessels in southern CA submitting electronic logs


CA.GOV
California Department of Fish and Wildlife
Register | Login
Home
Apps
Marine Logs
Marine Logs : CPFV
Commercial Passenger Fishing Vessel (CPFV) Logs
Vessel Owner or Operator
Note: You must be a registered vessel owner and/or operator in order to submit CPFV logs to CDFW.
Get Started
Create an account with CDFW or login
Training Tools
The holder of a Commercial Passenger Fishing Vessel (CPFV) license is required to complete and submit to CDFW an accurate record of their fishing activities, including when no fishing occurred in a month.
The application on this website allows the CPFV license holder to manage accounts for vessel(s) and for CPFV license holders and CPFV operators to create, submit, and view their logs for fishing activity records electronically.
Otherwise the CPFV license holder and/or CPFV operator must complete and submit paper logs from logbooks provided by CDFW.
The authority to collect this information is granted pursuant to Fish and Game Code Sections 7923 and 8026 and California Code of Regulations, Title 14, Section 195. CPFV catch information is used by CDFW for resource analysis and resource management.
Marine Logs
Commercial Passenger Fishing Vessel
Need Help?
Training Tools
Contact us about electronic logs at
cpfv.help@wildlife.ca.gov
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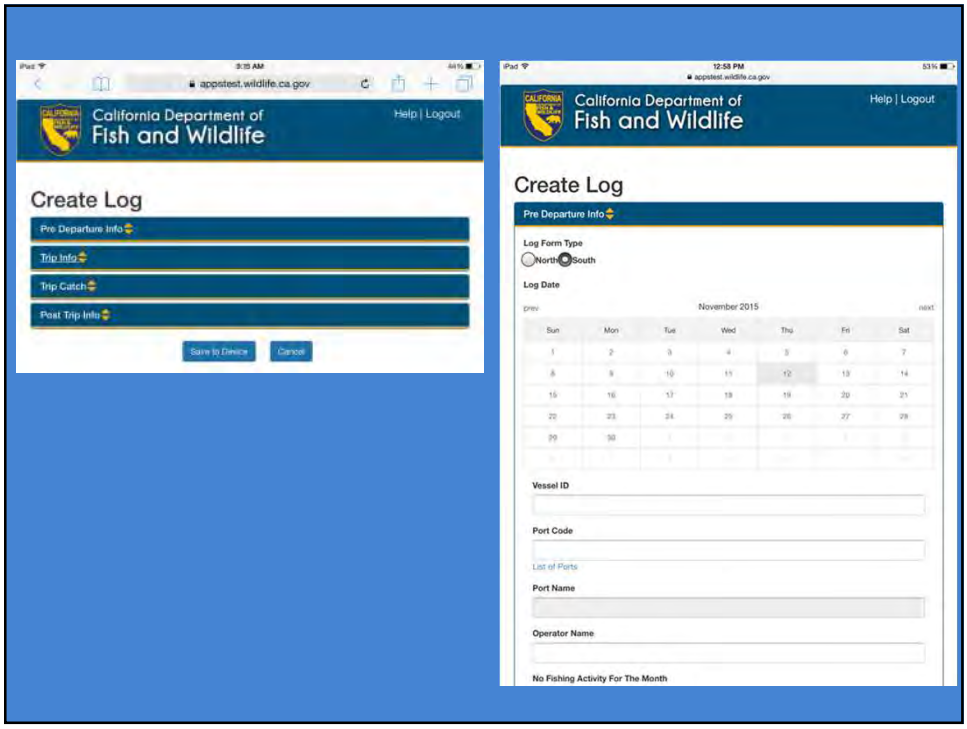
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California Department of Fish and Wildlife
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Create Log
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Post Trip Info
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California Department of Fish and Wildlife
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Create Log
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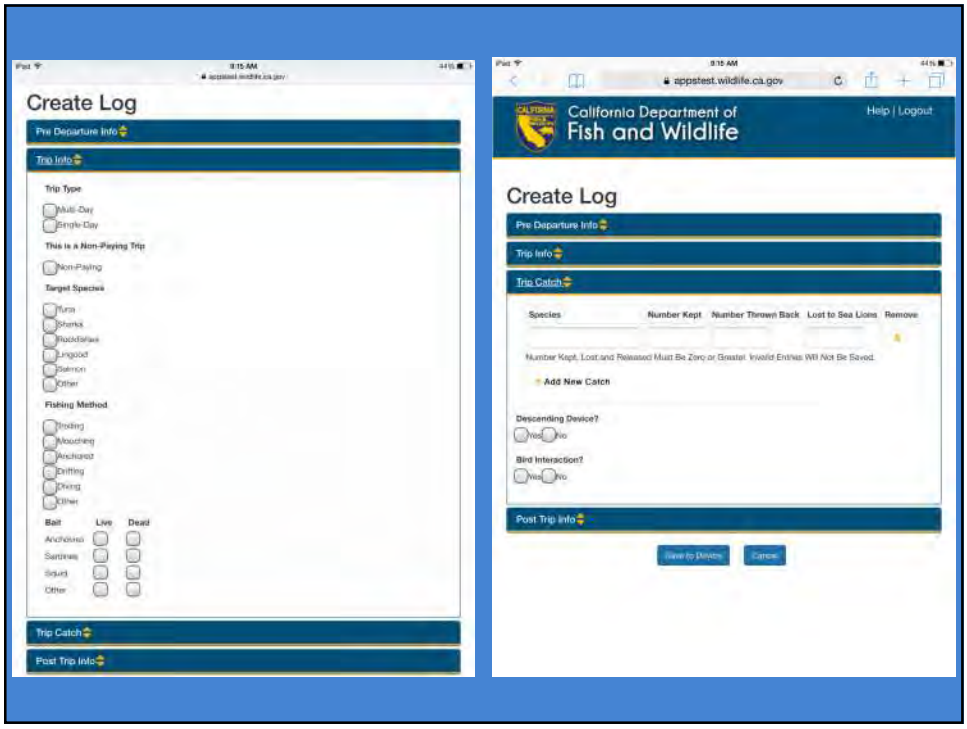
North
South
Log Date
November 2015
Vessel ID
Port Code
List of Ports
Port Name
Operator Name
No Fishing Activity For The Month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Trip Info
Trip Type
Multi-Day
Single-Day
This is a Non-Paying Trip
Non-Paying
Target Species
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Sharks
Rockfishes
Lingcod
Salmon
Other
Fishing Method
Trolling
Mooching
Anchored
Drifting
Diving
Other
Bait
Live
Dead
Anchovies
Sardines
Squid
Other
Trip Catch
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appstest.wildlife.ca.gov
California Department of
Fish and Wildlife
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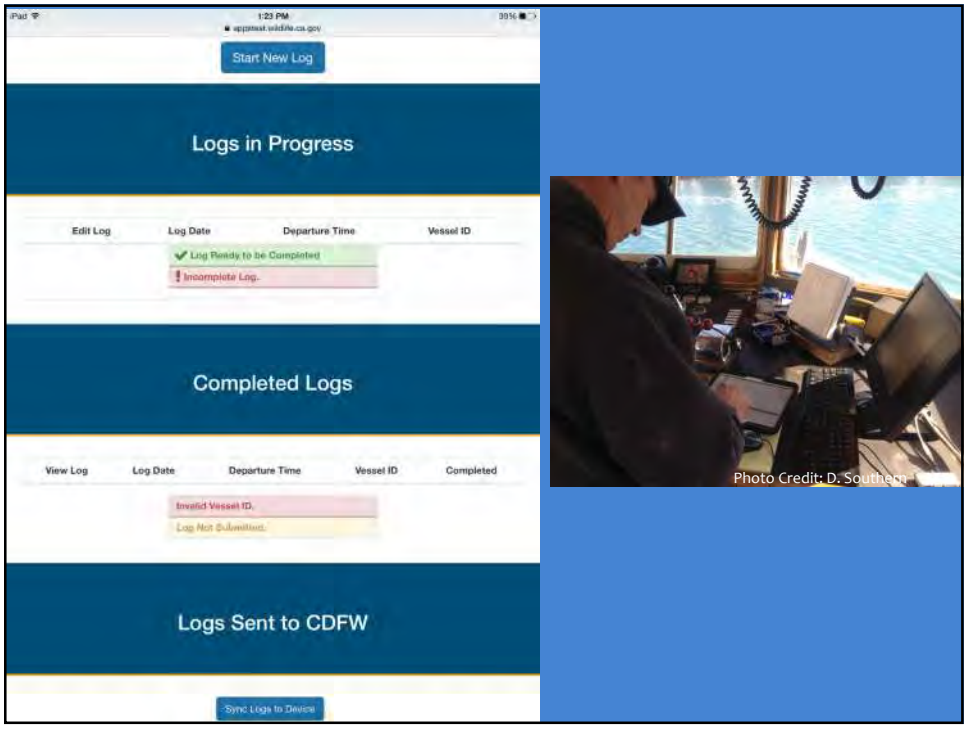
Trip Info
Trip Catch
Species
Number Kept
Number Thrown Back
Lost to Sea Lions
Remove
Number Kept, Lost and Released Must Be Zero or Greater. Invalid Entries Will Not Be Saved.
Add New Catch
Descending Device?
Yes
No
Bird Interaction?
Yes
No
Post Trip Info
Save to Device
Cancel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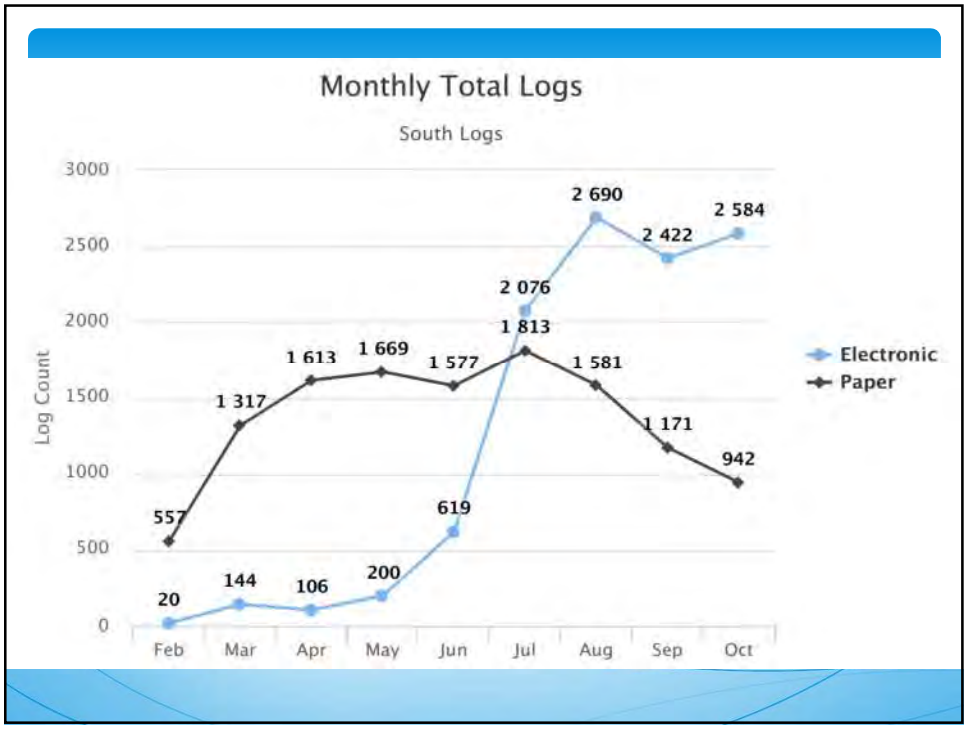
Logs in Progress
Edit Log
Log Date
Departure Time
Vessel ID
Log Ready to be Completed
Incomplete Log.
Completed Logs
View Log
Log Date
Departure Time
Vessel ID
Completed
Invalid Vessel ID.
Log Not Submitted.
Logs Sent to CDFW
Sync Logs to Device
Photo Credit: D. Southern



Future Plans

- Complete the Marine Log System database - TBD
- Complete evaluation of logbooks – May 2016
- Complete regulatory package that allows option of electronic reporting for logbooks – April 2016

Acknowledgements

- **Marine Region:** J. Eres, J. Robertson, O. Horning
- **Data and Technology Division:** T. Lupo, C. McClanahan, M. Billingsley, A. Del Monte, V. Hardge, J. Thomas, E. Miller, D. Hampton, A. Miller, R. Dubey.
- **Law Enforcement Division:** R. Puccinelli, M. Stefanak
- **SAC:** Ken Franke, Alayna Siddall, Derek Southern, and all the owners & operators participating in the pilot program
- **PSMFC:** Steve Williams

Summary

- Department is making good progress on the Marine Log System database
- Successful pilot program for CPFV electronic logs
- Foundation has been built for future electronic logs

Thank You * Questions

Katie Perry
Environmental Program Manager
(916) 445-6456

Draft Regulatory Language

December 2, 2015

Section 665, Title 14, CCR, is amended to read:

665. Meeting Procedures

~~(a) Time limits for speakers at commission meetings.~~

~~(1) The time allotted for each speaker wishing to address an agenda item shall be set by the presiding commissioner.~~

(a) Commission quorum, agendas, and meeting procedures.

(1) Quorum. Commission and committee meetings may not be conducted without a quorum present.

(A) Commission meetings require a quorum of at least three commissioners be present to conduct a meeting. A commission meeting must be immediately recessed or adjourned if at least three commissioners are no longer present.

(B) Committee meetings require a quorum of at least one appointed member be present to conduct a meeting. A committee meeting must be immediately recessed or adjourned if at least one appointed member is no longer present.

(2) Commissioner participation at committee meeting.

(A) No more than two commissioners may attend a committee meeting.

(3) Meeting agendas.

(A) Public requests for items to be added to an agenda must be received no later than the commission meeting immediately prior to the desired meeting.

(B) Contents of meeting agendas.

1. Except for emergency meetings of the commission, contents of commission and committee meeting agendas are established by a majority vote of the commission.
2. Contents of agendas for emergency meetings of the commission are established by the president or the president's designee.
3. Committee agendas may not contain items that have been placed on commission meeting agendas, unless otherwise directed by a majority vote of the commission.
4. Notwithstanding subsection (a)(3)(B)1., the president or the president's designee may add an item to the agenda.

(C) Agenda distribution.

1. Except for emergency meetings of the commission, commission and committee meeting agendas shall be distributed and posted to the commission website at least 10 days prior to the first day of the meeting.
2. Agendas for emergency meetings of the commission shall be distributed and posted to the commission website

pursuant to the provisions of the Bagley-Keene Open Meeting Act (Government Code Sections 11120-11132).

(4) Committee recommendations. Pursuant to Sections 105 and 106 of the Fish and Game Code, the marine resources committee and wildlife resources committee shall report on their activities from time to time and make recommendations on resource matters before the commission.

(A) Committees may meet to make recommendations no later than 15 days prior to the first day of the commission meeting at which the commission may consider taking action on the subject of the recommendation.

(B) Committee recommendations shall be posted to the commission website at least five days prior to the first day of the meeting.

(5) Commission Meeting Voting

(A) A motion shall pass or fail only upon a majority vote of the membership.

1. The commission may make and vote on more than one motion related to an agenda item. If no motion receives a majority vote of the membership, the agenda item shall be continued to a subsequent commission meeting.

(b) Public participation. Except for the department, every person or agency participating in commission and/or committee meetings is subject to the provisions in this subsection.

(1) Public comment on agenda items. The public may comment on an agenda item before any decision is made regarding the agenda topic.

(A) Public requests to provide comments on a commission agenda item must be submitted to commission staff prior to when the agenda item is announced.

1. A person may voluntarily complete a speaker card furnished by commission staff.

2. A person not completing a speaker card must inform commission staff, orally or in writing, of their desire to comment on the item.

(B) A person may request to provide comments on a committee agenda item by raising his hand during the discussion of that item.

(2) Public forum. During the public forum agenda item, any member of the public may address the commission or committee regarding commission policies or any other matter within the commission's jurisdiction so long as the subject is not related to any other item on the current agenda.

(3) Allotted time for comments and presentations at commission meetings.

(A) The time allotted for each person wishing to address an agenda item shall be set by the presiding commissioner at between one and three minutes per person per agenda item, except as provided in subsections (b)(3)(A)1., (b)(3)(A)2. and (b)(3)(A)3.

1. Ceding time. The presiding commissioner may allot up to five minutes for a person to comment on an agenda item if at least three other persons are present when the agenda item

is called and forgo their opportunity to speak to that agenda item.

2. Advanced approval for extended time. The public may request extended time to comment longer than three minutes. The president or designee of the president shall approve or deny the requested time based on relevance to the agenda topic and time available.
    a. Except for emergency meetings of the commission, requests for extended time must be received in writing no later than 12:00 noon five days prior to the first day of the meeting and must be sent by email to fgc@fgc.ca.gov or by mail/courier to California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814. Only one method of delivery is necessary.
        i. The president or designee shall approve or deny the request no later than 5:00 p.m. two days prior to the first day of the meeting.
    b. Requests for extended time for an emergency meeting of the commission must be received prior to the start of the meeting and must be sent by email to fgc@fgc.ca.gov or delivered in person at the meeting.
        i. The president or designee shall approve or deny the request prior to the start of the meeting.
3. At the request of any commissioner, a person may receive additional time to comment on an agenda item.

(B) The total amount of time allocated for public comments on a particular issue may be limited by publishing the time limit on the meeting agenda.

(4) Allotted time for comments at committee meetings. The time allotted for each person wishing to address an agenda item shall be at the discretion of the committee chair(s).

(5) Written comments. All written comments are available to commissioners upon request.

(A) Except for an emergency meeting of the commission, written comments intended for a commission or committee meeting must be delivered to the commission office via email or mail/courier no later than 12:00 noon five days prior to the first day of the meeting, or in person at the meeting.

1. Written comments received by 5:00 p.m. 13 days prior to the first day of the meeting may be posted to the commission website and may be included in the meeting materials provided to commissioners prior to the first day of the meeting.

2. Written comments received after 5:00 p.m. 13 days prior to the first day of the meeting and before 12:00 noon 5 days prior to the first day of the meeting may be made available to commissioners at the meeting, but are not posted to the commission's website for that meeting.
3. Written comments received in the commission office after 12:00 noon five days prior to the first day of the meeting are only delivered to the meeting if required by the Administrative Procedure Act, Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code, and are not posted to the commission's website for that meeting.
4. Written comments received in the commission office after 12:00 noon five days prior to the first day of the meeting that are not required to be delivered to the meeting pursuant to the Administrative Procedure Act are held for a future meeting if related to a future agenda item.
5. Number of copies of written comments delivered in person at a meeting.
    a. Ten copies of written comments are requested if delivered in person at a commission meeting, except two copies of written comments are requested if delivered in person at a teleconference meeting.
    b. Five copies of written comments are requested if delivered in person at a committee meeting.
6. Any writings, when distributed to all, or a majority of all, commissioners in connection with a matter subject to discussion or consideration at a meeting shall be made available to the public upon request without delay. However, this subsection does not apply to any writing exempt from public disclosure under Section 6253.5, 6254, or 6254.7 of the Government Code.
7. Writings that are public records under subsection (b)(5)(A)6., and that are distributed to members of the commission prior to a meeting, pertaining to any item to be considered during the meeting, shall be made available for public inspection at the meeting.
8. Writings that are public records under subsection (b)(5)(A)6., and that are distributed to members of the commission during a meeting, pertaining to any item to be considered during the meeting shall be made available for public inspection at the meeting if prepared by department or commission staff, or after the meeting if prepared by some other person.

(B) Written comments intended for an emergency meeting of the commission must be received prior to the start of the meeting or in person at the meeting.

(C) In the event multiple written comments expressing similar views are received, an example or a summary of the comments may be posted to the commission website and/or included in the meeting materials for commissioners.

(D) Written comments delivered to the commission office must be submitted via email to fgc@fgc.ca.gov or mail/courier to California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814. Only one copy and only one method of delivery are necessary.

(E) Written comments are not accepted if sent to the meeting facility.

(6) Audio or visual materials for commission and committee presentations must be approved by the executive director.

(A) Except for emergency meetings of the commission, consideration for approval requires that materials be submitted no later than 12:00 noon five days prior to the first day of the meeting.

(B) For emergency meetings of the commission, consideration for approval requires that materials be submitted prior to the start of the meeting.

(C) A request for an audio or visual presentation for a commission or committee meeting may be denied if the material is deemed not relevant to the agenda item, contains inappropriate material, or contains unauthorized copyrighted materials.

(D) A request for an audio or visual presentation for Commission meetings may be denied if the material cannot be presented in three minutes or less.

(E) Audio or visual materials for presentations must be submitted via email to fgc@fgc.ca.gov.

(F) All electronic formats must be Windows PC compatible.

(7) Prohibited behavior. A person willfully disrupting the orderly conduct of the meeting may be removed from the meeting.

(c) Concurrence with Government Code Sections 6707 and 6800. The deadlines and due dates in this Section shall conform to Sections 6707 and 6708 of the Government Code pertaining to deadlines that fall on Saturdays or holidays.

Note: Authority cited: Section 108, Fish and Game Code. Reference: Section 108, Fish and Game Code; Section 11125.7 Government Code.

Summary of Public Recommendations for Commission and Committee Procedures

12/2/2015

Source	Recommendation	Staff Response	Notes
Commission Votes			
6/30/15 Eric Mills	If only three of the five commissioners are present, any issue on the agenda should be required to receive a 3:0 vote for passage. [Majority of the entire membership]	**Some Commissioners have expressed an interest in including this provision, if not as a regulation, then perhaps as a policy.**	**The Bagley-Keene Open Meeting Act only requires that a majority of the members of a state body meet to establish a quorum for a meeting; it does not require a majority vote of the membership for a vote to pass. The general standard for passage of an item requires the majority of those present and voting for an item to pass.**
Public Forum			
6/30/15 Eric Mills	There should be public forum at the beginning and end of each day of each meeting.	Reject: The Commission has already determined that it will include public forum at the beginning or end of each meeting day, but not both; to date public comment has supported public forum at the beginning of the day and the Commission has chosen to accommodate that preference.	The Bagley-Keene Open Meeting Act provides that at any meeting the body can elect to consider comments from the public on any matter under the body's jurisdiction. (§11125.7, Government Code)
Committees are Subject to the Bagley-Keene Open Meeting Act			
4/14/14 Michel & Associates	Because the Wildlife Resources Committee (WRC) was created by statute and because it includes more than one member, it is subject to the Bagley-Keene Open Meeting Act.	Accept: The proposed regulation recognizes that Commission committees are subject to the Bagley-Keene Open Meeting Act.	

Source	Recommendation	Staff Response	Notes
7/18/14 Bell, McAndrews & Hiltachk	The WRC is created by statute, and therefore is subject to the Bagley-Keene Open Meeting Act, regardless of whether it is a decision-making or advisory body.	Accept: The proposed regulation recognizes that Commission committees are subject to the Bagley-Keene Open Meeting Act.	
7/14/14 Safari Club International	The WRC must publish its plan to meet.	Accept: The proposed regulation provides that committee meeting agendas are published at least 10 days prior to the meeting.	The Commission must announce its meetings for the year by January 1 of that year, or sixty days prior to the first meeting, whichever is sooner. (§206, Fish and Game Code)
7/14/14 Safari Club International	Upon obtaining suggested presentations from the public, the WRC should publish its proposed agenda.	Reject: **The public may request, but does not assign WRC agenda items. The Commission, not the WRC, determines the WRC agenda.** The proposed regulation provides that committee meeting agendas will be approved at the Commission meeting immediately prior to the committee meeting and may be amended by the president **or his** designee. Consistent with the Bagley-Keene Open Meeting Act, the proposed regulation provides that Commission and committee meeting agendas will be distributed and posted to the Commission website at least ten days prior to the first day of a meeting.	

Source	Recommendation	Staff Response	Notes
7/14/14 Safari Club International	The WRC should give the public adequate opportunity to prepare responses to agenda items and to submit requests to be heard on agenda items.	Accept: Consistent with current practice, the proposed regulation provides rules for submitting written comments and presentations on an agenda item, and rules for making oral comments or presentations at a meeting.	The Bagley-Keene Open Meeting Act provides that a member of the public must be expressly afforded an opportunity to speak at meetings of a body either before or during the consideration of any agenda item (§11125.7, Government Code).
7/28/14 Michel & Associates	A committee meeting is subject to the Bagley-Keene Open Meeting Act if (a) any portion of the meeting relates to one or more matters within the Commission's jurisdiction, and (b) the meeting is attended (whether in person or otherwise) by all of the following: at least one WRC member, and least one Department employee, and at least one person who is neither a member of the Department nor affiliated with the Commission (e.g., non-committee member Commissioners or Commission staff)	Reject	The Bagley-Keene Open Meeting Act defines a meeting as any congregation of a majority of the members of a state body at the same time and place to hear, discuss, or deliberate upon any item that is within the subject matter jurisdiction of the state body to which it pertains. (§11122.5, Government Code)
9/24/15 Michel & Associates	**What is the process for arranging a WRC meeting? Who decides the date, and location?**	**The dates and locations of committee meetings are established annually by the Commission.**	**The Commission must announce its meetings for the year by January 1 of that year, or sixty days prior to the first meeting, whichever is sooner. (§206, Fish and Game Code)**

Source	Recommendation	Staff Response	Notes
9/24/15 Michel & Associates	**Who dictates what items will be discussed at the WRC? How are issues decided to be placed on the agenda for any given meeting? Is there a process for the public to suggest items for consideration by the WRC.**	**The proposed regulation provides that the Commission will approve committee meeting agenda topics at the Commission meeting immediately prior to the committee meeting.** **The public may suggest items for consideration by the WRC by presenting the request to the Commission.**	
9/24/15 Michel & Associates	**Does the WRC comply with the Bagley-Keene Act as it must? If so, does it have established procedures to maintain compliance? Who created those procedures?**	**The proposed regulation recognizes that Commission committees are subject to the Bagley-Keene Open Meeting Act.** **The WRC currently complies with the requirements of the Bagley-Keene Open Meeting Act. The proposed regulations will codify procedures not duplicative of current laws and regulations. The proposed regulations are being developed by Commission staff as directed by the Commission.**	

Source	Recommendation	Staff Response	Notes
9/24/15 Michel & Associates	**Until our questions are answered and the lack of transparency for what the WRC is doing is addressed, it is inappropriate for the WRC to engage in any more activity related to the Commission's policy making.**	**WRC meetings are publicly noticed and open to the public. WRC does not make policy decisions on behalf of the Commission, but is directed by statute to make recommendations to the Commission.**	**The WRC shall report to the commission from time to time on its activities and shall make recommendations on all nonmarine resource matters considered by the commission. (§106, Fish and Game Code)**
Appointments to WRC			
4/14/14 Michel & Associates	The WRC should have at least two members.	Reject	WRC is required to have only one member (§106, Fish and Game Code)
7/14/14 Safari Club International	The membership of the WRC should be two Commissioners	Reject	IBID
4/14/14 Michel & Associates	When the Commission makes its yearly appointment to the WRC, it should, to the extent practicable, appoint two WRC members who have different backgrounds (e.g., a hunter and a member with non-hunting interests).	Reject: Committee appointments are dependent upon the background and interest of commissioners.	Commissioners are appointed by the Governor (Article 4, Section 20, California Constitution) and IBID.
7/28/14 Michel & Associates	To the extent feasible, the Commission shall place at least one Commissioner with substantial hunting experience on the WRC.	Reject: Committee appointments are dependent upon the background and interest of commissioners.	Commissioners are appointed by the Governor (Article 4, Section 20, California Constitution)

Source	Recommendation	Staff Response	Notes
7/28/14 Michel & Associates	If the WRC has a designee, the name of that designee should be announced at a Commission meeting prior to that designee acting as the designee of the WRC.	Reject: It is impracticable to have a regulation requiring that the name of a designee be announced at a Commission meeting prior to a meeting that may not yet have been scheduled. Generally, the designee would be the wildlife advisor or executive director.	The WRC or its designee shall, to the extent practicable, attend meetings of the department staff, including meetings of the department staff with interested parties, in which significant wildlife resource management documents are being developed. (§106, Fish and Game Code)
Committee Quorum			
7/11/14 Michel & Associates	By law, the WRC is only required to have one member, so the claim that two members are needed for WRC meetings is inaccurate.	Accept: The proposed regulation provides that a committee quorum is one appointed member.	
7/28/14 Michel & Associates	WRC meetings will be run by at least one of the WRC members or the designee	Accept in part: The proposed regulation provides that a quorum is one appointed member.	Statute does not provide that a designee may run a WRC meeting (§106, Fish and Game Code).
Non-committee Members' Participation in Committee Meetings			
4/14/14 Michel & Associates	Three Commissioners should never participate in any WRC meeting.	**Accept: The proposed regulation provides that no more than two Commissioners may attend a Committee meeting.**	The prohibitions of the Bagley-Keene Open Meeting Act do not apply to the attendance of a majority of the members of a state body at an open and noticed meeting of a standing committee of that body, provided that the members of the state body who are not members of the standing committee attend only as observers. (§11122.5 (c)(6),
7/14/14 Safari Club International	Non-committee Commissioners should resist the temptation of attending WRC meetings in any capacity.	Reject: **The proposed regulation provides that no more than two Commissioners may attend a Committee meeting.**	

Source	Recommendation	Staff Response	Notes
7/28/14 Michel & Associates	Non-committee Commissioners may attend a WRC meeting but should be expressly prohibited from participating in anything other than an observational capacity. Non-member commissioners should not make any comment, either directly or indirectly, during a WRC meeting.	**Reject: The proposed regulation provides that no more than two Commissioners may attend a Committee meeting.**	Government Code)
Committee Recommendations			
4/14/14 Michel & Associates	Because WRC is required to make recommendations, final decisions will need to be made, which could be problematic if there are two Commissioners sitting on the WRC (e.g., a tie). The regulations should address how any disputes between WRC members shall be resolved.	Reject: Committees are not decision making bodies. They are required to make recommendations on matters before the Commission. In addition, the public has an opportunity per the Bagley-Keene Open Meeting Act to request that the Commission consider actions not recommended by a Committee.	
7/28/14 Michel & Associates	If the WRC has two members, any finding or recommendation it makes must be unanimous.	Reject: Committees are not required to have agreement between the members and may forward to the Commission differing recommendations.	

Source	Recommendation	Staff Response	Notes
7/18/14 Bell, McAndrews & Hiltachk	If the WRC members are to operate within their statutory authority as a strictly advisory body, the Commission must provide significant intervening substantive review for all recommendations made by the WRC, and must do so where the deliberations and determinations are open to the public – the Commission cannot simply rubberstamp a recommendation made by WRC. Furthermore, in considering recommendations from the WRC, the Commission must adhere to the Administrative Procedure Act and Bagley-Keene Open Meeting Act.	Accept: The proposed regulation provides that the Marine Resources Committee (MRC) and WRC may meet to make recommendations no later than 15 days prior to the Commission meeting at which the Commission may consider taking action on the subject of the recommendation; Committee recommendations shall be posted to the Commission website at least five days prior to the first day of the meeting; and **the public may comment on an agenda item before any decision is made regarding the item.**	
9/24/15 Michel & Associates	**Who decides (or what is the process for deciding) what actions WRC will take, i.e., whether a recommendation will be made to the full Commission?**	**Committees are not decision making bodies; they are required to make recommendations on matters before the Commission.**	**The WRC shall report to the commission from time to time on its activities and shall make recommendations on all nonmarine resource matters considered by the commission. (§106, Fish and Game Code)**

Source	Recommendation	Staff Response	Notes
9/24/15 Michel & Associates	**What happens if one Commissioner disagrees with a recommendation? Is there a record kept of that? Is the Commission or the public informed of the disagreement?**	**Committees are not required to have agreement between the appointed members and may forward to the Commission differing recommendations.** **Committee meetings are currently audio-recorded and Commission meetings are audio- or video-recorded. Commission staff maintains Commission voting records.**	
9/24/15 Michel & Associates	**What form does a recommendation take? Who prepared it?**	**The proposed regulation provides that MRC and WRC may meet to make recommendations no later than 15 days prior to the Commission meeting at which the Commission may consider taking action on the subject of the recommendation; Committee recommendations shall be posted to the Commission website at least five days prior to the first day of the Commission meeting at which the recommendations will be considered.** **Recommendations are generally developed by Commission staff under direction of the Committees.**	

Source	Recommendation	Staff Response	Notes
Public Participation in Committee Meetings – Written Comments and Presentations			
7/11/14 Michel & Associates	If the purpose of the WRC is to have the most enlightened discussion possible…then stakeholders and the public should not be surprised by new information presented for the first time at WRC meetings when there is no opportunity to prepare a rebuttal. If the Executive Director receives a copy of presentation materials a few weeks prior to the WRC meeting, why can't that information be circulated publicly beforehand?	Accept in Part: The proposed regulation provides that written comments received at least 13 days prior to the meeting may be posted to the Commission's website at the same time Commissioners receive them. All writings are made available to the public when distributed to all or a majority of Commissioners. Members of the public who plan to submit information at a meeting are not required to share that information prior to a meeting; the exception in this regulation is for audio or visual presentations, which must be submitted to the executive director by noon five days prior to the day of the meeting.	The Bagley-Keene Open Meeting Act provides that "…writings, when distributed to all, or a majority of all, of the members of a state body…shall be made available upon request without delay" (§11125.1, Government Code). The act also provides that a member of the public must be expressly afforded an opportunity to speak at meetings of a body either before or during the consideration of any agenda item (§11125.7, Government Code), which necessarily suggests that new information may be provided at a meeting without advance notice.
7/11/14 Michel & Associates	If a deadline is applicable to all, it should be publicized.	Accept: The proposed regulation includes deadlines for receipt of written comments and audio/visual presentations.	
7/14/14 Safari Club International	The WRC must solicit proposed presentations for a meeting from the public generally, and not just from a limited group.	Reject: The proposed regulation provides rules for submitting written comments and presentations on Commission and committee meeting agenda items, with no limitations on who may submit such materials. However,	

Source	Recommendation	Staff Response	Notes
		the Commission and committees may ask a certain individual(s) or group(s) to provide information relevant to an agenda item or to work together to develop a collaborative proposal; this would not preclude others from participating in Commission and committee processes. The proposed regulation also provides that members of **the public may comment on an agenda item before any decision is made regarding the item.**	
7/14/14 Safari Club International	The WRC should require presentations to be submitted well in advance of the meeting and should share those presentation materials with the public to give the public the opportunity to prepare comments on those presentations.	Accept in Part: The proposed regulation includes a deadline of noon five days prior to the first day of a meeting for receipt of written comments and audio/visual presentations. All writings and presentations are available to the public when distributed to all, or a majority of all, Commissioners.	
7/18/14 Bell, McAndrews & Hiltachk	All members of the public must be given the opportunity to comment and participate in meetings of the WRC.	Accept: The proposed regulation provides that Commission committees are subject to the Bagley-Keene Open Meeting Act and provides rules for written and verbal participation.	

Source	Recommendation	Staff Response	Notes
Public Participation in Committee Meetings Should not Preclude Public Participation during Commission Meetings			
7/11/14 Michel & Associates	Clarification is needed whether the WRC is going to be the only opportunity for public comment on issues raised at WRC meetings, or if the public will have an opportunity to comment on all issues agendized for Commission meetings, even if that issue was already discussed (or not) at a WRC meeting.	Accept: The proposed regulation provides that **the public may comment on an agenda item before any decision is made regarding the item.**	The Bagley-Keene Open Meeting Act includes an allowance to not take testimony on items discussed in committee, but it is not included in our proposed regulation. "…the state body shall provide an opportunity for members of the public to directly address the state body on each agenda item before or during the state body's discussion or consideration of the item. This section is not applicable if the agenda item has already been considered by a committee composed exclusively of members of the state body at a public meeting where interested members of the public were afforded the opportunity to address the committee on the item, before or during the committee's consideration of the item, unless the item has been substantially changed since the committee heard the item, as determined by the state body**.**" (§11125.7, Government Code)
7/14/14 Safari Club International	Need to clarify how the Commission and WRC will work together and, in particular, whether a discussion on the WRC agenda will provide the only opportunity for the public to comment on matters that result in WRC recommendations to the Commission.	Accept: The proposed regulation provides that **the public may comment on an agenda item before any decision is made regarding the item.**	
7/28/14 Michel & Associates	The ability to speak at a WRC meeting on a particular item should not preclude a member of the public from attending a later Commission meeting and commenting on that item, or a related item, during the Commission meeting but prior to the Commission taking action.	Accept: The proposed regulation provides that **the public may comment on an agenda before any decision is made regarding the item.**	
Subcommittees			
4/14/14 Michel & Associates	WRC needs rules to explain exactly how and when subcommittees will be formed.	Reject: If the Commission desires to move forward with this proposal, staff recommends doing so in a separate rulemaking.	

Source	Recommendation	Staff Response	Notes
7/28/14 Michel & Associates	WRC should not create any sub-committee or other entity without express approval by the full Commission after the Commission has taken public comment on the issue.	Reject: If the Commission desires to move forward with this proposal, staff recommends doing so in a separate rulemaking.	
7/28/14 Michel & Associates	Any subcommittee or other entity created by the WRC should only meet as part of a WRC meeting.	Reject: It is impracticable to have a regulation requiring that meetings of a subcommittee only take place as part of a committee meeting, which defeats the purpose of creating such a group.	
7/28/14 Michel & Associates	All communications between members of any subcommittee or other entity created by WRC should be treated as public records.	Reject: The Public Records Act dictates the extent to which communications between members of any entity created by WRC are treated as public records.	
9/25/15 Michel & Associates	**What is the source of authority to create the Predator Working Group (PWG)? Assuming there is such authority, why is it not subject to the official rulemaking process? Would the Commission be able to create a workgroup itself without going through the formal rulemaking process?**	**Nothing prohibits a deliberative body from engaging the public to help it resolve issues before it. Nothing in the proposed regulations, or in practice, gives workgroups any authority; guidance and information provided by a workgroup is just that.**	If the Commission determines it is appropriate to adopt a regulation regarding creation of a working group, staff recommends doing so in a separate rulemaking.
9/25/15 Michel & Associates	**Who has authority to dictate the criteria or process for nominating PWG members? Are such nominations subject to the official rulemaking process?**	**The Commission approved a proposal by public vote to establish a predator policy workgroup. It included criteria and a process for nominating members to the workgroup.**	

Source	Recommendation	Staff Response	Notes
9/25/15 Michel & Associates	**Assuming authority exists to establish the PWG, does such authority reside with the Commission or the WRC?**	**The WRC serves at the pleasure of the Commission and the Commission directs all work of the committees.**	
9/25/15 Michel & Associates	**Will the public have an opportunity to weigh in on the criteria for nominating PWG members?**	**The public had an opportunity to provide comment at the August, 2015 meeting when the proposal was discussed.**	
Minutes, Webcasting and Video Recording Committee Meetings			
4/14/14 Michel & Associates	WRC meetings should be video recorded and posted on the internet.	Reject: Though it may be desirable to video record and/or webcast committee meetings, for the foreseeable future the Commission does not have the necessary resources, making a regulation impracticable. WRC meetings are currently audio-recorded and posted on the Commission website.	This recommendation exceeds the requirements of the Bagley-Keene Open Meeting Act.
7/28/14 Michel & Associates	WRC meetings should be audio recorded. WRC meetings should be video recorded and broadcast on the internet unless the Commission makes a finding that as to a specific year, funding is not reasonably available for video recording.		
9/24/15 Michel & Associates	**Are any meeting minutes or notes of proposed actions prepared? If so, by whom? Are any meeting minutes or notes kept? If so, are they made available?**	**Committee meetings are currently audio-recorded and the recordings are posted to the Commission website.**	

Source	Recommendation	Staff Response	Notes
Purpose/Function of Committee Meetings			
7/11/14 Michel & Associates	If the WRC meeting will provide for a longer format pre-discussion of a discussion that will take place again before the full Commission, then no binding action (other than perhaps a recommendation to the Commission action) takes place at a WRC meeting. If that is the case, then the Commission should say so unequivocally.	Reject: WRC is established by statute that does not authorize WRC to take binding action on behalf of the Commission.	"The commission shall form a wildlife resources committee from its membership consisting of at least one commissioner. The committee shall report to the commission from time to time on its activities and shall make recommendations on all nonmarine resource matters considered by the commission. The committee or its designee shall, to the extent practicable, attend meetings of the department staff, including meetings of the department staff with interested parties, in which significant wildlife resource management documents are being developed." (§106, Fish and Game Code)
7/14/14 Safari Club International	Asks for clarification regarding statements made that suggested that WRC meetings can operate as official Commission meetings.	Reject: Membership and meetings of committees and the Commission are not interchangeable pursuant to the various requirements of the Bagley-Keene Open Meeting Act.	
7/28/14 Michel & Associates	Unless specific situations dictate otherwise, WRC meetings should be structured to provide participants opportunities to engage in detailed discussions with Commission staff, Department staff, the presenter (if	Reject: It is not necessary to codify this in regulation. The proposed regulation requires sufficiently less structure and rules for committee meetings than Commission meetings to allow for greater flexibility and less	

Source	Recommendation	Staff Response	Notes
	applicable), and stakeholders. The WRC should strive to provide an informal setting at its meetings where all participants will have an opportunity to provide input into the conversation. However, if required, WRC should retain the option to apply a more structured setting.	formality.	
9/24/15 Michel & Associates	**Who decides the format of a WRC meeting?**	**The format of committee meetings is the discretion of the committee chairs.**	
Miscellaneous WRC Procedures/Practices			
4/14/14 Michel & Associates	Fish and Game Code §106 does not actually authorize or suggest the WRC is to perform its own meetings; the Commission should explain to the public why the Commission is going beyond its statutory mandate.	Reject: It is not necessary to codify this in regulation. WRC is required to report from time to time on its activities and shall make recommendations on all non-marine resource matters before the Commission (§106, Fish and Game Code); the only logical mechanism for these to occur, per the Bagley-Keene Open Meeting Act, is through public meetings.	
4/14/14 Michel & Associates	The WRC is, to the extent practicable, to attend meetings of DFW staff, including meetings of DFW staff with interested parties, in which significant wildlife resource management documents are being developed. Are these meetings all going to be open to the public and publicly noticed? Is	Reject: The recommendation would be duplicative. The Bagley-Keene Open Meeting Act defines public meetings.	

Source	Recommendation	Staff Response	Notes
	there going to be a public record of these meetings occurring?		
7/28/14 Michel & Associates	The WRC should strive to adhere to an "equal time" model to the extent practicable, to prevent an unreasonable disparity of non-public WRC meetings being granted to specific parties holding disparate viewpoints.	Reject: This recommendation does not pertain to meeting procedures but to one-on-one meetings between a WRC member and a member of the public.	
7/28/14 Michel & Associates	A log should be kept of all WRC-related meetings attended by WRC members or the WRC-designee.	Reject: This recommendation is excessive. If questions arise about a specific meeting or document, members of the public have recourse through the Public Records Act.	
Communication Should be Made on Government-Issued Devices			
6/5/15 Michel & Associates	The Commission should mandate that all electronic correspondence concerning official Commission matters be conducted through government issued e-mail accounts that are stored on government owned servers or other electronic data storage mechanism. The use of personal email accounts for transmitting communications relating to any government business should be prohibited. The use of text messaging and other technologies that don't	Reject: Inappropriate for meeting procedures. If the Commission desires to move forward with a regulation regarding communication methods, staff recommends doing so in a separate rulemaking.	**At its October 2015 meeting, FGC referred this recommendation to legal counsel for evaluation.**

Source	Recommendation	Staff Response	Notes
	create a record should be prohibited or discouraged.		
7/8/15 National Shooting Sports Foundation	The use of personal email, personal cell phones, or any other personal device used for sending or receiving official government communications or business should be strictly prohibited or highly discouraged. The Commission should require all business communications be conducted via government issued technology and stored on government servers/databases, etc.	Reject: Inappropriate for meeting procedures. If the Commission desires to move forward with a regulation regarding communication methods, staff recommends doing so in a separate rulemaking.	**At its October 2015 meeting, FGC referred this recommendation to legal counsel for evaluation.**

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April 14, 2014

VIA EMAIL, U.S. POST & HAND DELIVERY

Sonke Mastrup
Executive Director
CALIFORNIA FISH & GAME COMMISSION
P.O. Box 944209, Sacramento, CA
smastrup@dfg.ca.gov

Re: Comments on Proposed Regulations and Notice of Improper Wildlife Resources Committee Procedures

Dear Mr. Mastrup:

We write on behalf of our client, the National Rifle Association of America, to comment on proposed policies and to notify you of apparent improprieties in the proposed adoption of policy and procedures related to the Wildlife and Marine Resources Committee (respectively "WRC" and "MRC").

The agenda for the Fish & Game Commission ("Commission") meeting of February 5, 2014, includes the following agenda item: "DISCUSSION OF DRAFT POLICY AND PROCEDURES FOR WILDLIFE AND MARINE RESOURCES COMMITTEES" (the "Draft") A copy of the Draft is available at http://www.fgc.ca.gov/meetings/2014/feb/proposed_committee_procedures.pdf.

The Draft, as written, is a "regulation[1]" under state law. So the Commission appears to be

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[1] Government Code section 11342.600 states, in its entirety,

> '[r]egulation' means every rule, regulation, order, or standard of general application or the amendment, supplement, or revision of any rule, regulation, order, or standard adopted by any state agency to implement, interpret, or make specific the law enforced or administered by it, or to govern its procedure.

Further, as used in section 11342.600, the term "state agency" includes every state commission. Gov't

improperly attempting to create "underground regulations[,]" i.e., regulations that are not valid because they were not adopted in accordance with the proper procedural guidelines.

I. The Proposed Procedures Must Be Properly Enacted Before They Can Be Implemented

California law is clear about the prohibition on the issuance or use of underground regulations:

> No state agency shall issue, utilize, enforce, or attempt to enforce any guideline, criterion, bulletin, manual, instruction, order, standard of general application, or other rule, which is a regulation as defined in Section 11342.600, unless the guideline, criterion, bulletin, manual, instruction, order, standard of general application, or other rule has been adopted as a regulation and filed with the Secretary of State pursuant to this chapter.

Gov't Code § 11340.5(a).

Case law confirms that the proposed rules in the Draft would be improper "underground regulations" if they arose as part of the implementation of the duties created by Fish and Game Code section 105 and 106, which, respectively, created the MRC and WRC. *See Engelmann v. State Bd. of Educ.*, 2 Cal. App. 4th 47, 62 (1991) (holding Board of Education was required to go through rule making process found in the Administrative Procedures Act when creating the guidelines and manuals for the mutli-level review process used for selecting the textbooks that could be used in public schools).

Accordingly, the Commission should follow normal regulatory standards (e.g., a series of three properly noticed Commission meetings used to introduce, discuss, and vote on a proposed regulation that was noticed via publication in the state's Regulatory Notice Register) to move forward with the creation of the proposed policies/regulations. Once the proper process has been complied with and the regulations have been filed with the Secretary of State, only then can the regulations be relied upon by the WRC.

II. Substantive Comments Regarding the Proposed Regulations

1. Based on the lack of notice regarding the formation and dissolution of the Predatory Policy subcommittee, it is clear the WRC needs rules to explain exactly how and when subcommittees will be formed. The Draft should be revised accordingly.

2. Fish & Game Code section 106 does not actually authorize or suggest the WRC is to perform its *own* meetings; the Commission should explain to the public why the Commission is going beyond its statutory mandate.

3. The WRC should have at least two members; there appears to be no difference between

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Code § 11000. Thus, the Commission is clearly a state agency for the purposes of section 11342.600.

a Commissioner's own abilities and a one-person WRC, and having two members will decrease the possibility of hasty or unfairly biased decision making.

4. The Draft should include a provision that, when the Commission makes its yearly appointment to the Committee, it should, to the extent practicable, appoint two WRC members who have differing backgrounds (e.g., a hunter and a member with non-hunting interests) to help ensure that recommendations have been "vetted" as much as possible before they get to the Commission.

5. Because the WRC is required to make recommendations (i.e., take "action[,]" as that term is defined in Government Code section 11122), that means final decisions will need to be made, which could be problematic if there are two Commissioners sitting on the WRC (e.g., a "tie"). The proposed regulations should address how any disputes between WRC members shall be resolved.

6. The WRC is, "to the extent practicable," to "attend meetings of the department staff, including meetings of the department staff with interested parties, in which significant wildlife resource management documents are being developed." Fish & Game Code § 106. Are these meetings all going to be open to the public and publicly noticed? Is there going to be a public record of these meetings occurring? If they are not, and further assuming the department has discretion as to who it meets with in private concerning the development of "significant wildlife resource management documents[,]" there are real transparency and equal access problems here.

7. Because the WRC was created by statute and because it includes more than one member, it is subject to the requirements of the Bagley-Keene Act. Gov't Code §§ 11121, 11123. Regardless, if it is the Commission's position is that the WRC, or any "subcommittees" it produces, will not be treated as if subject to the Bagley-Keene Act, the Commission should explain to the public the considerations that the Commission has found to outweigh the public's interest in open government.

8. Three Commissioners should never participate in any WRC meeting. The Draft obscures, at the least, the limits of Government Code section 11122.5(c)(2)(6). That section states:

> [a] majority of the members of a state body [e.g., the Commission] shall not, outside of a meeting authorized by this chapter, use a series of communications of any kind, directly or through intermediaries, to discuss, deliberate, or take action on any item of business that is within the subject matter of the state body . . . . The prohibitions of this article do not apply to . . . attendance of a majority of the members of a state body at an open and noticed meeting of a standing committee of that body, ***if*** the members of the state body who are not members of the standing committee attend only as observers.

(Emphasis added).

It seems, however, that someone within the Commission or related staff wants to blur the lines about non-committee member Commissioners attending committee meetings. This can be seen via a comparison of the Draft and the prior "approved" MRC rules previously posted on the Commission's website.

Compare the following.

- In the event that another Commissioner wishes to attend a meeting of the MRC, and there are two members of the MRC present at the meeting, that Commissioner may attend the meeting but must recuse himself or herself from any discussions related to Commission business. [2]

- Non-chair Commissioner [sic] may attend committee meetings.[3]

There is no legitimate reason to make this language *less* clear than it was in the prior draft. Further, it is debatable if the passage, as originally stated, is an accurate representation of the limitation stated in section 11122.5(c)(2)(6). Having three Commissioners on the dias during a committee meeting is inappropriate. If the Commission is going to have a meeting, it should be clearly noticed as a *Commission* meeting. History has show that non-committee Commissioners are likely going to speak at committee meetings even though doing so is patently inappropriate, and the rules should be absolutely clear to everyone, *including Commissioners and staff*, that non-committee Commissioners cannot legally speak at committee meetings.

9. WRC meetings should not be video recorded and posted on the internet. It was mentioned at the last WRC meeting that the cost of such service would be a problem. Though no actual cost information was provided, with the availability of YouTube and inexpensive digital cameras (perhaps even state-owned cellular phones), that statement is difficult to accept. Indeed, if the Commissioners and staff are all having travel costs reimbursed, it seems that the cost of video, which would *guarantee public access*, is likely much less than that which is already expended.

During the meeting of February 5, 2014, the Commission discussed the possibility of live-streaming WRC meetings. During that discussion, you mentioned that live-streaming meetings costs approximately six to eight thousand dollars per meeting, and the it was unclear if the Department of Fish and Wildlife had the money in its budget needed to live-stream the meetings. Because of the importance of public participation,

[2] http://www.fgc.ca.gov/meetings/committees/MRCrulesandprocedures052213.pdf.

[3] http://www.fgc.ca.gov/meetings/2014/feb/proposed_committee_procedures.pdf.

live streaming and later web access should be considered a priority.

10. To the extent that the Draft states committee meetings "may be taped and broadcast on the internet at the discretion of the Commission[,]" this provision should be clarified, as it can reasonably be interpreted as a prohibition on the public recording committee meetings, subject only to express permission of the Commission. *See* Gov't Code § 11124.1 (members of the public have the right to use a video recording device to record meetings of state bodies).

III. Conclusion

In summary, the Commission should incorporate all of the above comments into a new draft set of regulations that can be considered and adopted through the appropriate procedural mechanisms.

Sincerely,
Michel & Associates, P.C.

Scott M. Franklin

cc'd by Email and U.S. Post:
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July 11, 2014

VIA EMAIL & U.S. POST
President G. Michael Sutton
Vice President Jack Baylis
Commissioner Jim Kellogg
Commissioner Richard B. Rogers
Commissioner Jacque Hostler-Carmesin
California Fish & Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Re: Request Wildlife Resources Committee Procedure and Meeting Protocols Be Put In Place *Before* That Committee Makes Any Recommendations to the Fish & Game Commission

Honorable Commissioners:

We write on behalf of our client the National Rifle Association.

Recently while conducting meetings, the Commission and the WRC have blurred the lines between a true Commission hearing, where policy decisions can legally be made and official actions can be taken, and WRC meetings where apparently the only action possible is the WRC making a recommendation for the Commission to consider. This letter is a formal request that the Fish & Game Commission (Commission) require the Wildlife Resources Committee (WRC) to establish and publicize rules and procedures under which it will operate before the WRC takes any further substantive action, and that such procedural rules be vetted through the normal regulatory approval process before they become effective.

1. The Commission is Sending Mixed Signals About the Authority of the WRC

There is confusion about the role and authority of the WRC because at Commission and WRC meetings, the Executive Director, as well as Commissioners Sutton and Baylis, have inaccurately stated that WRC meetings are a form of, or can operate as, official Commission meetings. The Commissioners and Commission staff have also made numerous other confusing and conflicting comments about the role, limitations, and procedural rules of the WRC. Commissioner Sutton said that the WRC meetings are of an "informal nature." But there has been no clarification about whether

the WRC is going to be the only opportunity for public comment on issues raised at WRC meetings, or if the public will have opportunity to comment on all issues agendized for Commission meetings, even if that issue was already discussed (or not) at a WRC meeting. This is compounded by the fact that WRC meeting videos are not available online, notwithstanding multiple requests from various segments of the stakeholder community for that type of access.

If the WRC meeting will provide for a longer format pre-discussion of a discussion that will take place again before the full Commission, then no binding action (other than perhaps a recommendation to the Commission action) takes place at a WRC meeting. If that is the case, then the Commission should say so unequivocally. This clarification would drastically reduce the amount of confusion being created by the uncertain state of the WRC's procedures and its authority.

2. *The Commission Must Establish Procedural Rules for the WRC Before It Allows the WRC to Address Substantive Issues*

Based on the recently released agenda for the July 28, 2014, WRC meeting, it appears that the Commission is moving forward with potentially substantive decision making at the upcoming next WRC meeting, even though the procedures for how the WRC will operate, and significantly, how the public can participate in WRC meetings, have not been publicized and apparently do not exist. Because there is no system or procedures in place, our clients, other stakeholders, and the interested public are unable to effectively participate in the rule and policy making process.

This office sent the Executive Director of the Commission a letter on April 14, 2014, raising concerns that the previously proposed WRC rules would be improper as "underground regulations." That letter also outlined nine other specific issues that are confusing or otherwise unclear as to plans for the future operation of the WRC. A copy of the letter is attached.

Our office recently followed up with the Executive Director about that letter. We were informed that the Commission has addressed the concerns raised our letter of April 14, 2014. We respectfully disagree. No new proposed procedural rules have been published, nor have we received a response letter addressing the issues noted in the letter of April 14, 2014.

So we now ask the Commission to please tell us; how have our client's concerns as recited in our April 14, 2014 letter, been addressed?

3. *The Commission Seems Biased, Favoring Participation by Anti-Hunting Groups Over Pro-Hunting Groups*

Holding WRC meetings without established procedures facilitates the impression that different rules apply to different stakeholders. Certain stakeholders appear to have more access and to information about WRC activities and plans. This not only creates an appearance of impropriety and fosters an antagonistic situation, it will result in increased investigations by watchdog associations suspecting bias in the way the Department and Commission are conducting their affairs.

If published rules are put in place, it would not only provide some clarity, it would also help limit unfair treatment, reduce the appearance of bias or conflicts of interest, alleviate concerns of bias,

and facilitate a more productive regulatory process.

4. Stakeholder Presentation Materials Should Be Made Publicly Available Well Before WRC Meetings

Furthermore, it was only because this office asked the Executive Director that we found out that the deadline for making a request to make a presentation at the July 28, 2014, WRC meeting was July 7, 2014. Assuming this was a deadline that was applicable to all who wanted to make a presentation to the WRC, shouldn't it have been publicized? And if that deadline did not apply to every group that wanted to make a presentation, our clients object to any content-based scheduling advantage that is being granted to other stakeholders.

If the purpose of the WRC is to have the most enlightened discussion possible concerning issues headed to the full Commission for consideration, then stakeholders and the public should not be surprised by new information presented for the first time at WRC meetings when there is no opportunity to prepare a rebuttal.

It is our understanding that there is a currently unwritten rule that presenters at WRC meetings are required to give the Executive Director a copy of presentation materials a few weeks prior to the WRC meeting. Though our clients don't necessarily agree with such a rule, if it is going to be enforced, why couldn't that information be circulated publicly beforehand?

5. The Commission's Attempt to Create an "Alternate" WRC Member Is Disconcerting

Another unsettled and troubling issue related to the WRC is the attempt (foiled by a loss of quorum at the June 4, 2014, meeting of the Commission) to create an "alternate" WRC "member" position. By law, the WRC is only required to have one member, so the claim that two members are need for meetings is inaccurate. Fish & Game Code § 106 ("The commission shall form a wildlife resources committee from its membership consisting of at least one commissioner.").

The WRC has *two* committee "members," Commissioners Kellogg and Baylis. If only one of committee "members" is unable to attend a WRC meeting, there is still no quorum or other procedural limitation that prevents a single WRC committee member from going forward with a WRC meeting.

The fact that some Commissioners are pushing very hard to have a third Commissioner appointed as a "member" to the WRC, even though there is no need to do so, raises concerns that by having three Commissioners at WRC meetings, those Commissioners would then attempt to act as the Commission and take a binding vote on Commission business.

At the January 15, 2014, WRC meeting, both the Executive Director and Commissioner Baylis indicated that had the three Commissioners present at that meeting wanted to, they could have acted as the Commission (an assertion we vigorously disagree with). Though the January 15, 2014, meeting was technically a Commission meeting, it was also an illegal meeting because it was not properly noticed as a Commission meeting.

If the Commission tries to use a noticed WRC meeting as an opportunity to take a Commission

vote on a controversial topic, that will result in litigation.

The Commission should consider the implications of the WRC's current methods of operation, and should draft a new set of proposed procedures for the WRC. In doing so, the "alternate" issue should be resolved.

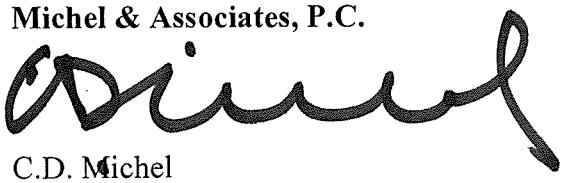
6. Reservation of Rights

Because it is not clear to us what the limitations are about making comments at the upcoming WRC and at later, related Commission meetings, our clients expressly reserve all rights to make a comment/presentation and at the July 28, 2014, WRC meeting and the August 6, 2014 Commission meeting, regardless of whether our client participates in one or both of these meetings.

7. Conclusion

The next WRC meeting should be used to formalize a set of proposed procedural rules that can be reviewed and approved by the Commission through its normal regulatory process. Otherwise the WRC's actions will continue to cause stakeholders and the public to believe that the Commission has lost its objectivity, and that it is now a biased politicized body. This directly conflicts with the reason the Commission was created in the first place. See *Young v. Dep't of Fish & Game*, 124 Cal. App. 3d 257, 273 (1981) (noting that the constitutional amendment that resulted in the Commission being a constitutional body "was to remove the old Fish and Game Commission from political influence").

Sincerely,
Michel & Associates, P.C.



C.D. Michel

CDM/smf

Enc.: April 14, 2014 Letter

cc: Sonke Mastrup
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July 18, 2014

VIA HAND DELIVERY

Commissioner Michael Sutton, President,
Commissioner Jack Baylis, Vice President.
Commissioner Jim Kellogg
Commissioner Richard B. Rogers
Commissioner Jacque Hostler-Carmesin
Executive Director Sonke Mastrup

Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

RE: Wildlife Resources Committee

Dear Commissioners and Mr. Mastrup:

Our firm represents the National Shooting Sports Foundation ("NSSF"). NSSF is the trade association for America's firearms, ammunition, hunting and recreational shooting sports industry. NSSF's more than 10,000 members are comprised of manufacturers, distributors, retailers, shooting ranges, sportsmen's organizations and publishers, including many based in California. NSSF's mission is to promote, protect and preserve hunting and shooting sports.

The purpose of this letter is to address concerns of the NSSF regarding the transparency of the Wildlife Resources Committee ("WRC"). The policies and decisions of the California Fish and Game Commission ("Commission"), and the actions of the WRC have a direct and substantial, material impact on businesses of a significant number of our members, including those based in California.

Effective January 1, 2014, the California Fish and Game Code was amended by the Legislature to require the Commission to form a wildlife resources committee to make recommendations on all nonmarine resource matters considered by the Commission. (Fish and Game Code §106.) However, the Commission has not adopted rules of order and procedures for the WRC, and does not appear to adhere to existing statutory requirements.

Although the Commission apparently views the WRC as an "informal" committee, the Bagley-Keene Open Meeting Act ("the Bagley-Keene Act") covers all state bodies. (Gov. Code §§ 11120-111321.) If a body is created by statute, such as by a statute added to the Fish and Game Code, it is subject to the Bagley-Keene Act regardless of whether it is decision-making or advisory. (Gov. Code §11121(a); see also subdivision (c) which explicitly applies to certain advisory committees.) This requires the WRC to adhere to basic requirements involving notice, access to records, and the opportunity for public comment. This is to ensure transparency and accountability in the governmental process.

Pursuant to the Bagley-Keene Act, at least ten days prior to the WRC meetings, the WRC must prepare an agenda of all items to be discussed or acted upon at the meeting. (Gov. Code § 11125(b).) The notice must also state the time and the place of the meeting and give the name, phone number and address of a contact person who can answer questions about the meeting and the agenda. (Gov. Code § 11125(a).) Not only agendas, but also all other materials distributed to a majority of the WRC members, must be made available to the public without delay. (Gov. Code § 11125.1.) This includes all members of the public, and not just those that support the WRC's views on a recommendation. Further, all members of the public must be given the opportunity to comment and participate in the meetings of the WRC. (Gov. Code §11125.7.) NSSF respectfully requests that these requirements be strictly followed by the WRC.

As a separate issue, the WRC must ensure that it is working within the confines of its statutory authority. The Fish and Game Code provides that the WRC is only to make recommendations to the Commission. (Fish and Game Code §106.) A committee does not possess decision-making authority and is considered strictly advisory in nature if it is formed for the sole purpose of researching a topic and preparing a recommendation for submission to another governmental body that has final decision-making authority. (2 CCR § 18701.)

However, a committee is no longer considered to be strictly advisory if the committee members advise or make recommendations to the decionmaker either directly or without significant intervening substantive review by: (1) conducting research or making any investigation which requires the exercise of judgment on the part of the committee member for the purpose of influencing a governmental decision; or, (2) preparing or presenting any report, analysis, or opinion, orally, or in writing, which requires the exercise of judgment on the part of the committee member for the purpose of influencing a governmental decision. (2 CCR § 18702.2.) If the WRC members are to operate within their statutory authority as a strictly advisory body, the Commission must provide significant intervening substantive review for all recommendations made by the WRC, and must do so where the deliberations and determinations are open to the public – the Commission cannot simply rubberstamp a recommendation made by the WRC. Furthermore, in considering recommendations from the WRC, the Commission must adhere to the Administrative Procedures Act and Bagley-Keene Act.

NSSF has recently raised a series of concerns related to the impartiality and transparency of the Commission. The operation of the Wildlife Resources Committee reinforces NSSF's concerns about the ability of the current Commission to fairly and openly manage California's treasured wildlife. NSSF exhorts the Commission to examine its operational policies and its accessibility to all stakeholders.

Very truly yours,

Ashlee Titus
Attorney for National Shooting Sports Foundation

ANT/cfd

cc: Governor Jerry Brown, via Hand Delivery
Christopher Ames, Senior Assistant Attorney General (Ret.)
via email Christopher.Ames@doj.ca.gov

July 14, 2014

VIA E-Mail, FAX and U.S. Post
Mr. Michael Sutton, President,
Mr. Jack Baylis, Vice President.
Mr. Jim Kellogg
Mr. Richard B. Rogers
Ms. Jacque Hostler-Carmesin
Mr. Sonke Mastrup, Executive Director
California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Re: Request for Transparency, Structure and Fairness in the Operations of the California Wildlife Resources Committee

Dear Sirs and Madam:

On behalf of the California chapters of Safari Club International (SCI California), we are submitting this letter to request major changes in the manner in which the California Wildlife Resources Committee (WRC) conducts its business. In the past several months and continuing into the present, the WRC has operated without formal procedural constraints. As a result, the WRC and by implication the entire Fish and Game Commission (Commission) have created the appearance that they are bodies that make decisions without fairness and based on the agendas of certain interest groups who have special access to the WRC and the Commission. Without procedural rules that require that all interest groups be given equal access to the WRC's decision-making processes, all recommendations made by the WRC and all determinations that the Commission makes based on WRC recommendations violate the law and potentially harm the resources that the Commission is obligated to protect.

Safari Club International Chapters in California

There are thirteen California Chapters of Safari Club International, collectively representing over 5,000 members and 30,000 California affiliates who hunt and participate in sustainable wildlife conservation. SCI chapters and their members participate in numerous conservation projects throughout the state. SCI California Chapters attend WRC and Commission meetings and make every effort to play active roles in the state's decision-making concerning

wildlife conservation and management. The activities of the WRC have deprived SCI California Chapters and their members of fair and equal access to these important decisions.

The WRC and Commission Have Created the Impression That Only Certain Interest Groups Have Access to Their Decision-Making Processes

The July 28, 2014 meeting agenda for the WRC includes "Discussion of Options to Implement Non-lead Ammunition Requirements" and identifies a presentation on this topic by Audubon California, Defenders of California and the Humane Society of the United States. To SCI California's knowledge, no organization or individual representing the hunting community was offered the opportunity to make a presentation on this issue. Similarly, on the agenda for the January 15, 2014 meeting included a "Discussion and Update of Predator Management Subcommittee's Recommendations for Changes to Predator Management Policies/Regulations." The recommendations reviewed by the WRC for this discussion were submitted by only two entities, HSUS and Project Coyote. To SCI California's knowledge, no organization or individual representing the hunting community was asked to participate on the Predator Management Subcommittee or to engage in the development of the recommendations for changes to the Predator Management Policies/Regulations.

The WRC is patently offering access to only certain interest groups for development of its recommendations and presentations. If the WRC, and by implication the Commission, wants to avoid the appearance, taint and potential invalidity of its decisions due to inappropriate bias, it should take immediate action to create procedures and regulations that impose measures to prevent such bias.

The Commission Must Establish and Publish Procedural Rules for the WRC Before the WRC Makes Any Further Recommendations or Takes Any Further Actions

Currently, the WRC is operating without formally adopted or publicized procedures for its decision-making process. Nevertheless, the WRC has already held a meeting on January 15, 2014 and plans another meeting for July 28, 2014. Without such established procedures, all WRC recommendations are potentially invalid and will have a similar impact on the decisions that the Commission makes that are based upon these recommendations. In the absence of such procedures, the public, and in particular members of SCI California Chapters, cannot actively participate in the WRC meetings and recommendations in a meaningful and significant way.

In a July 8, 2014 e-mail from Executive Director Sonke Mastrup to Kathy Lynch, Mr. Mastrup admitted that the WRC has no formal procedures established for their meetings and referred to the WRC meeting scheduled for July 28, 2014 as a "workshop." Unfortunately, the labeling of the meeting as a "workshop" offers little to the public in terms of how to offer meaningful participation in the WRC's work. The "workshop" label does nothing to remedy the imbalances in the access gained by certain interest groups and does not appear to have any impact on the Commission's use of and reaction to the WRC's recommendations. Informality does not excuse bias or illegality. Consequently, SCI California Chapters strongly recommend that the WRC July 28, 2014 "workshop" be cancelled (as was the May

2014 WRC meeting) and that no future meetings be scheduled until fair and predictable procedures can be adopted. In addition, the public should be permitted to play a role in establishing such procedures, to make certain that the WRC's agenda and its subcommittees are fairly represented by all or at least a balanced share of the constituencies interested in the WRC's and Commission's responsibilities.

The Commission Must Clarify Its Relationship With the WRC As Well as The Extent of the WRC's Authority

SCI California Chapters are very concerned that the lines between the WRC and the Commission have been blurred. According to the information on the Commission's own website, the WRC cannot operate instead or on behalf of the Commission. "It is important to note that the committee chairs cannot take action independent of the full Commission. Instead, the chairs make recommendations to the full Commission at regularly scheduled meetings." Consequently, SCI California Chapters are concerned about statements made by Executive Director Mastrup and Commissioners Sutton and Baylis that have suggested that WRC meetings can operate as official Commission meetings. SCI California Chapters need better clarification about how the Commission and WRC will work together, and in particular whether a discussion on the WRC agenda will provide the only opportunity for the public to comment on matters that result in WRC recommendations to the Commission.

The WRC's Membership Should Not Be Increased With an "Alternate" WRC Member

SCI California Chapters are aware of recommendations that the Commission appoint a third "alternate" Commissioner to the WRC. If a third Commissioner was added to the WRC's Membership as an alternate, the WRC would run the risk of turning all of its meetings into unpublicized Commission meetings. Such attempt to bypass the statutory limitations and requirements for Commission meetings could taint the recommendations of the WRC meetings, as well as the decisions made by the Commission at such meetings, or based on the recommendations made at these meetings. SCI strongly recommends that the membership of the WRC remain at two Commissioners only and that the remaining Commissioners resist the temptation of attending WRC meetings in any capacity.

WRC Meeting Must Give the Public a Meaningful Opportunity to Participate

As indicated above, the actions of the WRC up until this date have given the appearance that only certain interest groups have access to the WRC agenda, to offer presentations at WRC meetings and to influence the WRC decision-making processes. These practices must be immediately reversed. At the outset, the WRC must publish notice of its plan to meet and must solicit proposed presentations for the meeting from the public generally, and not just from a limited group. Upon obtaining suggested presentations, the WRC should publish its proposed agenda and give the public adequate opportunity to prepare responses and to submit requests to be heard on agenda items. The WRC should require presentations to be submitted well in advance of the meeting and should share those presentation materials with the public to give the public the opportunity to prepare comments on those presentations.

The only way that the WRC can make meaningful recommendations to the Commission is to make certain that it solicits data from all perspectives. Unless the WRC immediately develops a process to give the public an opportunity to participate in its decision-making, the

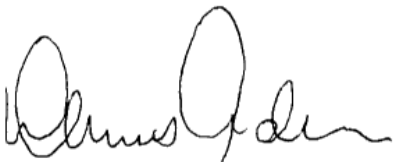
WRC's recommendations will be useless and will make the Commission's decisions vulnerable to challenge.

Participation in the July 28, 2014 WRC Meeting

In the absence of any established procedures for the upcoming WRC meeting, and future meetings, SCI California Chapters expressly reserve all rights to make comments/ presentations at these meetings and at the August 6, 2014 Commission meeting.

Thank you for the opportunity to present these concerns. Should you have any question concerning this letter or concerning the intent of the SCI California Chapters to participate in the July 28, 2014 WRC Meeting and/or the August 6, 2014 Commission meeting, please contact Anna M. Seidman, Director of Litigation, Safari Club International, 202-543-8733 or aseidman@safariclub.org.

Sincerely yours,



Dennis Anderson
Safari Club International, California Legislative Coordinator

cc: Governor Edmund G. Brown
Safari Club International California Chapters
Ms. Kathryn Lynch, Legislative Advocate

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TUCSON, AZ

July 28, 2014

SENT VIA E-MAIL
& HAND DELIVERED

California Fish and Game Commission
c/o Executive Director Sonke Mastrup
P.O. Box 944209
Sacramento, CA 94244-2090

sonke.mastrup@fgc.ca.gov

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION
2014 JUL 31 PM 4:51

Re: Petition for Rule Making by the Fish & Game Commission Regarding the Need for Formal Procedures and Rules for the Proper and Fair Operation of the Wildlife Resources Committee

Dear Mr. Mastrup:

This Petition, submitted by the National Rifle Association of America ("NRA") pursuant to Government Code sections 11340.6 and 11340.7, requests that the California Fish & Game Commission (the "Commission") enact regulations to ensure public participation and fair debate vis-à-vis the Wildlife Resource Committee (the "WRC").

I. STANDING OF PETITIONERS

Petitioner NRA is an Internal Revenue Code § 501(c)(4) nonprofit corporation, incorporated in the State of New York in 1871, with principal offices and place of business in Fairfax, Virginia. NRA has approximately five million members, and hundreds of thousands of members in California.

The founders of NRA desired to create an organization dedicated to marksmanship, or, in the parlance of the time, to "promote and encourage rifle shooting on a scientific basis." NRA's bylaws, at Article II, Section 5, state that one of the purposes of NRA is "[t]o promote hunter safety, and to promote and to defend hunting as a shooting sport and as a viable and necessary method of fostering the propagation, growth, conservation, and wise use of our renewable wildlife resources."

NRA has been a party to or supported multiple lawsuits throughout the nation supporting and

defending the right to keep and bear firearms for hunting, sport shooting, and self-defense. Indeed, one of NRA's key functions is to preserve the tradition of hunting, by protecting it from unreasonable and unnecessary restrictions.

NRA has an established record of advocating against restrictions on hunting based on scientifically unsupported claims of alleged environmental harm.

Petitioner David Halbrook resides in Victorville, California, and has been a hunter for basically his entire life. Mr. Halbrook has hunted various big and small game in California in the past, and he intends to hunt in California in the future. Mr. Halbrook is a member of NRA and is the executive director of the Hunt For Truth Association.

Based on the foregoing, the petitioners have standing to make the requested regulatory changes.

II. REQUESTED REGULATORY CHANGES

Petitioners hereby seek the amendment of California Code of Regulations ("CCR"), title 14, via the addition of a new section dedicated to the procedural aspects of the operation of the WRC, including, but not limited to, public meetings held by the WRC.

The following provisions, based on draft language created by the Commission, should be included in the new section.

(A) Section 108 of the Fish and Game Code requires the commission to adopt rules to govern the business practices and processes of the Commission. Sections ~~105 and~~[†] 106 of the Fish and Game Code require the commission to establish ~~a minimum of two committees, the Marine Resources Committee and~~[2] the Wildlife Resources Committee~~, respectively~~.

(B) A minimum of one, but no more than two members of the Commission will be appointed to the Wildlife Resources C~~c~~ommittee~~s~~ at the first Commission meeting of each calendar year. To the extent feasible, the Commission shall place at least one Commissioner with substantial hunting experience on the Wildlife Resources Committee.

(C) All public are welcome to attend and participate meetings as defined in subsection (a).

(D) The Commission will establish the meeting schedule for the WRC ~~committees~~ each year

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[1] ~~Strikeout~~ and underline are used herein to reflect deletions and additions, respectively, that Petitioner proposes be made regarding language previously put forth by the Commission in the Draft.

[2] Petitioner is not taking any position on what regulations should or should not be adopted for the operation of the Marine Resources Committee, but reference thereto is omitted herein because this Petition does not concern the operation of the Marine Resources Committee.

as part of the annual rulemaking calendar the prior November and may schedule additional meetings as needed.

(E) Agenda will be approved at the Commission meeting before the committee meeting. Agendas will be developed by staff and will be comprised of standing items and topics requested by: ~~referred by~~ the Commission, ~~topics requested by~~ the Department, ~~and/or~~ state agencies, and federal agencies~~, and standing items~~. Public requests for agenda items must be made to the Commission and subsequently referred to the ~~appropriate committee~~ Wildlife Resources Committee.

Agenda items to be considered for the year will be adjusted based on urgency, need, and interest as determined by the Commission. Findings and recommendations will be made to the Commission for possible action by the ~~two chairs~~ Wildlife Resources Committee. If the Wildlife Resources Committee has two members, any finding or recommendation it makes must be unanimous.

(F) All Wildlife Resources Committee meetings ~~of committees~~ shall be noticed at least 10 days prior to the meetings. Meeting agendas will be noticed on the Commission's website and distributed electronically.

(G) Commission staff will secure appropriate meeting venues for Wildlife Resources Committee meetings with preference given to those that are provided free of charge. Meetings will be run by at least one of the Wildlife Resources Committee members or the designee, ~~two chairs~~ and facilitated by Commission staff.

(H) ~~In general~~ Unless specific conditions dictate otherwise, meetings will be structured to provide participants opportunities to engage in detailed discussions with Commission staff, Department staff, the presenter (if applicable), and stakeholders. ~~Meetings~~ The Wildlife Resources Committee will strive to provide an informal setting at its meetings, where all participants will have an opportunity to provide input into the conversation. However, if required, the ~~chairs~~ Wildlife Resource Committee retains the option to apply a more structured setting whereby discussion and public comment are governed by speaker cards and time limits.

(I) Non-~~chair~~ member Commissioners may attend Wildlife Resource Ccommittee meetings, however, they are expressly prohibited from participating in anything other than an observational capacity. Non-member Commissioners shall not make any comment, either directly or indirectly, during a Wildlife Resources Committee meeting.

(J) Commission staff shall prepare a ~~M~~meeting ~~S~~summary following each Wildlife Resources Committee meeting that summarizes the main discussion points and any recommendations developed by the Wildlife Resources Committee ~~committee chairs~~. Draft meeting summaries shall be provided to the Department and Wildlife Resources Committee ~~committee chairs~~ prior to finalization for review and comment. The final meeting summary shall be posted on the Commission's website and serve as the formal record of the meeting. Any recommendations developed by a committee shall be clearly

identified in the meeting summary and presented to the Commission for consideration at a future Commission meeting.

(K) Wildlife Resources Committee meetings shall be audio recorded. Wildlife Resource Commission meetings ~~may~~ shall be ~~taped~~ video recorded and broadcast on the internet ~~at the discretion of~~ unless the Commission ~~and available~~ makes a specific finding that, as to a specific fiscal year, funding is not reasonably available for video recording. This provision does not in any way inhibit any right that members of the public have concerning the use of a recording device to record public meetings of a state body.

Furthermore, the following provisions, drafted by the Petitioner, should also be included in the new section requested hereby.

(L) A meeting is subject to the Bagley-Keene Act if (a) any portion of the meeting relates to one or more matter within the Commission's jurisdiction, and (b) the meeting is attended (whether in person or otherwise) by all of the following: at least one Wildlife Resources Committee member (or a Wildlife Resources Committee designeee), at least one Department of Fish & Wildlife (the "Department") employee, and at least one person who is neither a member of the Department nor affiliated with the Commission (e.g., non-committee member Commissioners or Commission Staff). This provision only applies to meetings that concern, at least in part, nonmarine wildlife resource issues.

(M) The ability of the public to speak at a Wildlife Resources Committee meeting on a particular item does not preclude a member of the public from attending a later Commission meeting and commenting on that item, or a related item, during the Commission meeting but prior to the Commission taking action on the relevant item.

(N) If the Wildlife Resources Committee has a designee, the name of that designee shall be announced at a Commission meeting prior to that designee acting as the designee of the Wildlife Resources Committee.

(O) The WRC shall strive to adhere to an "equal time" model to the extent practicable, to prevent an unreasonable disparity of non-public Wildlife Resources Committee meetings being granted to specific parties holding disparate viewpoints.

(P) The Wildlife Resources Committee shall not create any sub-committee or other entity without express approval by the full Commission after the Commission has taken public comment on the issue. All subcommittes or similar entities created by Wildlife Resources Committee with Commission approval shall meet only as a part of Wildlife Resources Committee meetings, and all communications between members of these entities shall be treated as public records.

(Q) A log should be kept of all Wildlife Resources Committee-related meetings attended by Wildlife Resources Committee members or the Wildlife Resources Committee designee.

III. JUSTIFICATION FOR THE REQUESTED REGULATORY CHANGES

A. Any Rules Used by and for the WRC Are Regulations, Thus They Must Be Approved through the Proper Regulatory Process

The agenda for the Fish & Game Commission ("Commission") meeting of February 5, 2014, included the following agenda item: "DISCUSSION OF DRAFT POLICY AND PROCEDURES FOR WILDLIFE AND MARINE RESOURCES COMMITTEES" (the "Draft"). A copy of the Draft is available at http://www.fgc.ca.gov/meetings/2014/feb/proposed_committee_procedures.pdf.

The Draft, as written, is a "regulation" under state law. Government Code section 11342.600 states, in its entirety,

> '[r]egulation' means every rule, regulation, order, or standard of general application or the amendment, supplement, or revision of any rule, regulation, order, or standard adopted by any state agency to implement, interpret, or make specific the law enforced or administered by it, or to govern its procedure.

As used in section 11342.600, the term "state agency" includes every state commission. Gov't Code § 11000. Thus, the Commission is clearly a state agency for the purposes of section 11342.600. Section 11342.600 is in accord with Fish & Game Code section 108, which "requires the commission to adopt rules to govern the business practices and processes of the Commission."[3]

Should the Commission attempt to utilize any rules regarding the operation of the Wildlife Resources Committee without having them adopted via proper regulatory rulemaking, that would violate Government Code section 11340.5(a). That section states:

> No state agency shall issue, utilize, enforce, or attempt to enforce any guideline, criterion, bulletin, manual, instruction, order, standard of general application, or other rule, which is a regulation as defined in Section 11342.600, unless the guideline, criterion, bulletin, manual, instruction, order, standard of general application, or other rule has been adopted as a regulation and filed with the Secretary of State pursuant to this chapter.

Case law confirms that the Wildlife Resources Committee would be using illegal "underground regulations" if the Commission allowed the Wildlife Resources Committee to operate by a set of rules that were not properly enacted. *See Engelmann v. State Bd. of Educ.*, 2 Cal. App. 4th 47, 62 (1991) (holding Board of Education was required to go through rule making process found in the Administrative Procedures Act when creating guidelines and manuals for a mutli-level review process used for selecting textbooks that could be used in public schools).

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[3] *See* the Draft, available at http://www.fgc.ca.gov/meetings/2014/feb/proposed_committee_procedures.pdf

B. Equal Access and Transparency Interests Will Be Served if the Petition Is Granted

The Petitioner sent a letter to the Commission on April 14, 2014, outlining why the Wildlife Resources Committee needed rules adopted pursuant to the proper regulatory process. A copy of that letter is attached and incorporated by reference. Put simply, that letter outlined the various potential pitfalls related to the draft rules that the Commission circulated earlier this year, rules that, it seemed, the Commission wanted to adopt without adhering to the proper regulatory process. Because three months have passed since that letter and the July 28, 2014, meeting of the Wildlife Resources Committee is being held without any binding rules or regulations, the Petitioner is now forced to make this formal demand that the lack of regulations be addressed.

Indeed, to prevent any possible argument that a Commission decision was made as the result of a fault in the undefined Wildlife Resources Committee public comment process in place as of July 28, 2014, the Petitioner strongly suggests that the Wildlife Resources Committee not make any final decisions or recommendations at that meeting.

IV. THE COMMISSION HAS THE LEGAL AUTHORITY TO ADOPT THE REQUESTED REGULATORY CHANGES

Section 108 of the Fish and Game Code requires the commission to adopt rules to govern the business practices and processes of the Commission. Thus, the regulations sought hereby are clearly within the Commission's regulatory authority. *See also* Gov't Code § 11340.6 ("any interested person may petition a state agency requesting the adoption, amendment, or repeal of a regulation").

V. CONCLUSION

For the reasons stated herein, this Petition should be granted.

Sincerely,
Michel & Associates, P.C.

C.D. Michel

cc:
cc: Senior Assistant Attorney General Christopher Ames
(Christopher.ames@doj.ca.gov)

enc:
Letter of April 14, 2014

FGC

From: Eric Mills
Sent: Tuesday, June 30, 2015 5:41 PM
To: Mastrup Sonke@
Cc: FGC; Miller-Henson Melissa@; Fonbuena Sherrie@
Subject: Re: Commission Bylaws

June 30, 2015

Dear Sonke:

So am I to understand that there are NO official bylaws for the Commission?

Specific recommendations, you ask?

Indeed. See my original inquiry. Here are two:

I'm of the opinion that, if only three of the five commissioners are present, any issue on the agenda should be required to receive a 3:0 vote for passage. A 2:1 or 2:0 margin shouldn't be allowed to decide such issues. (Case in point: the recent failure of Endangered Status for the tri-colored blackbird.)

And this: As you know, the Commission recently put Public Forum back first-thing on the agenda, where it belongs. You might consider adding a Public Forum to the tail-end of each day's meeting, too, as a "public friendly" service.

Thoughts?

Cheers,

Eric Mills, coordinator
ACTION FOR ANIMALS
Oakland

----- Original Message -----
From:
"Mastrup Sonke@FGC"

To:
Eric Mills
Cc:
"FGC" <FGC@fgc.ca.gov>, "Miller-Henson Melissa@FGC" <Melissa.Miller-Henson@fgc.ca.gov>, "Fonbuena Sherrie@FGC" <Sherrie.Fonbuena@fgc.ca.gov>
Sent:
Tue, 30 Jun 2015 15:12:15 +0000
Subject:
Commission Bylaws

Hi Eric,

The Commission generally follows Robert's Rules of Order and strictly adheres to the Bagley-Keene Open Meeting Act. As you know, we have been working on adopting additional regulations that will govern the operations of the Commission. If you have any specific recommendations, please don't hesitate to share them with us.

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C. D. MICHEL*

SPECIAL COUNSEL
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ERIC M. NAKASU
W. LEE SMITH

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June 5, 2015

California Fish and Game Commission
c/o Executive Director Sonke Mastrup
P.O. Box 944209
Sacramento, CA 94244-2090

VIA ELECTRONIC MAIL: fgc@fgc.ca.gov

Re: Petition for the Adoption of a Regulation Requiring Correspondence About Official Fish & Game Commission Matters to Be Conducted Via Government Issued Means

Mr. Mastrup:

This Petition is submitted on behalf of our clients, the National Rifle Association of America ("NRA") and California Rifle and Pistol Association ("CRPA") pursuant to Government Code sections 11340.6 and 11340.7.

I. REQUESTED ACTION

The Petitioners hereby request that the California Fish and Game Commission ("FGC") propose and adopt regulations requiring Department of Fish & Wildlife ("FWD") personnel, FGC Commissioners, and the staffers, agents, employees, and others assisting them with official Commission business, to conduct all government business in a way that maximizes public transparency and discourages the exclusion of any stakeholder group from being fully informed about the regulatory process. Toward this end, the FGC should mandate that all electronic correspondence concerning official Commission matters be conducted through government issued electronic-mail (i.e., e-mail) accounts that are stored on government owned servers, cloud data networks, or other electronic data storage mechanisms.

Use of personal email accounts for transmitting communications relating to any government business should be prohibited. The use of text messaging and other technologies that don't create a record should also be prohibited or discouraged.

Alternatively, should the FGC not wish to adopt this measure as a regulation, Petitioners request that FGC nevertheless adopt it as official policy of the Commission.

II. STANDING OF PETITIONERS

Petitioner NRA is an Internal Revenue Code § 501(c)(4) nonprofit corporation, incorporated in the State of New York in 1871, with principal offices and place of business in Fairfax, Virginia. NRA has approximately five million members, including hundreds of thousands of members who reside in California.

The founders of NRA desired to create an organization dedicated to marksmanship, or, in the parlance of the time, to "promote and encourage rifle shooting on a scientific basis." NRA's bylaws, at Article II, Section 5, state that one of the purposes of NRA is "[t]o promote hunter safety, and to promote and to defend hunting as a shooting sport and as a viable and necessary method of fostering the propagation, growth, conservation, and wise use of our renewable wildlife resources."

Petitioner CRPA is a nonprofit membership organization classified under section 501(c)(4) of the Internal Revenue Code and incorporated under the laws of California, with headquarters in Fullerton, California. Founded in 1875, the CRPA works to preserve the constitutional and statutory rights of gun ownership for its members, including the right to hunt. CRPA regularly participates in Fish and Game Commission matters on behalf of its tens of thousands of California resident members.

Based on the foregoing, the petitioners have standing to make the requested regulatory changes.

III. JUSTIFICATION FOR REQUESTED ACTION

a. The Commission Should Establish a Regulation Governing Communications of Official Matters that Promotes Government Transparency and Accountability

The California Constitution provides that "[t]he people have the right of access to information concerning the conduct of the people's business, and, therefore, the meetings of public bodies and ***the writings of public officials and agencies shall be open to public scrutiny***." (Cal. Const., art. I, § 3(b)(1).)[1] Current law, however, does not specifically address the propriety of FGC Commissioners using their personal communications technologies means, such as e-mails, texts, and servers, to conduct public business.

A regulation prohibiting Commissioners and their employees and agents from conducting public business via private or secret or non-public means is necessary to optimally provide transparency, open-government access, and accountability to facilitate CPRA requests, and to promote public understanding, participation, and confidence in the FGC and in its practices and procedures in matters deserving of public review.

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[1]The California Public Records Act (Gov. Code, § 6250 et seq.) ("CPRA") provides that "'public records' include any writing containing information relating to the conduct of the public's business prepared, owned, used, or retained by any state or local agency regardless of physical form or characteristics." (Gov. Code, § 6252(e).)

Such a regulation also furthers the principles articulated in Fish and Game Code section 107 that the FGC is legally obligated to adhere to. Relevant here are subdivisions: (b) stating "the commissioner shall conduct his or her affairs in the public's best interest;" (c) stating the "commissioner shall conduct his or her affairs in an open, objective, and impartial manner, free of undue influence, and the abuse of power and authority;" (d) stating FGC's programs "require public awareness, understanding, and support of, and participation and confidence in, the commission and its practices and procedures;" and (e) stating "the commissioner shall preserve the public's welfare and the integrity of the commission, and act to maintain the public's trust in the commission and the implementation of its regulations and policies."

With the public's increased and increasing skepticism of government officials who are using none traceable technologies and private e-mail accounts, the appearance of a conflict of interest that this creates, the distrust in government that these practices encourage, the diversity of views stakeholders the FGC should take all steps available to show by its actions and regulations that it is dedicated to being transparent beyond what current statutory law requires. This is especially critical for a body like the FGC whose actions directly and significantly impact stakeholders with a large diversity of views. Adoption of the proposed regulation is a small but significant step towards achieving just that.

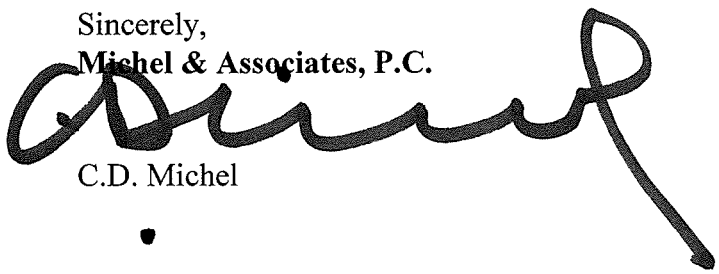
IV. THE COMMISSION HAS THE LEGAL AUTHORITY TO TAKE THE REQUESTED ACTION

Pursuant to section 108 of the California Fish and Game Code, the FGC must "adopt rules to govern the business practices and processes" of the FGC. Further, as discussed above, section 107 requires that the Commission maintain the public trust in implementing its regulations and policies. Thus, the regulation Petitioners propose is clearly within the FGC's regulatory authority.

V. CONCLUSION

For the above stated reasons, the FGC should accept this Petition and open the rulemaking process for a regulations that require electronic correspondence by Commissioners or their agents or employee about any official Commission matter to be conducted through government issued electronic-mail accounts that are hosted on government owned servers and that discourages the adoption or use of any technology or practice that serves to avoid creating a record that can be viewed by the public. Alternatively, the FGC should adopt this as an official policy, if not a regulation. Either way, this should be the standard operating procedure for the FGC.

Sincerely,
Michel & Associates, P.C.



C.D. Michel

CDM/sab

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TREVOR SANTOS
MANAGER, GOVERNMENT
RELATIONS/STATE AFFAIRS

July 8, 2015

California Fish and Game Commission
c/o Executive Director Sonke Mastrup
P.O. Box 944209
Sacramento, CA 94244-2090

Re: Petitions for the Adoption of a Regulation Requiring Correspondence About Official Fish & Game Commission Matters to be Conducted Via Government Issued Means

Dear Mr. Mastrup:

On behalf of the National Shooting Sports Foundation, I write to you today to express our support for the petition submitted on behalf of the National Rifle Association ("NRA") and California Rifle and Pistol Association ("CRPA") on June 5, 2015. The petition submitted on behalf of the NRA and CRPA "request(s) that the California Fish and Game Commission ("FGC") propose and adopt regulations requiring Department of Fish & Wildlife ("DFW") personnel, FGC Commissioners, and staffers, agents, employees, and others assisting them with official Commission business, to conduct all government business in a way that maximizes public transparency and discourages the exclusion of any stakeholder group from being fully informed about the regulatory process."

As the trade association for America's firearms, ammunition, hunting, and recreational shooting sports industry, the National Shooting Sports Foundation ("NSSF") seeks to promote, protect, and preserve hunting and the shooting sports. NSSF has a membership of nearly 13,000 manufacturers, distributors, firearms retailers, shooting ranges, and sportsmen's organizations. Our manufacturer members make the firearms used by law-abiding California sportsmen, the U.S. military and law enforcement agencies throughout the state.

The view of the NSSF follows that of the NRA and CRPA in that the use of personal email, personal cell phones, or any other personal device used for sending or receiving official government communications or business should be strictly prohibited or highly discouraged. When conducting business funded by tax-payers, the ultimate goal of the FGC and FWD should be complete transparency. Like the NRA and CRPA, the NSSF would respectfully request the FGC and DFW adopt a regulation, or official policy, requiring all business communications be conducted via government issued technology and stored on government servers, cloud-based databases, etc.

In closing, the National Shooting Sports Foundation strongly supports and would respectfully request that you move forward with the petition submitted on behalf of the NRA and the CRPA, and adopt regulations, or official policy, requiring all correspondence regarding official Fish & Game Commission matters be conducted through government issued means.

Sincerely,

Trevor W. Santos
Manager of Government Relations – State Affairs
National Shooting Sports Foundation

cc: California Fish and Game Commissioners
Mr. Charlton Bonham, Director, California Department of Fish and Wildlife
Governor Edmund G. Brown, Jr.
National Shooting Sports Foundation

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September 24, 2015

VIA ELECTRONIC MAIL & U.S. POST

Sonke Mastrup
Executive Director
CALIFORNIA FISH & GAME COMMISSION
P.O. Box 944209, Sacramento, CA
smastrup@dfg.ca.gov

Re: Comments on Wildlife Resources Committee Procedures

Dear Mr. Mastrup:

We again write on behalf of our client the National Rifle Association of America to comment on the Wildlife Resources Committee's lack of established procedure and governing rules. Our office sent the Commission's Executive Director a letter on April 14, 2014, raising concerns that the originally proposed rules for the WRC would be improper as "underground regulations" because they had not been adopted pursuant to the proper rulemaking process. That letter also outlined nine other specific issues that are confusing or otherwise unclear as to plans for the future operation of the WRC.[1]

Our office followed up with the Executive Director about that letter. We were informed that the Commission had since addressed our client's concerns. Not seeing any evidence of that, on July 11, 2014, we sent a formal request that this Commission require that rules and procedures be established for the WRC through the normal regulatory approval process before the WRC takes any further

[1] A copy of the letter is attached as Exhibit 1.

action.[2] Around the same time Safari Club International submitted a letter raising similar concerns, and NSSF attorneys also submitted a letter correctly explaining the legal shortcomings for how the WRC is operated. Due to a lack of response to these correspondence, our office then followed up with an official petition on July 28, 2014, which the Commission accepted and referred it to staff for evaluation and recommendation.[3]

Despite all these efforts, our client's concerns have not been addressed *over a year later*. To date no official procedures for the WRC have been adopted. To the contrary, it seems like how the WRC runs is ever-changing, leaving stakeholders cynical about the process and with many questions that need to be answered, including:

> What is the process for arranging a WRC meeting? Who decides the date, location, and format?
>
> Who dictates what items will be discussed at the WRC? How are issues decided to be placed on the agenda for any given meeting? Is there a process for the public to suggest items for consideration by the WRC?
>
> Who decides (or what is the process for deciding) what actions the WRC will take, i.e., whether a recommendation will be made to the full Commission? What happens if one Commissioner disagrees with a recommendation? Is there a record kept of that? Is the Commission or the public informed of the disagreement?
>
> What form does a recommendation take? Who prepared it?
>
> Are any meeting minutes or notes of proposed actions prepared? If so, by whom? Are any meeting minutes or notes kept? If so, are they made available?
>
> Does the WRC comply with the Bagley-Keene Act as it must? If so, does it have established procedures to maintain compliance? Who created those procedures?

Until these (and other) questions are answered and the lack of transparency for what the WRC is doing is addressed, it is inappropriate for the WRC to engage in any more activity related to the Commission's policy making. Yet, the exact opposite seems to be occurring.

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[2] A copy of the letter is attached as Exhibit 2.

[3] A copy of the petition is attached. as Exhibit 3

Not only does the WRC continue to operate without any formal governing procedures in place, but it is *expanding* its operation. The October Commission meeting agenda includes, among other items, "Appointments to predator workgroup." While not entirely clear (which is an additional issue that needs to be addressed), it appears this item means the Commission will be discussing nominations and appointments to the WRC's so-called Predator Policy Workgroup ("PWG"). The propriety of such an expansion is dubious standing alone, but with so many questions remaining about the proper procedure and structure for the WRC itself, doing so is beyond the pale for a public entity.

Moreover, it is unclear whether it is even legal to form the PWG. Nothing in the statute creating the WRC provides for it.[4] Assuming it is legal, it remains unclear whether the Commission or the WRC would be the body responsible for creating it and regulating it. Accordingly, before the WRC expands with subcommittees like the PWG, the following questions should be answered:

> What is the source of authority to create the PWG? Assuming there is such authority, why is its creation not subject to the official rulemaking process? Would the Commission be able to create a workgroup under itself without going through the formal rulemaking process?
>
> Who has authority to dictate the criteria or process for nominating PWG members? Are such nominations subject to the official rulemaking process?
>
> Assuming such authority exists in either case, does it reside in the Commission or the WRC?
>
> Will the public have an opportunity to weigh in on the criteria for nominating PWG members?

Of course, the same queries regarding the lack of procedure for the WRC generally apply to the PWG, but addressing those now would be to put the cart before the horse. Our client is not alone in its concerns here. Even WRC staff recently recommended "[t]hat structure, function, and specific tasks for the predator workgroup be clearly identified."[5]

Needless to say, established rules and procedures are needed for the WRC now. Important matters are currently being addressed while many stakeholders remain uncertain about how to participate in the process because of the constantly changing process. The effect is to thwart the original purpose of the WRC, which was to facilitate input from stakeholders on matters of interest

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[4] *See* Fish and Game Code § 106.

[5] See Item 7 on Page 8 at:
http://www.fgc.ca.gov/meetings/2015/Sep/WRC_MeetingBinder_20150907.pdf

regarding natural resources that the Commission may want to consider.

For these reasons, we respectfully request that the above questions be answered and that the WRC cease taking any actions until official rules and procedures governing it are adopted following a public comment period. If you have any questions, please feel to contact our office.

Sincerely,
Michel & Associates, P.C.

Sean A. Brady

cc'd by Email and U.S. Post:
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April 14, 2014

VIA EMAIL, U.S. POST
& HAND DELIVERY

Sonke Mastrup
Executive Director
CALIFORNIA FISH & GAME COMMISSION
P.O. Box 944209, Sacramento, CA
smastrup@dfg.ca.gov

Re: Comments on Proposed Regulations and Notice of Improper Wildlife Resources Committee Procedures

Dear Mr. Mastrup:

We write on behalf of our client, the National Rifle Association of America, to comment on proposed policies and to notify you of apparent improprieties in the proposed adoption of policy and procedures related to the Wildlife and Marine Resources Committee (respectively "WRC" and "MRC").

The agenda for the Fish & Game Commission ("Commission") meeting of February 5, 2014, includes the following agenda item: "DISCUSSION OF DRAFT POLICY AND PROCEDURES FOR WILDLIFE AND MARINE RESOURCES COMMITTEES" (the "Draft") A copy of the Draft is available at http://www.fgc.ca.gov/meetings/2014/feb/proposed_committee_procedures.pdf.

The Draft, as written, is a "regulation[1]" under state law. So the Commission appears to be

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[1] Government Code section 11342.600 states, in its entirety,

'[r]egulation' means every rule, regulation, order, or standard of general application or the amendment, supplement, or revision of any rule, regulation, order, or standard adopted by any state agency to implement, interpret, or make specific the law enforced or administered by it, or to govern its procedure.

Further, as used in section 11342.600, the term "state agency" includes every state commission. Gov't

improperly attempting to create "underground regulations[,]" i.e., regulations that are not valid because they were not adopted in accordance with the proper procedural guidelines.

I. The Proposed Procedures Must Be Properly Enacted Before They Can Be Implemented

California law is clear about the prohibition on the issuance or use of underground regulations:

> No state agency shall issue, utilize, enforce, or attempt to enforce any guideline, criterion, bulletin, manual, instruction, order, standard of general application, or other rule, which is a regulation as defined in Section 11342.600, unless the guideline, criterion, bulletin, manual, instruction, order, standard of general application, or other rule has been adopted as a regulation and filed with the Secretary of State pursuant to this chapter.

Gov't Code § 11340.5(a).

Case law confirms that the proposed rules in the Draft would be improper "underground regulations" if they arose as part of the implementation of the duties created by Fish and Game Code section 105 and 106, which, respectively, created the MRC and WRC. *See Engelmann v. State Bd. of Educ.*, 2 Cal. App. 4th 47, 62 (1991) (holding Board of Education was required to go through rule making process found in the Administrative Procedures Act when creating the guidelines and manuals for the mutli-level review process used for selecting the textbooks that could be used in public schools).

Accordingly, the Commission should follow normal regulatory standards (e.g., a series of three properly noticed Commission meetings used to introduce, discuss, and vote on a proposed regulation that was noticed via publication in the state's Regulatory Notice Register) to move forward with the creation of the proposed policies/regulations. Once the proper process has been complied with and the regulations have been filed with the Secretary of State, only then can the regulations be relied upon by the WRC.

II. Substantive Comments Regarding the Proposed Regulations

1. Based on the lack of notice regarding the formation and dissolution of the Predatory Policy subcommittee, it is clear the WRC needs rules to explain exactly how and when subcommittees will be formed. The Draft should be revised accordingly.

2. Fish & Game Code section 106 does not actually authorize or suggest the WRC is to perform its *own* meetings; the Commission should explain to the public why the Commission is going beyond its statutory mandate.

3. The WRC should have at least two members; there appears to be no difference between

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Code § 11000. Thus, the Commission is clearly a state agency for the purposes of section 11342.600.

a Commissioner's own abilities and a one-person WRC, and having two members will decrease the possibility of hasty or unfairly biased decision making.

4. The Draft should include a provision that, when the Commission makes its yearly appointment to the Committee, it should, to the extent practicable, appoint two WRC members who have differing backgrounds (e.g., a hunter and a member with non-hunting interests) to help ensure that recommendations have been "vetted" as much as possible before they get to the Commission.

5. Because the WRC is required to make recommendations (i.e., take "action[,]" as that term is defined in Government Code section 11122), that means final decisions will need to be made, which could be problematic if there are two Commissioners sitting on the WRC (e.g., a "tie"). The proposed regulations should address how any disputes between WRC members shall be resolved.

6. The WRC is, "to the extent practicable," to "attend meetings of the department staff, including meetings of the department staff with interested parties, in which significant wildlife resource management documents are being developed." Fish & Game Code § 106. Are these meetings all going to be open to the public and publicly noticed? Is there going to be a public record of these meetings occurring? If they are not, and further assuming the department has discretion as to who it meets with in private concerning the development of "significant wildlife resource management documents[,]" there are real transparency and equal access problems here.

7. Because the WRC was created by statute and because it includes more than one member, it is subject to the requirements of the Bagley-Keene Act. Gov't Code §§ 11121, 11123. Regardless, if it is the Commission's position is that the WRC, or any "subcommittees" it produces, will not be treated as if subject to the Bagley-Keene Act, the Commission should explain to the public the considerations that the Commission has found to outweigh the public's interest in open government.

8. Three Commissioners should never participate in any WRC meeting. The Draft obscures, at the least, the limits of Government Code section 11122.5(c)(2)(6). That section states:

> [a] majority of the members of a state body [e.g., the Commission] shall not, outside of a meeting authorized by this chapter, use a series of communications of any kind, directly or through intermediaries, to discuss, deliberate, or take action on any item of business that is within the subject matter of the state body . . . . The prohibitions of this article do not apply to . . . attendance of a majority of the members of a state body at an open and noticed meeting of a standing committee of that body, ***if*** the members of the state body who are not members of the standing committee attend only as observers.

(Emphasis added).

It seems, however, that someone within the Commission or related staff wants to blur the lines about non-committee member Commissioners attending committee meetings. This can be seen via a comparison of the Draft and the prior "approved" MRC rules previously posted on the Commission's website.

Compare the following.

- In the event that another Commissioner wishes to attend a meeting of the MRC, and there are two members of the MRC present at the meeting, that Commissioner may attend the meeting but must recuse himself or herself from any discussions related to Commission business. [2]

- Non-chair Commissioner [sic] may attend committee meetings.[3]

There is no legitimate reason to make this language *less* clear than it was in the prior draft. Further, it is debatable if the passage, as originally stated, is an accurate representation of the limitation stated in section 11122.5(c)(2)(6). Having three Commissioners on the dias during a committee meeting is inappropriate. If the Commission is going to have a meeting, it should be clearly noticed as a *Commission* meeting. History has show that non-committee Commissioners are likely going to speak at committee meetings even though doing so is patently inappropriate, and the rules should be absolutely clear to everyone, *including Commissioners and staff*, that non-committee Commissioners cannot legally speak at committee meetings.

9. WRC meetings should not be video recorded and posted on the internet. It was mentioned at the last WRC meeting that the cost of such service would be a problem. Though no actual cost information was provided, with the availability of YouTube and inexpensive digital cameras (perhaps even state-owned cellular phones), that statement is difficult to accept. Indeed, if the Commissioners and staff are all having travel costs reimbursed, it seems that the cost of video, which would *guarantee public access*, is likely much less than that which is already expended.

During the meeting of February 5, 2014, the Commission discussed the possibility of live-streaming WRC meetings. During that discussion, you mentioned that live-streaming meetings costs approximately six to eight thousand dollars per meeting, and the it was unclear if the Department of Fish and Wildlife had the money in its budget needed to live-stream the meetings. Because of the importance of public participation,

[2] http://www.fgc.ca.gov/meetings/committees/MRCrulesandprocedures052213.pdf.

[3] http://www.fgc.ca.gov/meetings/2014/feb/proposed_committee_procedures.pdf.

live streaming and later web access should be considered a priority.

10. To the extent that the Draft states committee meetings "may be taped and broadcast on the internet at the discretion of the Commission[,]" this provision should be clarified, as it can reasonably be interpreted as a prohibition on the public recording committee meetings, subject only to express permission of the Commission. *See* Gov't Code § 11124.1 (members of the public have the right to use a video recording device to record meetings of state bodies).

III. Conclusion

In summary, the Commission should incorporate all of the above comments into a new draft set of regulations that can be considered and adopted through the appropriate procedural mechanisms.

Sincerely,
Michel & Associates, P.C.

Scott M. Franklin

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July 11, 2014

VIA EMAIL & U.S. POST
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Vice President Jack Baylis
Commissioner Jim Kellogg
Commissioner Richard B. Rogers
Commissioner Jacque Hostler-Carmesin
California Fish & Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Re: Request Wildlife Resources Committee Procedure and Meeting Protocols Be Put In Place *Before* That Committee Makes Any Recommendations to the Fish & Game Commission

Honorable Commissioners:

We write on behalf of our client the National Rifle Association.

Recently while conducting meetings, the Commission and the WRC have blurred the lines between a true Commission hearing, where policy decisions can legally be made and official actions can be taken, and WRC meetings where apparently the only action possible is the WRC making a recommendation for the Commission to consider. This letter is a formal request that the Fish & Game Commission (Commission) require the Wildlife Resources Committee (WRC) to establish and publicize rules and procedures under which it will operate before the WRC takes any further substantive action, and that such procedural rules be vetted through the normal regulatory approval process before they become effective.

1. The Commission is Sending Mixed Signals About the Authority of the WRC

There is confusion about the role and authority of the WRC because at Commission and WRC meetings, the Executive Director, as well as Commissioners Sutton and Baylis, have inaccurately stated that WRC meetings are a form of, or can operate as, official Commission meetings. The Commissioners and Commission staff have also made numerous other confusing and conflicting comments about the role, limitations, and procedural rules of the WRC. Commissioner Sutton said that the WRC meetings are of an "informal nature." But there has been no clarification about whether

the WRC is going to be the only opportunity for public comment on issues raised at WRC meetings, or if the public will have opportunity to comment on all issues agendized for Commission meetings, even if that issue was already discussed (or not) at a WRC meeting. This is compounded by the fact that WRC meeting videos are not available online, notwithstanding multiple requests from various segments of the stakeholder community for that type of access.

If the WRC meeting will provide for a longer format pre-discussion of a discussion that will take place again before the full Commission, then no binding action (other than perhaps a recommendation to the Commission action) takes place at a WRC meeting. If that is the case, then the Commission should say so unequivocally. This clarification would drastically reduce the amount of confusion being created by the uncertain state of the WRC's procedures and its authority.

2. *The Commission Must Establish Procedural Rules for the WRC Before It Allows the WRC to Address Substantive Issues*

Based on the recently released agenda for the July 28, 2014, WRC meeting, it appears that the Commission is moving forward with potentially substantive decision making at the upcoming next WRC meeting, even though the procedures for how the WRC will operate, and significantly, how the public can participate in WRC meetings, have not been publicized and apparently do not exist. Because there is no system or procedures in place, our clients, other stakeholders, and the interested public are unable to effectively participate in the rule and policy making process.

This office sent the Executive Director of the Commission a letter on April 14, 2014, raising concerns that the previously proposed WRC rules would be improper as "underground regulations." That letter also outlined nine other specific issues that are confusing or otherwise unclear as to plans for the future operation of the WRC. A copy of the letter is attached.

Our office recently followed up with the Executive Director about that letter. We were informed that the Commission has addressed the concerns raised our letter of April 14, 2014. We respectfully disagree. No new proposed procedural rules have been published, nor have we received a response letter addressing the issues noted in the letter of April 14, 2014.

So we now ask the Commission to please tell us; how have our client's concerns as recited in our April 14, 2014 letter, been addressed?

3. *The Commission Seems Biased, Favoring Participation by Anti-Hunting Groups Over Pro-Hunting Groups*

Holding WRC meetings without established procedures facilitates the impression that different rules apply to different stakeholders. Certain stakeholders appear to have more access and to information about WRC activities and plans. This not only creates an appearance of impropriety and fosters an antagonistic situation, it will result in increased investigations by watchdog associations suspecting bias in the way the Department and Commission are conducting their affairs.

If published rules are put in place, it would not only provide some clarity, it would also help limit unfair treatment, reduce the appearance of bias or conflicts of interest, alleviate concerns of bias,

and facilitate a more productive regulatory process.

4. Stakeholder Presentation Materials Should Be Made Publicly Available Well Before WRC Meetings

Furthermore, it was only because this office asked the Executive Director that we found out that the deadline for making a request to make a presentation at the July 28, 2014, WRC meeting was July 7, 2014. Assuming this was a deadline that was applicable to all who wanted to make a presentation to the WRC, shouldn't it have been publicized? And if that deadline did not apply to every group that wanted to make a presentation, our clients object to any content-based scheduling advantage that is being granted to other stakeholders.

If the purpose of the WRC is to have the most enlightened discussion possible concerning issues headed to the full Commission for consideration, then stakeholders and the public should not be surprised by new information presented for the first time at WRC meetings when there is no opportunity to prepare a rebuttal.

It is our understanding that there is a currently unwritten rule that presenters at WRC meetings are required to give the Executive Director a copy of presentation materials a few weeks prior to the WRC meeting. Though our clients don't necessarily agree with such a rule, if it is going to be enforced, why couldn't that information be circulated publicly beforehand?

5. The Commission's Attempt to Create an "Alternate" WRC Member Is Disconcerting

Another unsettled and troubling issue related to the WRC is the attempt (foiled by a loss of quorum at the June 4, 2014, meeting of the Commission) to create an "alternate" WRC "member" position. By law, the WRC is only required to have one member, so the claim that two members are need for meetings is inaccurate. Fish & Game Code § 106 ("The commission shall form a wildlife resources committee from its membership consisting of at least one commissioner.").

The WRC has *two* committee "members," Commissioners Kellogg and Baylis. If only one of committee "members" is unable to attend a WRC meeting, there is still no quorum or other procedural limitation that prevents a single WRC committee member from going forward with a WRC meeting.

The fact that some Commissioners are pushing very hard to have a third Commissioner appointed as a "member" to the WRC, even though there is no need to do so, raises concerns that by having three Commissioners at WRC meetings, those Commissioners would then attempt to act as the Commission and take a binding vote on Commission business.

At the January 15, 2014, WRC meeting, both the Executive Director and Commissioner Baylis indicated that had the three Commissioners present at that meeting wanted to, they could have acted as the Commission (an assertion we vigorously disagree with). Though the January 15, 2014, meeting was technically a Commission meeting, it was also an illegal meeting because it was not properly noticed as a Commission meeting.

If the Commission tries to use a noticed WRC meeting as an opportunity to take a Commission

vote on a controversial topic, that will result in litigation.

The Commission should consider the implications of the WRC's current methods of operation, and should draft a new set of proposed procedures for the WRC. In doing so, the "alternate" issue should be resolved.

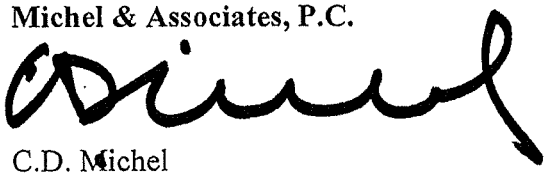
6. Reservation of Rights

Because it is not clear to us what the limitations are about making comments at the upcoming WRC and at later, related Commission meetings, our clients expressly reserve all rights to make a comment/presentation and at the July 28, 2014, WRC meeting and the August 6, 2014 Commission meeting, regardless of whether our client participates in one or both of these meetings.

7. Conclusion

The next WRC meeting should be used to formalize a set of proposed procedural rules that can be reviewed and approved by the Commission through its normal regulatory process. Otherwise the WRC's actions will continue to cause stakeholders and the public to believe that the Commission has lost its objectivity, and that it is now a biased politicized body. This directly conflicts with the reason the Commission was created in the first place. See *Young v. Dep't of Fish & Game*, 124 Cal. App. 3d 257, 273 (1981) (noting that the constitutional amendment that resulted in the Commission being a constitutional body "was to remove the old Fish and Game Commission from political influence").

Sincerely,
Michel & Associates, P.C.



C.D. Michel

CDM/smf

Enc.: April 14, 2014 Letter

cc: Sonke Mastrup
Executive Director
CALIFORNIA FISH & GAME COMMISSION
P.O. Box 944209, Sacramento, CA
smastrup@dfg.ca.gov

EXHIBIT 3

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LOS ANGELES, CA

DAVID T. HARDY
TUCSON, AZ

July 28, 2014

SENT VIA E-MAIL
& HAND DELIVERED

California Fish and Game Commission
c/o Executive Director Sonke Mastrup
P.O. Box 944209
Sacramento, CA 94244-2090

sonke.mastrup@fgc.ca.gov

Re: Petition for Rule Making by the Fish & Game Commission Regarding the Need for Formal Procedures and Rules for the Proper and Fair Operation of the Wildlife Resources Committee

Dear Mr. Mastrup:

This Petition, submitted by the National Rifle Association of America ("NRA") pursuant to Government Code sections 11340.6 and 11340.7, requests that the California Fish & Game Commission (the "Commission") enact regulations to ensure public participation and fair debate vis-à-vis the Wildlife Resource Committee (the "WRC").

I. STANDING OF PETITIONERS

Petitioner NRA is an Internal Revenue Code § 501(c)(4) nonprofit corporation, incorporated in the State of New York in 1871, with principal offices and place of business in Fairfax, Virginia. NRA has approximately five million members, and hundreds of thousands of members in California.

The founders of NRA desired to create an organization dedicated to marksmanship, or, in the parlance of the time, to "promote and encourage rifle shooting on a scientific basis." NRA's bylaws, at Article II, Section 5, state that one of the purposes of NRA is "[t]o promote hunter safety, and to promote and to defend hunting as a shooting sport and as a viable and necessary method of fostering the propagation, growth, conservation, and wise use of our renewable wildlife resources."

NRA has been a party to or supported multiple lawsuits throughout the nation supporting and

defending the right to keep and bear firearms for hunting, sport shooting, and self-defense. Indeed, one of NRA's key functions is to preserve the tradition of hunting, by protecting it from unreasonable and unnecessary restrictions.

NRA has an established record of advocating against restrictions on hunting based on scientifically unsupported claims of alleged environmental harm.

Petitioner David Halbrook resides in Victorville, California, and has been a hunter for basically his entire life. Mr. Halbrook has hunted various big and small game in California in the past, and he intends to hunt in California in the future. Mr. Halbrook is a member of NRA and is the executive director of the Hunt For Truth Association.

Based on the foregoing, the petitioners have standing to make the requested regulatory changes.

II. REQUESTED REGULATORY CHANGES

Petitioners hereby seek the amendment of California Code of Regulations ("CCR"), title 14, via the addition of a new section dedicated to the procedural aspects of the operation of the WRC, including, but not limited to, public meetings held by the WRC.

The following provisions, based on draft language created by the Commission, should be included in the new section.

(A) Section 108 of the Fish and Game Code requires the commission to adopt rules to govern the business practices and processes of the Commission. Sections ~~105 and~~[1] 106 of the Fish and Game Code require the commission to establish ~~a minimum of two committees, the Marine Resources Committee and~~[2] the Wildlife Resources Committee~~, respectively~~.

(B) A minimum of one, but no more than two members of the Commission will be appointed to the Wildlife Resources C~~c~~ommittees at the first Commission meeting of each calendar year. To the extent feasible, the Commission shall place at least one Commissioner with substantial hunting experience on the Wildlife Resources Committee.

(C) All public are welcome to attend and participate meetings as defined in subsection (a).

(D) The Commission will establish the meeting schedule for the WRC ~~committees~~ each year

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[1] ~~Strikeout~~ and underline are used herein to reflect deletions and additions, respectively, that Petitioner proposes be made regarding language previously put forth by the Commission in the Draft.

[2] Petitioner is not taking any position on what regulations should or should not be adopted for the operation of the Marine Resources Committee, but reference thereto is omitted herein because this Petition does not concern the operation of the Marine Resources Committee.

as part of the annual rulemaking calendar the prior November and may schedule additional meetings as needed.

(E) Agenda will be approved at the Commission meeting before the committee meeting. Agendas will be developed by staff and will be comprised of standing items and topics requested by: ~~referred by~~ the Commission, ~~topics requested by~~ the Department, ~~and/or~~ state agencies, and federal agencies~~, and standing items~~. Public requests for agenda items must be made to the Commission and subsequently referred to the ~~appropriate committee~~ Wildlife Resources Committee.

Agenda items to be considered for the year will be adjusted based on urgency, need, and interest as determined by the Commission. Findings and recommendations will be made to the Commission for possible action by the ~~two chairs~~ Wildlife Resources Committee. If the Wildlife Resources Committee has two members, any finding or recommendation it makes must be unanimous.

(F) All Wildlife Resources Committee meetings ~~of committees~~ shall be noticed at least 10 days prior to the meetings. Meeting agendas will be noticed on the Commission's website and distributed electronically.

(G) Commission staff will secure appropriate meeting venues for Wildlife Resources Committee meetings with preference given to those that are provided free of charge. Meetings will be run by at least one of the Wildlife Resources Committee members or the designee, ~~two chairs~~ and facilitated by Commission staff.

(H) ~~In general~~ Unless specific conditions dictate otherwise, meetings will be structured to provide participants opportunities to engage in detailed discussions with Commission staff, Department staff, the presenter (if applicable), and stakeholders. ~~Meetings~~ The Wildlife Resources Committee will strive to provide an informal setting at its meetings, where all participants will have an opportunity to provide input into the conversation. However, if required, the ~~chairs~~ Wildlife Resource Committee retains the option to apply a more structured setting whereby discussion and public comment are governed by speaker cards and time limits.

(I) Non-~~chair~~ member Commissioners may attend Wildlife Resource Ccommittee meetings, however, they are expressly prohibited from participating in anything other than an observational capacity. Non-member Commissioners shall not make any comment, either directly or indirectly, during a Wildlife Resources Committee meeting.

(J) Commission staff shall prepare a ~~M~~meeting ~~S~~summary following each Wildlife Resources Committee meeting that summarizes the main discussion points and any recommendations developed by the Wildlife Resources Committee ~~committee chairs~~. Draft meeting summaries shall be provided to the Department and Wildlife Resources Committee ~~committee chairs~~ prior to finalization for review and comment. The final meeting summary shall be posted on the Commission's website and serve as the formal record of the meeting. Any recommendations developed by a committee shall be clearly

identified in the meeting summary and presented to the Commission for consideration at a future Commission meeting.

(K) Wildlife Resources Committee meetings shall be audio recorded. Wildlife Resource Commission meetings ~~may~~ shall be ~~taped~~ video recorded and broadcast on the internet ~~at the discretion of~~ unless the Commission ~~and available~~ makes a specific finding that, as to a specific fiscal year, funding is not reasonably available for video recording. This provision does not in any way inhibit any right that members of the public have concerning the use of a recording device to record public meetings of a state body.

Furthermore, the following provisions, drafted by the Petitioner, should also be included in the new section requested hereby.

(L) A meeting is subject to the Bagley-Keene Act if (a) any portion of the meeting relates to one or more matter within the Commission's jurisdiction, and (b) the meeting is attended (whether in person or otherwise) by all of the following: at least one Wildlife Resources Committee member (or a Wildlife Resources Committee designeee), at least one Department of Fish & Wildlife (the "Department") employee, and at least one person who is neither a member of the Department nor affiliated with the Commission (e.g., non-committee member Commissioners or Commission Staff). This provision only applies to meetings that concern, at least in part, nonmarine wildlife resource issues.

(M) The ability of the public to speak at a Wildlife Resources Committee meeting on a particular item does not preclude a member of the public from attending a later Commission meeting and commenting on that item, or a related item, during the Commission meeting but prior to the Commission taking action on the relevant item.

(N) If the Wildlife Resources Committee has a designee, the name of that designee shall be announced at a Commission meeting prior to that designee acting as the designee of the Wildlife Resources Committee.

(O) The WRC shall strive to adhere to an "equal time" model to the extent practicable, to prevent an unreasonable disparity of non-public Wildlife Resources Committee meetings being granted to specific parties holding disparate viewpoints.

(P) The Wildlife Resources Committee shall not create any sub-committee or other entity without express approval by the full Commission after the Commission has taken public comment on the issue. All subcommittes or similar entities created by Wildlife Resources Committee with Commission approval shall meet only as a part of Wildlife Resources Committee meetings, and all communications between members of these entities shall be treated as public records.

(Q) A log should be kept of all Wildlife Resources Committee-related meetings attended by Wildlife Resources Committee members or the Wildlife Resources Committee designee.

III. JUSTIFICATION FOR THE REQUESTED REGULATORY CHANGES

A. Any Rules Used by and for the WRC Are Regulations, Thus They Must Be Approved through the Proper Regulatory Process

The agenda for the Fish & Game Commission ("Commission") meeting of February 5, 2014, included the following agenda item: "DISCUSSION OF DRAFT POLICY AND PROCEDURES FOR WILDLIFE AND MARINE RESOURCES COMMITTEES" (the "Draft"). A copy of the Draft is available at http://www.fgc.ca.gov/meetings/2014/feb/proposed_committee_procedures.pdf.

The Draft, as written, is a "regulation" under state law. Government Code section 11342.600 states, in its entirety,

> '[r]egulation' means every rule, regulation, order, or standard of general application or the amendment, supplement, or revision of any rule, regulation, order, or standard adopted by any state agency to implement, interpret, or make specific the law enforced or administered by it, or to govern its procedure.

As used in section 11342.600, the term "state agency" includes every state commission. Gov't Code § 11000. Thus, the Commission is clearly a state agency for the purposes of section 11342.600. Section 11342.600 is in accord with Fish & Game Code section 108, which "requires the commission to adopt rules to govern the business practices and processes of the Commission."[3]

Should the Commission attempt to utilize any rules regarding the operation of the Wildlife Resources Committee without having them adopted via proper regulatory rulemaking, that would violate Government Code section 11340.5(a). That section states:

> No state agency shall issue, utilize, enforce, or attempt to enforce any guideline, criterion, bulletin, manual, instruction, order, standard of general application, or other rule, which is a regulation as defined in Section 11342.600, unless the guideline, criterion, bulletin, manual, instruction, order, standard of general application, or other rule has been adopted as a regulation and filed with the Secretary of State pursuant to this chapter.

Case law confirms that the Wildlife Resources Committee would be using illegal "underground regulations" if the Commission allowed the Wildlife Resources Committee to operate by a set of rules that were not properly enacted. *See Engelmann v. State Bd. of Educ.*, 2 Cal. App. 4th 47, 62 (1991) (holding Board of Education was required to go through rule making process found in the Administrative Procedures Act when creating guidelines and manuals for a mutli-level review process used for selecting textbooks that could be used in public schools).

[3] *See* the Draft, available at http://www.fgc.ca.gov/meetings/2014/feb/proposed_committee_procedures.pdf

B. Equal Access and Transparency Interests Will Be Served if the Petition Is Granted

The Petitioner sent a letter to the Commission on April 14, 2014, outlining why the Wildlife Resources Committee needed rules adopted pursuant to the proper regulatory process. A copy of that letter is attached and incorporated by reference. Put simply, that letter outlined the various potential pitfalls related to the draft rules that the Commission circulated earlier this year, rules that, it seemed, the Commission wanted to adopt without adhering to the proper regulatory process. Because three months have passed since that letter and the July 28, 2014, meeting of the Wildlife Resources Committee is being held without any binding rules or regulations, the Petitioner is now forced to make this formal demand that the lack of regulations be addressed.

Indeed, to prevent any possible argument that a Commission decision was made as the result of a fault in the undefined Wildlife Resources Committee public comment process in place as of July 28, 2014, the Petitioner strongly suggests that the Wildlife Resources Committee not make any final decisions or recommendations at that meeting.

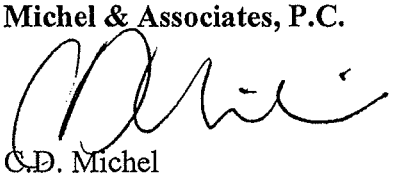
IV. THE COMMISSION HAS THE LEGAL AUTHORITY TO ADOPT THE REQUESTED REGULATORY CHANGES

Section 108 of the Fish and Game Code requires the commission to adopt rules to govern the business practices and processes of the Commission. Thus, the regulations sought hereby are clearly within the Commission's regulatory authority. *See also* Gov't Code § 11340.6 ("any interested person may petition a state agency requesting the adoption, amendment, or repeal of a regulation").

V. CONCLUSION

For the reasons stated herein, this Petition should be granted.

Sincerely,
Michel & Associates, P.C.



C.D. Michel

cc:
cc: Senior Assistant Attorney General Christopher Ames
(Christopher.ames@doj.ca.gov)

enc:
Letter of April 14, 2014

FGC

From: [redacted]
Sent: Monday, October 05, 2015 7:31 AM
To: FGC
Subject: Wildlife Resource Committee

Dear Sirs and Madams,

I am writing to respectfully oppose any further action by the WRC, and to request the the Committee establish required procedures in a manner compliant with California law. All stakeholders should have an opportunity to take part in the rule-making that relates to hunting and wildlife, and clear, public procedures for the WRC are necessary for that to happen.

Thank you for your consideration,
Padraic MacLeish
[redacted]

Commission Procedures

The Evolution

Presented to the California Fish and Game Commission by
Commission Staff on **December 9, 2015**

Evolutionary Forces

Public expectations:

- Greater transparency
- More access
- Active engagement
- Effective outcomes

Staff expectations:

- Efficient process
- Responsiveness
- Excellent service
- Procedures legal

Proposed Adaptations

- Commission quorum
- Agendas
- Committee recommendations
- Public participation
  - Written
  - Verbal
  - Audio/visual presentations
  - Prohibited behavior

Commission Quorum

Meetings may not be conducted without a quorum of members present:

- Commission meetings require three members
- Committee meetings require one appointed member
- **No more than two commissioners may attend committee meetings**

Commission Agendas

Establish agenda-setting procedures:

- Public requests for agenda items must be received no later than the Commission meeting immediately prior to the desired meeting
- Commission meeting agendas will be established by majority vote of the Commission but **items may be added** by the president **or the president's designee**

Committee Agendas

- Committee agendas are approved by majority vote of the Commission but **items may be added** by the president **or the president's designee**
- Public requests for agenda items must be received no later than the Commission meeting immediately prior to the desired meeting
- Committee agendas may not contain items on Commission meeting agendas for action unless directed by majority vote of the Commission

Commission Voting

- **A motion shall pass or fail only upon a majority vote of the membership**
- **The commission may make and vote on more than one motion related to an agenda item. If no motion receives a majority vote of the membership, the agenda item shall be continued to a subsequent commission meeting**

Committee Recommendations

Establish procedures for committee recommendations:

- Committees may meet to make recommendations no later than 15 days prior to the Commission meeting at which action on the subject of the recommendation may be taken
- Committee recommendations shall be posted to the Commission website at least five days prior to said meeting

Public Participation - Written

- Establish procedures for submitting written comments and materials for Commission and committee meetings
- Establish procedures for what written comments and materials are posted to the Commission website and when

Public Participation - Verbal

Establish procedures for speaking at Commission and Committee meetings:

- Public comment taken before the Commission makes a decision on an agenda item
- During public forum, public may address Commission policies or other matter within its jurisdiction, for items not already on the agenda
- Time allotted per speaker shall be set by the presiding commissioner at between one and three minutes

Public Participation – Verbal

- The public may be granted additional time, either through pre-approval by the president or by having three people cede time
- The Commission may limit the total time for public comment on a particular item by publishing the limit on the meeting agenda

Public Participation – Audio/Visual

Establish procedures and criteria for audio/visual presentations at meetings:

- Must be pre-approved by the executive director
- Disapproval only if irrelevant, inappropriate, contains unauthorized copyrighted material, or, for Commission meetings only, exceeds the allotted time

Prohibited Behavior

Identify behaviors that could result in **removal** from a meeting:

- Behavior preventing orderly function of meeting

CONFLICT OF INTEREST CODE
FOR THE
FISH AND GAME COMMISSION

The Political Reform Act (Government Code Sections 81000, *et seq.*) requires state and local government agencies to adopt and promulgate conflict of interest codes. The Fair Political Practices Commission has adopted a regulation (2 Cal. Code of Regs. Section 18730) that contains the terms of a standard conflict of interest code, which can be incorporated by reference in an agency's code. After public notice and hearing, the standard code may be amended by the Fair Political Practices Commission to conform to amendments to the Political Reform Act. Therefore, the terms of 2 Cal. Code of Regs. Section 18730 and any amendments to it duly adopted by the Fair Political Practices Commission are hereby incorporated by reference. This regulation and the attached Appendices, designating positions and establishing disclosure categories, shall constitute the conflict of interest code of the Fish and Game Commission (Commission).

Individuals holding designated positions shall file their statements of economic interests with the Commission. Upon receipt of the statements of the members of the Commission, the Commission shall make and retain a copy and forward the original of these statements to the Fair Political Practices Commission. All other statements of designated employees shall be retained by the Commission.

NOTE: Authority cited: Sections 81008, 87300, 87306, Government Code. Reference: Section 87302, Government Code.

FISHAND GAME COMMISSION
APPENDIX A
DESIGNATED POSITIONS

APPOINTED COMMISSIONERS - CATEGORY 1

EXECUTIVE DIRECTOR AND DEPUTY EXECUTIVE DIRECTOR- CATEGORY 1

STAFF COUNSEL – CATEGORY 1

STAFF SERVICES MANAGER- CATEGORY 2

MARINE FISH AND WILDLIFE SCIENTIFIC ADVISOR TO THE COMMISSION- CATEGORY 3

TERRESTRIAL FISH AND WILDLIFE SCIENTIFIC ADVISOR TO THE COMMISSION- CATEGORY 4

PROGRAM ANALYSTS INVOLVED WITH CONTRACTING- CATEGORY 2

FISH AND GAME COMMISSION
APPENDIX B
DISCLOSURE CATEGORIES

Category 1:

A designated position in this category must report:

(a) All interests in real property.

(b) All investments, positions in business entities, and income (including gifts, loans, and travel payments) from sources that are engaged in any of the following:

(1) A business related to fish and wildlife, including boating or fishing related business such as commercial fishing (including aquaculture), fish processing plants, recreational boating and fishing (including boat and equipment rentals, charter services, and guide services); or the manufacturing or supplying of boating or fishing equipment.

(2) A business related to hunting such as game processing, manufacturing and/or supplying of outdoor related equipment, or outdoor recreation (including rental outlets, gear rental, guide services, dog services, charter services, and providers of recreational services such as resorts and fishing and hunting lodges.

(3) The sale or possession of species that are the subject of a license or permit issued by the Department of Fish and Wildlife.

(4) A construction, demolition, or maintenance related business that may have an impact on fish, wildlife, or related businesses.

(5) The utilization of natural resources that may have an impact on fish or wildlife , or related businesses, such as mining, oil-related businesses (e.g. production, exploration, transportation, cleanup, or response), logging, dredging, or land development.

(6) The removal, storage, or containment of materials hazardous to fish or wildlife.

(7) The conservation of natural resources, activities related to mitigation banking, the protection of fish or wildlife, or the promotion of boating or outdoor recreation (including fishing, hunting, environmental advocacy, and outdoor activity clubs.).

(c) All investments, positions in business entities, and income (including gifts, loans, and travel payments) from sources that provide services, facilities, consulting, equipment, office space, materials, or supplies of the type utilized by the Commission.

(d) All investments, positions in business entities, and income (including gifts, loans, and travel payments) from sources that the official knows, are, or will be before the Commission on appeal from the Department of Fish and Wildlife.

(e) All investments, positions in business entities, and income (including gifts, loans, and travel payments) from sources that are the type that receive grants or contracts from, through or are managed by the Commission or that make appearances on behalf of an applicant for funding or recipient of a grant from or through the Commission

Category 2:

A designated position in this category must report all investments, positions in business entities, and income (including gifts, loans, and travel payments) from sources that provide services, consulting, equipment, office space, materials, supplies or facilities of the type utilized by the Commission.

Category 3

A designated position in this category must report:

(a) All interests in real property.

(b) All investments, positions in business entities, and income (including gifts, loans, and travel payments) from sources that are engaged in any of the following:

(1) A business related to marine fish or wildlife, including boating or fishing related business such as commercial fishing (including aquaculture), fish processing plants, recreational boating and fishing (including boat and equipment rentals, charter services, and guide services), providers of marine recreational services such as resorts and fishing lodges, or the manufacturing or supplying of boating or fishing equipment;.

(2) The sale or possession of marine fish or wildlife species that are the subject of a license or permit issued by the Department of Fish and Wildlife.

(3) A construction, demolition, or maintenance related marine business that may have an impact on marine fish or wildlife related businesses.

(4) The utilization of natural resources that may have an impact on marine fish or wildlife related businesses such as mining, oil-related businesses (e.g. production, exploration, transportation, cleanup, or response), logging, dredging, or land development.

(5) The removal, storage, or containment of materials hazardous to fish or wildlife in marine areas.

(6) The conservation of marine fish or wildlife resources, activities related to mitigation banking, the protection of marine fish or wildlife, or the promotion of outdoor marine recreation (including fishing, environmental advocacy, and outdoor activity clubs.).

(c) All investments, positions in business entities, and income (including gifts, loans, and travel payments) from sources that the official knows, are, or will be before the Commission on appeal as to marine fish or wildlife issues from the Department of Fish and Wildlife.

(e) All investments, positions in business entities, and income (including gifts, loans, and travel payments) from sources that are the type that receive grants or contracts from, through or are managed by the Commission or that make appearances on behalf of an applicant for funding, or recipient of a grant, related to marine fish or wildlife resources from or through the Commission.

Category 4

A designated position in this category must report:

(a) All interests in real property.

(b) All investments, positions in business entities, and income (including gifts, loans, and travel payments) from sources that are engaged in any of the following:

(1) A business related to hunting such as game processing, manufacturing and/or supplying of outdoor related equipment, or outdoor recreation (including rental outlets,

gear rental, dog services, charter services, guide services, and providers of recreational services such as resorts and hunting lodges.

(2) The sale or possession of terrestrial wildlife or inland fish species that are the subject of a license or permit issued by the Department of Fish and Wildlife.

(3) A construction, demolition, or maintenance related business that may have an impact on terrestrial wildlife or inland fish, or related businesses.

(4) The utilization of natural resources that may have an impact on terrestrial wildlife or inland fish such as mining, oil-related businesses (e.g. production, exploration, transportation, cleanup, or response), logging, dredging, or land development.

(5) The removal, storage, or containment of hazardous materials.

(6) The conservation of terrestrial wildlife or inland fish resources, activities related to mitigation banking, the protection of terrestrial wildlife or inland fish, or the promotion of hunting or outdoor wildlife related recreation (including environmental advocacy, and outdoor activity clubs.).

(c) All investments, positions in business entities, and income (including gifts, loans, and travel payments) from sources that the official knows, are, or will be before the Commission on appeal as to terrestrial wildlife or inland fish issues from the Department of Fish and Wildlife.

(d) All investments, positions in business entities, and income (including gifts, loans, and travel payments) from sources that are the type that receive grants or contracts from, through or are managed by the Commission or that make appearances on behalf of an applicant for funding, or recipient of a grant, related to terrestrial wildlife or inland fish resources from or through the Commission.

<u>* Contractors/Consultants and new positions who make or participate in making governmental decisions as those terms are described in 2 Cal. Code of Regs. Section 18704 shall be included in the list of designated employees and shall disclose pursuant to the broadest disclosure category in the code, Category 1, subject to the following limitation:</u>

<u>The executive director of the Commission may determine in writing that a particular consultant or contractor, although in a "designated position," is hired to perform a range of duties that is limited in scope and thus is not required to fully comply with the disclosure requirements in this section. Such written determination shall include a description of the consultant or contractor's duties and a statement of the extent of disclosure requirements (which category of reporting, if any, that contractor/consultant must use or how the category is tailored to address the specific work). The director's determination is a public record and shall be retained for public inspection in the same manner and location as this conflict of interest code. (Gov. Code Section 81008.)</u>

DUTY STATEMENT

EXECUTIVE DIRECTOR
FISH AND GAME COMMISSION
565-001-0771-401

Under general direction of the Fish and Game Commission, the Executive Director oversees the administration of a critical statewide regulatory program, maintains close contact with legislators, makes operational decisions on budget, personnel, and program management, represents the Commission and performs the following duties.

Percent	Activity
25	Oversees and directs the items that appear on the Commission meeting agenda and coordinates the development of background information on agenda items. Advises the Commission regarding these issues. Briefs the audience on agenda items at the Commission's meetings, facilitates the meetings and assures compliance with the provisions of the Administrative Procedure Act. Conducts public hearings as directed by the Commission. Disseminates information concerning actions of the Commission. Certifies Commission orders and rulemaking files with the Office of Administrative Law for inclusion in the California Code of Regulations.
20	Manages and resolves a wide variety of complex issues, many of which are of a sensitive and controversial nature and which may have legal implications. Represents the Commission in negotiations on issues within its jurisdiction.
15	Maintains liaison with members of the Legislature and legislative committees, the Resources Agency, other boards and commissions, the public, conservation groups, Department administrators, county boards of supervisors and allied agencies, both state and federal. Speaks to a variety of groups on Commission affairs.
10	Responsible for researching and developing for Commission ratification, general policies for the conduct of the Department. Provides interpretation of those policies and ensures compliance.
10	Responsible for legislative proposals and amendments, and being aware of new or proposed legislation that impact the powers, duties and responsibilities of the Commission, and state fish and wildlife conservation activities. Maintains a comprehensive working knowledge of Department programs and operations.

7	Schedules and assists in conducting quasi-judicial license and permit revocation and appeal proceedings and provides legal notification to individuals involved. Provides certified copies of such actions to appropriate entities as requested.
5	Investigates and reports to the Commission members on complaints received relating to Commission rules, regulations or policies and recommends appropriate corrective action. Keeps apprised of statewide resource issues and promotes discussions with the Commission members.
5	Advises the Commission, the Department and the Attorney General's Office regarding the provisions of the Fish and Game Code and related statutes. Schedules matters which require specific action by the Commission. Takes independent action, as required, to implement Fish and Game Code provisions.
3	Prepares and administers the Commission's annual budget.

State of California - Department of Fish and Wildlife
DUTY STATEMENT
DFW 242A (REV. 03/19/14)

☒ **PROPOSED**
☐ **CURRENT**

INSTRUCTIONS: A duty statement and organizational chart must be submitted with each Request for Personnel Action, Form 242	EFFECTIVE DATE: December 1, 2015

CDFW DIVISION/BRANCH/REGION/OFFICE	POSITION NUMBER (Agency-Unit-Class-Serial)
Fish and Game Commission	565-001-7500-001
UNIT NAME AND LOCATION	CLASS TITLE
Fish and Game Commission - Sacramento	Career Executive Assignment (CEA) A
INCUMBENT	CURRENT POSITION NUMBER (Agency-Unit-Class-Serial)

BRIEFLY DESCRIBE THE POSITION'S ORGANIZATION SETTING AND MAJOR FUNCTIONS

The CEA serves as a member of the Fish and Game Commission Executive Leadership Team, working with and on behalf of the Executive Director, and acting in his/her absence. The CEA identifies and directs formulation and development of statewide policies; oversees and directs consistent application and implementation of those policies; and ensures policies are consistent with and support the Commission's mission and goals through collaboration with the Department of Fish and Wildlife (DFW) and Natural Resources Agency. Advises the Executive Director and members of the Commission on matters relating to issue resolution; delivers reports and makes presentations to DFW's Executive Leadership Team, and members of the Commission. Manages the statewide regulatory program, conducts strategic planning, manages media relations and public outreach, and supervises Commission staff.

PERCENTAGE OF TIME PERFORMING DUTIES	INDICATE THE DUTIES AND RESPONSIBILITIES ASSIGNED TO THE POSITION AND THE PERCENTAGE OF TIME SPENT ON EACH. GROUP RELATED TASKS UNDER THE SAME PERCENTAGE WITH THE HIGHEST PERCENTAGE FIRST.
20%	**ESSENTIAL FUNCTIONS** ***Policy Development and Advice.*** Independently and in collaboration with the Executive Director, makes policy decisions on legislative matters and political strategies. Identifies and develops policies on complex resource management issues within the Commission's statutory authority, makes recommendations on policy decisions before the Commission, and reviews and makes recommendations for changes to existing policies. Advises the Executive Director, Commission, DFW's Executive Leadership Team, Natural Resources Agency, and Governor's Office on policy issues concerning fish and wildlife resources.
20%	***Intergovernmental Affairs.*** Represents and independently makes recommendations on behalf of the Executive Director and Commission in a variety of local, state and national settings, including before legislative committees, the DFW Leadership Team and the Ocean Protection Council, and in high-level task forces. Conducts meetings and work sessions with the highest level executive officers within DFW, Natural Resources Agency, other government agencies, and the California State Legislature. Assists the Executive Director in establishing and maintaining cooperative relations with tribes and tribal communities concerned with the conservation of fish and wildlife resources. Works closely with other government agencies to identify opportunities for collaboration on resource conservation and recreational opportunities. Gathers information from DFW, other government agencies, tribes, and stakeholders, and integrates all information to provide Commissioners with recommendations and advice on natural resource policy and regulatory decisions.
20%	***Public Affairs.*** Establishes and maintains cooperative working relationships with constituents concerned with fish and wildlife resources. Works with constituents in collaboration with senior DFW, legislative and Natural Resources Agency staff to help resolve complex policy issues with substantial economic or political ramifications and that significantly affect fish and wildlife resources. Acts as the Commission's ombudsman to

	constituent organizations, hearing and helping settle their concerns and reporting outcomes to the Executive Director and Commission. Represents the Commission in a variety of public settings and in meetings and events with constituent organizations. Manages public communication, education and outreach efforts, and interacts with the media.
15%	***Regulatory Program.*** Oversees the Commission's statewide regulatory program, providing policy direction in creating, modifying and implementing regulations, as well as ensuring California Environmental Quality Act compliance. Effectively coordinates with DFW leadership, government agencies, tribes and stakeholders in identifying potential regulation changes to resolve complex fish and wildlife policy issues. Advises the Executive Director and Commission on policy issues related to the statewide regulatory program.
15%	***Strategic Planning.*** Conducts planning, coordination and implementation of annual Commission programmatic work plan; integrates the programmatic work plan into annual strategic plan tracking and measurement; reviews and makes recommendations for changes to Commission policies in support of the Commission's strategic plan; and reviews and makes recommendations for changes to the strategic plan.
10%	***Administration and Personnel.*** Supervises and directs the work of multidisciplinary professional and administrative staff; analyzes administrative policies, organization and practices to attain common goals; oversees operational processes to promote staff development and retention; and ensures administrative consistency with state policies and regulations, including equal employment opportunity and preventing discrimination and harassment.
	INDICATE THE KNOWLEDGE AND ABILITIES NECESSARY FOR THIS POSITION
	See the minimum qualifications, including knowledge and abilities, for this class at www.calhr.ca.gov/state-hr-professionals/pages/7500.aspx.
	INDICATE THE DESIRABLE QUALIFICATIONS FOR THE POSITION
	• Experience in managing programs and interdisciplinary professional staff • Experience in formulating policies and strategies for complex programs and succinctly explaining the ramifications of recommended actions • Experience in public administration, personnel management, leadership and supervision • Experience in researching, analyzing and presenting information about complex and contentious issues in a clear, concise and logical fashion, both orally and in writing • Experience in developing and maintaining cooperative working relationships with local, state, federal and tribal government agencies, the legislature, the Governor's Office, industry, non-governmental organizations and the public • Experience in proactively and independently taking action, with open-mindedness, flexibility and tact involving sensitive matters and relations • Experience in strategic thinking and planning, setting and attaining goals, and promoting the vision and mission of an organization • Familiarity with California Fish and Game Code, Title 14 of the California Code of Regulations, the Administrative Procedure Act, and the Bagley-Keene Open Meeting Act • Basic understanding of natural resource management issues and trends

	Special Personal Characteristics • Possess a high level of personal integrity and mature judgment • Be self-motivated and willing to work independently • Understand and value inclusive and transparent decision-making • Be flexible, resourceful and adapt to changing priorities • Desire to take on increasing responsibility and learn new things ***Interpersonal Skills*** • Possess excellent oral and written communication skills to interact professionally and courteously with Commissioners, elected officials, the media, staff and the public • Develop and maintain cooperative and respectful working relationships with a diversity of individuals, organizations and other government agencies • Possess willingness to work in a team environment, courteously assist other staff, and ask for help
	INDICATE THE WORKING CONDITIONS FOR THIS POSITION
	• Private office in a smoke-free environment, equipped with a desk, telephone, and computer, as well as nearby printer, copier, scanner and fax • Professional office environment where appropriate business attire is required • Flexible, irregular work hours, including evenings and weekends as needed • Frequent travel throughout California, up to 20% of time • Use of a smart phone, computer, related software applications, and the Internet

SUPERVISOR'S STATEMENT: **I HAVE DISCUSSED THE DUTIES OF THE POSITION WITH THE EMPLOYEE.**

PRINT SUPERVISOR'S NAME	**SUPERVISOR'S SIGNATURE**	**DATE**

EMPLOYEE'S STATEMENT: **I HAVE DISCUSSED WITH MY SUPERVISOR THE DUTIES OF THE POSITION AND HAVE RECEIVED A COPY OF THE DUTY STATEMENT.**

I HAVE READ AND UNDERSTAND THE DUTIES AND ESSENTIAL FUNCTIONS OF THE POSITION AND CAN PERFORM THESE DUTIES WITH OR WITHOUT REASONABLE ACCOMMODATION.

PRINT EMPLOYEE'S NAME	**EMPLOYEE'S SIGNATURE**	**DATE**

BEFORE THE
FISH AND GAME COMMISSION
STATE OF CALIFORNIA

In the Matter of the Permanent Revocation of the Hunting Privileges of: PETER VITALI, Appellant.	Case No. 14ALJ15-FGC OAH No. 2014060844

PROPOSED DECISION

Administrative Law Judge Coren D. Wong, Office of Administrative Hearings (OAH), State of California, heard this matter on July 30, 2015, in Sacramento, California.

Linda Barrera, Staff Counsel, represented the Department of Fish and Wildlife (Department), State of California.

Attorney David A. Grow of the Law Offices of David A. Grow represented appellant Peter Vitali, who was present throughout the hearing.

Evidence was received, and the record was left open for the parties to submit written briefs addressing the admissibility of Exhibit B (a written report from the Department's Wildlife Forensic Laboratory). The parties' briefs were received and marked as Exhibits I (the Department's opening brief), 2 (appellant's opening brief), and J (the Department's reply brief). The record was closed, and the matter was submitted for written decision on August 28, 2015.[1]

[1] After considering the parties' briefs, appellant's objection to Exhibit B is sustained on the grounds of relevance, Exhibit B is not admitted for any purpose, and it was not considered. Appellant was convicted of illegal possession of bear parts for profit or personal gain, not of killing any of the bears whose parts he possessed. Therefore, specific information about the bears whose parts he illegally possessed is not relevant, and only relevant evidence is admissible. (Evid. Code, § 350.) And even if such evidence was relevant to a disputed fact that is of consequence to the determination of this action, it is proper to exclude the evidence because its "probative value is substantially outweighed by the probability that its admission will … create a substantial danger of undue prejudice … ." (Evid. Code, § 352.)

On August 31, appellant filed a request to reopen the record to produce additional evidence and argument regarding the admissibility of Exhibit B. The Department opposed the request. The parties' briefs on the issue were marked as Exhibits 3 and 4 (appellant's request and supplemental brief, respectively) and K (the Department's opposition). Appellant's request to reopen the record is denied as moot since his objection to Exhibit B is sustained.

SUMMARY

The Department seeks to permanently revoke appellant's hunting privileges in the State of California because he was convicted of illegal possession of bear parts for profit or personal gain. Cause exists to permanently revoke appellant's hunting privileges. When all relevant evidence is considered, appellant did not introduce sufficient evidence demonstrating his ability to exercise the privileges granted pursuant to a hunting license in a manner consistent with the Department's mission to manage California's diverse wildlife for the use and enjoyment by the people of the State of California. Therefore, his hunting privileges in the State of California should be permanently revoked.

FACTUAL FINDINGS

Procedural Background

1. On November 25, 2013, Michael P. Carion, Chief of the Law Enforcement Division of the Department, sent correspondence to appellant, which read:

> This letter is to inform you that you are not eligible for bear tags for the 2014/2015 hunting season.
>
> On November 4, 2013 you were convicted in the El Dorado County Superior Court of Fish and Game Code section 12012(a) – illegally possess wildlife parts for profit or personal gain (bear). Fish and Game Code Section 4754 states that a person convicted of a violation involving bear shall not apply for a bear tag for the following license year.
>
> Additionally, please be advised that information regarding the suspension of your bear tag privileges for the 2014/2015 hunting season is being provided to member states of the Wildlife Violator Compact.[2] It is your responsibility to verify your

[2] The Wildlife Violator Compact is an agreement amongst member states to recognize the suspension and revocation of hunting, fishing, and trapping licenses in member states. Therefore, illegal activities in one state can affect a person's hunting or fishing privileges in

revocation status in other member states before attempting the purchase of hunting, fishing and/or trapping licenses. Please see the attached document for contact information.

2. On January 10, 2014, Mr. Carion sent correspondence to appellant, which read:

> On November 4, 2013 you were convicted in the El Dorado County Superior Court of a violation of Fish and Game Code (FGC) section 12012 related to your possession of three bear gall bladders [*sic*] and twenty bear claws for commercial purposes. FGC section 12154 (attached) authorizes the California Department of Fish and Wildlife to suspend or permanently revoke a person's hunting or sport fishing privileges upon a conviction of FGC section 12012. **Pursuant to this authority, your hunting privileges in the State of California are hereby permanently revoked**. You may appeal this revocation to the California Fish and Game Commission pursuant to FGC section 12154(b)(1) by sending a request for an appeal hearing to:
>
> California Fish and Game Commission
> P.O. Box 944209
> Sacramento, CA 94244-2090
>
> Additionally, please be advised that information regarding the suspension of your hunting privileges is being provided to member states of the Wildlife Violator Compact. It is your responsibility to verify your revocation status in other member states before engaging in hunting activities or attempting to purchase any hunting licenses. Contact information of the member states is attached.

(Bold in original.)

3. Appellant timely appealed the Department's decision to permanently revoke his hunting privileges.[3]

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all other member states, and the suspension or revocation of a person's hunting or fishing privileges in one member state could result in the suspension or revocation of his hunting or fishing privileges in all other member states without further violation of the law. California is a member state. (Fish & G. Code, § 716 et seq.)

[3] While no evidence of appellant's appeal was introduced at hearing, a reasonable inference that appellant timely appealed the Department's decision is drawn from the fact

Criminal Conviction

4. On November 4, 2013, in the Superior Court of the State of California, in and for the County of El Dorado, Case No. P13CRF0298, appellant pled no contest to, and was convicted of, a misdemeanor violation of Fish and Game Code section 12012, subdivision (a), illegal possession of bear parts for profit or personal gain. Imposition of sentence was suspended, and appellant was placed on informal probation for three years. He was also ordered to serve 60 days in the El Dorado County Jail, one-half of which was suspended. He was approved for alternative sentencing for the remaining 30 days, and was granted permission to complete such program in the State of Idaho. Appellant was also ordered to pay restitution to the Department in the total amount of $12,500, $5,000 of which was to be paid forthwith while the remaining amount was to be paid at the rate of $208 per month starting December 30, 2013. The court also issued the following order: "Defendant is to only engage in lawful hunting."

5. The factual basis for appellant's conviction arose out of his April 20, 2013 arrest by a Fish and Game warden for possessing three bear livers with the gallbladders attached and 20 bear claws.[4]

6. At hearing, Fish and Game Warden Darrell Stevenson testified about his April 20, 2013 arrest of appellant. That day, he and his partner were on routine patrol when they encountered two men, one of whom was appellant, in what they recognized as a "houndsman's rig."[5] Based on his experience as a Fish and Game warden, Warden Stevenson knew that houndsman's rigs are commonly used to hunt bears. However, bear hunting season had not yet opened in California. Therefore, Warden Stevenson drove his vehicle next to appellant's and engaged him in conversation. During the conversation, appellant denied that he was hunting and said he did not have any firearms with him. During a consensual search, however, Warden Stevenson found a .22 caliber revolver hidden in the back of the truck. When asked, appellant explained that the gun belonged to his passenger. Warden Stevenson found a second .22 caliber revolver in the back of the truck, which appellant admitted was his. Upon further search of the vehicle, Warden Stevenson found a gray/black backpack. Inside the backpack, he found a large plastic bag containing 20 bear claws with fresh blood, another plastic bag containing one bear liver with the gallbladder attached, and a third plastic bag containing two bear livers with the gallbladders attached.

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that the hearing was held and the Department did not object to appellant's appeal as being untimely.

[4] The individual phalanges of one or more bears.

[5] A houndsman's rig is a vehicle, commonly a pickup truck, that is outfitted with a raised platform in the back that hunters who use tracking dogs commonly use. The tracking dogs are usually tethered to the platform while the vehicle is driven in search of game, using the dogs' strong sense of smell. There are locking compartments underneath the platform for transporting the dogs to and from the hunting site.

While appellant claimed to have found the backpack lying in the middle of the road, he identified a flashlight found in the backpack as his. He also stated that a knife found in the backpack belonged to his passenger. Appellant's claim that he found the backpack was not credible.

Additional Evidence at Hearing

7. Eric Crawford, a Senior Conservation Officer/Regional Investigator with the Idaho Department of Fish and Game, testified at hearing. He explained that the State of Idaho is a member of the Wildlife Violator Compact. He first met appellant in April 2014 when appellant voluntarily surrendered his Idaho sportsman license in light of the permanent revocation of his hunting privileges in the State of California.

8. Officer Crawford's most recent contact with appellant prior to hearing occurred on March 3, 2015. That morning, Officer Crawford was on routine patrol for mountain lion and bobcat hound hunters in Clearwater County, Idaho. Snow had fallen early that morning, which often leads to mountain lion and bobcat hound hunters heading out to hunt because it is easier to track their prey by following their footprints in the fresh snow.

Officer Crawford came across a pickup truck parked on the other side of a U.S. Forest service road that was blocked by a locked gate. He observed five hound dogs that were of a breed commonly used to hunt mountain lions and bobcats in the bed of the truck. As he approached the truck, he recognized it as belonging to appellant. When he did not see appellant in or near the truck, he called out appellant's name, and appellant appeared shortly thereafter.

As appellant approached, Officer Crawford engaged him in conversation, which was recorded on Officer Crawford's body camera. Appellant explained that he was "shed" hunting,[6] and denied that he was hunting for mountain lions, bobcats, or any other animal. The only evidence of any firearm appellant had during the encounter was the revolver he told Officer Crawford he had in his truck. He also explained that he had a permit to carry a weapon.

In discussing his criminal conviction, appellant told Officer Crawford: "What I got busted for was really pitiful. It was a terrible thing. And it's totally legal here."

9. During their encounter and at hearing, Officer Crawford accused appellant of illegally hunting on March 3, 2015. He based his accusation on the following facts: 1) it was mountain lion and bobcat hunting season; 2) fresh snow had fallen early that morning, which creates conditions favorable to mountain lion and bobcat hunting; 3) appellant had with him dogs of a breed commonly used for mountain lion and bobcat hunting; and 4) appellant is a "houndsman's man" and hunting is "in his blood." But Officer Crawford's conclusion was supported by nothing other than his supposition and conjecture, which does

[6] Searching for antlers shed by deer, moose, and elk.

not constitute admissible evidence. (*Borders Online, LLC v. State Board of Equalization* (2005) 129 Cal.App.4th 1179, 1188 [mere speculation and conjecture does not constitute admissible evidence].)

10. Officer Crawford did not arrest or issue a citation to appellant for violating any laws on March 3, 2015. No criminal charges had been filed against appellant as a result of his March 3, 2015 conduct as of the date of hearing. After considering all admissible evidence, there was insufficient evidence to support the conclusion respondent was illegally hunting on March 3, 2015.

11. Appellant's wife testified at hearing, and explained that she has known her husband for 38 years and has been married to him for 36 of those years. She, like her husband, is an avid hunter.

12. Mrs. Vitali described her husband as being "very remorseful" over the conduct which led to his criminal conviction. She explained he "breaks down" when discussing his conviction. She also adamantly stated that "he doesn't need rehabilitation" because "he's not a criminal."

13. Appellant did not testify at hearing, and there was no evidence of what he intended to do with the three bear livers with attached gallbladders and 20 bear claws he had in his possession on April 20, 2013.

Discussion

14. Fish and Game Code section 12154, subdivision (b)(1), provides the following with regard to the determination of an appeal of the Department's decision to permanently revoke a person's hunting license privileges: "The commission shall consider at least the nature, circumstances, extent, and gravity of the person's violations, the person's culpability for the violations, and the injury to natural resources by the violations, and may restore a person's hunting or sport fishing license or permit privileges."

15. Here, respondent was convicted of illegally possessing three bear livers with the gallbladders attached and 20 bear claws for profit or personal gain. There was no evidence of what he intended to do with any of those body parts. And while it is irrelevant whether he actually killed the bears to obtain those body parts, it is important to note that bear hunting season was still closed when he was caught. Additionally, he was not truthful with Warden Stevenson when he initially stated he did not have any firearms in his truck. Appellant was also untruthful when he told Warden Stevenson he found the backpack. Furthermore, appellant's description of his criminal conduct as being "pitiful" and "a terrible thing" when describing the basis for his criminal conviction to Officer Crawford demonstrates that he has yet to take full responsibility for such conduct.

16. As explained in the Legal Conclusions below, appellant's conviction for violating Fish and Game Code section 12012 establishes cause to permanently revoke his hunting license privileges. When all the evidence discussed above is considered, appellant did not demonstrate that he is capable of exercising the privileges granted pursuant to a hunting license in a manner consistent with the Department's mission to manage California's diverse wildlife for the use and enjoyment by the people of the State of California. Therefore, his hunting license privileges should be permanently revoked.

LEGAL CONCLUSIONS

Applicable Burden/Standard of Proof

1. The Department has the burden of proving the existence of legal cause to permanently revoke appellant's hunting privileges. (*Mann v. Department of Motor Vehicles* (1999) 76 Cal.App.4th 312, 320 ["[T]he DMV's burden was to prove by a preponderance of the evidence that Mann exercised the privilege of his license in derogation of the public interest"].) And it must do so by a preponderance of the evidence. (*Imports Performance v. Department of Consumer Affairs, Bureau of Automotive Repair* (2011) 201 Cal.App.4th 911, 916-917 [proceedings to discipline a nonprofessional or occupational license "are governed by the preponderance of evidence standard of proof"].)

Once the Department has met its burden, the burden shifts to appellant to demonstrate, by a preponderance of the evidence, that his hunting privileges should not be permanently revoked, despite the existence of legal cause to do so. (*Martin v. Alcoholic Beverage Control Appeals Board of California* (1959) 52 Cal.2d 259; *Southern California Jockey Club v. California Horse Racing Board* (1950) 36 Cal.2d 167; *Breakzone Billiards v. City of Torrance* (2000) 81 Cal.App.4th 1205.)

The Department's reliance on *Housman v. Board of Medical Examiners* (1948) 84 Cal.App.2d 308, for the proposition that appellant bears the burden of proving by clear and convincing evidence to a reasonable certainty that his hunting privileges should be reinstated is misplaced. In *Housman*, the petitioner was a physician who was seeking reinstatement of his license to practice medicine. The court concluded that the petitioner had the burden of proving sufficient rehabilitation to justify reinstating his license by clear and convincing evidence to a reasonable certainty. (*Id.*, at pp. 315-316.) Here, on the other hand, appellant is not seeking reinstatement of his hunting privileges, but is exercising his appellate rights pursuant to Fish and Game Code section 12154, subdivision (b)(1), to challenge the Department's decision to permanently revoke such privileges.

//

Applicable Law

2. Fish and Game Code section 12012, subdivision (a), provides:

> Any person who illegally takes, possesses, imports, exports, sells, purchases, barters, trades, or exchanges any amphibian, bird, fish, mammal, or reptile, or part thereof, for profit or personal gain is guilty of a misdemeanor punishable by a fine of not less than five thousand dollars ($5,000), nor more than forty thousand dollars ($40,000), or imprisonment in the county jail for not more than one year, or by both that fine and imprisonment.

3. "[T]he department may suspend or permanently revoke a person's hunting or sport fishing license or permit privileges" after he has been convicted of violating Fish and Game Code section 12012. (Fish & G. Code, § 12154, subd. (a).) And once the Department take such action, the person may appeal.

> Any person whose privileges are suspended or revoked pursuant to this section may appeal the suspension or revocation to the commission. The commission shall initiate the appeal process within 12 months of the violator's appeal request. The commission shall consider at least the nature, circumstances, extent, and gravity of the person's violations, the person's culpability for the violations, and the injury to natural resources by the violations, and may restore a person's hunting or sport fishing license or permit privileges.

(Fish & G. Code, § 12154, subd. (b)(1).)

Cause for Permanent Revocation

4. Cause exists pursuant to Fish and Game Code section 12154, subdivision (a), to permanently revoke appellant's hunting privileges based on his conviction of violating Fish and Game Code section 12012, subdivision (a), as discussed in Factual Finding 4.

Conclusion

5. When all admissible evidence is considered, appellant did not demonstrate that he is capable of exercising the privileges granted pursuant to a hunting license in a manner consistent with the Department's mission to manage California's diverse wildlife for the use and enjoyment by the people of the State of California for the reasons discussed in Factual Findings 14 through 16. Therefore, his hunting privileges should be permanently revoked.

ORDER

Appellant Peter G. Vitali's hunting privileges are PERMANENTLY REVOKED.

DATED: September 16, 2015

DocuSigned by:
Coren D. Wong
F42876F5E756451...

COREN D. WONG
Administrative Law Judge
Office of Administrative Hearings

LAW OFFICES OF DAVID ANDREW GROW

901 H Street, Ste. 400A
Sacramento, CA 95814

Phone 916-283-5000
Fax 916-492-1707

November 23, 2015

Fish and Game Commission
State of California
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Re: In the Matter of the Appeal of PETER G. VITALI
Case No. 14ALJ15-FGC
OAH No. 2014060844

Dear Commissioners,

Attached please find Appellant's request regarding the proposed decision. I urge you to examine this matter carefully, as I am sure you will. I cannot express to you how strongly I feel that the proposed revocation is unnecessarily punitive.

Mr. Vitali, who is 58 years old, has led a productive law-abiding life. He made a terrible mistake in judgment, which he regrets deeply. Hunting is and always has been his primary source of recreation and is very important to him. Despite the error that brings him before you, he has hunted lawfully and responsibly for many years. He always fully utilizes the animals he hunts and does not engage in 'sport' hunting.

I believe in second chances. I am hopeful, under these circumstances, that the Commission does as well. Hopefully there is some punishment, short of permanent revocation, that will serve the State's interest and adequately punish Mr. Vitali.

Your consideration of this request is greatly appreciated.

Very truly yours,

LAW OFFICES OF DAVID ANDREW GROW

David Andrew Grow

{cc: Linda Barrera, David Bess, James Fong, Sonke Mastrup}

DAVID ANDREW GROW
Law Offices of David Andrew Grow
901 H Street, Suite 400A
Sacramento, CA 95814
(916) 283-5000

Attorney for Peter Vitali

FISH AND GAME COMMISSION
STATE OF CALIFORNIA

In the Matter of	FGC Case No. 14ALJ15-FGC OAH No. 2014060844
PETER G. VITALI, Appellant.	OBJECTION TO AND REQUEST TO VACATE THE OFFICE OF ADMIN-ISTRATIVE HEARINGS PROPOSED DECISION HEARING: DEC 9, 2015

TO THE STATE OF CALIFORNIA FISH AND GAME COMMISSION:

Appellant hereby objects to the Office of Administrative Hearings' proposed decision dated September 16, 2015, and respectfully requests that it be rejected and that the permanent revocation of Appellant's hunting privilege be substantially reduced.

This request is made on the grounds that the permanent revocation recommended in the proposed decision is excessive and is not supported by the evidence presented at the hearing and violates fundamental principles of fairness.

Dated: November 20, 2015 By _____
David A. Grow

SUMMARY:

Appellant is a 58 years old contractor who has been an outdoorsman and hunter all of his life. He has no significant criminal record. He is an experienced hunter and has taught hunting techniques and guided other hunters. He has held various hunting licenses all of his adult life. He has always possessed a valid hunting license. Hunting is his primary recreational activity. He made one mistake, for which he has taken full responsibility, and the California Department of Fish and Wildlife now wishes to permanently revoke his hunting privileges. Because of the interstate compact this decision would permanently terminate his hunting rights in virtually every state, including his home state of Idaho. This proposed punishment is too severe considering the conduct.

Appellant was found guilty, following his plea of no contest, to illegally possessing bear parts; a misdemeanor. The plea followed several months of plea negotiations between Appellant and the El Dorado County District Attorney's Office. As part of the agreement the defendant was to complete volunteer work in Idaho, where he lives, and pay substantial fines and restitution. *The plea agreement was monitored by representatives of the California Department of Fish and Wildlife whom actively participated in the final agreement.*

Evidence of the Department's involvement was introduced at the hearing in the form of an email from the Deputy District Attorney who handled the case, and was acknowledged by Fish and Game Warden Darrell Stevenson, who testified at the hearing.

At no time did the District Attorney's Office or the Department request either suspension or revocation of Appellant's hunting privileges as part of the plea agreement. This was, in part, because of Appellant's lack of a prior record and because the crime was a single incident. Additionally, the court made no orders with respect to Appellant's hunting privileges, having given the matter careful consideration during months of negotiations. As mentioned, Appellant satisfactorily complied with all conditions of his probation regarding this matter.

First Letter:

Following his conviction, Appellant received a letter dated **November 23, 2013**, from Michael Carion, Chief of the Law Enforcement Division of the Department, advising Appellant that he was not eligible for bear tags for the 2014/2015 hunting season. Appellant received the letter and complied.

Second Letter:

On **January 10, 2014**, Mr. Carion sent a **second** letter advising Appellant that his hunting privileges were now ***permanently revoked***, based on the same conduct and conviction in El Dorado County referenced in the November 23rd letter. *In compliance Appellant contacted the Department of Fish and Game in Idaho where he resides and advised them of his revocation*. ***Appellant contacted Idaho Fish and Game on his own in order to comply with any requirements Idaho might have had in this regard.*** Despite Appellant's efforts, the Department argues that Appellant is non-compliant. There is nothing in the record to support this assertion.

Appellant timely appealed and his hearing before the Office of Administrative Hearings' was held on July 30, 2015, before Administrative Law Judge Coren D. Wong. Judge Wong recommended that Appellant's hunting privileges in California be permanently revoked finding:

> *"When all relevant evidence is considered, appellant did not introduce sufficient evidence demonstrating his ability to exercise the privileges granted pursuant to a hunting license in a matter consistent with the Department's mission to manage California's diverse wildlife for the use and enjoyment by the people of the State of California."*

ARGUMENT:

The permanent revocation of Appellant's hunting privileges is too severe a penalty. Appellant has been a lifelong hunter with no significant prior criminal record. He took responsibility for his crime. He satisfied his probation and all orders of the court, including paying a substantial fine which, by statute, goes directly to the Department of Fish and Game. In fact, the fines were paid early before they were due. Appellant subsequently voluntarily notified his home state of Idaho of his revocation after receiving the January 10th revocation letter.

Contrary to assertions made by the Petitioner, Appellant was and is remorseful for his conduct. His wife testified passionately in his defense in this regard at the hearing. He took full responsibility for his actions by pleading no contest in court. All of Appellant's actions following his conviction demonstrated that he took full responsibility

for his conduct. He accepted the punishment imposed by the court and he accepted the sanction imposed by the Department.

Appellant's conviction was for a single misdemeanor count and involved a single hunting violation, for which he received neither jail time nor suspension of his hunting privileges. The District Attorney's Office made no request in this regard. **An email was accepted as evidence at the hearing demonstrating that the Department was involved in the final plea agreement with the court.** Appellant relied, in good faith, on all of these actions in making his decision to plead to the charge. It is patently unfair for the Department to, under these circumstances, seek a permanent revocation of Appellant's hunting privileges.

While the Department has the authority to do so, under these facts it is unfair and the penalty excessive. The Administrative Law Judge concluded that Respondent *'did not demonstrate his ability to exercise his hunting privilege.'* This assertion is not supported by the evidence introduced at the hearing, the defendant's compliance with all orders of the court concerning his criminal conviction, and his lifetime of compliance with hunting laws.

The Department pointed to a taped conversation with Idaho Conservation Officer Eric Crawford during which Respondent stated *"what I got busted for was really pitiful. It was a terrible thing. And it's totally legal here."* This partial statement was from a lengthy conversation Appellant had with Officer Crawford.

At the hearing the Department argued that this statement evidenced that Appellant had no remorse. It should be noted that *the recording of the statements was taken surreptitiously by Officer Crawford and that Appellantt did not know he was being recorded.* Clearly the statement is capable of more than a single interpretation and alone would not support a conclusion that Appellant was not remorseful for his conduct. It should be noted that the Judge rejected Officer Crawford's opinion that Appellant was unlawful hunting on the date of the contact.

The facts and circumstances surrounding this case and the Appellant's background and character do not warrant a permanent revocation of Appellant's hunting privilege. The Commission should use its discretion and reject the proposed decision and substantially reduce Appellant's punishment.

Dated: November 20, 2015

By _____
David A. Grow

DAVID ANDREW GROW
Law Offices of David Andrew Grow
901 H Street, Suite 400A
Sacramento, CA 95814
(916) 283-5000

Attorney for Peter Vitali

FISH AND GAME COMMISSION
STATE OF CALIFORNIA

In the Matter of	FGC Case No. 14ALJ15-FGC OAH No. 2014060844
PETER G. VITALI, Appellant.	DECLARATION OF COUNSEL

I am the attorney for Appellant, Peter G. Vitali.

1. I represented Mr. Vitali in both his criminal matter in El Dorado County and at the Administrative Hearing, which is the subject of this Request. I am familiar with the proceedings and facts surrounding this case.

2. The assertions contained in this request are based upon events and evidence presented at the Hearing.

I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed on November 23, 2015, in Sacramento, California.

By: _____

David A. Grow

Attorney for Appellant

State of California – Natural Resources Agency
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
1416 9th Street, Ste. 1341
Sacramento, CA 95814
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

November 30, 2015

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Subject: Response to Appellant's Request Regarding Proposed Decision, *In the Matter of the Permanent Revocation of the Hunting Privileges of Peter G. Vitali*, Case No. 14ALJ15-FGC, OAH No. 2014060844.

Dear Commissioners:

Thank you for the opportunity to respond to Appellant's (Peter Vitali) request regarding the Proposed Decision of Administrative Law Judge Coren D. Wong dated September 16, 2015 ("Proposed Decision"), *In the Matter of the Permanent Revocation of the Hunting Privileges of Peter G. Vitali,* in a letter submitted by David Andrew Grow on behalf of Peter Vitali on November 23, 2015. The Department of Fish and Wildlife ("Department") strongly agrees with the Proposed Decision and respectfully requests that the Fish and Game Commission ("Commission") permanently revoke Peter Vitali's hunting privileges.

There is no dispute that Mr. Vitali was convicted for possessing three black bear gall bladders and twenty bear claws for profit in violation of Fish and Game Code section 12012 ("Section 12012"), subdivision (a). Pursuant to Fish and Game Code section 12154 ("Section 12154"), the Department permanently revoked Mr. Vitali's hunting license. The issue before the Commission is whether to restore Peter Vitali's hunting privileges. Section 12154, subdivision (b) requires that the Commission "consider at least the nature, circumstances, extent, and gravity of the person's violation, the person's culpability for the violations, and the injury to natural resources by the violation" when determining whether to "restore a person's hunting license or permit privileges."

As determined by Judge Wong, the Department successfully demonstrated to the hearing officer that Mr. Vitali's hunting license should remain revoked. The following exhibits (attached) and hearing testimony admitted into evidence during the administrative hearing proves that Mr. Vitali violated Section 12012(a) and demonstrates the gravity of Mr. Vitali's violation and lack of remorse and rehabilitation.

- Exhibit A - Arrest report prepared by Warden Darrell Stevenson and photographs of the evidence seized from Mr. Vitali's backpack and pickup truck on April 20, 2013. This evidence shows that Mr. Vitali possessed three bear livers with attached gall bladders and 20 bear claws

along with three bloodied knives, one pair of gloves, and a camo flashlight in a backpack hidden inside the ceiling of a dog box in the back of his pickup truck. The evidence shows that Mr. Vitali was not truthful when he told Warden Stevenson that Mr. Vitali found the backpack containing the bear parts, and that Mr. Vitali had attempted to hide the bear parts from law enforcement officials.

- Exhibit B - Superior Court of El Dorado County disposition of criminal case No. P13CRF0298. This evidence shows that on November 4, 2013, Mr. Vitali pled *nolo contendre* to violating Section 12012(a) in the Superior Court of El Dorado County. A *nolo contendre* plea is a conviction of a violation of the Code under Fish and Game Code section 12158.5 for the purpose of invoking any provision of the Code relating to the revocation of any license. This evidence also shows that Mr. Vitali was placed on court probation for a period of 36 months for the convicted charge and required to "obey all laws" and "only engage in lawful hunting."
- Exhibit C - Letter from the Department to Peter Vitali dated January 10, 2014. This evidence shows that because of the egregious poaching by Mr. Vitali, the Department exercised its authority under Section 12154 subdivision (a) to permanently revoke Mr. Vitali's hunting license upon conviction of Section 12012.
- Exhibit D - Includes the declaration of Eric Crawford, a regional investigator with the Idaho Department of Fish and Game, Crawford's investigation report, and photographs taken on March 3, 2015. This evidence establishes that the Idaho Department of Fish and Game revoked Mr. Vitali's hunting license pursuant to the Wildlife Violator Compact. This evidence shows that on March 3, 2015, after the revocation of his Idaho hunting privileges, Mr. Vitali was driving a pickup truck behind closed and locked gates on U.S. Forest Service roads after a fresh snow and was carrying dog boxes with five hound dogs commonly used to hunt mountain lions and bobcats. Neither season was open. This evidence also shows that Mr. Vitali attempted to hide his identity by removing his vehicle's rear license plate and allowing it to swing under the rear bumper area of the truck; there was no license plate visible on the front of the vehicle.
- Exhibit E - A video recording of the conversation between Investigator Crawford and Mr. Vitali on March 3, 2015. This evidence shows Mr. Vitali describing his criminal conduct in California as

"what I got busted for is really pitiful and an awful thing. It's totally legal here [in Idaho]."[1] This evidence demonstrates that Mr. Vitali showed no remorse for his wildlife poaching conviction in California or respect for California's bear harvest restrictions.

- Testimony of Warden Darrell Stevenson. Warden Stevenson testified that based on his observations, Mr. Vitali possessed claws, a liver, and a gall balder removed from a female bear and two livers with attached gall bladders removed from two young bears. Warden Stevenson testified that the young bears were likely the cubs of the female bear. He explained that the bear hunting season is open approximately from September through December, and taking bears is prohibited during other times of the year. (California Code of Regulations, Title 14 ("Title 14"), section 365 ("Section 365"), subd. ((b).) Warden Stevenson also explained that Mr. Vitali was not only caught with fresh bear parts outside of the bear hunting season, but he killed a female bear and her cubs when they were at their most vulnerable – waking up from hibernation and barely coming out of their den. In California, cubs and females accompanied by cubs may not be taken. (Section 365, subd. (c).) Warden Stevenson also testified that Mr. Vitali did not return to the Department the report card portions of bear license tag for any of the bears he killed. In California, every person who takes a bear shall immediately fill out and return the report portion of the bear license tag. (Title 14, section 708.12, subds. (a) and (b).)
- Cross examination of Mrs. Cherri Vitali. Ms. Vitali testified that she is an expert hunter and regularly accompanied her husband (Peter Vitali) to harvest bears. Ms. Vitali's inconsistent statements regarding how many bears she and her husband had harvested when they lived in California, and whether or not they had returned bear tags after killing a bear, demonstrate that Mr. Vitali had a penchant for disregarding the Department's hunting regulations. Ms. Vitali's testimony also failed to show that Mr. Vitali is truly remorseful or apologetic as she insisted that Mr. Vitali was "not guilty" of the crime and adamantly stated that "he doesn't need rehabilitation" because "he's not a criminal."

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[1] Mr. Vitali also claims that "the recording of the statements was taken surreptitiously by Officer Crawford and that Appellant did not know he was being recorded." (Peter Vitali's November 23, 2015, letter to the Fish and Game Commission ("Vitali's Letter"), p. 6.) Idaho law allows such recordings by law enforcement officers.

Mr. Vitali's objection to the Proposed Decision mischaracterizes the facts presented at the hearing and should be rejected because he failed to demonstrate that his hunting privileges should not be permanently revoked. The Proposed Decision concludes:

> "When all admissible evidence is considered, appellant did not demonstrate that he is capable of exercising the privileges granted pursuant to a hunting license in a manner consistent with the Department's mission to manage California's diverse wildlife for the use and enjoyment of the people of the State of California for the reasons discussed in Factual Findings 14 through 16. Therefore, his hunting privileges should be permanently revoked."

The Department fully agrees with the Proposed Decision and accordingly, respectfully requests that the Commission adopt it in its entirety.

I. Response to Vitali's Letter

a) Mr. Vitali Has Failed to Show that He Has Taken Full Responsibility for His Prior Misconduct

In his November 23, 2015 letter, Mr. Vitali claims that all of his actions following his conviction demonstrate that he took full responsibility for his conduct.[2] However, Exhibit F shows that only five months before the hearing on this matter Mr. Vitali stated that "what [he] got busted for is really pitiful" and "it's totally legal [in Idaho].[3]" These statements were videotaped by Investigator Crawford and were admitted into evidence at the hearing. These statements show Mr. Vitali's disregard for California wildlife law and important bear hunting regulations. At the hearing, Mr. Vitali did not apologize for his prior misconduct or for prior statements that demonstrate a lack of remorse for his conviction.

Mr. Vitali also claims that his wife's testimony shows that he is remorseful for his conduct.[4] However, as discussed above, Mrs. Vitali's testimony did not show that Mr. Vitali is apologetic for his crime. In fact, despite stating that her husband was "very remorseful" over the conduct which led to his criminal conviction, Mrs. Vitali insisted that her husband was not guilty of the crime and adamantly stated that "he doesn't need rehabilitation."[5] After inconsistent statements are made such as the ones made by Mr. Vitali's closest family member and hunting partner, it is difficult to conclude that Mr. Vitali is truly remorseful of his actions and is capable of complying with California hunting laws and regulations.

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[2] Vitali's Letter, p. 4.
[3] Exhibit F-A, Report of Investigation, p. 3.
[4] Vitali's Letter, p. 4.
[5] Proposed Decision, Factual Findings No.12, p. 6.

Mr. Vitali argues that the Proposed Decision's assertion that he did not demonstrate an ability to exercise his hunting privilege is not supported by the evidence introduced at the hearing.[6] Yet, the evidence introduced by the Department at the hearing shows that Mr. Vitali has repeatedly been untruthful with law enforcement officers regarding his hunting activities[7] and therefore cannot be trusted to abide by the state's wildlife laws and regulations. Because Mr. Vitali was not successful in conveying this argument to Judge Wong before the record on this matter was closed, he now seeks to convince the Commissioners that he is remorseful of his conduct. It is important to note that Mr. Vitali's letter to the Commission does not discuss why he is remorseful or acknowledge the impact of his illegal conduct on the Department's management of bears in California. In fact, at no time during the hearing or in Mr. Vitali's letter does he express regret for hunting bears outside of the hunting season, killing a female bear accompanied by her cubs and killing her cubs in violation of Department's regulations, or for failing to fill out and return bears tags upon killing a bear.

Mr. Vitali now also argues that permanent revocation to his hunting privileges is too severe because he has satisfied his probation and all orders of the court.[8] Exhibit B shows that Mr. Vitali's November 2013 conviction and court order placed him on probation for a period of 36 months following his conviction in November 2013 and requires him to "obey all laws" and "only engage in lawful hunting." Although the Proposed Decision found there was insufficient evidence to conclude that Mr. Vitali was in fact illegally hunting in Idaho while permanently revoked in that state, the video recording in Exhibit F showing Mr. Vitali's behavior – hiding the license plate on his pickup truck, driving his pickup truck behind closed and locked gates on U. S. Forest Service roads after a fresh snow, carrying dog boxes with five hound dogs commonly used to hunt mountain lions and bobcats, and stating that "what I got busted for is really pitiful and an awful thing. It's totally legal here" – strongly suggests that Mr. Vitali cannot be trusted to obey all laws and therefore comply with terms of his probation.[9] The Department notes that Mr. Vitali continues to be subject to a three year court probation which ends in November 2017. As such, until his court probation ends, Mr. Vitali cannot claim that he has fulfilled all the terms of his probation and court order.

The Department has a legitimate and vital interest in ensuring that Mr. Vitali can no longer engage in activities which significantly impact the Department's management of bears for the use and enjoyment of the people of the State of California. An appellant who makes no effort to acknowledge the consequences of his misconduct and impact on wildlife resources should not have his hunting

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[6] Vitali's Letter, p. 5.
[7] Proposed Decision, Factual Findings No. 15, p. 6.
[8] Vitali's Letter, p. 4.
[9] Exhibit F, Report of Investigation, pp. 1-5; *see also* Video Recording.

privileges restored. Based on all the foregoing facts, there is no basis for the Commission to find that Mr. Vitali is entitled to have his hunting privileges restored in California.

b) Vitali's Claims Regarding Department Involvement in Plea Negotiations Are False

In his November 23, 2015 letter, Mr. Vitali claims that the Department actively participated in the final plea agreement with the court.[10] Mr. Vitali argues that it is unfair for the Department to seek a permanent revocation of his hunting privileges given that it allegedly was involved in the final plea agreement.[11] Yet, at the hearing, Warden Stevenson unequivocally stated that he did not participate in any plea negotiations or provide any input concerning Mr. Vitali's plea agreement. The Department was not a party to the agreement between Mr. Vitali and the El Dorado County District Attorney's Office, and it had no involvement in setting the terms of Mr. Vitali's probation terms. Mr. Vitali has failed to provide evidence that shows the contrary. After Mr. Vitali offered an exhibit into evidence that shows an email dated November 1, 2013, between Mr. Vitali's counsel and Ms. Jodi Jensen, the prosecutor assigned to the criminal case, Warden Stevenson testified that he did not discuss any plea agreement with Ms. Jensen concerning Mr. Vitali's criminal case. Most importantly, the email that Mr. Vitali introduced into evidence does not state that the Department was a party to the plea agreement, nor does it state that the Department set the terms of Mr. Vitali's court probation.

Mr. Vitali's supposition that the Department approved a plea agreement that would allow Mr. Vitali to engage in lawful hunting is incorrect. The El Dorado County District Attorney's Office and the superior court were the only entities with authority to approve the resolution of Mr. Vitali's criminal case, and he voluntarily agreed to terms of his plea conviction and court probation. Upon Mr. Vitali's criminal conviction, the Department exercised its authority to permanently revoke his hunting privileges pursuant Section 12154, subdivision (a). For the reasons explained above. Mr. Vitali's criminal conviction and his conduct post-conviction demonstrate that he is not entitled to have his hunting privileges restored.

Conclusion

Mr. Vitali illegally possessed three black bear gall bladders and twenty bear claws for profit. This violation and abuse of his hunting privileges and state resources were so severe, that the Department properly exercised its authority pursuant to Section 12154 and permanently revoked his hunting privileges.

In his letter, Mr. Vitali did not claim that the nature, circumstances, extent, and gravity of his violations, his culpability for the violations, and the injury to natural resources caused by the violations

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[10] Vitali's Letter, pp. 2 and 5.
[11] Vitali's Letter, p. 5.

show that the Commission should restore his privileges. Instead, he claims that he has taken full responsibility for his violations, a claim contradicted by his failure to apologize, his statement to Investigator Crawford that "what [he] got busted for is really pitiful," and the testimony of his wife in which she stated that her husband was not guilty of the crime and that he "doesn't need rehabilitation." He also claims that the Commission should restore his privileges because an agreement between him and the District Attorney's office did not mention revocation as a punishment, and it is therefore unfair to revoke his privileges now. This claim is also unpersuasive because the Department was not a party to that agreement.

The evidence presented at the hearing demonstrates that Mr. Vitali is incapable of exercising the privileges granted pursuant to a hunting license in a manner consistent with the Department's mission to manage California's diverse wildlife for the use and enjoyment of the people of the State of California. The Department respectfully requests that the Commission adopt the Proposed Decision in its entirety and sustain the Department's permanent revocation of Mr. Vitali's hunting privileges in California.

Sincerely,

Attorney for the California
Department of Fish and Wildlife

Cc: David Andrew Grow
Attorney for Peter Vitali

A

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

ARREST/INVESTIGATION REPORT

ENF 6a (4-04)

Region # NED Page 1 Of 5

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
04/20/2013	1100	NF 63, Cat Creek Road, El Dorado County

"X" ONE: ☐ Arrest Report ☒ Formal Complaint

"X" ONE: ☒ Self Initiated ☐ Complaint

TYPE OF REPORT ("X" APPLICABLE): ☐ Commercial Fishing ☒ Hunting ☐ Inland Pollution ☐ CalTIP ☐ Recreational Fishing ☐ Trapping ☐ Marine Pollution ☒ Other

Other: Unlawful take/poss/of bear/poss of bear parts for sale

Suspect Information

Name Suspect #1 (First, Middle, Last)	Sex	Date of Birth (MM/DDIYY)	Citation Number
Peter George Vitali	☒ M ☐ F		AD1823713

Suspect Address (Street, Apt, City, State, Zip Code): P.O. Box 681, Pioneer, CA. 95666 — Home Phone:

Business Address (Street, Apt., City, State, Zip Code): Idaho address; — Business Phone:

Identification Type ("X"APPLICABLE): ☐ CDL/CID ☒ Other State DL/ID ☒ Other ID: _____ Number: _____

Suspect Description ("X"APPLICABLE)

General: Height: _____ Weight: _____

Hair: ☐ Bln ☐ Blk ☒ Brn ☐ Gry ☐ Red ☐ None

Eyes: ☒ Blu ☐ Brn ☐ Grn ☐ Hzl

Ethnicity: ☐ Asian ☐ Black ☐ Hispanic ☒ White ☐ Other: _____

Vehicle Type ("X" APPLICABLE): ☒ Auto ☐ Vessel ☐ Other

Description (Make, Model, Year, Color): 1984 Toyota SR-4WD pickup, Tan in color

License Plate Number/VIN:

Offenses and Charges

☒ F&G ☐ T-14 ☐ Other: _____ Section: 4758(a) Description: Unlawful possession for sale bear claws	☒ F&G ☐ T-14 ☐ Other: _____ Section: 2002 Description: Unlawful possession of bear(s)
☒ F&G ☐ T-14 ☐ Other: _____ Section: 4758(b) Description: Unlawful possession of more than one bear gall	☐ F&G ☐ T-14 ☐ Other: _____ Section: _____ Description:
☒ F&G ☐ T-14 ☐ Other: _____ Section: 2000 Description: Unlawful take of bear(s)	☐ F&G ☐ T-14 ☐ Other: _____ Section: _____ Description:

Evidence Seized

Evidence Description (Amount, Type, Serial Number, etc.)	"X" ONE	Evidence Photographed?
See attached evidence receipts and photos, Vitali Cit# AD1823713	☒ Held ☐ Returned ☐ Destroyed ☐ Other	☒ Yes ☐ No
See attached evidence receipts and photos, Blake Cit# AD1823762	☒ Held ☐ Returned ☐ Destroyed ☐ Other	☒ Yes ☐ No
	☐ Held ☐ Returned ☐ Destroyed ☐ Other	☐ Yes ☐ No

Case Synopsis

On 04-20-13 at approximately 1100 hours, the above subjects Peter George Vitali and Arthur Martin Blake(page 2) were contacted by Fish and Wildlife Wardens on National Forest Road 63(Cat Creek Road),6/10ths of a mile north west of Highway 88, El Dorado County. Vitali and Blake had three hound dogs, two .22 caliber revolvers, 20 large bear claws and three bear livers with gall bladders attached. Both Vitali and Blake were arrested and booked into the El Dorado County Jail, their vehicle was impounded and stored as evidence and the three dogs were taken by Animal Control. Vitali and Blake were in violation of sections 2000, 2002, 4758 (a) and 4758(b) of the Fish and Game Code. See attached narrative, supplements for further.

See ENF 6b For Additional Suspect and Witness Information "x"ONE ☒ Yes ☐ No

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Darrell Stevenson #366	04/22/2013		

PROSECUTING AGENCY --- (WHITE) REGION --- (GOLDEN ROD) ADMINISTRATIVE USE --- (GREEN) OFFICER --- (BLUE)

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

SUPPLEMENTAL SUSPECT/WITNESS INFORMATION

ENF 6b (4-04) Region # NED Page 2

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT	D/
04/20/13	1100	NF 63, Cat Creek Road, El Dorado County	C

Additional Suspect Information

Name Suspect #2 (First, Middle, Last)	Sex	Date of Birth (MM/DD/YY)	Citation Number
Arthur Martin Blake	☒ M ☐ F		AD1823762 /

Suspect Address (Street, Apt., City, State, Zip Code)	Home Phone
P.O. Box 9, River Pines, CA. 95675 / NF 10N83K	

Business Address (Street, Apt., City, State, Zip Code)	Business Phone
N/A	N/FN/

Identification Type (*"X"APPLICABLE*)
☒ CDL/CID ☐ Other State DL/ID
☐ Other ID: _____
Number: _____

Suspect Description (*"X"APPLICABLE*)
General: Height: _____ Weight: _____
Hair: ☐ Bln ☐ Blk ☒ Brn ☐ Gry ☐ Red ☐ None
Eyes: ☐ Blu ☒ Brn ☐ Grn ☐ Hzl
Ethnicity: ☐ Asian ☐ Black ☐ Hispanic ☒ White ☐ Other: _____

Vehicle Type ("x"APPLICABLE)	Description (Make, Model, Year, Color)	License Plate Number/VIN
☐ Auto ☐ Vessel ☐ Other		

Name Suspect #3 (First, Middle, Last)	Sex	Date of Birth (MM/DD/YY)	Citation Number
	☐ M ☐ F		

Suspect Address (Street, Apt., City, State, Zip Code)	Home Phone

Identification Type (*"X"APPLICABLE*)
☐ CDL/CID ☐ Other State DL/ID
☐ Other ID: _____
Number: _____

Suspect Description (*"X"APPLICABLE*)
General: Height: _____ Weight: _____
Hair: ☐ Bln ☐ Blk ☐ Brn ☐ Gry ☐ Red ☐ None
Eyes: ☐ Blu ☐ Brn ☐ Grn ☐ Hzl
Ethnicity: ☐ Asian ☐ Black ☐ Hispanic ☐ White ☐ Other: _____

Name Suspect #4 (First, Middle, Last)	Sex	Date of Birth (MM/DD/YY)	Citation Number
	☐ M ☐ F		

Suspect Address (Street, Apt., City, State, Zip Code)	Home Phone

Identification Type (*"X"APPLICABLE*)
☐ CDL/CID ☐ Other State DL/ID
☐ Other ID: _____
Number: _____

Suspect Description ("X"*APPLICABLE*)
General: Height: _____ Weight: _____
Hair: ☐ Bln ☐ Blk ☐ Brn ☐ Gry ☐ Red ☐ None
Eyes: ☐ Blu ☐ Brn ☐ Grn ☐ Hzl
Ethnicity: ☐ Asian ☐ Black ☐ Hispanic ☐ White ☐ Other: _____

Witness Information

Name Witness #1 (First, Middle, Last)	Sex	Date of Birth (MM/DD/YY)	Identification Number
Warden L. Gregory	☐ M ☒ F		#591

Witness Address (Street, Apt., City, State, Zip Code)	Home Phone
Department of Fish and Wildlife,1701 Nimbus Road, Rancho Cordova, CA. 95670	

Name Witness #2 (First, Middle, Last)	Sex	Date of Birth (MM/DD/YY)	Identification Number
Warden E. Elliott	☒ M ☐ F		#458

Witness Address (Street, Apt., City, State, Zip Code)	Home Phone
Department of Fish and Wildlife,1701 Nimbus Road, Rancho Cordova, CA. 95670	

Name Witness #3 (First, Middle, Last)	Sex	Date of Birth (MM/DD/YY)	Identification Number
	☐ M ☐ F		

Witness Address (Street, Apt., City, State, Zip Code)	Home Phone

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Darrell Stevenson #366	04/22/2013		

PROSECUTING AGENCY --- (WHITE) REGION --- (GOLDEN ROD) ADMINISTRATIVE USE --- (GREEN) OFFICER --- (BLUE)

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NARRATIVE/SUPPLEMENTAL

ENF 6a p.2 (Rev 4-04) Region# NED

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
04/20/2013	1100	NF 63, Cat Creek Road, El Dorado County

"X"APPLICABLE
☒ Narrative ☒ Arrest Report
☐ Supplemental ☒ Formal Complaint

TYPE OF REPORT *("X"APPLICABLE)*
☐ Commercial Fishing ☒ Hunting ☐ Inland Pollution ☐ Incident Report
☐ Recreational Fishing ☐ Trapping ☐ Marine Pollution ☒ Other
Other: Unlawful take/poss. of bear(s)/poss of bear parts for sale

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
NF 63, Cat Creek Road/ Peter Vitali & Arthur Blake/4758 F&G	Stevenson #366	AD1823713,762

On 04-20-2013 at approximately 1100 hours, Warden L. Gregory #591& I were in uniform and in a marked Fish and Game patrol vehicle. Traveling north west along National Forest Road 63, Cat Creek Road, El Dorado County 6/10th of one mile north west of Highway 88, I observed a light tan colored Toyota pickup occupied by two white male adult subjects. The vehicle was stopped along the right shoulder of NF 63 and headed in a south east direction. We immediately recognized the vehicle as a "houndsman's rig". I observed carpet with a chain on the hood of the vehicle and dog boxes on the rear. I pulled along side and spoke with the driver. I asked if he had any dogs in the vehicle and he told me he had three dogs in the boxes in the rear of the vehicle. I immediately exited my vehicle. I asked the driver if he was hunting and he told me no. He stated the dogs were on the boxes earlier in the morning. Currently, the use of dogs for pursuit/take of mammals or for dog training is closed(section 265(4) CCR, T-14). The area where contact was made is in the Central California Dog Control Zone(section 265(A) CCR, T-14).

I asked the driver if he had any firearms and he replied no. I asked the driver and right front passenger for identification. The driver was identified as Peter George Vitali through Idaho DL. The passenger was identified as Arthur Martin Blake through CDL. I recognized Vitali from previous contacts. He told me he is in the process of moving to Idaho and that is why he had an Idaho Driver's License. I asked Vitali if there were any firearms or game in the vehicle and he told me no. I asked if we could take a look and he replied go ahead. I had both Vitali and Blake step out.

I visually inspected the front cab driver's side, while Warden Gregory talked with suspect Blake and inspected the passenger side of the vehicle. I inspected a tool box directly behind the cab and observed two ice chests, one on driver's side and the other on the passenger side. I found food and beer in both. I moved around to the back of the pick-up and

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Darrell Stevenson #366	04/22/2013		

PROSECUTING AGENCY --- *(WHITE)* REGION --- *(GOLDEN ROD)* ADMINISTRATIVE USE --- *(GREEN)* OFFICER --- *(BLUE)*

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NARRATIVE/SUPPLEMENTAL

WPD 6a p.2 (Rev 10-98) Region# NED

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
04/20/2013	1100	NF 63, Cat Creek Road, El Dorado County

"X" APPLICABLE
☒ Narrative ☒ Arrest Report
☐ Supplemental ☒ Formal Complaint

TYPE OF REPORT ("X" APPLICABLE)
☐ Commercial Fishing ☒ Hunting ☐ Inland Pollution ☐ Incident Report
☐ Recreational Fishing ☐ Trapping ☐ Marine Pollution ☒
Other: Unlawful take/poss. of bear(s)/poss of bear parts for sale

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
NF 63, Cat Creek Road/ Peter Vitali & Arthur Blake/4758 F&G	Stevenson #366	AD1823713,762

peered through the holes on the back of the dog boxes. I observed two dogs in the passenger side box and one dog in the drivers side box. At which time, I observed a brown paper shopping bag covered with a brown plastic shopping bag in the box.

I put the tailgate down and opened the drivers side box. I removed the brown shopping bag. Inside I observed a .22 caliber revolver in a black nylon holster in the bag. I showed the revolver to Vitali and told him, I thought you didn't have any firearms. He told me the handgun belonged to Blake.

I then observed a grey/black back pack further back inside the dog box. I had Vitali remove all three of his dogs. I retrieved the back pack and inspected it. Inside I found one large plastic bag containing 20 bear claws with fresh blood, one large plastic bag containing one liver with gall bladder attached and another plastic bag containing 2 livers with gall bladders attached. In addition, amongst other items,the backpack contained one pair of dried blood stained leather gloves, one Cabela's camo flashlight with dried blood on the handle, 3 knives (one with dried blood and hair at base of blade). Suspect Vitali told me the camo flashlight was his and one of the knives belonged to Blake. He further told me he found the backpack lying in the middle of the road.

Inside the the passenger side dog box, I found a second .22 caliber revolver in a black leather holster, which was bungee chorded to the top of the dog box unable to view, but accessible. Vitali indicated the revolver was his. I inspected both firearms and found they were unloaded. Vitali and Blake were taken into custody for several violations of the Fish and Game Code, the dogs were taken by Amador County Animal Control and the Toyota pick-up was seized and towed by Amador Towing and Recovery.

See Wardens L. Gregory and E. Elliott's attached supplemental reports and copies of evidence photos attached.

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Darrell Stevenson #366	04/22/2013		

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NARRATIVE/SUPPLEMENTAL

WPD 6a p.2 (Rev 10-98) Region# NED

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
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Other: Unlawful take/poss. of bear(s)/poss of bear parts for sale

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
NF 63, Cat Creek Road/ Peter Vitali & Arthur Blake/4758 F&G	Stevenson #366	AD1823713,762

63. Pursuant to subsection (h)(1) of the Penal Code 1170 and respectively, the
64. Department of Fish and Wildlife (Game) respectfully requests the following
65. charges be filed against Peter G. Vitali and Arthur M. Blake
66.
67. One each felony count of Section 4758(a) Fish and Game Code - It is unlawful to
68. sell or purchase, or possess for sale, the meat, skin, hide, teeth, claws, or other parts
69. of any bear in this state.
70.
71. One each felony count of Section 4758(b) Fish and game Code - The possession of
72. more than one bear gall bladder is prima facie evidence that the bear gall bladders
73. are possessed for sale.
74.
75. Section 2000 Fish and Game Code- Unlawful take of mammal. Possession of
76. mammal or parts thereof in or on the fields, forests, or waters of this state, or while
77. returning therefrom with hunting equipment is prima facie evidence the possessor
78. took the mammals or parts thereof.
79.
80. Section 2002 Fish and Game Code- It is unlawful to possess a mammal or parts
81. thereof, taken in violation of any of the provisions of this code, or of any regulation
82. made under it.
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Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Darrell Stevenson #366	04/22/2013		

PROSECUTING AGENCY --- (WHITE) REGION --- (GOLDENROD) ADMINISTRATIVE USE --- (GREEN) OFFICER --- (BLUE)

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

ARREST/INVESTIGATION REPORT

WPD 6b p.2 (10-98) Region # NED

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL JURISDICTION	
04/20/2013	1100 hours	El Dorado / El Dorado / El Dorado Superior Court	

"X" ONE	"X" ONE	TYPE OF REPORT ("X" *APPLICABLE*)	
[] Arrest Report [] Formal Complaint [X] Supplemental	[X] Self Initiated [] Complaint	[] Commercial Fishing [X] Hunting [] Inland Pollution [] CalTIP [] Recreational Fishing [] Trapping [] Marine Pollution [] Other	[ ] Arrest [ ] Su

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
Cat Creek Road / Arthur Martin Blake & Peter George Vitali	Warden Darrell Stevenson #336	AD1823761

On 04/20/2013, I was in uniform on patrol in a marked vehicle with Warden Darrell Stevenson #336 in El Dorado and Amador Counties. At approximately 1100 hours, we made contact with Peter George VITALI and Arthur Martin BLAKE parked in a Toyota truck on Cat Creek Road in El Dorado County.

Warden Stevenson made contact with the owner/driver, later identified as VITALI. He asked and received permission to search the Toyota truck from VITALI. While Warden Stevenson was searching the vehicle, I acted as a cover officer and asked the passenger, later identified as BLAKE to step out of the vehicle.

BLAKE and I were standing near the hood of the Toyota, while Warden Stevenson inspected the bed of the truck which contained a large dog box with three dogs. I asked BLAKE if they had any guns in the truck. He said, "Maybe." I asked him again, if they have guns in the truck. He stated there were two guns in the truck, one handgun belonged to him (not registered) and the other handgun belonged to VITALI. He told me he bought the handgun and never registered the firearm. I asked BLAKE for the location of the guns in the truck. He stated they were in the bed of the truck.

Before I could relay the information to Warden Stevenson regarding the handguns, Warden Stevenson found the two handguns, a backpack containing zip lock bags filled with Bear organs ((3) Liver and Gallbladders) and (20) Bear Claws in the dog box. While Warden Stevenson was holding the bags up for me to see, I asked BLAKE if he knew what was in the zip lock bags. He stated it was Bear parts.

While Warden Stevenson continued his search on the truck, I did a cursory search for weapons on BLAKE and I found (6) live 22. MAG rounds in his right front pant pocket. After I searched for weapons, I asked BLAKE several questions regarding the live rounds in his pocket, when and where they killed the Bears and if they used the dogs to locate the Bears. BLAKE stated VITALI picked him up at this residence (Forest Service Road 10N83K, El Dorado) this morning at first light and they drove on North South Road to Cat Creek Road. Once they were on Cat Creek Road, VITALI let his dogs out of the boxes and placed them on top of the boxes and hood of the vehicle. The dogs had telemetry tracking collars on their necks. VITALI drove on Cat Creek Road, until the Hounds alerted VITALI to a mammal (Bear or Deer) in the area and he turned the dogs loose to follow the scent trail. BLAKE stated he stayed in the truck (to keep eye on the

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Warden M. E. Gregory #591	04/26/2013	Lt. S. LaFave	4-29-13

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

ARREST/INVESTIGATION REPORT

WPD 6b p.2 (10-98) Region # NED

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL JURISDICTION
04/20/2013	1100 hours	El Dorado / El Dorado / El Dorado Superior Court

"X" ONE	"X" ONE	TYPE OF REPORT ("X" *APPLICABLE*)
[] Arrest Report [] Formal Complaint [X] Supplemental	[X] Self Initiated [] Complaint	[] Commercial Fishing [X] Hunting [] Inland Pollution [] CalTIP [] Recreational Fishing [] Trapping [] Marine Pollution [] Other

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
Cat Creek Road / Arthur Martin Blake & Peter George Vitali	Warden Darrell Stevenson #336	AD1823761

truck), while VITALI went after the dogs carrying a backpack. BLAKE did not know if VITALI was carrying a gun. After approximately one hour, VITALI returned back to the truck with the dogs. VITALI was caring the same backpack and BLAKE assumed he had brought something back in the backpack, but he did not know what was inside it.

I asked BLAKE to tell me again what happened. This time his story was different, he stated after VITALI went after the hounds, BLAKE left the vehicle went down a hill (same direction VITALI traveled) and took a nap. After approximately 30 minutes later, VITALI returned to the truck with the hounds and put something in the dog boxes. I asked BLAKE to tell me again what VITALI did after the hounds were loose. Again, his story was different, he stated VITALI was not carrying a backpack when he went after his hounds, but after a while VITALI returned back to the truck, grabbed a backpack and went back to the dogs down the hill. Approximately 30 minutes later, VITALI contacted BLAKE via two-way radio, asking BLAKE to go pick him up down the road (Cat Creek Road). When BLAKE arrived at VITALI's location, he was carrying the backpack and he was with his hounds. He put the backpack in the dog box. BLAKE stated he knew the backpack was filled with Bear parts.

I went to interview VITALI, but VITALI stated he was sick to his stomach and did not want to talk to me about anything.

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Warden M. E. Gregory #591	04/26/2013	Lt. S. LaFave	4-29-13

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE

NARRATIVE/SUPPLEMENTAL

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DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL JURISDICTION
04/20/13	1100	El Dorado Superior Court- Placerville

"X" APPLICABLE		TYPE OF REPORT ("X" APPLICABLE)			
[ ] Narrative	[ ] Arrest Report	[ ] Commercial Fishing	[X] Hunting	[ ] Inland Pollution	[ ] Incident Report
[X] Supplemental	[ ] Formal Complaint	[ ] Recreational Fishing	[ ] Trapping	[ ] Marine Pollution	[X] Penal Code

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
USFS Rd 10N83K / Peter Vitali and Arthur Blake	D. Stevenson	AD1823713 and AD1823762

BACKGROUND:

On 04/20/2013, Warden D. Stevenson began an investigation into the unlawful takingof bear and the possession ofbear parts (gall bladder) for sale. Warden Stevenson contacted me(Warden E. Elliott) and asked me to attempt an interview with Suspect Blake. It was determinedSuspect Blake was no longer in custody and was out on bail.

INTERVIEW WITH ARTHUR BLAKE- 04/21/13:

On 04/21/13, Warden M. Galli and I drove to Suspect Blake's residence (off USFS Road 10N83K). Suspect Blake was standing outside the residence as we drove up and we asked him if he would be willing to communicate with us. Suspect Blake advised he had bailed out of jail the night before andwas willing to talk with us. He also expressed a desire to cooperate with us. The following is a summary of this communicationwith Suspect Blake:

Around daybreak on 04/20/13, Suspect Peter Vitali and he loaded up their(2) pistols (which he identified as being both Ruger .22 caliber magnums)and (3) hunting/ hound dogs and entered Suspect Vitali's white Toyota pick-up for the purpose of exercising the dogs and to hunt wildlife (raccoon and fox). He knew they shouldn't be pursuing bears because bear season was closed, but the dogs pursued and later treed bears.Suspect Vitali had his pistol hidden inside one of the dog boxes as it wasattached with a couple "bungee cords" to the roof of this dog box. He thought Suspect Vitali placed this pistol here becauseSuspect Vitali was being sneaky. Suspect Blake put his Ruger .22 magnum pistol in a brown paper bag and placed this pistol/ bag inthe sawdust within one of the dog boxes. Throughout the course of the day, Suspect Vitali removed two of the dogs from the boxes andplaced them on top of the boxes so they could better smell wildlife and "strike" (alert Suspect Vitali and Suspect Blake they had smelled wildlife).As they were driving on USFS roads in the area, the dogsoccasionally "struck" (smelled familiar scent and barked) After the dog(s) "struck", Suspect Vitali (operator ofthe vehicle) would stop the truck, and let the dog(s) looseso the dogs could check the scent and pursue wildlife. Throughout the course ofthe day's hunting, Suspect Vitali let all (3) hunting dogs loose and the dogs began chasing what Suspect Blake thought was a wild animal/ wildlife. They tracked the dogs with"tracking devices" (telemetry equipment) as the dogs pursued the wild animal. The (3) dogs continued to pursue wildlife until they indicated they had something "treed" along Cat Creek Rd. Suspect Vitali instructed Suspect Blake to stay with the pick-up while Suspect Vitali walked toward the dogs withSuspect Vitali's Ruger .22 magnum pistol. Suspect Blake knew the dogs had a wild animal "treed" on the upslope side of Cat Creek Rd because he heard the dog's "chomping" at the tree. Suspect Blake later drove the white Toyota south on Cat Creek Road (away from the treed animal)and exited

Preparer=s Name and Badge Number	Date	Reviewer=s Name	Date
E. Elliott #458	04/25/13	Lt. S. LaFave	

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE

NARRATIVE/SUPPLEMENTAL

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL JURISDICTION
04/20/13	1100	El Dorado Superior Court- Placerville

"X" APPLICABLE		TYPE OF REPORT ("X" APPLICABLE)			
[ ] Narrative	[ ] Arrest Report	[ ] Commercial Fishing	[X] Hunting	[ ] Inland Pollution	[ ] Incident Report
[X] Supplemental	[ ] Formal Complaint	[ ] Recreational Fishing	[ ] Trapping	[ ] Marine Pollution	[X] Penal Code

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
USFS Rd 10N83K / Peter Vitali and Arthur Blake	D. Stevenson	AD1823713 and AD1823762

his vehicle. Suspect Blake heard multiple shots coming from the area where the dogs had the animal treed Suspect Vitali later radioed Suspect Blake and Suspect Blake knew this meant he was supposed to pick Suspect Vitali up in the same general area where he had dropped Suspect Vitali off. Suspect Vitali was walking south towards the pickup on Cat Creek Rd, and Suspect Vitali was carrying the same backpack he left the truck with. Suspect Vitali returned to the pickup and told Suspect Blake he shot and killed (3) bears- a sow and two cubs. Suspect Blake thought Suspect Vitali hid/ secured Suspect Vitali's Ruger pistol back to the roof of the dog box with "bungee cords". Suspect Blake advised his Ruger .22 magnum pistol never left the vehicle on this hunt. Suspect Vitali told Suspect Blake he had (3) bear livers with the attached (3) gall bladders which were in Suspect Vitali's backpack. Suspect Blake knew Suspect Vitali placed the backpack containing the (3) gall bladders into one of the truck's dog boxes. Suspect Blake knew Suspect Vitali had a connection with a "Chinaman" who had purchased gall bladders from Suspect Vitali in the past and would continue to purchase the gall bladders for about $300 per gall bladder. Suspect Blake never received any money from the sale of bear parts, nor did he ever intend to sell bear parts. Suspect Blake had first-hand knowledge Suspect Vitali was involved in illegal bear hunting (guiding bear hunters without a guide's license) and gave specific information regarding this illegal hunting activity. Suspect Blake advised he witnessed Suspect Vitali remove the gall bladder fom a bear in the past.

-We asked Suspect Blake if he would be willing to take us to the kill site. Suspect Blake advised he would be willing and wanted to cooperate with us fully. Suspect Blake stopped along Cat Creek Rd. and pointed out an area where he said we would find the (3) bear carcasses/ kill site. We searched the area thoroughly and found no kill site

INTERVIEW WITH ARTHUR BLAKE- 04/22/13:

On 04/23/13, DFW Warden D. Moskat and I contacted Suspect Blake at the intersection of Omo Ranch Road and North South Rd. We informed Suspect Blake we did not find the kill site in the area where he advised us we would find the kill site. Suspect Blake immediately informed us he was willing to go back to Cat Creek Road and thoroughly search with us until we found the kill site. Suspect Blake escorted us to Cat Creek Road and we stopped/ searched multiple areas where Suspect Blake thought the kill site may have been. We found no evidence of the kill site in any of these areas. Suspect Blake advised us he was certain the kill site was on Cat Creek Road, but was uncertain to the exact location. Suspect Blake continued to tell us he was not at the kill site when the bears were killed and his only involvement was being the driver of the vehicle who picked up Suspect Vitali after the (3) bears were killed and their

Preparer=s Name and Badge Number	Date	Reviewer=s Name	Date
E. Elliott #458	04/25/13	Lt. S. LaFave	

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE

NARRATIVE/SUPPLEMENTAL

WPD 6b p.2 (10-98) Region # 2 Page

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL JURISDICTION
04/20/13	1100	El Dorado Superior Court- Placerville

"X" APPLICABLE		TYPE OF REPORT ("X" APPLICABLE)			
[ ] Narrative	[ ] Arrest Report	[ ] Commercial Fishing	[X] Hunting	[ ] Inland Pollution	[ ] Incident Report
[X] Supplemental	[ ] Formal Complaint	[ ] Recreational Fishing	[ ] Trapping	[ ] Marine Pollution	[X] Penal Code

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
USFS Rd 10N83K / Peter Vitali and Arthur Blake	D. Stevenson	AD1823713 and AD1823762

gall bladders removed.

INTERVIEW WITH ARTHUR BLAKE- 04/24/13:

I contacted Suspect Blake at his residence at USFS Road 10N83K and asked to talk with him. Suspect Blake indicated he was willing to talk with us and again advised he wanted to cooperate with us. I asked Suspect Blake to be more honest with me about the incident. Suspect Blake immediately informed me he had not been completely honest and said he had told me a "white lie". The following is a summary of this communication with Suspect Blake:

On 04/20/13, Suspect Vitali's (3) hunting dogs had been pursuing wildlife for about an hour and a half before they heard the dogs indicate they had the wild animal "treed" along Cat Creek Rd. Suspect Blake and Suspect Vitali both exited the vehicle with firearms and both walked toward the sound of Suspect Vitali's dogs. Suspect Blake knew the treed animal was likely a bear because that is what Suspect Vitali normally hunts and is most interested in. Suspect Blake knew Suspect Vitali and his dogs were not as interested in pursuing other wild animals, but were primarily focused on bears. Suspect Blake and Suspect Vitali arrived in the area where the (3) dogs were and knew there were (4) bears (a sow with three cubs) which the dogs had "treed" in different trees, but in the same general area. Suspect Blake shot a bear cub two or three times with his own Ruger .22 magnum pistol. This cub fell out of the tree and died. Suspect Vitali shot the sow bear with Suspect Vitali's Ruger .22 magnum pistol and this sow bear fell out of the tree and died. Suspect Vitali additionally shot a cub and wounded it. This wounded cub fell out of the tree and Suspect Vitali's (3) dogs began mauling the wounded cub Suspect Blake saw the dogs mauling the injured cub so he walked up to the wounded cub, shot the cub in the head with his .22 magnum caliber pistol and killed it. The third cub ran out the "back side of the tree" and escaped unharmed. Suspect Blake knew these (3) bears were killed because Suspect Vitali was going to remove their gall bladders and sell them to a "Chinaman" from the Sacramento area who would purchase as many gall bladders as Suspect Vitali could provide him. Suspect Vitali and Suspect Blake went back to the pickup, placed the dogs in the dog boxes, and Suspect Vitali retrieved his backpack with half gallon jug of water (so Mr. Vitali could clean his hands after removing the bears' organs). Suspect Vitali went back to the kill site with his backpack and told Suspect Blake he would be back about (15) minutes later. Suspect Vitali directed Suspect Blake to drive south on Cat Creek Road, out of the immediate area and to stay with the vehicle Suspect Blake advised he knew by removing the vehicle from the kill site area, he was acting as a type of lookout in case law enforcement was in the area. Suspect Blake knew law enforcement would "shake him up" while Suspect Vitali was busy removing the gall bladders from the

Preparer=s Name and Badge Number	Date	Reviewer=s Name	Date
E. Elliott #458	04/25/13	Lt. S. LaFave	

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE

NARRATIVE/SUPPLEMENTAL

WPD 6b p.2 (10-98) Region # 2 Page

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL JURISDICTION
04/20/13	1100	El Dorado Superior Court- Placerville

"X" APPLICABLE		TYPE OF REPORT ("X" APPLICABLE)			
[ ] Narrative	[ ] Arrest Report	[ ] Commercial Fishing	[X] Hunting	[ ] Inland Pollution	[ ] Incident Report
[X] Supplemental	[ ] Formal Complaint	[ ] Recreational Fishing	[ ] Trapping	[ ] Marine Pollution	[X] Penal Code

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
USFS Rd 10N83K / Peter Vitali and Arthur Blake	D. Stevenson	AD1823713 and AD1823762

(3) bears at the kill site. Suspect Blake received a radio call from Suspect Vitali informing Suspect Blake it would be longer than expected because Suspect Vitali was doing "extra" work. Suspect Blake knew what Suspect Vitali meant by this and described this "extra" work Suspect Vitali was engaged in as removing bear claws from the bear paws. Suspect Vitali returned to the truck with the backpack he left the pickup with. Suspect Blake knew this backpack belonged to Suspect Vitali. Suspect Blake knew this backpack contained (3) gall bladders with attached livers and multiple bear claws. Suspect Blake knew Suspect Vitali placed this backpack into one of the dog boxes. After Suspect Vitali returned to the truck, Suspect Vitali informed Suspect Blake that Suspect Vitali thought he could get $300 for the sow's gall bladder, but thought he may only get about $200 for each of the cub's gall bladders because they were smaller. Suspect Blake knew Suspect Vitali had sold a whole bear to a black man in Los Angeles for $500 in the past and described the transaction as being secretive like a "dope deal". Suspect Blake knew it was illegal to sell wildlife parts and was personally not involved in the selling of wildlife. Suspect Blake knew Suspect Vitali for about five or six years. Suspect Blake knew Suspect Vitali was involved in killing bears and selling their gall bladders for as long as he knew Suspect Vitali. Suspect Blake thought Suspect Vitali was lying to him about receiving only $300 per gall bladder and thought Suspect Vitali was being paid much more for each gall bladder. Suspect Blake thought each gall bladder was worth three to five thousand dollars. Since the time of their arrest, Suspect Blake received multiple telephone calls from Suspect Vitali. In these telephone conversations, Suspect Vitali instructed Suspect Blake not to talk with law enforcement and told Suspect Blake they should come up with a lie about where they obtained the backpack which contained the (3) gall bladders, claws, etc. Suspect Vitali said they should each stick to this one fabricated story and tell the authorities they were driving on Cat Creek Rd. when they rounded a corner and saw an unknown vehicle in front of them on the road. The unknown occupants of the vehicle "spooked" and left this backpack in the road. They picked up this backpack, which contained the bear parts, and placed it in the dog box. Suspect Blake responded by telling Suspect Vitali this story was not believable and would not work, but Suspect Vitali said this was their only option to escape being prosecuted for their crimes. Suspect Blake advised he was being completely honest, knew what he did was wrong and wanted to fully cooperate with us. I gave Suspect Blake my business card with direct cell phone number and asked him to call me when/ if he ever could direct us to the kill site. Suspect Blake has never provided this information.

Preparer=s Name and Badge Number	Date	Reviewer=s Name	Date
E. Elliott #458	04/25/13	Lt. S. LaFave	

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND WILDLIFE

NARRATIVE/SUPPLEMENTAL

WPD 6b p.2 (10-98) Region # 2 Page 1

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL JURISDICTION
04/20/13	1100	El Dorado Superior Court- Placerville

"X" APPLICABLE		TYPE OF REPORT ("X" APPLICABLE)			
[ ] Narrative	[ ] Arrest Report	[ ] Commercial Fishing	[X] Hunting	[ ] Inland Pollution	[ ] Incident Report
[X] Supplemental	[ ] Formal Complaint	[ ] Recreational Fishing	[ ] Trapping	[ ] Marine Pollution	[ ] Penal Code

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
USFS Rd 10N83K / Peter Vitali and Arthur Blake	D. Stevenson	AD1823713 and AD1823762

BACKGROUND: On 04/24/13, I spoke with Arthur Blakeabout his involvement in this caseand asked him to call me if he had any additional information regarding the kill site location. I had not heard anything back from him since that time. I drove to his residence on 05/18/13 to ask Suspect Blakefor the last timeif he had any better recollection of where they killed the (3) bears.

SYNOPIS OF INTERVIEW WITH ARTHUR BLAKE- 05/18/13:

Suspect Blake met me outside of his residence and informed me he did not know the location of the bear kill site. He again gave the same generalstory regarding thekilling of the (3) bears as outlined on my supplemental report dated 04/25/13. In addition, Blake advised Suspect Vitali and he were involved in the unlawful take of (8) bears since they had been hunting together. Blake statedmost of these bears were killed for the specific purpose of training Vitali's dogs. Blake told me these bears were primarily shot byVitali and left to rot in the woodsafter they were killed.Blake stated he knew he was wrong for poaching bears withVitali and should have stopped illegally hunting as he knew he was likely to get caught. Blake told mehe did not stop illegally hunting bears because he enjoyed the thrill of the hunt.

Additionally, Blake stated he toldVitali to drive the back wayhome (Cat Creek Rd to North-South Rd) on 04/20/13 after they killedthe (3) bears and Vitaliremoved their galls/ claws . Blake told mehe wanted to go the back way and avoid transporting the illegal bear gall bladders/ parts on Hwy. 88 because he did not want to get caught with them. He thought they were less likely to get caught if they avoided the highwayand kept to the back roads.

Suspect Blake advised I was welcome on his property anytime totalk with him and he wanted to be forthright aboutis involvement in this case.Blake indicated he planned on showing up to court as promised, but hinted around that Suspect Vitali may flee to Idaho to avoid prosecution.

Preparer=s Name and Badge Number	Date	Reviewer=s Name	Date
E. Elliott #458	05/22/13	Lt. S. LaFave	

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

SUPPLEMENTAL REPORT

WPD 6a (10-98) Region # HQ

DATE OF INCIDENT / OCCURANCE	TIME (2400)	LOCATION/CITY/COUNTY/JUDICIAL DISTRICT
April 26, 2013	0900	El Dorado County

"X" ONE	"X" ONE	TYPE OF REPORT ("X" APPLICABLE)			
[X] Arrest Report	[ ] Narrative	[ ] Commercial Fishing	[X] Hunting	[ ] Inland Pollution	[ ] CalTIP
[ ] Formal Complaint	[X] Supplemental	[ ] Recreational Fishing	[ ] Trapping	[ ] Marine Pollution	[ ] Other

Location/Subject/Incident Name	Case Number	Case Officer
Peter Vitali	AD1823713 & 762	Darrell Stevenson #366

On April 26, 2013 at approximately 0900 hours Warden Galli contacted Peter Vitali. Warden Galli wanted to interview Vitali regarding his involvement on April 20, 2013 when he was arrested on Cat Creek Road, El Dorado County for multiple Fish and Game violations. Warden Galli contacted Vitali at a jobsite located at 4217 Putah Creek Road, Winters, Solano County. A new custom home was in the process of being built at the jobsite. Vitali is a carpenter who was working on location.

Warden Galli interviewed Vitali in a room of the custom home. Galli sat on a block of wood and Vitali sat on a pile of boards. Galli recorded the interview using a digital voice recorder that was on Galli's person. The interview is summarized as follows:

Galli asked Vitali what happened. Vitali stated he was not going to say anything. Galli asked Vitali what he was going to do with the bear gall bladders. He stated he has never ever sold any animal parts in his life. Galli asked Vitali why he had the gall bladders. Vitali stated he picked the pack up and he saw the livers and discovered the rest inside. Vitali figured why not pick it up; there were things of value inside. Vitali continued to state that when they bag (take) a bear, all the leftover meat scrapes, parts, and liver get boiled and are feed to the dogs. Vitali stated again that he has never sold any animal parts and he would not know where to begin to sell parts.

Vitali denied killing any bear. Based on Galli's training and experience and Vitali's statements and actions Galli did not believe Vitali was being truthful with regards to the killing of bears and how he obtained the bear gall bladders.

After the interview, Vitali gave Galli a tour of the custom home. At approximately 0945 hours Galli left the job site.

Preparer's Name and Badge Number	Date	Office Address and Phone Number	Reviewer's Name and Date
Matthew Galli #455	May 2, 2013	P.O. Box 7734, Chico, Ca 95927 916-719-5895	

Photo #1 – 1984 Toyota Pick-up with chain on hood where dog can stand while hunting

Cit # AD1823713 and AD1823762

Photo taken by: Stevenson, 04/20/2013

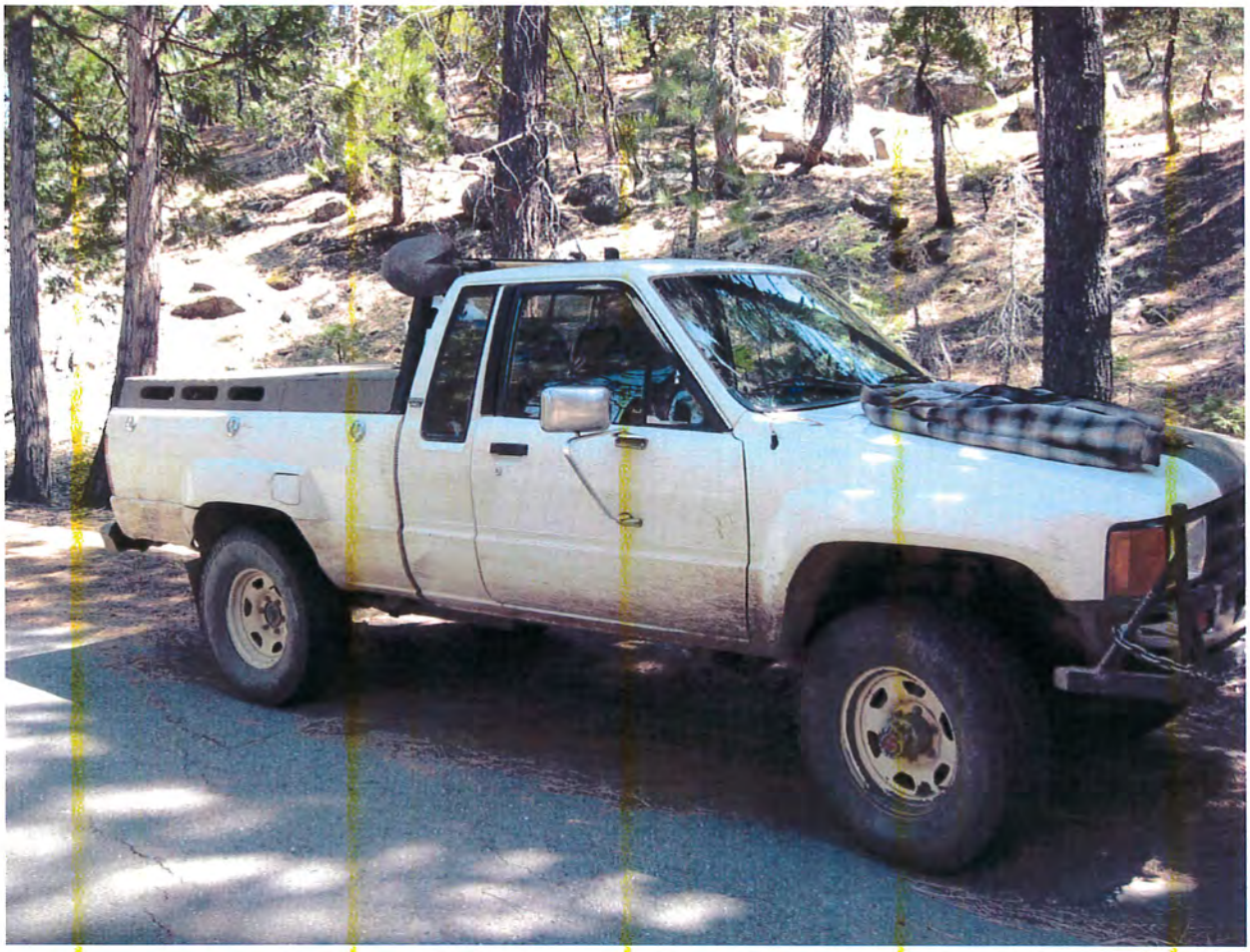

Photo #2 – Side shot of 1984 Toyota Pick-up showing dog boxes in bed of truck.

Cit# AD1823713 & 762

Photo taken by: Stevenson, 04/20/2013

Photo #3 – Grey/Black back removed from driver's side dog box, containing knives, bear claws, bear livers and bear galls. Left side of backpack is brown paper bag inside of brown plastic shopping bag(inside of bag is a Ruger .22 caliber revolver belonging to Arthur M. Blake).

Cit # AD1823713 & 762

Photo taken by: Stevenson, 04/20/2013

Photo # 4 – shows bear parts in baggies and other items removed from Grey/black back pack in photo #3. Evidence removed and placed on top of dog boxes.

Cit # AD1823713 & 762

Photo taken by: Stevenson, 04/20/2013

Photo #5 – Grey/ black back pack with contents of backpack lying on top of dog box. Revolver and leather holster were found bungee chorded to top of passenger side dog box. See photo #6.

Cit# AD1823713 & 762

Photo taken by: Stevenson. 04/20/2013

Photo #6 – Ruger .22 caliber revolver in black leather holster, bungee chorded to top of box.

Cit# AD1823713 & 762

Photo taken by: Stevenson, 04/20/2013

Photo #7 – 20 large bear claws and plastic bag containing large liver with gall bladder attached.

Cit #AD1823713 & 762

Photo taken by: Stevenson, 04/20/2013

Photo #8 – one plastic bag with large liver and gall bladder attached on left and plastic bag on right contains 2 livers with 2 gall bladders attached.

Cit # AD1823713 & 762

Photo taken by: Stevenson, 04/20/2013

Photo #9 – Suspect Peter G. Vitali and his three dogs

Cit #AD1823713 & 762

Photo taken by: Stevenson, 04/20/2013

Photo #10 – Claws, three livers with gall bladders attached.

Cit #AD1823713 & 762

Photo taken by: Stevenson, 04/23/2013

Photo #11 – Large liver with gall bladder attached.

Cit # AD1823713 & 762

Photo taken by: Stevenson , 04/23/2013

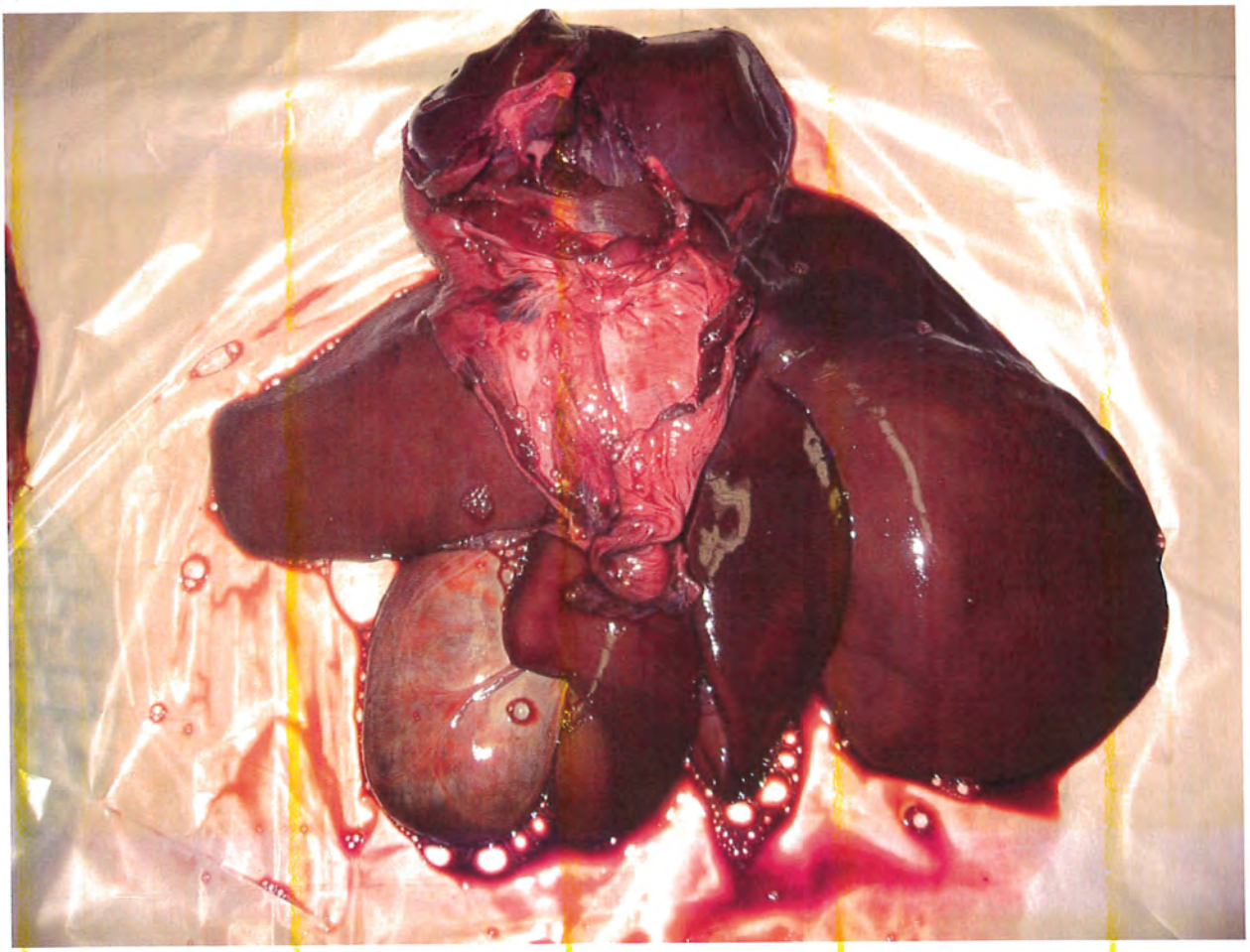

Photo #12 – One small liver with gall bladder attached.

Cit # AD1823713 & 762

Photo taken by: Stevenson, 04/23/2013

Photo #13 – second small liver with gall bladder attached.

Cit #AD1823713 & 762

Photo taken by: Stevenson, 04/23/2013

B

SUPERIOR COURT OF CALIFORNIA, COUNTY OF EL DORADO
2850 Fairlane Court Ste 120
Placerville, CA 95667

People of the State of California
VS.
PETER GEORGE VITALI

Case No: P13CRF0298

MINUTE ORDER

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PRE-PRELIMINARY HEARING
Date: 11/04/13 Time: 8:00 am Dept/Div: 7

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Charges: 1) 4758(A) FG-F D, 2) 4758(B) FG-F D, 3) 2002 FG-M D
4) 12012(A) FG-M C

Honorable Judge DOUGLAS C. PHIMISTER presiding
Clerk: A. Mitchell
Court Reporter: Tracy Bocinski CSR 9196
Bailiff B Schaub

Deputy District Attorney J Jensen present.
Defendant is represented by David Grow - Retained.
Defendant present

Bench Conference is held; not reported.

Additionally complaint amended to add count 4 as a violation of 12012(A) FG.

Defendant requests, and is granted permission to withdraw previously entered NOT GUILTY plea and pleads guilty.
Deft advised of his/her right to a jury or court trial, right to have his/her attorney cross-examine any witnesses that may be called to testify
against him/her, the right of the court to compel witnesses to testify on their behalf, and the right to remain silent.
Defendant understands these rights and waives same
Counsel joins in waivers.
Defendant advised of maximum/minimum penalty.
Defendant is advised of mandatory fines.
Defendant advised that if he/she pleads guilty or is found guilty, his/her probation or parole could be revoked.

PLEA
Defendant pleads Nolo Contendre to Count(s) 4

Court finds plea/admission is free & voluntary; deft knows & understands constitutional rights, nature of charges and consequences of his/her plea.
The Court finds that there is a factual basis for the entry of the plea and that the plea is freely and voluntarily made.
Defendant advised that he/she had the right to be sentenced not

less than six (6) hours nor more than five (5) days.
Formal arraignment for and time of sentencing waived.
No legal cause why judgment should not now be pronounced.

On motion of the District Attorney, Count(s) 1 2 3 is/are dismissed a 1385 PC

SENTENCE
For all convicted charges:
Summary Probation granted for a period of 36 months under the following terms and conditions:
01) Obey all Laws.
02) Follow all orders of the Court and report as directed.
03) Notify Court immediately of any change in residence address.

JAIL TERMS:
04) Defendant committed to the custody of the County Sheriff for a
--- period of 60 days.
****30 days is ordered STAYED.******
Defendant will serve 30 days Jail Time.
Alternative Sentencing o.k.
CHI Okay
Contact Probation/CHI by 11/05/2013.
Stay of execution granted until 02/03/2014 at 18:00 and defendant is ordered to surrender to Sheriff at that time.
Credits are @ the 1/2 x rate if served in custody.
Defendant resides in Idaho. Defendant is authorized to complete Alternative Sentencing in Idaho. Defendant must find acceptable Alternative Sentencing by 12/16/2013.

SPECIAL ORDERS
Pursuant to 12028 PC the weapon is declared a Public Nuisance and is ordered destroyed.
Defendant is to only engage in lawful hunting.
Defendant is ordered to forfeit all agreed upon equipment in his truck including: knives; guns; Telemetry Equipment.

FINE PAYMENT TERMS:
08) Pay victim restitution in the amount of $12500.00. Payable to
--- the Court. purs to PC 1202.4
Victim: Department of Fish and Game
The Fine is stipulated to and is placed in Victim Restitution to be paid directly to the Department of Fish and Game.
Defendant will pay $5000.00 forthwith.
06) Fine/fee is payable at the rate of $208.00 per month
--- Payments to commence 12/30/2013.
07) It is your responsibility to make monthly payments, no billing

Case Number : P13CRF0298 People vs. PETER VITALI

--- statements will be provided.
Defendant waives breakdown of fines/fees.

Cash Bail is ordered applied to fine and balance (if any) to be exonerated.

Defendant waives breakdown of fines/fees.

Defendant advised of appeal rights.
Defendant Waives Appeal Rights.

CUSTODY STATUS
Current Bail Bond Exonerated.
Released on Probation

CC:DA PD DEF JAIL PROB DCSS ATTY INT POLICE SHERIFF CHP PROG RR ACCT

==========MINUTE ORDER END==========

Dispo

C

California Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
http://www.wildlife.ca.gov
Law Enforcement Division
1416 9th Street, Room 1326
Sacramento, California 95814
(916) 653-4094

EDMUND G. BROWN, JR. Governor
CHARLTON H. BONHAM, Director

Copy 2 LED's File.

January 10, 2014

Mr. Peter Vitali

Dear Mr. Vitali:

On November 4, 2013 you were convicted in the El Dorado County Superior Court of a violation of Fish and Game Code (FGC) section 12012 related to your possession of three bear gall bladders and twenty bear claws for commercial purposes. FGC section 12154 (attached) authorizes the California Department of Fish and Wildlife to suspend or permanently revoke a person's hunting or sport fishing privileges upon a conviction of FGC section 12012. **Pursuant to this authority, your hunting privileges in the State of California are hereby permanently revoked.** You may appeal this revocation to the California Fish and Game Commission pursuant to FGC section 12154(b)(1) by sending a request for an appeal hearing to:

California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Additionally, please be advised that information regarding the suspension of your hunting privileges is being provided to member states of the Wildlife Violator Compact. It is your responsibility to verify your revocation status in other member states before engaging in hunting activities or attempting to purchase any hunting licenses. Contact information of the member states is attached.

Sincerely,

Michael P. Carion, Chief
Law Enforcement Division

Attachments

ALDS 2 1/15/14
IWVC ?

WILDLIFE VIOLATOR COMPACT
NOTICE OF APPLICABILITYAND DUE PROCESS

This is official notice that the member states of the Interstate Wildlife Violator Compact have agreed to recognize, as applicable, the attached wildlife license suspension or revocation notice and/or order as if the qualifying offense, conviction, and suspension or revocation had occurred in those states. Obtaining or attempting to obtain any license, tag or permit that is prohibited by the attached notice may be an additional and separate violation if the license, tag or permit is obtained from any of the member states. Any license, tag or permit obtained in violation of the attached notice and/or order may be invalid. It is your responsibility to contact any member state where you intend to obtain or attempt to obtain any license, permit or tag to determine your eligibility to purchase that license, permit or tag, or to determine if appeal procedures are available. You may determine your eligibility by inquiring in writing to the specific member state at the address listed below. This list is subject to change as new states are added. It is recommended you contact any state in which you wish to hunt/fish to determine if they are a member.

Member states contact information is as follows:

Alabama Dept. of Conservation & Nat. Res.
64 N. Union Street #339
Montgomery, AL 36130

Alaska Dept. of Fish and Game
PO Box 115526
Juneau, AK 99811-5526

Arizona Game and Fish Department
Law Enforcement Branch – IWVC
5000 W. Carefree Highway
Phoenix, AZ 85086

California Dept. of Fish & Game
1416 Ninth St., Ste. 1326
Sacramento, CA 95814

Colorado DNR, Division of Wildlife
6060 Broadway
Denver, CO 80216

Florida Fish and Wildlife Conservation
620 South Meridian Street
Tallahassee, FL 32399-1600

Georgia Dept. of Natural Resources
Wildlife Resources Division
2070 US Hwy 278 S.E.
Social Circle, GA 30025

Idaho Fish & Game
Enforcement Bureau
600 S. Walnut Box 25
Boise, ID 83707

Illinois Department of Natural Resources
Office of Law Enforcement
One Natural Resources Way
Springfield, IL 62702

Indiana Department of Natural Resources
Law Enforcement Division
402 W. Washington St. Room W255D
Indianapolis, IN 46204

Iowa DNR/Fish & Wildlife Division
Law Enforcement Bureau
Wallace State Office Bldg.
E 9th & Grand Ave
Des Moines, IA 50319

Kansas Department of Wildlife and Parks
512 S.E. 25th Avenue
Pratt, KS 67124-8174

Kentucky Dept. of Fish & Wildlife Resources
#1 Sportsman's Lane
Frankfort, KY 40601
800-858-1549

Louisiana Dept. of Fish and Wildlife
P.O. Box 9800
Baton Rouge, LA 70898

Maryland Natural Resources Police
Tawes State Office Bldg., E-3
580 Taylor Ave.
Annapolis, MD 21401

NDER: COMPLETE THIS SECTION

Complete items 1, 2, and 3. Also complete
tem 4 if Restricted Delivery is desired.
Print your name and address on the reverse
so that we can return the card to you.
Attach this card to the back of the mailpiece,
or on the front if space permits.

rticle Addressed to:

Peter Vitali

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by (Printed Name) Cherri Vitali

C. Date of Delivery 1/18/14

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

icle Number
nsfer from service label) 4417

rm 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

D

Linda Barrera, Esq.
1416 Ninth Street, Suite 1341
Sacramento, CA 95818
(916) 651-7653
linda.barrera@wildlife.ca.gov
State Bar No. 263104

Attorney for the DEPARTMENT OF FISH AND WILDLIFE

OFFICE OF ADMINISTRATIVE HEARINGS
BEFORE THE FISH AND GAME COMMISSION
STATE OF CALIFORNIA

In the Matter of	) FGC Case No. 14ALJ15-FGC
	) OAH No. 2014060844
PETER G. VITALI,	)
	) AFFIDAVIT OF ERIC CRAWFORD
Respondent.	)
	) Hearing Date: July 30, 2015
	) Time: 9:00 a.m.

I, Eric Crawford, declare as follows:

1. I am a regional investigator at the Idaho Department of Fish and Game. My business address is 3316 16th Street, Lewiston, Idaho 83501.

2. I have been employed in the Enforcement Bureau of the Idaho Department of Fish and Game since November 2000. Prior to my position in the Enforcement Bureau, I worked seasonally with the agency for four years as both a fisheries and wildlife technician. During my tenure with the Enforcement Bureau, I worked for approximately 12 years in a uniform patrol capacity and three years in a plain clothes investigator capacity. I currently hold an Advanced Peace Officer Certificate from the Idaho POST Council. I primarily conduct compliance patrols for licensing, and investigate the unlawful take, sale and possession of fish and wildlife.

3. I am familiar with Peter G. Vitali's appeal of the permanent revocation of his hunting privileges by the California Department of Fish and Wildlife. On November 4, 2013, Vitali was

convicted in El Dorado County Superior County, State of California, for possession of black bear parts for profit or personal gain and sentenced to 36 months probation. On January 10, 2014, the California Department of Fish and Wildlife notified Vitali that his hunting privileges were permanently revoked and that information regarding the revocation of his hunting privileges would be provided to member states of the Wildlife Violator Compact.

4. On March 25, 2014, the California Department of Fish and Wildlife entered Peter G. Vitali into the Interstate Wildlife Violator Compact database; notifying member states that Vitali had a lifetime hunting license revocation. Idaho is a member of the Interstate Wildlife Violator Compact. The Idaho Department of Fish and Game has revoked Peter G. Vitali's hunting privileges. Pursuant to the Wildlife Violator Compact, obtaining or attempting to obtain any license, tag, or permit is prohibited, and may be an additional and separate violation if the license, tag, or permit is obtained from any of the member states.

5. On April 5, 2014, I contacted Vitali at his residence in Helmer, Idaho because Vitali had purchased a 2014 Idaho Sportsman License. At that moment, Vitali voluntarily surrendered his Idaho Sportsman License because his hunting license was permanently revoked in California and his revocation was entered into the Interstate Wildlife Violators Compact.

6. On March 3, 2015, I was conducting a routine patrol for mountain lion and bobcat hound hunters in the Cloverleaf area, Clearwater County, State of Idaho. At approximately 8:33 am, March 3, 2015, I saw a white Toyota pickup truck parked behind a locked gate on US Forest Service Road 3924. In the fresh snow I could clearly see where the vehicle drove around the closed and locked gate. The vehicle's rear license plate had been removed by detachment and allowed to swing under the rear bumper area. After a brief inspection, I determined the license plate, Idaho 1L C9657 was in fact there. The vehicle is registered to Peter G. Vitali and Cherri J. Vitali of Deary, Idaho.

7. I observed five hound dogs consistent with breeds commonly used to hunt mountain lion and bobcat in a dog box; filling up the bed of the pickup truck. During the initial contact, there was no one at the vehicle. Based on a prior contact, I recognized the vehicle belonged to Peter Vitali. I called for Vitali to come out from where ever it was that he was, moments later Vitali appeared up the road near the gate he had drove around. I instantly recognized Vitali from previous contacts. At that moment, I activated my body camera to record the contact.

8. During the contact, Vitali did not admit that he was hunting, instead he indicated that he was shed hunting. I explained to Vitali that I too was a houndsman. I confronted Vitali with the fact that we got a fresh snow and that is when we as houndsman go out looking for a tracks. Vitali was in control of the five hounds, 4 Plotts and one Black and Tan, that he had in possession. Vitali offered to let them out so I could see them. Vitali made statements which I recorded on my body camera.

9. During the contact, I also reminded Vitali of a previous contact I had with him and an individual named Robert Britton on January 10, 2015. At that time, I observed that Vitali was a passenger in his own vehicle and had dog out. Britton did not have a hunting license at the time. I recorded my January 10, 2015, contact with Vitali on my body camera.

10. On March 3, 2015, the mountain lion hunting season was open in Idaho. On the night of March 2 and early morning of March 3, 2015 the area received a fresh snow. The area where I contacted Vitali is known to have mountain lion and bobcat present. Vitali drove approximately 8.75 miles on forest roads.

11. I back tracked all of Vitali's vehicle tracks that morning. On USFS Road 3924, Vitali traveled approximately 5.6 miles behind the locked gate on the closed road. At no point I was able to locate where he had gotten out of his vehicle to look for shed antlers. Vitali also traveled USFS Road 1445C for approximately 3 miles. USFS Road 1445C is closed to full size vehicles

from October 1 through June 15 and is clearly marked with a sign.

12. I have been an avid houndsman for approximately 15 years, having treed over 40 individual mountains and a handful of bobcats. I have harvested two mountains and two bobcats over the last 15 years. I have owned a hound, hunting him specifically for mountain lion and bobcat. I annually hunt approximately 10 plus days for mountain lion and bobcat. I am familiar with the techniques used to locate tracks of mountain lions and bobcats. I know that driving a vehicle, either wheeled or tracked is the best and most productive way to locate mountain lion and bobcat tracks. From my 15 years of experience, I also know that a fresh snow is the most productive time to locate fresh tracks of mountain lion and bobcat.

13. Based on my training and experience, I believe that on March 3, 2015, Vitali was using his hound dogs to hunt mountain lions and bobcats. My case file has been delivered to Clearwater County Prosecutor Lori Gilmore for review and drafting of a formal complaint. See attached REPORT OF INVESTIGATION, photographs, enclosed disc with digital videos and photographs, copy of the California Department of Fish and Wildlife revocation notice, and copy of the Interstate Wildlife Violator Compact database records of Peter G. Vitali.

14. I prepared the REPORT OF INVESTIGATION attached herein. This report presents a true and correct description of my contact with Peter G. Vitali on March 3, 2015.

15. I took the photographs (P1010210.JPG, P1010211.JPG, P1010212.JPG, P1010213.JPG, P1010214.JPG, P1010215.JPG, P1010216.JPG, P1010217.JPG, P1010218.JPG, P1010219.JPG, P1010220.JPG, P1010221.JPG, P1010222.JPG, P1010223.JPG, P1010224.JPG, P1010225.JPG, and P1010226.JPG) attached herein and saved in the enclosed disc. These photographs present a true and correct depiction of what I observed at the scene during my contact with Vitali on March 3, 2015.

16. I recorded the digital videos (FILE0020.MOV and FILE0024.MOV) in the enclosed disc

with my body camera. Digital video, FILE0020.MOV, presents a true and correct depiction of my contact with Vitali on March 3, 2015, and digital video, FILE0024.MOV, presents a true and correct depiction of my contact with Vitali on January 10, 2015.

I certify and declare that the above statements are true and correct under penalty of perjury.

Dated: 07-06-15

Place: Lewinston, Idaho

CHASITY NEWMAN
NOTARY PUBLIC
STATE OF IDAHO

By: _____
Eric Crawford
Senior Conservation Officer
Idaho Department of Fish and Wildlife

MLS

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, Ca 95814

Subject: Agenda Item 15;Climate Change Adaptations

Mister Chairman, Commission Members and Staff:

Kudos to the Department for its recognition and willingness to confront the challenges presented by climate change. I believe that a hard copy of the presentation for not just myself but also the press, relevant academics and agencies, and the public is in order.

- The impacts to water and its conveyance such as anadromous fish in the Sacramento and its Delta have far reaching impacts.
- The impacts of fire such as this year works both ways; not only does climate and weather impact wildland fire propensity, but also the fire production of carbon should be considered. I am not a fan of the park lobby types who see fire as natural so more fire means more natural. Historically sized fires, before negative interventions, not conflagrations, are to be seen as beneficial.
- The banning of active forest management, such as thinning should be made an issue. Banning of spraying herbicides happened because of what is grown in forests that could not be legally grown there or elsewhere more so than actual environment damage. Culling the sylvan farmers just might be a significant societal benefit.
- I am old enough to remember the Department doing air drops of hay to deer n order to augment the habitats shortage of food during " crisis years" and wonder if this practice will ever again occur- cynically, and admittedly sarcastically, adding that feeding the deer benefits the mountain lions, an iconic tool for those who feel a need to control other's behavior.

In conclusion, it would be beneficial if there were a report of the results of climate change, fires and erosion on habitats, reservoir, refuge and river turbidity and capacity, both next spring and annually thereafter. In addition to giving information, I hope that annual presentation will encourage the department to not lock in its adaptations, but to continue to adapt as the climate impacts change.

Sincerely,

Dennis Fox

Dennis Fox

CALIFORNIA FISH AND GAME COMMISSION
DECISION LIST FOR REGULATORY REQUESTS RECEIVED THROUGH OCT 8, 2015
Revised 11-24-2015

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Grant (previously Accept): FGC is *willing to consider* the petition through a process **Deny (previously Reject):** FGC is *not willing to consider* the petition
Refer: FGC *needs more information* before deciding whether to grant or deny the petition

Green cells: Referrals to DFW for more information **Blue cells:** Referrals to FGC staff or committee for more information
Lavender cells: Accepted and moved to a rulemaking **Yellow cells:** Current action items

Tracking No.	Date Received	Date Response Due (10 woking days)	Response letter to Petitioner	Accept or Reject	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision
	8/25/2015 8/30/2015				Julia Fuller Barbara Longmuir Raphael Zandra	Trapping		Requests complete ban on trapping of all furbearing animals because taking animals for profit is unnecesary.	**Action scheduled 12/9-10/2015 Staff Recommendation: Deny; pending WRC review**
	9/2/2015				Carol Johnson	Trapping		Requests ballot initiative to ban commercial and recreational trapping of all furbearers.	**Action scheduled 12/9-10/2015 Staff Recommendation: Deny; FGC has no authority over ballot initiatives**
	8/27/2015 9/11/2015 9/14/2015				Elaine Trogman Jill Franzke Diane Pease	Drift Gill Nets		Requests ban on drift gill net use in California to curb take of non-target species.	**Action scheduled 12/9-10/2015 Staff Recommendation: Deny; FGC has no authority over this matter**
	8/11/2015				George Burkhardt	Save Water		Requests two options to reduce water waste: (1) eliminate fish flow release, and (2) raise the level of all existing reservoir dams	**Action scheduled 12/9-10/2015 Staff Recommendation: Deny; FGC has no authority over this matter and eliminating fish flow is contrary to FGC policy**
	7/31/2015				Greg Helms, Ocean Conservancy; Anna Weinstein, Audubon California, and others	Forage Species Policy		Requests FGC consider planning for a rulemaking process to establish conforming forage regulations such that federal and California actions unfold on roughly parallel timelines.	**Action scheduled 12/9-10/2015 Staff Recommendation: Deny; requires fisher management plan for FGC action. DFW has authority under 7652.**
	8/10/2015				Jason Robinson	Rock Crab Transfer Process		Requests to amend the south coast rock crab permit process to allow for transfer permits on a first come first serve basis or to give applicants that have been attempting for consecutive years more points in the lottery as is the case with the sea urchin lottery.	**Action scheduled 12/9-10/2015 Staff Recommendation: Refer to DFW for evaluation**
	8/3/20154				Chris Borden	Fishing		Requests to stop fishing because too many whales are dying.	**Action scheduled 12/9-10/2015 Staff Recommendation: Deny; No evidence provided to support request. DFW working on whale entanglement issue.**
	8/21/2015				Greg Ross	Tehama Wildlife Area Rules		Requests revocation of the rules banning ATVs in the Tehama Wildlife Area because use does not impact wildlife or plants.	**Action scheduled 12/9-10/2015 Staff Recommendation: Refer to DFW for evaluation**
	8/28/2015				Del Norte County Board of Supervisors	Klamath River -- Blue Creek Closure		Requests FGC repeal or amend the closure of Blue Creek to fishing because the decision was made without consideration of science or the impact on residents, including small businesses.	**Action scheduled 12/9-10/2015 Staff Recommendation: Deny; pending evaluation by DFW.**

Tracking No.	Date Received	Date Response Due (10 woking days)	Response letter to Petitioner	Accept or Reject	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision
	9/24/2015				Mercer Lawing, CA Trappers Association	Bobcat Trapping		Requests FGC reconsider ban on bobcat trapping because the decision failed to address the biological and economic impacts.	**Action scheduled 12/9-10/2015** **Staff Recommendation:** **Deny; FGC will only revisit the issue with new information on bobcats.**
2015-001	9/29/2015	10/15/15	10/2/2015	A	Curtis Haney	Barnacles		Add barnacles to the list of invertebrates that can be harvested, and remove them from being prohibit to take or possess.	**Action scheduled 12/9-10/2015** **Staff Recommendation:** **Deny; no new data to support request.**
2015-002	10/2/2015 10/7/2015	10/16/15	10/15/2015	R	Andrea Treece, Earthjustice	Forage Species	New Section	Prohibit new or expanded directed commerical fishing in state waters on seven groups of unmanged forage fish species.	**Staff rejected as incomplete**

CALIFORNIA FISH AND GAME COMMISSION
DECISION LIST FOR NON-REGULATORY REQUESTS RECEIVED THROUGH OCT 8, 2015
Revised 11-23-2015

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Grant (previously Accept): FGC is *willing to consider* the petition through a process **Deny (previously Reject):** FGC is *not willing to consider* the petition
Refer: FGC *needs more information* before deciding whether to grant or deny the petition

Green cells: Referrals to DFW for more information **Blue cells:** Referrals to FGC staff or committee for more information
Lavender cells: Accepted and moved to a rulemaking **Yellow cells:** Current action items

Date Received	Name of Petitioner	Subject of Request	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
9/24/2015	Sean Brady, Michel & Associates, representing National Rifle Association	Committee Procedures	Requests rules and procedures be established for the WRC through normal regulatory approval process before WRC takes any further action.	**Action Scheduled 12/9-10/2015 Staff recommendation: Grant; FGC is currently working on both regulations and policies/procedures for committee function**		
8/6/2015	Ilson New, representing Dan Yoakum	Herring Eggs on Kelp (HEOK) Experimental Permit	Requests clarification on the definition of HEOK fishing.	**Action Scheduled 12/9-10/2015 Staff recommendation: Refer to legal counsel and DFW for evaluation**		
9/10/2015	Michael Flores, Al Taucher Conservation Coalition	Predator Policy Workgroup	Requests clarification of actions from FGC Aug 2015 meeting in Fortuna whereby individuals were publicly appointed to the Predator Policy Workgroup in conflict with the process previously established by FGC.	**Action Scheduled 12/9-10/2015 Staff recommendation: Grant; FGC will be implementing the approved process at its Dec 2015 meeting**		
8/11/2015	Diane Pleschner-Steele, CA Wetfish Producers Association	MRC Meeting Agenda	Request to provide update on industry squid research at MRC and FGC meetings.	**Action Scheduled 12/9-10/2015 Staff recommendation: Deny; not timely for oral presentation. Written form welcome.**		
9/11/2015 9/13/2015	Hazel Kimberly Leonard Frances LiBrandi	Urban Coyotes	Request to help control urban coyote problems.	**Action Scheduled 12/9-10/2015 Staff recommendation: Deny; DFW appropriate entity to address the subject**		
6/18/2015	William Lemos	North Coast Human Waste	Requests something be done to address the human waste problem occurring along the north coast during abalone season.	**Action Scheduled 12/9-10/2015 Staff recommendation: Deny; not within FGC's authority**		
9/25/2015	George Osborn, et al.	Fishing Licenses	Support for moving to a 12-month fishing license; requests FGC support SB 345 with this included.	**Action Scheduled 12/9-10/2015 Staff recommendation: Grant; FGC referred to MRC and WRC for evaluation**		

Date Received	Name of Petitioner	Subject of Request	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
10/7/2015	Sara Nichols, Sullivan Canyon Property Owners Assoc.	Wetland Permit	Concerned that DFW and FGC do not take the appropriate steps to investigate impacts on ecosystems before granting permits.	**Action Scheduled 12/9-10/2015 Staff recommendation: Deny; not within FGC's authority**		
10/7/2015	Sara Sickich, Heal the Bay	Pollution Enforcement	Requests more DFW enforcement of pollution issues along the coastline.	**Action Scheduled 12/9-10/2015 Staff recommendation: Deny; not within FGC's authority**		
10/7/2015	Greg Paully	Non-native Species Identification	Requests DFW dedicate more resources to response for increasing reports of non-native and invasive species.	**Action Scheduled 12/9-10/2015 Staff recommendation: Deny; not within FGC's authority**		
10/8/2015	Chris Smitz, Democrats of Napa Valley	CA Wolf Pack	Requests update on the status of California wolf packs, specifically an indication about whether DFW plans to collar them.	**Action Scheduled 12/9-10/2015 Staff recommendation: Grant; referred to DFW for update**		
10/8/2015	Jerry Hans, Friends of Griffith Park	Griffith Park Wildlife	Requests increased dialogue with DFW about wildlife connectivity issues and use of rodenticides in the park and the risk to wildlife.	**Action Scheduled 12/9-10/2015 Staff recommendation: Deny; not within FGC's authority**		
10/8/2015	Brendan Cummings, Center for Biological Diversity	Trapping Licenses	Requests clarification about FGC Section 4006 which demands that all licensing fees be set to recover fees. Does CBD need to petition for a mandate or not?	**Action Scheduled 12/9-10/2015 Staff recommendation: Grant; referred to DFW for evaluation**		
10/8/2015	Kathy Lynch	Nonlead Phase-in	Requests (1) DFW provide a formal protocol for annual certification of non-lead ammunition; (2) DFW provide some formal protocol for making a determination about when hunters will be exempted from regulation because of no availability of non-lead ammunition; and (3) some review of the non-lead phase-in process to determine whether adjustments need to be made as we proceed with implementation.	**Action Scheduled 12/9-10/2015 Staff recommendation: Grant; referred to DFW for evaluation**		

Domoic Acid Impacts

Dungeness and Rock Crab

Presented to the California Fish and Game Commission by
Commission Staff on December 9, 2015

Domoic Acid Threat

- Massive toxic bloom of the marine diatom Pseudo-nitzschia
- Produces a potent neurotoxin, known as domoic acid (DA), which can accumulate in shellfish, other invertebrates
- Leading to illness and death in a variety of birds and mammals
- Persistently high levels of DA in Dungeness and rock crab

Domoic Acid Threat

- DA levels exceed State's action level for the crabs' body meat as well as the viscera
- Pose a significant risk to the public if they are consumed
- The Office of Environmental Health Hazard Assessment (OEHHA), in consultation with the California Department of Public Health (CDPH), has recommended the fisheries be closed

Recreational Crab Closure

- Regulation prohibits recreational take and possession of Dungeness crab and all rock crab from ocean waters, including bays and estuaries, north of the Ventura/Santa Barbara county line
- Closure in effect until OEHHA and CDPH determine that domoic acid levels no longer pose a significant risk to public health and no longer recommends the fishery be closed

Commercial Crab Closure

- The California Department of Fish and Wildlife (CDFW) delayed the start of the commercial Dungeness crab season
- CDFW also closed the commercial rock crab fisheries in the affected area

Commercial D-Crab Closure

- Reopening procedures are designed to maintain the existing structure by providing the recreational sector fishing opportunities prior to the start of the commercial season

More Information

- http://www.cdph.ca.gov/HealthInfo/Pages/fdbDomoicAcidInfo.aspx
- https://www.wildlife.ca.gov/Conservation/Marine/Invertebrates/Crabs#315201115-links-to-the-latest-information

State of California
Department of Fish and Wildlife

Memorandum

Date: November 13, 2015

To: Sonke Mastrup
Executive Director
Fish and Wildlife Commission

From: Craig Shuman
Regional Manager, Marine Region

Subject: **December 9, 2015 Fish and Game Commission Meeting: Marine Region Update on the Marine Region Strategic Work Plan**

The Department of Fish and Wildlife Marine Region is pleased to transmit the attached conceptual framework for the Maine Region Strategic Work Plan. This work plan is designed to take a strategic approach to improve marine resource management in California with a focus on state fisheries managed under the Marine Life Management Act (MLMA).

The work plan takes a phased approach, with the first phase focused on electronic data collection, evaluation of data streams, and amendment of the MLMA Master Plan.

The Marine Region looks forward to working with the Commission, the Marine Resources Committee, and stakeholders as we begin to work on achieving the objectives of the work plan.

Attachment:
Department of Fish and Wildlife Marine Region Work Plan - Summary

ec: Tom Barnes, Program Manager
State Managed Fisheries
Marine Region
Tom.Barnes@wildlife.ca.gov

Department of Fish and Wildlife Marine Region Strategic Work Plan - Summary
Advancing Marine Resource Management in California
Updated - October 2015

Goal

Align statewide interests in marine resource management and fully utilize current technology, best available science, and best management practices to advance marine resource management in California.

Objectives

- Develop and implement electronic data collection and reporting structure relevant to management
- Amend Marine Life Management Act (MLMA) Master Plan to guide implementation of MLMA and increase scope of active management
- Determine appropriate structural organization and capacity to facilitate proactive management
- Identify and fill existing management gaps
- Evaluate and implement sustainable funding structure

Needs

- Joint work plan to achieve objectives
- Discipline exercised by all parties to focus short-term efforts on the Strategic Work Plan and critical resource management needs
- Leverage external support opportunities

Timeline

- Initial focus on electronic data collection and MLMA Master Plan amendment through mid - 2018

Metrics for success

- Implementation of electronic reporting of updated data streams
- Recognized achievement of management objectives mandated in the MLMA
- Sufficient and appropriate structural organization and capacity for effective management

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814
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www.fgc.ca.gov

Wildlife Heritage and Conservation
Since 1870

MEETING OUTCOMES FOR OCTOBER 7-8, 2015

These meeting outcomes were prepared by staff.
The official meeting minutes – video and audio recordings – may be obtained from www.cal-span.org.

Embassy Suites – LAX North
9801 Airport Blvd., Los Angeles

DAY 1 – OCTOBER 7, 2015

Pursuant to the call of the president, the California Fish and Game Commission (Commission) met at the Embassy Suites – LAX North, 9801 Airport Drive, Los Angeles, California on October 7, 2015.

The meeting was called to order at 8:40 a.m. by President Baylis, who introduced Executive Director Sonke Mastrup. Executive Director Mastrup introduced the meeting format and indicated that there was a request to move agenda item 15 to earlier in the day.

FISH AND GAME COMMISSION ATTENDANCE

Jack Baylis	President	Present
Jim Kellogg	Vice President	Present
Jacque Hostler-Carmesin	Member	Absent
Eric Sklar	Member	Present
Anthony C. Williams	Member	Present

1. Public Forum

No action taken.

CONSENT ITEMS

2. Receive and approve request from Mr. Francesco Licata to transfer his California Halibut Trawl Vessel Permit No. BT0050 to Mr. Thomas Nguyen

3. Approve settlement agreement between the Department of Fish and Wildlife (Department) and Mr. Craig Yerkins, et al. regarding appeal of the Department's denial to reinstate Transferable Dungeness Crab Vessel Permit No. CT0068-T7 for F/V Terry S (FG03513)

CONSENT (continued)

4. Approve settlement agreement between the Department and Mr. Robert Jackson regarding his appeal of the Department's denial to reinstate Transferable Dungeness Crab Vessel Permit No. CT0215-T7 , for F/V Brooke Michelle (FG70433)

5. Approve settlement agreement between the Department and Mr. John Reid regarding his appeal of the Department's denial to reinstate Transferable Dungeness Crab Vessel Permit No. CT0108-T7 for F/V Huson (FG06579)

6. Approve Neushul Mariculture, Inc.'s request to renew state water bottom lease M-654-03 for aquaculture

The Commission adopted the consent calendar, items 2-6, as presented.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

7. Tribal Committee
   - (A) Meeting summary
     - I. Receive recommendations
   - (B) Work plan development
     - I. Update on current work plan and timeline
     - II. Discuss and approve new topics

No action taken.

8. Marine Resources Committee
   - (A) Work plan development
     - I. Update on current work plan and timeline
     - II. Discuss and approve new topics

The Commission approved draft agenda topics for the November 2015 Marine Resources Committee meeting, and approved placing on a future Commission meeting agenda a presentation from the California Wetfish Producers Association regarding squid research.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

9. Adopt proposed changes to commercial squid logbook and regulations (Section 149 and Appendix A, Title 14, CCR)

The Commission adopted squid logbook and regulation changes as proposed.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

10. Adopt proposed changes to commercial hagfish regulations
(Section 180.6, Title 14, CCR)

The Commission adopted commercial hagfish regulation changes as proposed, including a change from two lines to three which will require a 15-day notice.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

11. Adopt proposed changes to commercial herring regulations and certify the final supplemental environmental document
(Sections 163 and 164, Title 14, CCR)

The Commission certified the final supplemental environmental document for commercial herring and adopted commercial herring regulation changes as proposed.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

12. Adopt proposed changes to Dungeness crab and crab trap sport fishing regulations and negative declaration
(Sections 29.80 and 29.85, Title 14, CCR)

The Commission adopted the negative declaration for Dungeness crab and crab trap sport fishing and adopted Dungeness crab and crab trap sport fishing regulations as proposed.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

13. Discuss proposed changes to marine protected area regulations
(Section 632, Title 14, CCR)

No action taken.

14. Update and direction on petition for changes to sea urchin regulations

The Commission directed staff to begin working with the California Sea Urchin Commission on a draft initial statement of reasons and appropriate California Environmental Quality Act document for the proposal as presented, and to schedule a rulemaking for 2016.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

15. Climate change adaptation presentations and discussion
(A) Charlton Bonham, Director, Department of Fish and Wildlife

(B) Dr. Mark Gold, Associate Vice Chancellor, UCLA Institute of the Environment and Sustainability

The Commission will work closely with the Department and other relevant state agencies to develop policies specific to wildlife and climate change.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

16. Announce results from Executive Session

Christopher Ames reported that the Office of Administrative Hearing's proposed decision for Mr. Fred Todd has become final.

17. Department informational items
    (A) Director's report
    (B) Wildlife and Fisheries Division, and Ecosystem Conservation Division
    (C) Law Enforcement Division
    (D) Marine Region
    (E) Overview of aquaculture in California
    (F) Other

No action taken.

18. Other items
    (A) Staff report
    (B) Legislative update and possible action
    (C) Federal agencies report

No action taken.

The Commission meeting recessed at 4:31 p.m. to reconvene on October 8, 2015 at 8:00 a.m.

DAY 2 – OCTOBER 8, 2015

Pursuant to the call of the president, the Commission reconvened at the Embassy Suites – LAX North, 9801 Airport Drive, Los Angeles, California on October 8, 2015. The meeting was called to order at 8:04 a.m. by President Baylis.

FISH AND GAME COMMISSION ATTENDANCE

Jack Baylis	President	Present
Jim Kellogg	Vice President	Present
Jacque Hostler-Carmesin	Member	Absent
Eric Sklar	Member	Present
Anthony C. Williams	Member	Present

19. Public Forum

No action taken.

CONSENT ITEMS

20. Receive and approve initial Private Lands Wildlife Habitat Enhancement and Management Area (PLM) plans and 2015-2020 licenses for:
(Pursuant to Section 601, Title 14, CCR)
(A) Pacheco Ranch (Santa Clara County)
(B) Camp 5 Outfitters Roth Ranch (Monterey and San Luis Obispo Counties)

21. Approve the Department's request for a 30-day extension to complete its evaluation of the petition to list the Humboldt marten (*Martes caurina humboldtensis*) as an endangered species under the California Endangered Species Act
(Pursuant to Section 2073.5, Fish and Game Code)

The Commission adopted the consent calendar, items 20-21, as presented.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

22. Wildlife Resources Committee
(A) Meeting summary
I. Receive and adopt recommendations
II. Update and direction concerning definition of frangible bullet
III. Update and direction concerning take of sambar deer
(B) Work plan development
I. Update on current work plan and timeline
II. Discuss and approve new topics
III. Appointments to predator workgroup

The Commission approved recommendations of the Wildlife Resources Committee:

1. **Modify the definition of legal bullets for big game to exclude "frangible" bullets, after discussions with stakeholders.**
2. **Start a rulemaking to delete the prohibition on the use of GPS for hounds.**
3. **Support Department proposals for changes to upland game, mammals, Klamath River and waterfowl regulations.**
4. **Conduct additional investigation into the 12-month fishing license proposal and ways to encourage public participation in fishing.**
5. **Support efforts to increase efficiency in addressing depredating pigs.**
6. **Support the continuing effort to implement Fish and Game Code Section 3080(e).**

7. **Move forward with the predator policy workgroup nomination process, with initial, potential appointments in December.**

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

23. Items of interest from previous meetings

(A) Action on petitions for regulatory change received at the August 2015 meeting

(B) Action on petitions for non-regulatory changed received at the August 2015 meeting

The Commission adopted the staff recommendations for actions on the petitions for regulation change and requests for non-regulatory action.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

(C) Commission budget review

No action taken.

(D) Update on bobcat trapping prohibition effective date

No action taken.

(E) Update on at-risk fisheries rulemaking

No action taken.

(F) Other

No action taken.

24. Adopt proposed changes to the transgenic definition, application and fee regulations
(Sections 1.92 and 703, Title 14, CCR)

The Commission adopted changes to the transgenic definition, application and fee as proposed.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

25. Discuss proposed changes to sport fishing regulations
(Sections 1.05, et al., Title 14, CCR)

No action taken.

26. Request for authorization to publish notice of intent to amend commission meeting procedures regulations
(Section 665, Title 14, CCR)

The Commission directed staff to amend the agendas section of the proposed verbatim to (1) strike the vice president from the list of those who can amend agendas, and (2) change "amend" agendas to "add to" agendas.

Ayes: J. Baylis, E. Sklar, A. Williams

Noes: J. Kellogg

Absent: J. Hostler-Carmesin

The Commission provided additional suggestions and directed staff to bring a revised proposal for commission meeting regulations to the December 2015 meeting.

27. Tricolored blackbird (*Agelaius tricolor*)
   (A) Acknowledge receipt of petition from the Center for Biological Diversity to list as endangered via emergency regulation and via the listing process set forth under the California Endangered Species Act
   (Pursuant to Sections 2073.3 and 2076.5, Fish and Game Code)
   (B) Receive the Department's evaluation of the petition to list as an endangered species
   (Pursuant to 2073.5, Fish and Game Code)
   (C) Receive and act on requests from the Center for Biological Diversity to reconsider the Commission's June 2015 decision on whether listing as a threatened or endangered species may be warranted and to move consideration to the Commission's December 2015 meeting.

The Commission rejected the request for reconsideration of its June 2015 decision regarding the tricolored blackbird.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

The Commission acknowledged receipt of the August 2015 petition for emergency listing of the tricolored blackbird and received the Department's evaluation of the petition.

Ayes: J. Baylis, J. Kellogg, E. Sklar, A. Williams

Absent: J. Hostler-Carmesin

28. Department report on the status of Coho salmon
(Pursuant to Section 2113, Fish and Game Code)

No action taken.

29. Discussion and action on future meeting items

(A) Next meeting – December 9-10 in San Diego

The Commission approved the December agenda topics, with the addition of a presentation from the Department on the review of state laws and other resource agency policies related to climate change.

(B) Perpetual timetable for regulatory action updates (including changes to timing of DFW Lands Pass, falconry clean-up, spiny lobster, and commercial logbooks)

The Commission approved changes to anticipated regulatory actions as identified in the perpetual timetable.

(C) New business
I. Commission name
II. Timing of officer elections

No action taken.

There being no further business, the Commission meeting adjourned at 1:31 p.m.

EXECUTIVE SESSION

(Not Open to Public)

Pursuant to the authority of Government Code Section 11126(a)(1) and (e)(1), and Section 309 of the Fish and Game Code, the Commission will meet in closed Executive Session. The purpose of this Executive Session is to consider:

(A) Pending litigation to which the Commission is a party

I. Big Creek Lumber Company and Central Coast Forest Assoc. v. California Fish and Game Commission (Coho listing, south of San Francisco)

II. James Bunn and John Gibbs v. California Fish and Game Commission (squid permits)

III. Center for Biological Diversity and Earth Island Institute v. California Fish and Game Commission (black-backed woodpecker)

IV. Dennis Sturgell v. California Fish and Game Commission, California Department of Fish and Wildlife, and Office of Administrative Hearings (revocation of Dungeness crab vessel permit No. CT0544-T1)

V. Kele Younger v. California Fish and Game Commission, et al. (restricted species inspection fee waiver and Administrative Procedure Act)

(B) Possible litigation involving the Commission

I. Tricolored blackbird
II. Bobcat trapping prohibition

(C) Staff performance and compensation

(D) Update on hearing officer recommendations for license and permit items

I. Mr. Fred Todd

FISH AND GAME COMMISSION
2015 MEETING SCHEDULE
www.fgc.ca.gov

MEETING DATE	COMMISSION MEETING	COMMITTEE MEETING
November 4		**Marine Resources** Four Points by Sheraton Ventura Harbor Resort 1050 Schooner Drive Ventura, CA 93001
December 9-10	Town and Country Resort & Convention Center 500 Hotel Circle North San Diego, CA 92108	

OTHER MEETINGS OF INTEREST

Wildlife Conservation Board

- November 19, 2015, Sacramento, CA

Pacific Fishery Management Council

- November 14-19, 2015, Garden Grove, CA
- March 9-14, 2016, Sacramento, CA
- April 9-14, 2016, Vancouver, WA
- June 23-28, 2016, Tacoma, WA
- September 15-20, 2016 Boise, ID
- November 16-21, 2016, Garden Grove, CA

Western Association of Fish and Wildlife Agencies

- January 7-10, 2016, San Diego, CA
- July, 2016, Cody, WY

California Fish and Game Commission

Staff Report on Staff Time Allocation

November 25, 2015

Staff time is a tangible and invaluable asset. This report identifies where Commission staff allocated working time to general categories during September and October 2015 (see table); note that the total percentage of staff time is greater than 100% as a result of overtime. This report also highlights some of the specific activities for October, November and December.

General Allocation

Category*	Sep Staff Time Expended	Oct Staff Time Expended
Regulatory Program	15%	12%
Commission Meetings	20%	17%
Legal Matters	2%	2%
External Affairs	7%	8%
Special Projects	2%	1%
Administration	18%	25%
Leave Time	18%	17%
Unfilled Positions	21%	22%
Total Staff Time	103%	103%

Note: Total staff time is greater than 100% due to overtime

Activity Highlights

Highlights for activities conducted in October:

- Prepared for and conducted the October Commission and Tribal Committee meetings
- Prepared for the November Marine Resources Committee meeting
- Participated in the fishing from piers stakeholder meeting in Santa Monica
- Began preparations for arrival of new attorney
- Participated in Tribal Leaders Forum in Sacramento
- Hosted commissioner for office hours
- Participated in a “climate change and fisheries” meeting with the Ocean Protection Council and California Department of Fish and Wildlife
- Participated in the California Department of Fish and Wildlife’s red abalone fishery management plan development meetings
- Six staff completed a 3-day course titled “Economic Tools for Resource Management”
- Participated in California Department of Fish and Wildlife kickoff meeting for Marine Life Management Act master plan amendments and a related data evaluation workshop

Highlights of activities conducted or expected for November:

- Prepared for and conducted the November Marine Resources Committee meeting
- Prepared for and conducted emergency Commission meeting, and participated in follow-up meetings, regarding domoic acid in crabs
- Prepared materials for the December Commission meeting
- Hosted commissioners for office hours
- Begin onboarding new attorney
- Presented to the Governor's Tribal Drought Task Force regarding tribal consultation
- Conducted interviews with potential wildlife resource advisor candidates
- Reviewed personnel files and conducted reference checks for potential wildlife resource advisor candidates
- Participated in the Marine Protected Areas North Coast Collaborative meeting
- Participated in quarterly regulatory coordination meeting with the California Department of Fish and Wildlife
- Assist in search for interim executive director and begin preparations for the transition from executive director

Highlights of activities expected for December:

- Prepare for and conduct the December Commission meeting
- Assist Commission in recruitment of new executive director and interim executive director
- Prepare for the January Wildlife Resources Committee
- Participate in the California Department of Fish and Wildlife's Joint Leadership Team meeting
- Participate in a legislative hearing on crab in Santa Rosa
- Conduct second round of interviews for wildlife resource advisor candidates
- Participate in meetings on fisheries and fishery management plans
- Participate in California Sea Urchin Commission meeting in Los Alamitos
- Participate in the Marine Protected Areas Statewide Leadership Team meeting
- Participate in a tour of the Fund for Animals Wildlife Center in Ramon

*** General Allocation Categories with Sample Tasks**

Regulatory Program

- Coordination meetings with DFW to develop timetables and notices
- Prepare and file notices, re-notices, ISORS and FSORs
- Review and process CESA petitions
- Track and respond to public comments
- Consult, research and respond to inquiries from OAL
- Prepare administrative records

Commission/Committee Meetings and Support

- Research and review practices and procedures for adaptive management
- Research and compile subject-specific information
- Review and develop policies
- Develop and distribute meeting agendas and materials
- Agenda and debrief meetings
- Prepare meeting summaries and audio files
- Maintain voting records
- Develop and distribute after-meeting memos/letters
- Make travel arrangements for staff and commissioners
- Conduct onsite meeting management
- Process submitted meeting materials
- Provide commissioner support (expense claims, office hours, etc.)
- Process and analyze regulatory petitions and non-regulatory requests

Legal Matters

- Respond to Public Records Act requests
- Process appeals and accusations
- Process requests for permit transfers
- Process kelp and state water bottom leases
- Litigation

External Affairs

- Engage and educate legislators, monitor legislation
- Maintain state, federal and tribal government relations
- DFW partnership, including joint development of management plans and concepts

Special Projects

- Predator Policy Workgroup
- Fishing from piers and jetties
- Fisheries Bycatch Workgroup
- Streamline routine regulatory actions

Administration

- Correspondence
- Purchases and payments
- Contract management
- Personnel management
- Strategic planning
- Budget development and tracking
- Health and safety oversight
- Internal processes and procedures
- Staff training and professional development

Leave Time

- Holidays
- Sick leave
- Vacation
- Absence without leave

Unfilled

- Wildlife Advisor
- Executive secretary

Media Contact: Brady Phillips
202-407-1298

New award recognizes outstanding efforts to increase awareness and safeguard U.S. natural resources from climate change

Individuals or groups can be nominated until January 8, 2016

November 12, 2015

As part of President Obama's Climate Action Plan and the National Fish, Wildlife & Plants Climate Adaptation Strategy, an interagency group of federal, state, and tribal agencies today announced creation of a new Climate Adaptation Leadership Award for Natural Resources.

The Award will recognize the actions of individuals and organizations that are making a difference by increasing understanding of climate impacts, adapting to and reducing threats, increasing response capabilities, and providing other innovative approaches to reducing impacts and increasing resilience in a changing climate. It will help spotlight innovative tools and actions that are making a difference now, and serve as a source of inspiration for additional efforts that advance climate smart resource conservation and management.

"Our climate is changing, and these changes are already affecting the nation's valuable wildlife and natural resources," said Michael Bean, Principal Deputy Assistant Secretary of the Interior for Fish and Wildlife and Parks. "This new Award recognizes outstanding leadership by organizations and individuals that is critical to help advance the resilience of our natural resources and the people, communities, and economies that depend on them."

Establishment of the Climate Adaptation Leadership Award for Natural Resources was one of the commitments announced as part of the Administration's Priority Agenda for Enhancing the Climate Resilience of America's Natural Resources in 2014.The agenda calls for a commitment across the federal government to support resilience of America's vital natural resources.

The Award also directly addresses the goals of the National Fish, Wildlife, and Plants Climate Adaptation Strategy, which was developed by a coalition of federal, state, and tribal natural resource agencies. These include:

- Goal 1: Conserve and connect species, habitats and ecosystems;
- Goal 2: Manage species and habitats to protect ecosystem functions and provide sustainable use;

- Goal 3: Enhance management capacity;
- Goal 4: Support adaptive management;
- Goal 5: Increase knowledge and information on natural resource impacts and responses to climate change;
- Goal 6: Increase awareness and motivate action to safeguard natural resources; and
- Goal 7: Reduce non-climate stressors to natural resources.

"State fish and wildlife agencies serve as stewards of the nation's fish and wildlife resources," said Dave Chanda, President of the Association of Fish and Wildlife Agencies, which is helping to lead implementation of the National Fish, Wildlife, and Plants Climate Adaptation Strategy. "Today's threats to fish, wildlife, and their habitats are exacerbated by climate change and underscore the need for incorporating climate adaptation in to conservation and science-based management." Nominations will be accepted until January 8, 2016. Individuals, groups, organizations and government agencies are eligible to apply. Three to five Awards are expected to be announced in 2016.

Fish, wildlife, and plant resources provide important benefits and services to Americans every day, including jobs, income, food, clean water and air, building materials, storm protection, tourism and recreation. For example, hunting, fishing and other wildlife-related recreation contribute an estimated $120 billion to our nation's economy every year, and marine ecosystems sustain a U.S. seafood industry that supports approximately 1.7 million jobs and $200 billion in economic activity annually.

Award sponsors include the U.S. Department of the Interior, U.S. Fish & Wildlife Service, the Commerce Department's National Oceanic and Atmospheric Administration, the Natural Resources Conservation Service and the U.S. Forest Service. They will sponsor the award in collaboration with the National Fish, Wildlife, and Plants Climate Adaptation Strategy's Joint Implementation Working Group, which is composed of representatives from 21 federal, state and tribal natural resource agencies.

For more information about the Award or how to apply, please visit the Climate Adaptation Leadership Award main page.

NOAA's mission is to understand and predict changes in the Earth's environment, from the depths of the ocean to the surface of the sun, and to conserve and manage our coastal and marine resources. Join us on Facebook, Twitter, **Instagram** and our other social media channels.

State of California
Department of Fish and Wildlife

Memorandum

Date: ~~October 23,~~ November 11 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Petition from the Environmental Protection Information Center and the Center for Biological Diversity to list the Humboldt marten as Endangered under the California Endangered Species Act**

The Department of Fish and Wildlife (Department) prepared the attached petition evaluation report in response to a petition, dated June 1, 2015, received by the Fish and Game Commission (Commission) on June 8, 2015 (Petition) from the Environmental Protection Information Center and the Center for Biological Diversity to list the Humboldt marten (*Martes caurina humboldtensis*) as an endangered species under the California Endangered Species Act (CESA). (See generally Fish and Game code §2073.5, subd. (a); Cal Code Regs., title 14, §670.1, subd. (d)(1).)

In accordance with CESA, the attached petition evaluation report delineates the categories of information required in a petition, evaluates the sufficiency of the information in the Petition, and incorporates additional relevant information that the Department possessed or received during the review period. Based upon the information contained in the Petition, the Department has determined that there is sufficient information to indicate that the petitioned action may be warranted. The Department recommends that the Petition be accepted.

If you have any questions or need additional information, please contact Dan Yparraguirre, Deputy Director, Wildlife and Fisheries Division at (916) 653-4673 or Eric Loft, Chief, Wildlife Branch at (916) 445-3555.

Attachment

State of California
Natural Resources Agency
Department of Fish and Wildlife

REPORT TO THE FISH AND GAME COMMISSION

EVALUATION OF THE PETITION FROM THE ENVIRONMENTAL PROTECTION INFORMATION CENTER AND THE CENTER FOR BIOLOGICAL DIVERSITY TO LIST THE HUMBOLDT MARTEN (*MARTES CAURINA HUMBOLDTENSIS*) AS ENDANGERED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT

Keith Slauson photo used with permission

Prepared by
California Department of Fish and Wildlife

October 13, 2015

I. Executive Summary

The Environmental Protection Information Center (EPIC) and the Center for Biological Diversity (CBD, collectively Petitioners) submitted a petition (Petition) to the Fish and Game Commission (Commission) to list the Humboldt marten (*Martes caurina humboldtensis*) as endangered pursuant to the California Endangered Species Act (CESA)(Fish & G. Code, § 2050, et seq.).

Pursuant to Fish and Game Code Section 2073.5 and Section 670.1 of Title 14 of the California Code of Regulations, the Department of Fish and Wildlife (Department) has prepared this evaluation report for the Humboldt marten petition (Petition Evaluation). The Petition Evaluation is an evaluation of the scientific information discussed and cited in the Petition in relation to other relevant and available scientific information possessed by the Department during the evaluation period. The Department's recommendation as to whether to make Humboldt marten a candidate for listing under CESA is based on an assessment of whether the scientific information in the Petition is sufficient under the criteria prescribed by CESA to determine that listing of the Humboldt marten may be warranted.

In completing its Petition Evaluation, the Department has determined there is sufficient scientific information to indicate that the petitioned action may be warranted. Therefore, the Department recommends the Commission accept the Petition for further consideration under CESA.

After reviewing the Petition and other relevant information, the Department makes the following findings:

I. Population Trend. The population of Humboldt martens in California has declined from an unknown "fairly numerous" number in the early 20th century to a present population which likely numbers less than 100 individuals.

II. Range. The Petition and other available information indicate the Humboldt marten's range in California is substantially reduced from its historical extent.

III. Distribution. Humboldt martens are unevenly distributed within the bounds of their California range. Whether changes in distribution have occurred over time is unknown.

IV. Abundance. Information in the Petition and other information available to the Department indicate that historically martens were far more abundant than they are today.

V. Life History. The Petition contains sufficient information on the relevant life history traits of Humboldt marten.

VI. Kind of Habitat Necessary for Survival. The Petition and other information available to the Department indicate that Humboldt martens are dependent on specialized habitats for their survival and reproduction, and those habitats are limited on the landscape.

VII. Factors Affecting the Ability to Survive and Reproduce. The Petition contains sufficient information to conclude that Humboldt martens are subject to a variety of threats that have the potential to adversely affect their ability to survive and reproduce.

VIII. Degree and Immediacy of Threat. The Petition contains sufficient information to conclude the degree and immediacy of some threats have the potential to adversely affect Humboldt martens at the population level.

IX. Impacts of Existing Management. The Petition contains sufficient information to conclude that existing management efforts alone are unlikely to maintain a self-sustaining population of Humboldt martens in California.

X. Suggestions for Future Management. The Petition contains sufficient information to conclude that additional management efforts may be necessary to maintain a self-sustaining population of Humboldt martens in California.

II. Introduction

A. Candidacy Evaluation

CESA sets forth a two-step process for listing a species as endangered. First, the Commission determines whether a species is a candidate for listing by determining whether "the petition provides sufficient information to indicate that the petitioned action may be warranted." (Fish & G. Code, § 2074.2, subd. (a)(2).) Within 10 days of receipt of a petition, the Commission must refer the petition to the Department for evaluation (Fish & G. Code, § 2073.) The Commission must also publish notice of receipt of the petition in the California Regulatory Notice Register. (Fish & G. Code, § 2073.3, subd. (a).) Within 90 days of receipt of the petition, the Department must evaluate the petition on its face and in relation to other relevant scientific information and submit to the Commission a written evaluation report with one of the following recommendations (Fish & G. Code, § 2073.5, subd. (a)(1)-(2)):

- Based upon the information contained in the petition, there is not sufficient information to indicate that the petitioned action may be warranted, and the petition should be rejected; or
- Based upon the information contained in the petition, there is sufficient information to indicate that the petitioned action may be warranted, and the petition should be accepted and considered.

If the petition is accepted for consideration, the second step requires the Commission to determine, after a year-long review of the subject species based on the best scientific information available to the Department, whether listing as endangered is or is not actually warranted. (Fish & G. Code, § 2074.6, subd. (a) and 2075.5.)

In *Center for Biological Diversity v. California Fish and Game Commission* (2008) 166 Cal.App.4th 597, the California Court of Appeals addressed the parameters of the Commission's discretion in its application of the threshold candidacy test. The court began its discussion by describing the candidacy test previously set forth in *Natural Resources Defense Council v. California Fish and Game Commission* (1994) 28 Cal.App.4th 1104, 1114:

> As we explained in *Natural Resources Defense Council* [citation], "the term 'sufficient information' in section 2074.2 means that amount of information, when considered

> with the Department's written report and the comments received, that would lead a reasonable person to conclude the petitioned action may be warranted." The phrase "may be warranted" "is appropriately characterized as a 'substantial possibility that listing could occur.'" "Substantial possibility," in turn, means something more than the one-sided "reasonable possibility" test for an environmental impact report but does not require that listing be more likely than not.

(*Center for Biological Diversity*, at pp. 609-610.) The court acknowledged that "the Commission is the finder of fact in the first instance in evaluating the information in the record." (*Id.* at p. 611.) However, the court clarified:

> [T]he standard, at this threshold in the listing process, requires only that a substantial possibility of listing could be found by an objective, reasonable person. The Commission is not free to choose between conflicting inferences on subordinate issues and thereafter rely upon those choices in assessing how a reasonable person would view the listing decision. Its decision turns not on rationally based doubt about listing, but on the absence of any substantial possibility that the species could be listed after the requisite review of the status of the species by the Department[.] (*Ibid*.)

B. Petition History

On June 8, 2015, the California Fish and Game Commission received Petitioners' Petition to list Humboldt marten as endangered under CESA. On June 18, 2015, the Commission referred the Petition to the Department for evaluation. The Department requested of the Commission, and was granted, a 30-day extension to the 90-day Petition evaluation period. This is the first time the Humboldt marten has been petition for listing under CESA.

The Humboldt marten was petitioned for listing under the federal Endangered Species Act (ESA) by the same Petitioners in 2010. In April 2015 the United States Fish and Wildlife Service (USFWS) found that listing the coastal distinct population segment (DPS) of the Pacific marten as threatened or endangered under the ESA was not warranted (80 FR 18742). Importantly, the USFWS evaluated coastal Oregon populations of Pacific marten (*Martes caurina caurina*) and the California Humboldt marten population collectively as one DPS when making its determination.

The Department evaluated the sufficiency of the scientific information presented in the Petition it received, using information in the Petition as well as other relevant scientific information available at the time of review. Pursuant to Fish and Game Code section 2072.3 and Section 670.1(d)(1) of Title 14 of the California Code of Regulations, the Department evaluated whether the Petition includes sufficient scientific information regarding each of the following petition components:

- Population trend;

- Range;
- Distribution;
- Abundance;
- Life history;
- Kind of habitat necessary for survival;
- Factors affecting ability to survive and reproduce;
- Degree and immediacy of threat;
- Impacts of existing management;
- Suggestions for future management;
- Availability and sources of information; and
- A detailed distribution map.

C. Humboldt Marten Description and Ecology

The Humboldt marten is a carnivorous mammal (order Carnivora, family Mustelidae), classified as a subspecies of Pacific marten (*Martes caurina*), a species occurring west of the Rocky Mountain Divide which was recently split from the American marten (*Martes americana*, Dawson and Cook 2012). The taxonomy of martens in the Pacific Northwest is currently unsettled, and some recent genetic evidence suggests that Humboldt martens and martens in coastal Oregon currently classified as *M. caurina caurina* are closely related, and should all be classified as Humboldt marten (Slauson et al. 2009a, USFWS 2015 p.5). California is also home to the closely related Sierra marten subspecies (*M. caurina sierrae*), which ranges throughout the Sierra Nevada and northern interior mountains and is not the subject of this Petition (figure 1). Humboldt martens historically occupied the coastal mountains of California from Sonoma County north to the Oregon border from sea level to 915m (3,000 ft.) within 80 km (50 mi.) of the coast, (Grinnell and Dixon 1926, Zielinski et al 2001, USFWS 2015). The current distribution is limited to areas of Humboldt, Del Norte, and Siskiyou Counties, encompassing less than 5% of the probable historical range (figure 1, Slauson et al. 2009b, USFWS 2015).

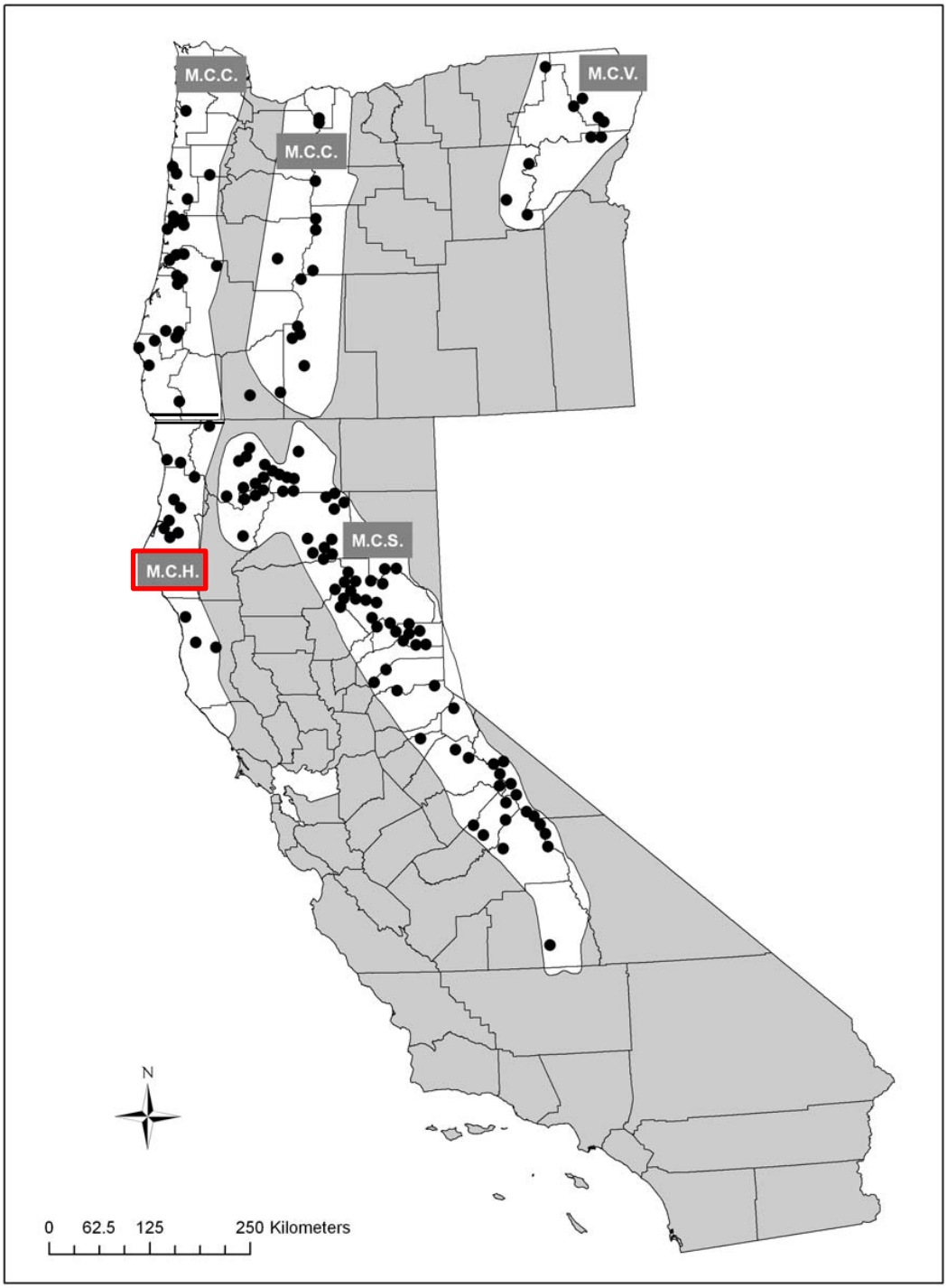

Figure 1. Historical range and distribution of Pacific marten subspecies occurring in Oregon and California. Range boundaries (white polygons) and historical records of occurrence (black circles) are modified from Zielinski et al. (2001, p. 480). Subspecies: *M. c. humboldtensis* (M.C.H.), *M. c. sierrae* (M.C.S.), *M. c. caurina* (M.C.C.), *M. c. vulpina* (M.C.V.). Source: USFWS 2015. Used with permission.

Martens appear elongated and low to the ground as do other members of the weasel family, though larger and stockier than long-tailed weasels (*Mustela frenata*), and with longer tail and body fur than similarly sized minks (*Neovison vison*). Pelage (fur) is brown (varying from yellowish buff to nearly black), with a contrasting lighter patch on the throat and chest. Bushy tails constitute more than 1/3 of the overall body length. Overall body lengths range from 45-70cm (18-28 in.) and weights range from 0.4-1.25 kg (0.88-2.76 lbs.), with males averaging 15% longer than females and up to 65% heavier than females (Powell et al. 2003, Clark et al. 1987). Humboldt martens differ from Sierra marten by having darker, richer golden fur, reduced throat patch, more extensive dark fur on feet, legs, and tail, smaller skulls, narrower faces (rostra), and differences in dentition (Grinnell and Dixon 1926, Grinnell et al. 1937, USFWS 2015).

North American martens are polygamists, with females producing their first litter at around 24 months of age (Markley and Basset 1942). Parturition typically occurs in March or April, with litters averaging 2-3 kits (Strickland et al. 1982). Marten young begin dispersing from their natal range as early as August, and may continue through the following summer (USFWS 2015). The average dispersal distance of North American martens is typically short, less than 15km (9.3 mi., Ibid.). The number of kits that survive to reproductive age is unknown. In California, Pacific martens seldom survive longer than 5 years in the wild (USFWS 2015). Martens are intrasexually territorial (i.e. adults exclude members of the same sex from their territories, but not members of the opposite sex, Powell et al. 2003), with marten home ranges in the Sierra Nevada varying from 170 - 733 ha (420 - 1,811 ac.) for males and from 70 - 580 ha (173 - 1,433 ac.) for females (Buskirk and Zielinski 1997). The limited available information on Humboldt marten home ranges suggests they are similar in size to Sierra marten home ranges (USFWS 2015).

Humboldt marten are strongly associated with two distinct habitat types: late successional conifer stands with dense shrub layers where abundant live and dead standing and downed tree structures are used for resting, denning, and escape cover; and serpentine soil communities of various seral stages with variable tree cover, dense shrubs, and rock piles and rock outcrops used for resting, denning, and escape cover. Large patches of late successional conifer forests or serpentine soil formations appear to be necessary for Humboldt marten occupancy (Slauson et al. 2007). The diet of Humboldt martens consists primarily of small mammals, berries, birds, insects and reptiles. Chipmunks (*Tamias spp.*), red-backed voles (*Myodes californicus*), Douglas's squirrels (*Tamiasciurus douglasii*) and flying squirrels (*Glaucomys sabrinus*) constitute 85 percent of the mammalian biomass in the diet during the summer and fall. Diets shift seasonally, with berries consumed more frequently in the summer and fall (Slauson et al. 2007).

Known predators of martens in western North America include coyote (*Canis latrans*), red fox (*Vulpes vulpes*), bobcat (*Felis rufus*), and great horned owl (*Bubo virginianus*). Fishers are also known to kill martens, and the distribution of fisher populations may limit the distribution of marten (USFWS 2015, Krohn et al. 2004).

II. Sufficiency of Scientific Information to Indicate the Petitioned Action May Be Warranted

A. Population Trend (pp. 4-5)

1. Scientific Information in the Petition

The Petition states that Humboldt martens were historically common, but had become so rare by the late 1990's that some believed the subspecies was extinct before they were detected again in 1996, and no verifiable detection records of Humboldt martens have been found for the period of 1945-1995 (citing Slauson et al. 2001, "Kucera et al. 1995" which is not listed in the literature cited section of the Petition but appears to refer to Kucera and Zielinski 1995 based on content, Zielinski and Golightly 1996, Slauson et al. 2009b, Slauson and Zielinski 2004). The Petition states that the extant population in California is likely less than 100 individuals and the population appears to have declined by over 40% over the period of 2000-2008, and then remained unchanged during the period of 2008-2012 (citing Slauson and Zielinski 2009, but based on content presumably referring to Slauson et al. 2009b and USFWS 2015). Additionally, the Petition states the size of the coastal population of martens in Oregon is unknown, but believed to be small. The Petition also references USFWS (2015) which notes that experts have serious concerns about the viability of the three extant populations of coastal martens (two in Oregon and one in California, citing Slauson et al. 2009a). The Petition further indicates that Kucera (1998) reported concern for Humboldt marten based in part on severe population declines, and Slauson et al. (2009b) expressed concern for the viability of coastal marten populations due to small population size, population isolation, and ongoing threats.

2. Other Relevant Scientific Information

In addition to the sources cited in the Petition, Grinnell et al. (1937) stated that Humboldt martens were "fairly numerous" in "earlier years" (p. 209), however, apparent declines in the Humboldt marten population, at least locally, were noted as early as the 1920s (pp. 209-210). Grinnell et al. (1937) report a tale of one trapper capturing 50 Humboldt martens in a single winter. Although it is impossible to quantify the statement that the species was once "fairly numerous", one can reasonably infer that the number of martens present at that time was larger than the population present in the 1990s when no detections of the species had been recorded for the previous 50 years (Zielinski and Golightly 1996).

3. Conclusion

The Petitioners cite relevant literature regarding the population trend of Humboldt martens in California. While no quantitative data exist regarding the population in the era of European American settlement, qualitative statements suggest the species was not uncommon (Grinnell et al. 1937). The Petitioners reference and accurately represent the findings and conclusions of the only known rigorous

quantitative estimate of the species' population in California derived from occupancy rates (i.e. Slauson et al. 2009b) which found a significant decline in occupancy between the 2000 -2001 field season and the 2008 season. This resulted in an estimate of less than 100 martens in northwestern California. Based upon the Petition and other information available to the Department, it appears the population of Humboldt marten in California has declined from an unknown "fairly numerous" number in the early 20th century to a present population estimate of fewer than 100 individuals.

B. Range and Distribution (pp. 6-7)

1. Scientific Information in the Petition

The Petition describes the historical range of Humboldt marten in California as coastal forests from Sonoma County north to Curry County Oregon (referencing Grinnell et al. 1937, Kucera 1998, and Slauson et al. 2001), and notes records of the species from Colusa, Del Norte, Glenn, Humboldt, Lake, Mendocino, Siskiyou, Tehama, and Trinity Counties from NatureServe (2015). The Petition states that Humboldt martens have been extirpated from 95% of their historic range in California (Slauson et al. 2007), and are now limited to an area approximately 2,273 km^2 (877 mi^2) (Petitioners state the estimate is based on analysis of Slauson et al 2009c data, however it appears the estimate was based on Slauson et al. 2009a).

2. Other Relevant Scientific Information

The Department possesses historical records of Humboldt marten from Del Norte, Humboldt, Siskiyou, Trinity, Tehama, Mendocino, Lake, Colusa, and Glenn Counties (California Natural Diversity Database [CNDDB] query August 8, 2015, fig. 2). Colusa and Glenn Counties are included due to a single record attributed to Snow Mountain near where Colusa, Glenn, and Lake Counties intersect. There are some experts who question whether the Humboldt marten historically occurred in Lake County because historical records from the area are attributed to trapper reports which are known to sometimes refer to the locations of the trapper's camps rather than the locations animals were taken, and because the habitat in Lake County today is dissimilar to the habitat known to be occupied by Humboldt marten in northwestern California (Slauson and Zielinski 2007, Greg Schmidt pers. comm. 7/23/15, USFWS 2015). However, trappers interviewed by Twining and Hensley (1947) reported that martens had formerly been taken as far south as Hull Mountain in northern Lake County and Fort Ross in Mendocino County, suggesting that historical records from this area may be accurate. All historical CNDDB observation records appear to be less than 100 km (<60 mi.) from the coast. The historical range described by Grinnell et al. (1937) was roughly 22,000 km^2 (8,500 mi^2), although not all of the habitat within the bounds of the historical range would have been suitable or occupied. Within the historical range, the distribution of marten record locations is uneven, with concentrations of records from northern Lake and east-central Mendocino County, an area southeast of Eureka, and near the intersection of Del Norte, Humboldt, and Siskiyou counties (fig. 2). Whether these concentrations reflect the relative density of martens within the range or are artifacts of uneven trapping or survey efforts is unknown. By the 1940s a significant decline in Humboldt marten trapping returns and a retraction of the southern

end of the range had been noted (Twining and Hensley 1947). Zielinski et al. (2001) conducted an exhaustive review of historical coastal marten records including published reports, museum specimens, unpublished notes of naturalists and trappers, and interviews of tribal members and others. Based on their review they concluded that a significant reduction in occupied range has occurred.

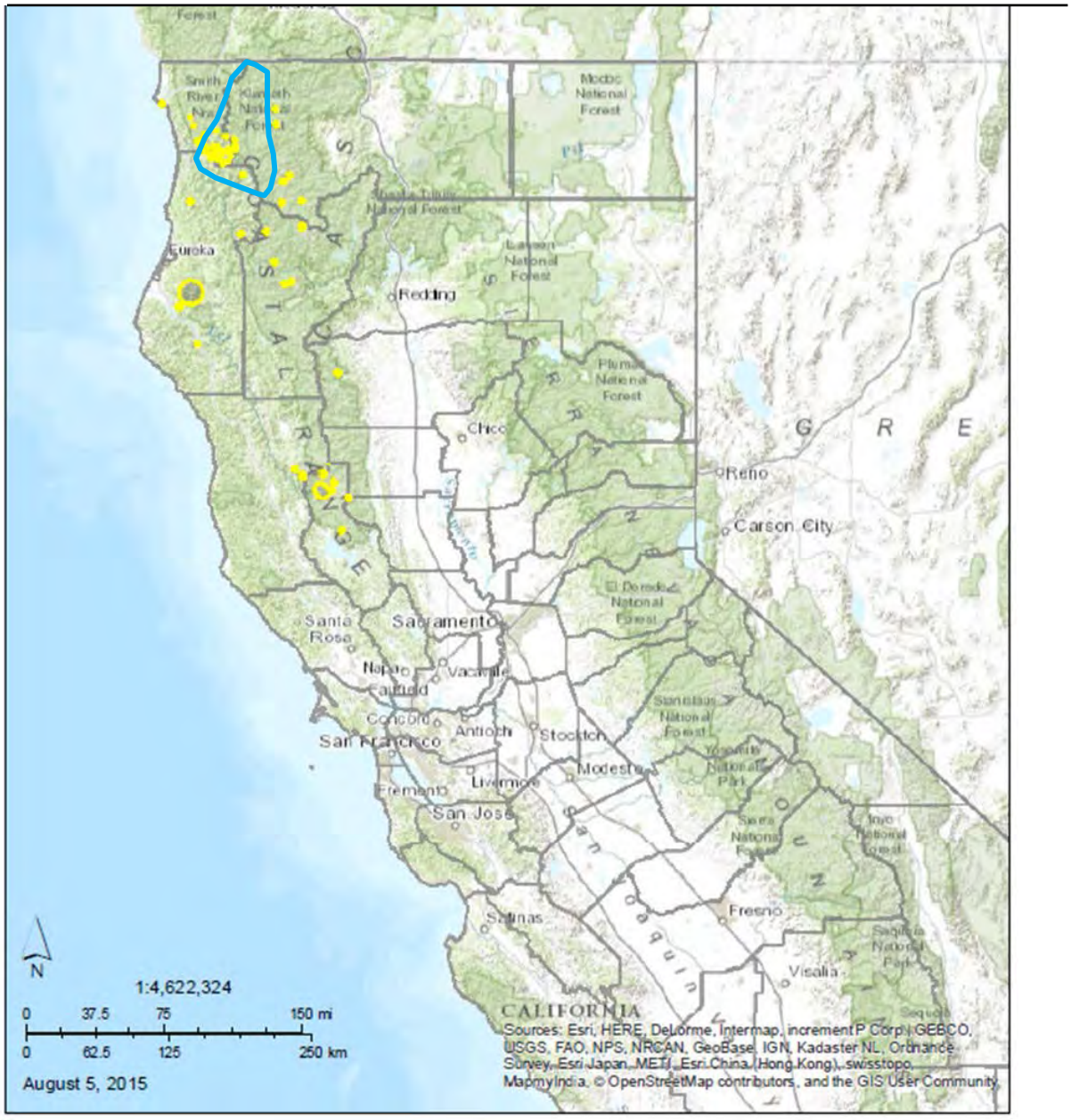

Figure 2. Humboldt marten occurrence records from the California Natural Diversity Database 1889-2004. Blue polygon represents approximate contemporary range in California (Humboldt marten records from database and literature 1995-2015).

The Department is aware of Humboldt marten records only from southern Del Norte, northern Humboldt, and extreme eastern Siskiyou Counties since 1995 (CNDDB query August 8, 2015) despite the fact that surveys during that period covered a much larger portion of the historical range (USFWS 2015). The occupied range (as of year 2008) as circumscribed by a minimum convex polygon drawn around detection locations was recently found to be 627 km^2 (242 mi^2) by Slauson et al. (2009b). Since that time, the known occupied range has expanded slightly with two detections of Humboldt martens in Prairie Creek Redwoods State Park in 2013, a few kilometers from the coast (CDFW 2014). Although there have been recent surveys at over 3,000 locations and 50,000 survey nights, no comprehensive range-wide survey has been conducted for this species (USFWS 2015).

3. Conclusion

Humboldt marten historically ranged from Sonoma County north to the Oregon border within 96 km (60 mi.) of the coast. The size of the historical range described by Grinnell et al. (1937) was roughly 22,000 km^2 (8,500 mi^2), and the area known to be occupied by Humboldt marten in northern California since 1995 is slightly larger than 627 km^2 (242 mi^2, Slauson et al. 2009b). Humboldt martens are distributed unevenly within their range. Based upon the Petition and other information available to the Department, the current range of Humboldt marten in California is clearly substantially reduced from the historical range.

C. Abundance (p. 8))

1. Scientific Information in the Petition

The Petition presents information on the abundance of Humboldt marten in California in a short table listing the estimate of Slauson et al. (2009b) of less than 100 individuals in north coastal California.

2. Other Relevant Scientific Information

The study referenced by the Petitioners is the only known estimate of Humboldt marten abundance in California.

3. Conclusion

The only known estimate of Humboldt marten abundance in California is less than 100 individuals. Historical estimates of abundance do not exist, but anecdotal information on trapping success, and the much larger historical range (Grinnell et al. 1937, Twining and Hensley 1947, Zielinski et al. 2001) could reasonably lead one to conclude that historically martens were more abundant and more widely distributed. Based upon the Petition and other information available to the Department, current abundance of less than 100 individuals leads the Department to conclude that listing marten may be warranted.

D. Life History (pp. 9-13)

1. Scientific Information in the Petition

The Petition describes the physical appearance of Humboldt martens and the morphological differences between Humboldt martens and the Sierran subspecies of martens. The Petition then describes the current accepted taxonomy of Humboldt marten (*M. caurina humboldtensis*) and the results of recent genetic investigations that found both Humboldt martens and martens in coastal Oregon (currently classified *as M. Caurina caurina*) shared unique genetic signatures, suggesting Humboldt martens and coastal Oregon martens share an evolutional lineage, and calling into question the separation of the two subspecies (Slauson et al. 2009a, USFWS 2015).

In describing the life history of Humboldt martens the Petitioners emphasize the traits that limit martens' (all North American marten species) ability to quickly repopulate following a population decline: late sexual maturity (24 months to first litter [Strickland et al. 1982]), low pregnancy rates during times of environmental stress (as low as 50% [Thompson and Colgan 1987]), a single litter per year (Calder 1984), small litter size (ranging from 1-5, averaging 2.85 [Strickland and Douglas 1987]), and relatively low population densities for an animal or their size (Buskirk and Ruggierro 1994, Kucera 1998). Reproductive cycle and longevity are then described in detail.

Home range size and composition are described as well as the relationship between habitat quality and home range size. The Petitioners, citing USFWS (2015), described the strong habitat selection exhibited by martens at the home range scale, with Pacific and American marten home ranges typically including 70% or more late successional forest habitat. The Petitioners note an inverse relationship between habitat quality and home range size, with the largest Pacific marten home ranges in California and Oregon occupying the most intensively logged landscapes (USFWS 2015).

2. Other Relevant Scientific Information

See life history information under Section I above.

3. Conclusion

The Petition accurately describes the appearance of Humboldt martens (see section I of this report for description), and the current taxonomic understanding of the subspecies. The reproductive biology of martens is well described and supported by appropriate literature. Home range size and composition is also accurately described and referenced.

E. Kind of Habitat Necessary for Survival (pp. 13-16)

1. Scientific Information in the Petition

The Petition emphasizes the highly habitat-specific nature of North American martens and their vulnerability to habitat loss and degradation (citing Harris 1984, Buskirk and Ruggiero 1994, Slauson 2003). Petitioners describe the strong association of martens to closed-canopy old-growth forests with complex structure near the ground (Buskirk and Powell 1994, Buskirk and Ruggiero 1994, Bull et al. 2005), the avoidance of young forests and open areas (Drew 1995, Buskirk and Ruggiero 1994, Slauson et al. 2007), and unwillingness to cross large areas with low canopy closure (Hargis and McCullough 1984, Bissonette and Sherburne 1993, Thompson and Harestad 1994, Hargis et al. 1999). The Petition describes the preference of martens for unlogged, old-growth stands with high canopy cover, multiple canopy layers, and high tree and log densities over harvested stands, early seral stages, and stands with few dead trees (citing Spencer et al 1983, Buskirk and Ruggiero 1994, Raphael and Jones 1997, Bull et al. 2005, and others). Regarding Humboldt martens specifically, the Petition quotes Slauson et al. (2003): "The [Humboldt] marten does not occur in extensively logged redwood forests and currently only occurs in conifer-dominated, late-mature and old-growth forests with dense shrub cover or near-coast serpentine communities with dense shrub cover."

The Petition describes three types of coastal conifer forest used by Humboldt marten in California: Old-growth Douglas-fir forests, mixed conifer forests on serpentine soils, and old-growth redwood forests (Slauson 2003, Slauson and Holden 2009). Serpentine soils are described as sites where the mineral composition of the soil creates a harsh growing environment for most plants and results in open, rocky sites with stunted trees (citing Slauson et al. 2007). The Petition further states that in both serpentine soil forests and non-serpentine soil forests, Humboldt martens occupy large areas of dense shrub cover associated with older forest habitats, and are not associated with shrub species that occur in areas of clear cuts and regrowth (Slauson et al. 2007).

The Petition states that martens select habitat at four spatial scales: microhabitat (resting and denning sites), stand, home range, and landscape, and at all scales there is a strong preference for old-growth habitats (no reference).

The Petitioners' description of Humboldt marten microhabitat associations is excerpted directly from USFWS (2015) with citations omitted. Regarding resting structures, the Petition states that rest structures are used daily by martens to provide thermoregulatory benefits and protection from predators. Rest structures are re-used infrequently, and the type of structures used varies seasonally, so multiple structures are required within a home range. Large diameter trees, snags, and logs are the most frequently used rest structures, with martens typically selecting the largest available structures. Humboldt marten rest structures average 95 cm (37 in.) diameter at breast height (dbh) for snags and 88 cm (35 in.) diameter at the larger end for logs. Live trees averaged 94cm (37 in.) dbh. Within these structures, martens typically use cavities, platforms, or chambers created within log piles or rock outcrops. The Petition states there are two types of dens used by Humboldt marten: natal dens where kits are born, and maternal dens to which kits are later moved. Pacific and American marten den site selection appears to be based on the characteristics of the structure as well as the surrounding stand, with females likely selecting for den sites in proximity to quality foraging sites. Cavities within large

trees and snags are most commonly used by denning Pacific and American martens. Three maternal dens from California Humboldt marten have been described, but no natal dens. Two dens were in cavities within the broken tops of a 66 cm (26 in.) dbh golden chinquapin (*Chrysolepis chrysophylla*) and a 113 cm (45 in.) Douglas-fir, and the third den was in a cavity in a 115 cm (45 in.) dbh Douglas-fir snag. All were located within the same old-growth Douglas-fir dominated riparian stand.

The Petition describes the forest stand scale as an area of several hectares containing the structural features required by martens for resting, denning, foraging and mating; and states that martens prefer old-growth stands (citing Buskirk and Powell 1994, Katnik et al. 1994, and Slauson et al. 2007). The Petition references Bull et al.'s 2005 study in northeastern Oregon where the authors found Pacific martens used stands with 50-74% canopy cover more than stands with <50% canopy cover, used stands with more canopy layers than in unused stands, used stands with a greater distance to forest openings more than stands with a shorter distance to openings, and used stands with higher densities of snags, logs, and large trees than unused stands. Additionally, Bull et al. (2005) found that martens used stands with no timber harvesting history more often than stands with any harvesting history, and that martens used stands with harvesting history less than expected based on availability. Specifically referring to Humboldt martens in non-serpentine soil stands the Petition states that martens used late successional stands more than expected based on their availability, used late-mature stands similar to availability, and made little use of all other seral stages (citing Slauson et al. 2007), and that earlier seral stages are not likely selected because they lack one or more key structural features (citing Slauson 2003).

At the home range scale the Petition states that Humboldt martens select the largest available patches of old-growth and late-mature, or serpentine habitat (citing Slauson et al. 2007). The Petition refers to Slauson et al.'s (2007) habitat models which found a 19-26% increase in the probability of Humboldt marten occurrence in an old-growth habitat patch for each 20 ha (49 ac.) increase in patch size, and the authors' conclusion that "The best models suggest that home range areas with larger patch sizes of old-growth, old-growth plus late-mature, or serpentine habitat within a 1-km radius of each sample unit are important for marten occurrence. Martens disproportionately used sample units within these largest patch sizes." The Petition also relates Slauson et al.'s (2007) finding that mixed-scale models which consider both the stand and home range scales explained Humboldt marten occurrence better than single scale models. The Petition then states that, because Humboldt martens are negatively associated with logging activities at the microhabitat, stand, and home range scales, logging at the landscape scale (tens to hundreds of km^2) inevitably negatively influences marten occurrence as well.

At the landscape scale, the Petition states loss and fragmentation of mature forest constrain marten movement and demography (Bissonette et al. 1989 [does not appear in Petition literature cited], Frederickson 1990, Phillips 1994, Chapin 1995, Chapin et al. 1998, Hargis 1996 [does not appear in Petition literature cited], Slauson 2003), and martens avoid landscapes where 25-30% of mature forest has been lost (Bisonette et al. 1989, Hargis et al. 1999 [does not appear in Petition literature cited], Potvin et al. 1999, Slauson 2003). The Petition states that fragmented forests and small patches of old-growth do not ensure the long term viability of marten populations. Citing Slauson et al. (2009b), the

Petition states that although Humboldt martens occasionally occupy old-growth forest patches <50ha (124 ac.), occupancy is stable only in larger patches. Further, Slauson et al. (2009b) found declines in sample unit marten occupancy from 2000 -2001 to 2008 in units with highly fragmented old-growth and in serpentine soil areas. The authors calculated that a 30 ha (74 ac.) increase in the amount of old-growth in a sample unit resulted in a 37% decrease in the probability of extinction in that unit. The Petition includes an excerpt from USFWS (2015) which emphasizes the high sensitivity of American and Pacific martens to landscape scale habitat loss and fragmentation created by timber harvesting, and the fact that habitat loss and fragmentation effectively lowers the number of marten home ranges a landscape can support. The Petition's landscape habitat associations section concludes with the statement that patches of suitable habitat in highly fragmented forests may be effectively unavailable to martens if martens cannot cross open areas to reach them. Therefore fragmented landscapes have a lower marten carrying capacity (citing Buskirk and Powell 1994, Thompson and Harestad 1994).

2. Other Relevant Scientific Information

The Petitioners' description of American and Pacific marten preferred habitat types are generally accurate. The term "old-growth" used by the Petitioners can be imprecise. Slauson (2003) uses the term in reference to specific structural attributes of Douglas-fir (*Psuedotsuga menziesii*) and tanoak (*Lithocarpus densiflora)* stands, but other cited authors used terms such as "old structure, unlogged stands" (Bull et al. 2005), and "late successional stands" (Buskirk and Ruggiero 1994) rather than old growth to describe stands favored by martens. Important structural features of these old forests stands, whether termed "old-growth," late successional," or "late seral," include: multiple canopy layers including different tree species , canopy openings which allow the development of dense vegetation on the forest floor, the presence of snags and coarse woody debris on the ground, and the absence of major stand-altering disturbance by humans (Bolsinger and Waddell 1993).

The Petition quotes Slauson et al. (2003), which in turn references Slauson (2003) which was in press at that time. The published version of Slauson (2003) does not contain as strong of a statement about Humboldt marten "only" using late-mature and old-growth forests, and in fact includes reference to marten use of three earlier seral stage stands where structural diversity was present (two were pole sized stands with heavy shrub cover adjacent to old growth stands, and one was a mid seral stand with a large component of larger trees). Additionally, Slauson (2003) contrasts his findings with Baker's (1992) finding that coastal martens on Vancouver Island, B.C. preferentially selected for 10-40 year old stands and against mature and old growth stands, speculating that one reason for the use of the younger stands in the Vancouver study area was the presence of a great deal of residual large woody structure remaining on the site following timber harvest (e.g. large stumps and logs).

The Petitioners' statement regarding the shrub species Humboldt marten are associated with is incomplete. Slauson et al. (2007) wrote that Humboldt martens favor a shade-tolerant, long-lived, mast producing shrub community composed of salal (*Gaultheria shallon*), huckleberry (*Vaccinium spp*.), rhododendron (*Rhododendron macrophyllum*), shrub oak (*Quercus vaccinifolia*), and tanoak, and noted

that this community does not include the shade-intolerant, short lived species such as *Ceanothus spp*. shrubs that occupy more xeric (dry) sites, and dominate sites following logging and other disturbances.

The Petitioners' discussion of microhabitat use is directly excerpted from USFWS 2015, however the three Humboldt marten maternal dens described were all used by the same female in the same year (Slauson and Zielinski 2009). Whether the habitats selected reflect the availability of structures and stands within her territory or her preferences as an individual, or whether they reflect the preferences of all Humboldt martens is impossible to discern. The discussion of Humboldt marten stand scale habitat use referred to a disproportionate use of late-successional stands while the authors (Slauson et al. 2007) used the term old-growth rather than late-successional. The Petitioners' discussion of Slauson et al.'s (2007) Humboldt marten habitat modeling emphasizes forest seral stage and old-growth patch size. Slauson et al.'s (2007) habitat modeling identified percent shrub cover as the most important predictor of Humboldt marten occurrence in both the stand scale and mixed stand and home range scale models.

The Petitioners' statement that logging at the landscape scale inevitably negatively influences marten occurrence is not supported by references. It is unclear whether the Petitioners are positing that any logging within the landscape will render the landscape unsuitable to martens, or whether they are stating that logging an entire landscape would be detrimental to marten. The latter is a logical conclusion based on scientific evidence, the former is not supported by the literature. Whether or not Humboldt martens can occur within a matrix of logged and unlogged habitat patches has not been directly addressed by any information source available to the Department, and would likely depend on the spatial scale, arrangement, and intensity of the logging. In the Petitioners' discussion of landscape scale habitat loss and fragmentation, many of the references cited are from studies of American and Pacific martens in other parts of North America, for example: Frederickson (1990) in Newfoundland, Phillips (1994) in Maine, and Potvin et al. (1999) in Quebec. Slauson (2003) references these studies, but makes no direct statement about constraint of Humboldt marten movement or demography due to landscape patterns.

3. Conclusion

The Petitioners' description of Humboldt marten habitat at the microhabitat, stand, home range, and landscape scales is generally accurate and well supported by literature. Although it is necessary to include references to other North American marten species and subspecies habitat associations due to the paucity of literature on the Humboldt marten subspecies, it is not always clear in the Petition when Humboldt martens specifically are being discussed, or whether information from martens in distant ecosystems (e.g. eastern deciduous forests) can be extrapolated to Humboldt martens. Additionally the critical association of Humboldt martens with extensive dense shrub layers is underemphasized.

F. Factors Affecting Ability to Survive and Reproduce (pp. 14-29)

1. Scientific Information in the Petition

The Petition states the Humboldt marten is threatened by all six of the factors that must be examined by the Commission per Title 14 of the California Code of Regulations section 670.1 when considering whether listing a species as threatened or endangered is warranted:

- present or threatened modification or destruction of its habitat;
- overexploitation;
- predation;
- competition;
- disease;
- other natural events or human-related activities.

Present or Threatened Modification or Destruction of Habitat

Timber Harvest and Logging:

The Petition states that logging threatens Humboldt marten and the species' habitat because it removes the largest and oldest trees available at all habitat scales (citing multiple studies), later noting that the structural features associated with old forests such as large trees, snags, and logs can take >100 years to develop, and little such habitat is expected to regenerate in the next several decades (citing USFWS 20015). The Petition then includes an excerpt from USFWS (2015) which states that the habitat loss and degradation from historical and current logging is the most plausible reason Humboldt marten are absent from much of their historic range, with most of the remaining suitable habitat located on federally owned land (citing Zielinski et al. 2001). The Petitioners go on to state that the majority of coastal forests in private ownership have been logged at least once, primarily by clear-cutting with short rotations of 60-70 years, which creates structurally simplified early seral forests that do not support martens (citing the following references from within Slauson et al. 2007: USDA 1992, Bolsinger and Waddell 1993, Lettman and Campbell 1997, Thornberg et al. 2000). The Petition notes that timber harvesting not only reduces the total amount of late successional forest, it also fragments it into smaller, more isolated patches, providing the example of the Redwood National and State Parks complex containing only three patches of late successional forest >= 2,023 ha (5,000 ac.), with most patches <=40 ha (100 ac., citing USFWS 2015).

Fire Suppression and Salvage Logging:

The Petition states that wildfire can threaten the already small Humboldt marten population by reducing and fragmenting the available habitat (citing Slauson and Zielinski 2004), and notes Slauson (2003) stated that stochastic (random, unpredictable) events such as wildfire present a major challenge to the persistence of Humboldt marten. The Petition states timber harvest and fire suppression exacerbate the threat of wildfire to marten by further fragmenting landscapes. Referencing USFWS (2015) the Petition states that vegetation management activities designed to reduce the risk of wildland fire by removing shrubs, reducing canopy cover, and removing snags and logs potentially negatively effects marten by removing required habitat structures, and removing shrub cover which can reduce prey abundance and improve access for competitors. The Petitioners state that on federal lands salvage

logging and fuels management activities can occur on all land allocation categories except for wilderness areas (Hamlin et al. 2010), and on private lands salvage logging plans are exempt from normal review procedures and automatically approved by the California Department of Forestry and Fire Protection (Cal Fire) through a ministerial process.

Overexploitation

This section of the Petition consists of numerous excerpts from USFWS (2015) and a summary statement that the threat posed to Humboldt marten in California by accidental trapping capture and poaching may be small, but the small, isolated nature of population makes any additional source of mortality significant. Important points from the USFWS excerpts include:

- There have been no studies on the population level effects of coastal marten trapping, but the loss of even a few adult martens, especially when combined with other mortality sources, could reduce the likelihood of long-term population viability.
- Early trapping of Humboldt marten was intensive, with accounts of individual trappers taking 35-50 martens in a single winter. By the early 1900s annual harvest of coastal martens was already declining, prompting Joseph Dixon to call for closing the trapping season in California to prevent an extirpation, however marten harvest continued until a partial closure was enacted in northwestern California in 1946, depleting populations and likely reducing genetic variation within the remaining population (Dixon 1925, Zielinski et al. 2001).
- Currently, trapping marten is illegal in California, though martens may occasionally be trapped inadvertently by trappers targeting other fur bearing species.
- Trapping of coastal martens remains legal in neighboring Oregon, although only three coastal martens were taken in 2013.

Predation

The Petition identifies predation as a major threat to Humboldt marten, stating that predation is the primary source of marten mortality, citing Bull and Heater's (2001) study of Pacific marten in northeastern Oregon which attributed 18 of 22 documented mortalities to predation. The Petition then identifies bobcats (*Lynx rufus*), foxes (*Vulpes* spp.), coyotes (*Canis latrans*), mountain lions (*Puma concolor*), great horned owls (*Bubo virginianus*), goshawks (*Accipiter gentilis*), and Pacific fishers (*Pekania pennanti*) as marten predators (citing Buskirk and Ruggiero 1994, Bull and Heater 2001, and Slauson et al. 2009). The Petition notes that habitat degradation and fragmentation caused by logging increases the threat to martens from predation by habitat generalist predators (citing Slauson et al. 2009), and that in redwood forests over the last 80 years fishers and gray foxes (*Urocyon cinereoargentus*) have expanded their ranges into Humboldt marten habitat as martens have declined (citing Slauson and Zielinski 2007b). Citing Slauson and Zielinski (2010, not listed in Petition literature cited) the Petitioners state that roads may facilitate the presence of larger mesocarnivores in the dense shrub habitats preferred by martens. The Petition states that Slauson et al. (2009) found the greatest declines in Humboldt marten sample unit occupancy between 2001 - 2008 in serpentine soil habitats and where old-growth was more fragmented, possibly due to higher predation rates. The Petition notes

that female martens may be more susceptible to predation by other mesocarnivores due to their smaller body sizes (citing Slauson et al. 2009b).

Competition

The Petition states that no data or studies have been produced to assess the impacts of competition between Humboldt marten and other species, but posits that competition for food and space with other predators is currently a limiting factor for the ability of the species to survive and reproduce, and notes that the USFWS (Hamlin et al. 2010) stated that one of the risks to small populations such as the Humboldt marten is environmental fluctuations in food supply.

Disease

The Petition states that although the threat to Humboldt marten from disease has not been studied, disease is a potential threat to Humboldt martens because of their extremely small population size, quoting the USFWS (2015): "The outbreak of a lethal pathogen within one of the three coastal marten populations could result in a rapid reduction in population size and distribution, likely resulting in a reduced probability of population persistence, given the small size of these populations." The Petition lists several diseases American and Pacific marten are known to be susceptible to, including: rabies, plague, distemper, toxoplasmosis, leptospirosis, trichinosis, sarcoptic mange, canine adenovirus, parvovirus, herpes virus, West Nile virus, and Aleutian disease (citing Strickland et al. 1982, Banci 1989, Green et al. 2008, Brown et al. 2008, Zielinski 1984 – not listed in Petition literature cited), and notes Brown et al. (2008) found dead fisher within the range of Humboldt marten had been exposed to canine parvovirus and canine distemper.

Other Natural Events or Human-related Activities

Vehicle Strikes:

The Petition states that vehicle collisions are a significant threat to Humboldt marten, particularly given their small, isolated populations. Citing USFWS (2015), the Petition states that collisions with vehicles are a known source of mortality for coastal martens, and may negatively affect population viability if roadkill mortalities combined with other sources of mortality exceed annual recruitment rates. Additionally, animals damaged by vehicle strikes would likely be more susceptible to other sources of mortality, such as disease, starvation, or predation.

Inadequacy of Existing Regulatory Mechanisms:

The Petitioners state that although Humboldt marten are protected from trapping in California, there are no regulatory mechanisms in place to protect Humboldt marten habitat from logging which could remove, degrade, and fragment habitat to the point that the species is driven to extinction. The Petitioners further state that conservation of the species will require management to enlarge and reconnect suitable habitat patches because merely aiming to maintain current habitat will not assure marten persistence (citing Slauson et al. 2007, Slauson 2003).

The Petition states that the Humboldt marten occurs on federal lands managed by the U.S. Forest Service and the National Park Service, but the Forest Service manages the majority of the marten's

range on the Six Rivers and Klamath National Forests. On Forest Service lands in Region 5 (California), the Humboldt marten is designated as a Sensitive Species and a Priority Species. As a Sensitive Species, management projects subject to the National Environmental Policy Act (NEPA) must analyze impacts to the species; however, there is no requirement to minimize or mitigate impacts to the species. The Petition further states that much of the Humboldt marten's range on National Forest land is managed under the Northwest Forest Plan (USDA and USDI 1994) which manages land according to seven allocations: Congressionally Reserved Areas, Late Successional Reserves, Managed Late Successional Areas, Adaptive Management Areas, Administratively Withdrawn Areas, Riparian Reserves, and Matrix lands. The Petitioners note that Matrix lands units are intended for timber harvest, yet Slauson (2003) detected Humboldt marten on Matrix lands in 8 out of 31 sample units, and 20% of Slauson et al.'s (2007) analysis area was designated as Matrix land available for logging with 16% of the Matrix land already logged. The Petition further states that Late Successional Reserves (LSR) are intended to support viable populations of late successional and old-growth dependent species such as Humboldt martens, however logging is not prohibited in this land allocation class, and not all LSR is currently in a late successional condition, but rather managed to grow into late successional habitat and therefore may not currently provide Humboldt marten habitat. The Petitioners note that 40% of Slauson et al.'s (2007) study area was designated LSR, with martens detected in 13 of 66 sample units in LSR, and 13% of LSR in the marten's range has been logged (Ibid.). The Petition states that the Humboldt marten was given only a 67% likelihood of remaining well distributed within the range of the northern spotted owl (*Strix occidentalis caurina*) by the Northwest Forest Plan scientific analysis team (USDA and USDI 1994), and Slauson et al. (2009b) concluded that the Northwest Forest Plan does not completely protect the extant population, with 38% of the Humboldt marten distribution outside of NWFP reserves.

Based upon an approximated range of Humboldt marten in northern California created by buffering known marten detections with the maximum marten dispersal distance (Petition figure 1, Lindsay Holm pers. comm. 8/21/15), Petitioners estimate that only 14% of the California Humboldt marten range is contained within the Siskiyou Wilderness, which the Petition states is an insufficient percentage to ensure long term survival of the species. The Petition goes on to state that not all of the Wilderness area is composed of vegetation suitable for martens, for example, Slauson (2003) detected marten on only 3 out of 23 sample units located in Wilderness. The Petition notes that the Forest Service also manages the Smith River National Recreation Area (SRNRA) which is not vulnerable to logging. Although Petitioners estimate that the SRNRA makes up 9% of the Humboldt marten's range in California, management of the area prioritizes recreation over wildlife values.

The Petition notes that National Park Service land in the Humboldt marten range includes the Redwood National Parks Complex managed by the National Parks Service and California State Parks, consisting of Redwood National Park, Prairie Creek Redwoods State Park, Jedediah Smith Redwoods State Park, and Del Norte Coast Redwoods State Park. Petitioners estimate that 10% of the California range of Humboldt marten is made up of these parks. The Petitioners state that although a marten was detected in Prairie Creek Redwoods State Park in 2009 (Slauson and Holden 2009), the parks do not support a significant marten population (Slauson et al. 2003), and habitat in the parks is not extensive enough to support a viable population of Humboldt martens and is not currently in optimal condition for martens.

The Petition notes that non-federal lands in California are governed by the California Forest Practice Act of 1973 (Pub. Resources Code, § 4511 et seq.) and associated Forest Practice Rules (FPR)(Cal. Code Regs., tit. 14, § 894 et seq.), and states that there are no regulations within the FPRs that adequately protect Humboldt marten or its habitat. Section 919.16 requires landowners to provide Cal Fire with stand information when late successional forest stands are proposed for harvesting if the harvest will "significantly reduce the amount and distribution of late successional forest stands or their functional wildlife value so that it constitutes a significant adverse impact on the environment", but there are no specified protective or mitigation measures to offset potentially significant impacts. The Petition notes that on nonfederal lands in the Humboldt marten range there are currently no Habitat Conservation Plans, Native Communities Conservation Plans, or Safe Harbor Agreements in place covering the species. Petitioners estimate that approximately one third of the Humboldt marten range in California is owned by Green Diamond Resources Company and managed as industrial timberland. The Petition states that Slauson et al. (2007) estimated 83% of the private land in their study area had been logged, primarily by clear cutting, and detected martens at only 2 of 36 sample units on private lands. The Petitioners conclude that the existing regulatory mechanisms in place on nonfederal lands are do not adequately protect the species or its habitat.

Petitioners estimate that approximately 9% of the California range of Humboldt marten is on the Yurok Reservation, and less than 1% is on Hoopa Reservation. The Petition states that most of the Yurok Reservation is within the Humboldt marten range; however, most of the reservation is in non-tribal ownership, including Green Diamond Resource Company. The Petitioners state that there are no publicly available data on the status of marten on tribal lands so it is unknown what protective measures may be in place.

Toxicant Exposure:

The Petition identifies toxicant exposure as an emerging significant threat to Humboldt marten survival and conservation. It further states that although there have been no studies of the issue specific to Humboldt martens, information from studies of toxicant exposure in other forest carnivores can be extrapolated to martens. The Petition states that Gabriel et al. (2012) recently found that 79% of fishers on forest lands in California tested positive for exposure to anticoagulant rodenticides (ARs), most showing signs of exposure to multiple ARs (range = 1-4 rodenticides, mean = 1.6). The Petition notes that at least six fishers have died from rodenticide poisoning in recent years (Gabriel et al. 2012, Gabriel et al. 2013). The Petitioners state that ARs detected in fishers from northwestern California include brodifacoum, bromodiolone, chlorophacinone, diphacinone, and warfarin; and brodifacoum and bromodiolone are considered second-generation anticoagulant rodenticides which were introduced when rodents developed resistance to first-generation compounds in the 1970s. The Petition states that strong evidence indicates pervasive illegal outdoor marijuana cultivation is the primary source of these ARs in California (citing Gabriel et al. 2012, 2013, Thompson et al. 2014), and additionally, other highly toxic pesticides, some of which are banned in the United States have been found at illegal marijuana grow sites (citing Thompson et al. 2014). The Petition concludes that toxicant exposure is a current and increasing threat to the small Humboldt marten population.

Climate Change:
The Petition states that the Humboldt marten is threatened by global climate change which could change the current climate characterized by moderate temperatures, high annual precipitation, and summer fog which supports dense conifer tree and shrub cover (citing Slauson et al. 2007). The Petition then presents an excerpt from USFWS (2015), summarized below:

> Increased temperatures and decreased precipitation projected in the range of coastal marten over the next 40-50 years may cause the loss, degradation, or fragmentation of suitable coastal marten habitat. Suitable marten habitat (moist conifer and mixed conifer-hardwood forests) may be replaced by unsuitable hardwood forests, and the dense, shade-tolerant shrub layer required by marten may be lost. These vegetation transitions would create conditions more favorable to marten predators such as gray fox and bobcat and increase predation rates. Additionally, climate changes could result in more frequent, larger, higher severity wildfires in the Humboldt marten range, potentially causing marten mortality and destroying, degrading, and fragmenting marten habitat. Such habitat effects could threaten the viability of Humboldt marten populations which are already small and isolated (key references cited for this section in USFWS 2015 include: Pierce et al. 2013, Littell et al. 2013, Cayan et al. 2012, DellaSalla et al. 2013, Johnstone and Dawson 2010, Lawler et al. 2012).

2. Other Relevant Scientific Information

Present or Threatened Modification or Destruction of Habitat
The Petitioners' statements about the strong habitat associations of Humboldt marten are generally accurate and well supported by literature (e.g. Slauson 2003, Slauson et al. 2007). The impacts of logging, forest management, and salvaging logging on the vegetative structure required by marten is likewise well supported by the citations provided by the Petitioners.

Overexploitation
Due, in part to Dixon's (1925) recommendation, marten trapping was banned by the California Fish and Game Commission in 1946 in District 1 ½, which includes Humboldt, Del Norte, and western Siskiyou and Trinity counties (Twining and Hensley 1947). Today trapping of all martens is prohibited throughout the state (CCR Title 14, §460). Although it is possible that Humboldt martens could be inadvertently trapped by trappers pursuing legal furbearers, trapping in California is highly regulated, and trappers must pass a Department examination demonstrating their skills and knowledge of laws and regulations prior to obtaining a license (CFGC §4005). Additionally, only use of live-traps is permitted for commercial and recreational take of fur bearers and trappers are required to check traps daily and release non-target animals (CFGC §3303, §4004). With the passage of Proposition 4 in 1998, body-gripping traps (including snares and leg-hold traps) were banned in California for commercial and recreational trappers (CFGC § 3003.1). Martens incidentally captured by trappers must be immediately released (CFGC § 465.5(f)(1)).

Predation

The Petitioners' references to Slauson and Zielinski (2007b) referring to the gray fox and fisher expanding their distributions into Humboldt marten habitat can be further informed by Slauson et al. (2007, p.466), who stated that the dense ericaceous shrub layer found in occupied Humboldt marten habitat likely excluded larger bodied predators like gray fox and fisher which were rarely detected in their study area yet fairly common in nearby areas where shrub cover has been reduced or fragmented by forestry practices. To expand on the Petitioners' reference to Bull and Heater (2001), the authors attributed 44% of marten predation to bobcats, 22% to raptors (birds of prey), 22% to other martens, and 11% to coyotes. In a study of Humboldt martens begun in 2012, nine martens have been found dead to date, and all nine mortalities were attributed to bobcat predation (USFWS 2015). Additionally, all nine mortalities occurred in the more fragmented serpentine soil forest habitat, suggesting a link between habitat quality and predation rates (Ibid.). Finally, Slauson et al. (2009b) hypothesized that predation was the likely cause of the 42% decline in Humboldt marten occupancy in their study area between 2001 - 2008.

Competition

The Petitioners speculate that competition for food and space with other predators is currently a limiting factor for Humboldt marten populations, however this speculation is not supported by literature. The USFWS coastal marten species report (2015) does not identify competition as a significant stressor on coastal martens. Additionally, species with very specific habitat associations such as Humboldt marten would be expected to use their preferred habitat more efficiently than would habitat generalist species (Ricklefs 1990, p. 742, Zabala et al. 2009).

Disease

Although Strickland et al. (1982, p. 607) found that American martens in their central Ontario study tested positive for toxoplasmosis, Aleutian disease (a carnivore parvovirus), and leptospirosis; none of the diseases was considered to be a significant mortality factor for martens. Similarly, although Zielinski (1984) discovered antibodies to plague (*Yersinia pestis*) in four of 13 Sierra martens in the Sierra Nevada, he noted martens only appear to show transient clinical signs of the disease. Conversely, the Petition underemphasizes the potential threat to Humboldt marten from canine distemper virus which is known to cause high rates of mortality in wild mustelid populations (members of the weasel family which includes fishers and martens), and was found in wild fisher from the Hoopa Reservation within or near the range of Humboldt martens (Williams et al. 1988, Brown et al. 2008, Deem et al. 2000). The USFWS (2015) states that canine distemper has the potential to greatly reduce the size and distribution of one or more of the small extant coastal marten populations.

Other Natural Events or Human-related Activities

Vehicle Strikes:

There have been no recorded roadkill Humboldt martens in California since 1980 (USFWS 2015). Of nine Humboldt marten mortalities detected between 2012-2014 by researchers, none were killed by vehicle collisions. In southern Oregon where 14 roadkill martens have been recorded since 1980, roadkills are not likely to constitute a significant population level impact (USFWS 2015).

Inadequacy of Existing Regulatory Mechanisms:
Humboldt marten range in California likely also extends into the Shasta-Trinity and Siskiyou National Forests. In addition to National Park and U.S. Forest Service federal land ownership, a small percentage of the range is owned and managed by the U.S. Bureau of Land Management. Although not explicitly stated in the Petition, it can be inferred that logging of designated Matrix lands could not only directly remove Humboldt marten habitat, but perhaps more importantly fragment remaining patches of late seral forest rendering them unavailable to dispersing martens.

A small proportion of the Humboldt marten range occurs within the Redwood State and National Parks. Although the General Plan/General Management Plan governing the management of the parks does not identify specific management action for Humboldt marten, 32.6% of the Park lands are managed as primitive zones where no development or facilities construction occurs and visitor use is limited to foot traffic on existing trails. Additionally, 55.4% of the Park lands are managed as backcountry zones where the preservation and restoration of the natural environment is emphasized, and modification of the environment related to visitor use is limited. Where suitable marten habitat exists within these management zones, it is likely maintained and protected from significant modification and degradation (USDI NPS and State Parks 2000, USDI NPS 2000).

The California Forest Practice Rules specify that an objective of forest management is the maintenance of functional wildlife habitat in sufficient condition for continued use by the existing wildlife community within planning watersheds. This language may result in actions on private lands beneficial to martens (Cal Code Regs., Title 14, § 897, subd. (b)(1)(B).). Nevertheless, information about what constitutes the "existing wildlife community" is frequently lacking in timber harvest plans, and specific guidelines to retain habitat for martens are not provided in the Forest Practice Rules. Further, this guidance would at best conserve habitat where Humboldt martens are known to exist, but would not be expected to result in the creation of additional habitat. Habitat suitable for martens may be retained within Watercourse and Lake Protection Zones (Cal. Code Regs., tit. 14, § 916 et seq.). Watercourse and Lake Protection Zones are defined areas along streams where the Forest Practice Rules restrict timber harvest in order to protect in-stream habitat quality for fish and other resources. Harvest restrictions and retention standards vary according to the presence of anadromous and other fish species, but these zones may encompass 15 m - 45 m (50-150 ft) on each side of a watercourse, 30 m - 91 m (100-300 ft) in total width depending on side slope, location in the state, and the watercourse's classification. Generally, within Watercourse and Lake Protection Zones, at least 50% of the tree overstory and 50% of the understory canopy covering the ground and adjacent waters must be retained in a well distributed multi-storied stand composed of a diversity of species similar to that found before the start of timber operations. For watersheds that fall within Anadromous Salmonid Protection rules (Cal. Code Regs., tit. 14, §§ 916.9, 936.9, and 956.9), the 13 largest trees per acre (live or dead) must be retained.

Toxicant Exposure:
The Petitioners' extrapolation of information on toxicant exposure from other forest carnivores to Humboldt marten, particularly from other forest mustelids such as fisher, is appropriate due to the similar use of habitats and prey species, and because of similarities in physiology and metabolism. The

distinction the Petitioners make between first generation ARs and second generation ARs is important because first-generation compounds generally require several doses to cause intoxication, while second-generation ARs, which are more acutely toxic, often require only a single dose to cause intoxication and persist in tissues and in the environment (Gabriel et al. 2012).

Climate Change:
Miller et al. (2012) reported that the number of fires per year, mean fire size, maximum fire size, and area burned all increased in northwestern California over the period of 1910-2008, and that observed changes in the local climate explained much of the fire trends. Although no trend in percent of high severity fires over time was detected, the authors did note that spikes in high severity fires occurred in years when region-wide lighting strikes caused multiple ignitions. This research demonstrates that the effects of a changing climate may already be impacting Humboldt marten habitat, and highlights the link between climate patterns and wildfire trends in northwestern California forests. In the summer of 2015 the Nickowitz fire burned approximately 2,800ha (7,000 ac.) in and adjacent to the current known range of Humboldt martens (InciWeb 2015). In addition to wildfire-mediated habitat changes resulting from changes in climate, other studies have projected changes in forest disease, insect damage, and other disturbance events which could affect marten habitat quality or availability (USFWS 2015). Finally, Lawler et al. (2012) suggested that martens (all North American species) will be highly sensitive to climate change and will likely experience the greatest impacts at the southernmost latitudes and lowest elevations within their range.

3. Conclusion

Present or Threatened Modification or Destruction of Habitat
Humboldt martens have specific habitat associations which include large trees for structure and cover, and a dense shrub understory. Logging and forest management to reduce fire threat can remove and degrade these requisite features thereby destroying, fragmenting and degrading Humboldt marten habitat. Additionally, modification of marten habitat from these activities may increase the probability of predation by marten predators. These habitat impacts have the potential to reduce Humboldt marten populations by increasing predation rates and decreasing the extent and quality of available habitat.

Overexploitation
Trapping pressure on Humboldt martens was intense during the late 1800s and early 1900s, and likely resulted in significant declines in population size as well as a reduction in range. It is unlikely that trapping currently threatens Humboldt martens in California due to a ban on trapping martens and a ban on lethal traps as well as requirements that licensed trappers check traps daily and release non-target animals.

Predation

Predation is a significant source of Humboldt marten mortality. What is unknown is whether predation rates are greater than Humboldt marten faced historically, or so high that marten recruitment does not exceed the combined mortality rate of predation and all other causes.

Competition

Although the Petitioners state that competition is a significant threat to Humboldt marten populations the statement is largely speculative due to a paucity of information on the subject. Others, including the USFWS (2015) have not identified competition as a significant threat to the species.

Disease

Disease could pose a potential threat to Humboldt marten populations. Martens are known to be vulnerable to several diseases and parasites, including canine distemper which is known to cause high mortality rates in wild mustelid populations and is known to be present in the vicinity of the Humboldt marten population. However, marten mortality rates from disease are unknown. Additionally, it is unknown whether mortality from disease, combined with all other mortality sources exceeds marten recruitment rates.

Other Natural Events or Human-related Activities

Vehicle Strikes:

The Petitioners are correct that vehicle strikes could impact Humboldt marten populations if roadkill mortalities combine with other sources of mortality to exceed recruitment rates; however, as the USFWS (2015) points out, vehicle strikes alone are not likely to constitute a significant threat to Humboldt marten populations in California as there have been none reported since 1980.

Inadequacy of Existing Regulatory Mechanisms:

The Petition correctly states that Humboldt marten are not specifically protected by regulation on public or private lands (with the exception of protection from trapping in California). Federal land use allocations provide varying levels of protection to Humboldt marten habitat. State and private lands are regulated by the California Forest Practice Act which includes some provisions that require disclosure of impacts and retention of trees and canopy, but requires no specific protections for marten.

Toxicant Exposure:

Although no studies specific to Humboldt marten currently exist, studies of toxicant effects on closely related fishers do exist. Toxicants appear to be widespread on the northwestern California landscape and may increase if marijuana cultivation continues to spread. Toxicant exposure possibly impacts Humboldt martens; however, the nature and magnitude of the impact on the California population is unknown.

Climate Change:

Climate change is likely to negatively impact Humboldt marten habitat through increasing temperatures, decreasing precipitation, and decreasing fog extent. These changes are expected to eventually result in

changes to the vegetation communities that constitute marten habitat in northwestern California. Additionally, climate change appears to have increased the extent of wildfire in the region which can destroy and fragment marten habitat.

G. Degree and Immediacy of Threat (p. 29)

1. Scientific Information in the Petition

The Petition states that there is a significant and immediate threat to the survival and conservation of Humboldt marten, largely due to the small size of the extant population and risks of extinction inherent to small populations, and due to the compounding effects of a small population combined with the other identified threats. The Petition's section on urgency states that there are believed to be less than 50 individuals in California and an unknown, but small and declining number in Oregon, while populations of at least several hundred reproductive individuals are required to ensure the long term viability of vertebrate species, with several thousand individuals being the goal (citing Primack 1993). Additionally, the Petition states martens have a low reproductive rate, making recovery from population-level impacts slow (citing Buskirk and Ruggiero 1994). The Petition states that small, isolated populations are inherently vulnerable to extinction for four main reasons: 1. genetic problems due to loss of genetic variability, inbreeding, loss of heterozygosity, and genetic drift; 2. demographic fluctuations due to random variation in birth and death rates; 3. environmental fluctuation due to variation in predation, competition, disease, and food supply; and 4. natural disturbances that occur at irregular intervals such as drought, fires, and severe storms (citing Primack 1993). The smaller the population size the more likely other threats will drive it to extinction (again citing Primack 1993). The Petition cites Slauson and Zielinski (2009, but based on content appears to be referring to Slauson et al. 2009a), who found that the probability of extinction in their study area was higher than the probability of colonization, and stated that conservation actions were needed immediately to ensure the Humboldt marten's persistence.

2. Other Relevant Scientific Information

The Petition discusses the threat inherently posed to Humboldt marten due to the small, isolated nature of their population. Small population size increases the risk of extirpation through demographic, environmental, and genetic stochastic events (random changes over time), particularly if the population is isolated, and through the deleterious effects associated with low genetic diversity (Traill et al. 2007, Traill et al. 2010). Demographic stochasticity can cause unbalanced age or sex ratios resulting in reduced capacity to breed. Genetic stochasticity can result in the loss of adaptive genes from the population or the proliferation of maladaptive genes. Additionally, small populations are less able to weather and recover from random catastrophic events in the environment. The Petition here uses a Humboldt marten population figure of less than 50 individuals, but elsewhere a figure of less than 100 individuals (see Abundance section above), however the discrepancy is of little import as either figure is well below the population size experts believe to be required to ensure long-term viability of a species (e.g. Traill et al. 2007, Traill et al. 2010, Flather et al. 2011). Regarding the Petitioners' comments about

the minimum population size needed to ensure long-term viability, Flather et al. (2011) noted that generalized minimum population recommendations across taxa are not supported by the historical record. The authors do agree that the population sizes required to sustain individual species over the long term are likely to be in the thousands, not hundreds.

The Petitioners' reference to Slauson et al.'s (2009a) extinction and colonization probabilities requires clarification. Slauson et al. (2009a) were referring to the probability of extinction and colonization at a given sample unit within their study area, not extinction and colonization at the population level.

3. Conclusion

The Petitioners correctly point out the inherent risk of extinction to small isolated populations. This inherent risk can compound the risks of other identified threats in terms of immediacy and degree.

H. Impact of Existing Management Efforts (P. 30)

1. Scientific Information in the Petition

The Petition states that there are no existing species-specific protective measures in place for Humboldt marten. It notes that there is currently a multi-agency Humboldt marten Conservation Group in place.

2. Other Relevant Scientific Information

For a discussion of existing management efforts see the discussion of existing management efforts under "Other Natural Events or Human-related Activities" in the Threats section above.

3. Conclusion

As stated above under "Other Natural Events or Human-related Activities" Humboldt martens are not specifically protected by any existing regulations or management plans, although they likely benefit from protections and management efforts aimed at protecting other resources. In the absence of specific actions to manage, restore, and enhance Humboldt marten habitat, existing management is unlikely to prevent the extinction of this species.

I. Suggestions for Future Management (p. 30)

1. Scientific Information in the Petition

The Petition reproduces the management strategy for Humboldt marten from the USFWS 2010 Humboldt marten Species Assessment (Hamlin et al. 2010):

- Maintain all currently occupied habitat.

- Restore habitat to increase and reconnect suitable habitat patches in the vicinity of the known population (Slauson and Zielinski 2004, p. 63).
- Increase the overall size of suitable patches toward the mean size of 447 ac (181 ha) (Slauson et al. 2007, p. 466).
- Restore functional landscape connectivity to enable recolonization of suitable, but currently unoccupied habitat (Slauson and Zielinski 2003, p. 13) and establish connectivity with habitat corridors between populations.
- Establish high priority restoration areas that enlarge small suitable patches, such as late-successional conifer-dominated stands and serpentine stands with dense shrub cover, so that they exceed the minimum patch size occupied by martens [greater than 205 ac (83 ha)]. This will reconnect suitable patches currently separated by unsuitable habitat.
- Restore or maintain dense, productive shrub layers and reduce road densities in the short-term and accelerate development of late-successional stand conditions, such as large diameter live trees, multilayered canopy, and large snags and logs over the long-term (Slauson et al. 2007, p. 466).
- Develop specific stand recommendations to manage early-seral conifer stands with lower tree densities to encourage maintenance of a productive shrub layer and increase tree growth rates (Slauson 2003, p. 71).
- Protect currently suitable resting and denning structures and plan for the future recruitment of new structures (Slauson and Zielinski 2009, p. 43).
- Establish additional populations within the historical range.

2. Other Relevant Scientific Information

Continued research into the ecology and demography of Humboldt marten is needed to increase the understanding of the species' biology, distribution, vital rates, habitat associations, and the ecology of their predators and prey species. Of particular importance is a better understanding of the relationship between habitat types and demographic rates. Additionally, although there have been extensive surveys for this species in recent years, many areas remain that have not been surveyed, or have not been intensively surveyed. Where the geographic boundary lies between the ranges of Humboldt martens and Sierra martens is currently unknown. Identifying the boundary more precisely would refine future estimates of the extent of available habitat and of population size. It is also important to determine whether Humboldt martens in California and the coastal martens of southern Oregon are members of the same subspecies or separate subspecies in order to more fully understand the potential threats to the species related to small population size and genetic isolation. Finally, the need for and feasibility of facilitated translocations and population augmentations from captive breeding should be studied.

3. Conclusion

The suggested management actions are appropriate for recovering Humboldt marten; however additional research on Humboldt marten genetics, distribution, ecology, and demography is also necessary to plan and implement the recovery of the species, and facilitated translocations and population augmentations should be carefully considered.

J. Detailed Distribution Map

The Petition reproduces figure 8.3 from USFWS (2015) showing the known extant Humboldt marten distribution in California.

IV. Status of the Species

The Humboldt marten population in California likely numbers less than 100 individuals. Although quantitative data is nonexistent, qualitative information suggests they were more common in the state in the early 1900s. The Humboldt marten range in California appears to have declined over the last century as well. The available literature indicates that the species requires specific habitats which are currently limited in distribution and fragmented. Although the degree and immediacy of the factors potentially threatening the persistence of the species are unknown, available information suggests that Humboldt martens may be threatened by historical habitat loss and fragmentation, exposure to toxicants, the effects of climate change, diseases, and the risks inherent to small populations.

Having reviewed and evaluated relevant information, including the material referenced in the Petition and other information in the Department's possession, the Department believes there is sufficient scientific information available at this time to indicate that the petitioned action may be warranted. (See Fish & G. Code, § 2073.5, subd. (a)(2); Cal. Code Regs. tit. 14, § 670.1, subd. (d).)

V. Literature Cited

Baker, J.M. 1992. Habitat use and spatial organization of pine marten on southern Vancouver Island, British Columbia. Burnaby, British Columbia: Simon Frasier University. M.S. thesis. 119 p.

Banci, V. 1989. A fisher management strategy for British Columbia. Victoria, BC: British Columbia Ministry of Environment, Wildlife Branch. Wildlife Bulletin B-63. 117. pp.

Bissonette, J.A., and S.S. Sherburne. 1993. Habitat preferences of unexploited pine marten *(Martes americana)* populations in Yellowstone National Park. Final report. Utah Cooperative Fish and Wildlife Research Unit, Utah State University, Logan, Utah.

Bolsinger, C. L. and K. L. Waddell. 1993. Area of old-growth forests in California,

Oregon, and Washington. U.S. Department of Agriculture, Forest Service. Research Bulletin. PNW-RB-197. 29 p.

Brown, R.N., M.W. Gabriel, G.M. Wengert, S. Matthews, J.M. Higley, and J.E. Foley. 2008. Pathogens associated with fishers. Pages 3–47 *in* Pathogens associated with fishers (*Martes pennanti*) and sympatric mesocarnivores in California: final draft report to the U.S. Fish and Wildlife Service for Grant #813335G021. U.S. Fish and Wildlife Service, Yreka, CA, USA.

Bull, E.L., and T.W. Heater. 2001. Survival, causes of mortality, and reproduction in the American marten in northeastern Oregon. Northwestern Naturalist 82:1–6.

Bull, E.L., T.W. Heater, and J.F. Shepherd. 2005. Habitat Selection by the American Marten in Northeastern Oregon. Northwest Science 79(1): 37-43.

Buskirk, S.W. and R.A. Powell. 1994. Habitat ecology of fishers and American martens. Pages 283–296 *in* Buskirk, S.W., A.S. Harestad, and M.G. Raphael, eds. Martens, sables, and fishers: biology and conservation. Cornell University Press, Ithaca, New York. 484p.

Buskirk, S.W., and L.R. Ruggiero. 1994. American marten. Pages 7–37 *in* L.F. Ruggiero, K.B. Aubry, S.W. Buskirk, L.J. Lyon, and W.J. Zielinski (editors), American marten, fisher, Lynx, and wolverine in the western United States. General Technical Report RM-254. U.S. Department of Agriculture, Forest Service. Rocky Mountain Research Station. Fort Collins, CO, USA.

Buskirk, S.W. and W.J. Zielinski. 1997. American marten (*Martes americana*) ecology and conservation. Pages 17–22 *in* J.E. Harris and C.V. Ogan, eds. Mesocarnivores of northern California biology, management, and survey techniques. August 12–15, Humboldt State University. The Wildlife Society California North Coast Chapter, Arcata, California.

Calder, W.A., Ill. 1984. Size, function, and life history. Cambridge, MA: Harvard University Press: 431 p.

California Department of Fish and Wildlife (CDFW. 2014. Distribution of fisher (*Pekania pennanti*) in southern Humboldt and Mendocino counties and Humboldt marten (*Martes caurina humboldtensis*) in Prairie Creek Redwoods and Humboldt Redwoods State Parks. Final Performance Report F11AF00995 (T-39-R-1). 16p.

Cayan, D., M. Tyree, D. Pierce, and T. Das. 2012. Climate Change and Sea Level Rise Scenarios for California Vulnerability and Adaptation Assessment. California Energy Commission. Publication number: CEC-500-2012-008.

Chapin, I. G. 1995. Influence of landscape pattern and forest type on use of habitat by marten in Maine. M.S. thesis. University of Maine, Orono. 100p.

Chapin, T.G., D.J. Harrison, and D.D. Katnik. 1998. Influence of landscape pattern on habitat use by American marten in an industrial forest. Conservation Biology 12(6):1327-1337.

Clark, T.W., E. Anderson, C. Douglas, and M. Strickland. 1987. *Martes americana*. Mammalian Species 289:1–8.

Dawson, N.G., and J. A. Cook. 2012. Behind the genes: diversification of North American martens (*Martes americana* and *M. caurina*). Pages 23–38 *in* K. Aubry, W. Zielinski, M. Raphael, G. Proulx, and S. Buskirk (editors). Biology and conservation of martens, sables, and fishers: a new synthesis. Cornell University Press, Ithaca, NY, USA.

Deem, S.L., L.H. Spelman, R.A. Yates and R.J. Montali. 2000. Canine distemper in terrestrial carnivores: a review. Journal of Zoo and Wildlife Medicine 31(4):441–451.

DellaSala, D.A. 2013. Rapid Assessment of the Yale Framework and Adaptation Blueprint for the North America Pacific Coastal Rainforest. *in* Data Basin. [File initial publication in Data Basin on January 31, 2013 ; File last modified on March 15, 2013; File last accessed on August 14, 2015] Available Online: http://databasin.org/articles/172d089c062b4fb686cf18565df7dc57

Dixon, J. 1925. A closed season needed for fisher, marten, and wolverine. California Fish and Game 11:23–25.

Drew, G.S. 1995. Winter habitat selection by American marten *(Maries americana)* in Newfoundland: Why old growth? Dissertation, Utah State University. Logan, UT, 83 p.

Flather, C. H., G. D. Hayward, S.R. Beissinger, and P.A. Stephens. 2011. Minimum viable populations: is there a 'magic number' for conservation practitioners? Trends in Ecology and Evolution. June 2011, vol. 26 (6).

Fredrickson, R.J. 1990. The effects of disease, prey fluctuation, and clearcutting on American marten in Newfoundland, Canada. M.S. thesis. Utah State University, Logan. 76 p.

Gabriel, M.W., L.W. Woods, R. Poppenga, R.A. Sweitzer, C. Thompson, S.M. Matthews, J.M. Higley, S.M. Keller, K. Purcell, R.H. Barrett, G.M. Wengert, B.N. Sacks, and D.L. Clifford. 2012. Anticoagulant rodenticides on our public and community lands: Spatial distribution of exposure and poisoning of a rare forest carnivore. PloS ONE 7(7):e40163.

Gabriel, M.W., G.M. Wengert, J.M. Higley, S. Krogan, W. Sargent, and D.L. Clifford. 2013. Silent Forests? Rodenticides on illegal marijuana crops harm wildlife. The Wildlife Society News. Available at: < http://news.wildlife.org/twp/2013-spring/silent-forests/>

Green, G.A., L.A. Campbell, and D.C. MacFarlane. 2008. A conservation assessment for fishers *(Martes pennanti)* in the Sierra Nevada of California. USDA Forest Service, Pacific Southwest Region, Vallejo, California, 72 pages.

Grinnell, J., and J.S. Dixon. 1926. Two new races of the pine marten from the Pacific Coast of North America. Zoology 21:411–417.

Grinnell, J., J.S. Dixon, and J.M. Linsdale. 1937. Fur-bearing mammals of California. Vol. 1. University of California Press, Berkeley, CA, USA.

Hamlin, R., L. Roberts, G. Schmidt, K. Brubaker and R. Bosch 2010. Species assessment for the Humboldt marten (*Martes americana humboldtensis*). U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, Arcata, California. 34 + iv pp.

Hargis, C.D. and R.D. McCullough. 1984. Winter diet and habitat selection of marten in Yosemite National Park. Journal of Wildlife Management. 48:140-146.

Hargis, C.D., J.A. Bissonette, and D.L. Turner. 1999. The influence of forest fragmentation and landscape pattern on American martens. Journal of Applied Ecology 36:157–172.

Harris, L.D. 1984. The Fragmented Forest: Island Biogeography Theory and the Preservation of Biotic Diversity. University of Chicago Press, Chicago, IL.

InciWeb Incident Information System. Nickowitz fire information. http://inciweb.nwcg.gov/incident/4466/ Accessed Sept. 9, 2015.

Johnstone, J.A., and T.E. Dawson. 2010. Climatic context and ecological implications of summer fog decline in the coast redwood region. Proceedings of the National Academy of Sciences of the United States of America 107:4533–4538.

Katnik, D. D., D. J. Harrison, and T. P. Hodgman. 1994. Spatial relations in a harvested population of marten in Maine. Journal of Wildlife Management 58:600-607.

Krohn, W. B., C. Hoving, D. Harrison, D. Phillips, and H. Frost. 2004. Martes footloading and snowfall patterns in eastern North America: implications to broad-scale distributions and interactions of mesocarnivores. Pages 113-131 in D. Harrison et al. editors. Martens and fishers (Martes) in Human-Altered Environments: An International Perspective. Springer, New York, New York.

Kucera, T.E., and W.J. Zielinski. 1995. The Case of Forest Carnivores: Small Packages, Big Worries. Endangered Species Update. 12(3):1-7.

Kucera, T.E. 1998. Humboldt marten species account pp. *in* Bolster, B.C., editor. Terrestrial Mammal Species of Special Concern in California. Draft Final Report prepared by P.V. Brylski, P.W. Collins, E.D. Pierson, W.E. Rainey and T.E. Kucera. Cal. Dept. of Fish and Game Wildlife Management Division, Nongame Bird and Mammal Conservation Program. Sacramento, CA.

Lawler, J.J., H.D. Safford, and E.H. Girvetz. 2012. Martens and fishers in a changing climate. Pages 371–397 *in* K.B. Aubry, W.J. Zielinski, M.G. Raphael, G. Proulx, and S.W. Buskirk (editors), Martens, sables, and fishers: a new synthesis. Cornell University Press. Ithaca, NY, USA.

Littell, J.S., J.A. Hicke, S.L. Shafer, S.M. Capalbo, L.L. Houston, and P. Glick. 2013. Forest ecosystems: vegetation, disturbance and economics. Pages 110–148 *in* M.M. Dalton, P.W. Mote and A.K. Snover (editors), Climate change in the northwest: implications for our landscapes, waters and communities. Island Press. Washington, DC and Covelo, CA, USA.

Lettman, G. and D. Campbell. 1997. Timber harvesting practices on private forest land in western Oregon. Oregon Department of Forestry, Salem, OR, USA.

Markley, M.H., and C.F. Bassett. 1942. Habits of captive marten. American Midland Naturalist 28(3):604–616.

Miller, J., C. Skinner, H. Safford, E. Knapp, and C. Ramirez. 2012. Trends and causes of severity, size, and number of fires in northwestern California, USA. Ecological Applications 22(1):184–203.

Phillips, D. M. 1994. Social and spatial characteristics and dispersal of marten in a forest preserve and industrial forest. M.S. thesis. University of Maine, Orono. 112 p.

Pierce, D.W., D.R. Cayan, T. Das, E.P. Maurer, N.L. Miller, Y. Bao, M. Kanamitsu, K. Yoshimura, M.A. Snyder, L.C. Sloan, G. Franco, and M. Tyree. 2013. Probabilistic estimates of future changes in California temperature and precipitation using statistical and dynamical downscaling. Climate Dynamics 40**:**839–856.

Potvin, F., L. Belanger, and K. Lowell. 1999. Marten habitat selection in a clearcut boreal landscape. Cons. Bio·. 14: 844-857.

Powell, R.A., S.W. Buskirk, and W.J. Zielinski. 2003. Fisher and Marten (*Martes pennanti* and *Martes americana*). Pages 635–649 *in* G. Feldhamer, B. Thompson, and J. Chapman, editors. Wild mammals of North America, 2nd Ed. Johns Hopkins University Press. Baltimore, MD, USA.

Primack, R.B. 1993. Essentials of Conservation Biology. Sinauer Associates Inc., Sunderland, Massachusetts.

Raphael, M.G., and L. L. C. Jones. 1997. Characteristics of resting and denning sites of American marten in central Oregon and western Washington. Pages 146-165 *in* G. Proulx, H. N. Bryant, and P. M. Woodard (editors), Martes: Taxonomy, Ecology, Techniques, and Management. Provincial Museum of Alberta, Edmonton, Alberta.

Ricklefs, R.E. 1990. Ecology. W.H. Freeman and Co., New York.

Slauson, K., W. Zielinski, and C. Carroll. 2001. Hidden in the Shrubs: Rediscovery of the Humboldt Marten? Mountains and Rivers A Quarterly Journal of Natural History for the Klamath-Siskiyou Region. 1(2):1-12.

Slauson, K.M. 2003. Habitat selection by American martens (*Martes americana*) in coastal northwestern California. M.S. thesis. Oregon State University, Corvallis, OR, USA.

Slauson, K.M., W.J. Zielinski, and G.W. Holm. 2003. Distribution and Habitat Associations of Humboldt marten *(Martes americana humboldtensis)* and Pacific fisher *(Martes pennanti pacifica)* in Redwood National and State Parks. Final Report. 18 March 2003. Redwood Sciences Lab, Pacific Southwest Research Station USDA Forest Service. Arcata, CA.

Slauson, K. M., and W. J. Zielinski. 2004. Conservation status of American martens and fishers in the Klamath-Siskiyou bioregion. Pages 60–70 *in* K. Merganther, J. Williams, and E. Jules (editors), Proceedings of the 2nd conference on Klamath-Siskiyou ecology, Cave Junction, OR, USA. May 29–31, 2003. Siskiyou Field Institute, Cave Junction, Oregon.

Slauson, K.M., W.J. Zielinski, and J.P. Hayes. 2007. Habitat selection by American martens in coastal California. Journal of Wildlife Management. 71:458–468.

Slauson, K.M., and W.J. Zielinski. 2007a. Strategic Surveys for Martes Populations in Northwestern California: Mendocino National Forest July- September 2006 Final Report. U.S.D.A. Forest Service, Pacific Southwest Research Station, Redwood Sciences Laboratory, Arcata, California.

Slauson, K.M., and W.J. Zielinski. 2007b. The Relationship Between the Understory Shrub Component of Coastal Forests and the Conservation of Forest Carnivores. pp. 241-243 *in* Standiford, R.G, G.A. Giusti, Y. Valachovic, W.J. Zielinski, and M.J. Furniss eds. 2007. Proceedings of the redwood region forest science symposium: What does the future hold? Gen. Tech. Rep. PSW-GTR-194. Albany, CA: Pacific Southwest Research Station, U.S. Department of Agriculture, Forest Service. 553 pp.

Slauson, K.M. and W. Holden. 2009. News Release: American marten discovered in Prairie Creek Redwoods State Park: first in recent times. USDA Forest Service Pacific Southwest Research Station, California. August 25, 2009.

Slauson, K.M., and W.J. Zielinski. 2009. Characteristics of summer/fall resting structures used by American martens in coastal northwestern California. Northwest Science 83:35–45.

Slauson, K.M., W.J. Zielinski, and K.D. Stone. 2009a. Characterizing the molecular variation among American marten (*Martes americana*) subspecies from Oregon and California. Conservation Genetics 10:1337–1341.

Slauson, K.M., J.A. Baldwin, W.J. Zielinski, and T.A. Kirk. 2009b. Status and estimated size of the only remnant population of the Humboldt subspecies of the American marten (*Martes americana humboldtensis*) in northwestern California: final report. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. Arcata, CA, USA. 28 pp.

Spencer, W.O., R.H. Barrett, and W.J. Zielinski. 1983. Marten habitat preferences in the northern Sierra Nevada. Journal of Wildlife Management 47:1181-1186.

Strickland, M.A., C.W. Douglas, M. Novak, et al. 1982. Marten. Pages 599-612 In: Chapman, J.A. and G.A. Feldhamer, eds. Wild mammals of North America: biology, management, economics. Baltimore, MD: Johns Hopkins University Press.

Strickland, M.A. and C.W. Douglas. 1987. Marten. Pages 530-546 in Novak, M., J.A. Baker, and M.E. Obbard, eds. Wild furbearer management and conservation in North America. Ontario Trappers Association, North Bay, Ontario.

Thompson, I. D. and P .W. Colgan. 1987. Numerical responses of martens to a food shortage in northcentral Ontario. Journal of Wildlife Management. 51: 824-835.

Thompson, I.D. and A.S. Harestad. 1994. Effects of logging on American martens, and models for habitat management. Pages 355–367 *in* Buskirk, S.W., A.S. Harestad, M.G. Raphael, eds. Martens, sables, and fishers: biology and conservation. Cornell University Press, Ithaca, New York. 484pp.

Thompson, C., R. Sweitzer, M. Gabriel, K. Purcell, R. Barrett, and R. Poppenga. 2014. Impacts of rodenticide and insecticide toxicants from marijuana cultivation sites on fisher survival rates in the Sierra National Forest, California. Conservation Letters 7(2):91-1 02.

Thornburg, D. A., R. F. Noss, D. P. Angelides, C. M. Olson, F. Euphrat, and H. W. Welsh. 2000. Managing redwoods. In: R. F. Noss (ed.). The Redwood Forest: History, ecology, and conservation of the Coast Redwoods. Island Press, Covelo,

CA. 339 pp.

Traill, L. W., C. J. A. Bradshaw, and B.W. Brook. 2007. Minimum viable population size: A meta-analysis of thirty years of published estimates. Biological Conservation. 139:159-166.

Traill, L. W., B. N. Brook, R. R. Frankham, and C.J. A, Bradshaw. 2010. Pragmatic population viability targets in a rapidly changing world. Biological Conservation. 143:28-34.

Twining, H., and A. Hensley. 1947. The status of pine martens in California. California Fish and Game 33:133–137.

U.S. Department of Agriculture (USDA). 1992. Final Environmental Impact Statement (FE IS) on management of the northern spotted owl in the national forests. States of Washington, Oregon, and California. Portland, Oregon.

U.S. Department of Agriculture and U.S. Department of the Interior (USDA and USDI). 1994. Record of decision on management of habitat for late-successional and old growth forest related species within the range of the northern spotted owl [Northwest Forest Plan]. Portland, OR.U.S.
Department of Interior National Park Service (USDI NPS). 2000. Record of Decision for Final Environmental Impact Statement and General Management Plan for Redwood National and State Parks. 10pp.

U.S. Department of the Interior National Park Service (USDI NPS) and California Department of Parks and Recreation (State Parks). 2000. General Management Plan / General Plan for Redwood National and State Parks. 111 pp.

U.S. Fish and Wildlife Service (USFWS). 2015. Coastal Oregon and Northern Coastal California Populations of the Pacific Marten (*Martes caurina*) Species Report. April 2015. 139 pp.

Williams, E.S., E.T. Thorne, M.J. Appel, and D.W. Belitsky. 1988. Canine distemper in blackfooted ferrets (*Mustela nigripes*) from Wyoming. Journal of Wildlife Diseases 24(3):385–398.

Zabala, J., I. Zuberogoitia, and J.A. Matinez-Clement. 2009. Testing for niche segregation between two abundant carnivores using presence-only data. Folia Zool. 58(4):385-395.

Zielinski, W.J. 1984. Plague in pine martens and the fleas associated with its occurrence. Great Basin Naturalist 44(1):170-175.

Zielinski, W.J., and R.T. Golightly. 1996. The status of marten in redwoods: is the Humboldt marten extinct? Pages 115–119 *in* J. LeBlanc (editor), Conference on coast redwood forest ecology and management, June 18–20, 1996. Humboldt State University, Arcata, CA. University of California Cooperative Extension, Forestry. Berkeley, CA, USA.

Zielinski, W.J., K.M. Slauson, C.R. Carroll, C.J. Kent, and D.K. Kudrna. 2001. Status of American marten populations in the coastal forests of the Pacific States. Journal of Mammalogy 82:478–490.

ATCC
AL TAUCHER CONSERVATION COALITION

U.S. SPORTSMEN'S ALLIANCE

September 8, 2015

The Honorable Jack Baylis, President

California Fish and Game Commission

1416 Ninth Street, Suite 1320

Sacramento, CA 95814

RE: Predator Working Group Participant Selection

Dear President Baylis:

The United States Sportsmen's Alliance ("USSA") is a national organization dedicated to the protection and promotion of America's sporting pursuits. For nearly forty years, USSA has sought to reinforce the role of hunters, fishermen, and trappers in the furtherance of the North American Wildlife Management model, and partners with the Al Taucher Conservation Coalition ("ATCC") to promote conservation efforts here in California. ATCC is an organization comprised of more than 27 state and national conservation, union, and volunteer organizations, and represents the interests of more than one million Californians who contribute over 3.6 billion dollars to California's growing economy.

ATCC is formally seeking clarification of actions the Commission recently took at the Commission's 5-AUG-15 meeting in Fortuna whereby individuals were publicly appointed to the Predator Policy working group ("PWG"). These appointments appear to be in stark conflict with the protocol the Commission previously set forth whereby parties interested in participating in the PWG could submit their applications in response to the Commission's solicitation, and then be selected according to their qualifications the Commission set forth after an application period of thirty days.

The California Fish and Game Commission is tasked with a very important role in conserving California's natural resources and safeguarding the ability of all Californians to recreate in Nature according to the dictates of their conscience, and as with any action that could potentially impact communities of Californians, our state's flora and fauna, agricultural enterprises, and recreational opportunities, it is

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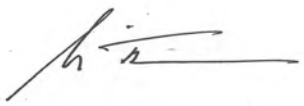
of paramount importance that the Commission establish and adhere to a well-defined process of involving stakeholder and public input. As you know, ATCC has been supportive of the effort to establish policies by which to guide the activities of the Wildlife Resources Committee ("WRC"), so it is concerning to our member organizations that the process has not been observed in this case; doing so only serves to further alienate and disenfranchise public input and invites distrust and antagonism to the governance of our state's natural resources and those tasked with setting forth policy.

I look forward to the Commission's prompt response to my concerns.

Sincerely,



Michael Flores
Al Taucher Conservation Coalition

California Fish and Game Commission
Staff Proposal for Predator Policy Workgroup

July 26, 2015

Background

The response by the public to the Wildlife Resources Committee's (WRC) predator policy workgroup (PWG) meeting in March 2015 was overwhelming, and outstripped staff capacity to host all the interest. Staff presented WRC with a preliminary report and recommendations at the meeting on May 6, 2015, and Co-Chair Baylis proposed appointing a balanced group of stakeholders to draft and vet policy and/or regulatory options for consideration and discussion at future WRC meetings. The proposal was discussed and tentatively approved at the June 11, 2015, Commission meeting with requests by Commissioners Kellogg and Hostler-Carmesin for additional information.

Proposal

The proposal requires the Commission to appoint representatives to one of two workgroups to support predator policy review and development. The first group, consisting of six representatives, is responsible for refining ideas and drafting language for review by the WRC. The second group, consisting of 10-15 representatives, is responsible for receiving input to inform the drafting group.

The workgroups are tasked with presenting draft recommendations in a report to the WRC in 2016, at which point the WRC will discuss and make final recommendations for consideration by the Commission in 2017.

Tier 1: Drafting Group (drafters)

The Commission would appoint six volunteers that can demonstrate their commitment to helping draft policy.

- Consists of six seats
- Meet often with each other and the review group
- Goal: To draft new predator policy and regulatory concepts for WRC consideration
- Objectives
    - Receive input from review group
    - Receive expert input
    - Review existing policy/regulatory concepts
    - Draft policy, best management guidelines and regulatory proposals

Tier 2: Review Group (reviewers)

The Commission would appoint no more than 15 volunteers that can demonstrate their commitment to providing constructive input to the drafters.

- Consists of 12-15 seats
- Meet frequently with each other, the drafting group, and key stakeholders

- Goal: To provide input, guidance, and support for the drafting group
- Objectives
    - Review draft from drafting group
    - Provide recommendations to drafting group based on input from stakeholders
    - Negotiate compromises, identify key issues and conceptual changes
    - Debate proposed policies and regulatory concepts
    - Identify best management practices

Appointment Process

Solicitation – Commission staff will distribute a notice of interest for persons willing to volunteer for either tier on the webpage and through the listserv. The notice will include the list of desired qualifications and will outline the task and anticipated term. There will be a 30-day period to apply.

Selection - The applicants will be screened by Commission staff for those meeting the minimum qualifications. The successful applicants will be presented to the Commission at the next available meeting for final selection to fill both tiers.

Minimum Qualifications

- Both drafters and reviewers must demonstrate ability and willingness to work with others of diverse opinions and views and show a commitment and ability to represent key stakeholders.
- Drafters: must demonstrate writing skills and ability to evaluate policy and regulations.
- Reviewers: must demonstrate ability to evaluate policy and regulations. Experience working collaboratively.

Workgroup Input Needs

1. Clear and specific objectives from the Commission and WRC
2. Commission staff support of effort
3. DFW expertise on science, management practices, law, and administration
4. Public attitudes, expectations, needs (depredation, anthropomorphic, property rights)
5. Webpage platform for announcements, key documents, etc.
6. Independent scientific input and/or review
7. Rules of conduct, expectations, roles and responsibilities of participants
8. Discussion starter (draft list of issues/concerns)

California Fish and Game Commission

Predator Policy Workgroup Nominees

11/18/2015

Name	Affiliation	Title	Group	Complete (Y - Yes, N - No, NP - Not Provided)	Ability and willingness to work with others of diverse opinions and views and show a commitment and ability to represent key stakeholders.	Drafters: must demonstrate writing skills and ability to evaluate policy and regulations.	Reviewers: must demonstrate ability to evaluate policy and regulations. Experience working collaboratively
Bill Gaines	Gaines & Associates, Government Relations		Drafting	NP	NP	NP	NP
Erica Sanko	California Wool Growers Association	Executive Director	Drafting	Y	Y	Y	Y
Jean Su	Center for Biological Diversity	Staff Attorney	Drafting	Y	Y	Y	NP
Jennifer Fearing	Humane Society of the United States	Representative	Drafting	Y	Y	Y	Y
Josh Brones	Sportsman's Alliance/Al Taucher Conservation Coalition		Drafting	Y	Y	Y	Y
Mark Hennelly	California Waterfowl	Vice President, Legislative Affairs and Public Policy	Drafting	N	NP	Y	NP
Noelle Cremers	California Farm Bureau Federation	Director, Natural Resources and Commodities	Drafting	Y	Y	Y	Y
Rick Hopkins	Project Coyote Science Advisory Board		Drafting	Y	NP	Y	Y
Rebecca Dmytryk	Humane Wildlife Control Association	President	Drafting (either)	Y	NP	Y	NP
Grandville Crow	Predator hunting groups		Either	N	NP	NP	NP

California Fish and Game Commission

Predator Policy Workgroup Nominees

11/18/2015

Jim Conrad	San Diego County Fish and Wildlife Advisory Committee	President	Either	Y	Y	Y	Y
Kimberly Richard	Wildlife advocate		Either	Y	Y	NP	NP
Kirk Wilbur	California Cattlemen's Association	Director, Government Affairs	Either	Y	Y	Y	Y
Ronald Stephens	Predator hunting groups		Either	Y	NP	NP	NP
Sally Barron	Agriculture and hunters		Either	Y	Y	NP	Y
Thomas Boo	Friends of the Inyo	Board of Directors	Either	Y	Y	Y	Y
Bill Saksa	Predator Callers of Orange County	Board Member	Not Stated	N	NP	NP	NP
Chuck Morse	Mendocino County Agricultural Commission	Commissioner	Not Stated	Y	Y	NP	Y
Dale T. Steele	Expert on predator issues (Retired DFW employee)		Not Stated	Y	Y	Y	Y
Ed Worley	National Rifle Association	Legislative Liaison	Not Stated	N	NP	NP	NP
George Osborn	California Association for Recreational Fishing	Representative	Not Stated	Y	Y	Y	Y
James Ferris	Hunter		Not stated	N	Y	NP	NP
Les Wright	Fresno County Agricultural Commission	Commissioner	Not Stated	Y	Y	Y	Y
Patrick Fitzmorris	California Deer Association	Senior Field Director	Not Stated	Y	Y	Y	Y
Randy Morrison	Mule Deer Foundation	California Regional Director	Not stated	Y	Y	NP	NP
Tom Pederson	California Rifle and Pistol Association	Legislative Director	Not stated	N	NP	NP	NP
Tony Linegar	Sonoma County Department of Agriculture	Commissioner	Not Stated	Y	Y	NP	Y
Damon Nagami	Natural Resources Defense Council	Senior Attorney	Review	Y	Y	Y	Y
Dennis Orthmeyer	APHIS Wildlife Services	State Director	Review	N	NP	NP	NP
Keli Hendricks	Project Coyote	Predator Friendly Ranching Coordinator	Review	Y	Y	NP	NP

California Fish and Game Commission

Predator Policy Workgroup Nominees

11/18/2015

Robert R. Smith	San Diego County Wildlife Federation	President	Review	Y	Y	Y	Y
Sharon Ponsford	California Council for Wildlife Rehabilitators	Board Member	Review	N	NP	Y	NP
Steven Childs	California State Varmint Callers Association	Member	Review	Y	Y	NP	NP
Tom O'Key	Project Bobcat	Founder	Review	Y	NP	NP	NP

NATIONAL SHOOTING SPORTS FOUNDATION, INC.
11 Mile Hill Road ▲ Newtown, CT 06470-2359 ▲ Tel (203) 426-1320 ▲ Fax (203) 426-7182 ▲ www.nssf.org

LAWRENCE G. KEANE
SENIOR VICE PRESIDENT
& GENERAL COUNSEL

September 24, 2015

VIA E-Mail
Mr. Jack Baylis, President,
Mr. Jim Kellogg, Vice President.
Ms. Jacque Hostler-Carmesin
Mr. Anthony C. Williams
Mr. Eric Sklar
Mr. Sonke Mastrup, Executive Director
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Re: Request for Transparency, Structure and Fairness in the Operations of the California Wildlife Resources Committee

Dear Sirs and Madam:

The National Shooting Sports Foundation ("NSSF") is the trade association for America's firearms, ammunition, hunting, and recreational shooting sports industry. Its mission is to promote, protect and preserve hunting and the shooting sports. NSSF has a membership of nearly 13,000 manufacturers, distributors, firearms retailers, shooting ranges, and sportsmen's organizations. Our manufacturer members make the firearms used by law-abiding California sportsmen, the U.S. military and law enforcement agencies throughout the state.

The purpose of this letter is to address continued concerns of NSSF regarding the transparency of the Wildlife Resources Committee ("WRC"). The policies and decisions of the California Fish and Game Commission ("Commission"), and the actions of the WRC have a direct and substantial, material impact on the businesses of a significant number of our members, including those based in California.

In our July 18, 2014 letter (attached) expressing our concerns about the Wildlife Resources Committee, apparently viewed by the Commission as an "informal" committee, we pointed out that "a committee is no longer considered to be strictly advisory if the committee members advise or make recommendations to the decision maker either directly or without significant intervening substantive review." Note that the WRC is further delegating authority to a self-appointed Predator Policy Workgroup ("Workgroup") that was not statutorily convened and is being appointed by the Commission using subjective criteria with virtually no transparency on

the process used to select candidates. Furthermore, while neither the invitation to apply to the Workgroup nor the official Fish and Game Commission website identifies any deadlines for applications, we see on the October 7-8, 2015 agenda that the Commission will be making the appointments at that meeting. As the notice for Workgroup nominations was posted on September 11, 2015 and the appointments are to be made at the October 7-8 meeting, very little time is available for the receipt and evaluation of nomination appointments before the final selection.

Since the WRC's inception on January 15, 2014 and subsequent meetings held in 2014 on May 7, July 28, and September 17, and in 2015 on January 14, May 6, and September 9, the WRC continues to function without formal policies and procedures that have been made clear to the public.

NSSF is again expressing concern as we seek further clarification about recent activities at the FGC meeting on August 5, 2015 when the President of the Fish and Game Commission without public discussion, attempted to appoint members to a Predator Policy Workgroup that had not been previously disclosed to the public. On September 11, 2015 the FGC publicly noticed the request for nominations to the Predator Policy Workgroup, thus creating even more confusion about the working of the WRC and the Commission's actions at its August 5 meeting.

Numerous questions arise in reviewing the proposed nomination process criteria for participation in the Predator Policy Workgroup. Of concern are the proper functioning of the WRC and what appear to be extremely subjective criteria. There is little disclosure of how this process will be conducted and how the subjective criteria will be validated. Under "Review Group: negotiate compromises, identifying key issues and conceptual changes" is an example: stakeholders being appointed to this Workgroup are to negotiate compromises on the behalf of a state-convened body. We would also note that references to such things as "best management practices" and "input from qualified experts" are very subjective and would be the choice of the individual appointed to the committee. Will there be a rating criteria for such appointments, such as knowledge or experience with web-based software under "Criteria for Selection"?

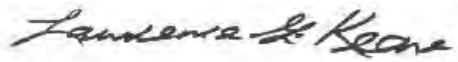
A list of organizations and individuals with whom they would be communicating is included under information that should be provided in the nomination. Knowledge of the names on the list, itself, is not a qualification for appointment without the consensus of the stakeholders. Most troubling in the criteria is the qualification that the individual should be able to work collaboratively with those of diverse opinions. There is nothing in the objectives of the WRC that requires this as a criterion (minority opinions provide valuable input to a fact-finding, deliberative and fair process). Exclusion of those voices appears to be self-defeating to the entire purpose of the WRC.

These are just a few of our concerns about this most recent development of the WRC, and we ask the Commission to step back and prioritize formal policies and procedures in public hearings before it proceeds with the adoption of WRC policy. This request has been made

numerous times in writing and during the Public Forum in both FGC and WRC meetings. For the sake of transparency, a public response is necessary.

NSSF exhorts you to consider the future of the Wildlife Resource Committee's effectiveness if a structure of fairness and openness is not provided that allows the participation of all stakeholders.

Sincerely,



Lawrence G Keane
Senior Vice President & General Counsel
National Shooting Sports Foundation

cc: Governor Edmund G. Brown, Jr.
Mr. Chris Ames, Attorney General's Office
National Shooting Sports Foundation

Attachment: NSSF Letter, dated July 18, 2014

Safari Club International
A NON-PROFIT ORGANIZATION • DEDICATED TO CONSERVING WILDLIFE AND PRESERVING HUNTING

SCI
FIRST FOR HUNTERS

California Chapters

September 24, 2015

VIA E-Mail
Mr. Jack Baylis, President,
Mr. Jim Kellogg, Vice President.
Ms. Jacque Hostler-Carmesin
Mr. Anthony C. Williams
Mr. Eric Sklar
Mr. Sonke Mastrup, Executive Director
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Re: Request for Transparency, Structure and Fairness in the Operations of the California Wildlife Resources Committee

Dear Sirs and Madam:

Safari Club International (SCI) is a worldwide non-profit organization with the mission to protect the freedom to hunt and to promote wildlife conservation. SCI recognizes and promotes hunting as a valuable wildlife management and conservation tool. SCI currently has over 48,000 members and over 6,500 members in California. SCI also has 30,000 California Affiliates, 950,000 U.S. Affiliates and over 7,000,000 International Affiliates.

There are thirteen California Chapters of Safari Club International, collectively representing over 5,000 of SCI's California members who hunt and participate in sustainable wildlife conservation. SCI's California chapters and their members participate in numerous conservation projects throughout the state. SCI California chapters attend Wildlife Resource Committee (WRC) and Fish and Game Commission (FGC) meetings and make every effort to play active roles in the state's decision-making concerning wildlife conservation and management. Despite SCI California chapters' efforts to contribute to and improve the effectiveness and propriety of the WRC's decision-making process, the activities of the WRC continue to deprive SCI California chapters and their members of fair and equal access to these important decisions.

Since the WRC's inception on January 15, 2014 and subsequent meetings held in 2014 on May 7, July 28 and September 17 and in 2015 on January 14, May 6 and September 9, the WRC continues to function without formal policies and procedures and have not made the process that they follow clear to the public. In a letter dated July 14, 2014 SCI's California

chapters outlined some of our concerns about the operation of the WRC. To date we have received no written communication responding to our concerns nor have we seen remedies to the problems we identified. (Please see attached letter, July 14, 2014)

SCI's California chapters are writing again to express our concerns as we seek further clarification about recent activities at the FGC meeting on August 5, 2015 when, without public discussion, the President of the Fish and Game Commission attempted to self-appoint members to a Predator Policy Workgroup that had not been previously disclosed to the public. Ostensibly to remedy this apparent error, on September 11, 2015 the FGC publicly noticed a request for nominations to the Predator Policy Workgroup. This unexplained request for nominations after the President's announcement of an illegal, unilateral and biased designation of nominees, created even more confusion about the workings of the WRC, the actions of the Commission at its August 5 meeting, and the Commission's relationship with stakeholders at the WRC.

The proposed nomination process criteria for participation in the Predator Policy Workgroup does little to improve the problems introduced by the President's inappropriate actions. The announcement of the nomination process does not answer the numerous ongoing questions about the proper functioning of the WRC or the apparent extremely subjective criteria for nominee selection. The WRC continues to offer little disclosure of how the selection of Predator Policy Workgroup members will be made and/or how the subjective criteria will be validated. We also note that there is no due date clearly listed for nominations to be submitted to the WRC, nor is a date by which the member selection will take place.

Once the members are selected, the problems increase. The process, or lack thereof, remains rife with subjective failings. For example, the "Review Group" is expected to negotiate compromises, identify key issues and conceptual changes. It is curious and likely illegal that stakeholders from specific interest groups that are appointed to this workgroup are being given the authority to negotiate compromises on the behalf of a state-convened body. This authority is being delegated without any rules to govern the conduct of these workgroup members. Further no definitions or criteria have been provided for subjective phrases such as "best management practices" and "input from qualified experts." However, the individuals appointed as members are given no guidance as to how to apply these subjective criteria. As a result, these evaluations will be left to the discretion of the individuals appointed to the committee, without consequence for abusing this discretion. It appears that the Drafting and Review groups within the Predator Policy Workgroup will be dictating policy in a vacuum while conducting meetings outside the public's view.

SCI's California chapters believe that the overall criteria for selection potentially excludes some of the most important voices with technical and on-the-ground experience. The process for selecting members of the Predator Policy Workgroup appears to be skewed towards those who lack this kind of technical and on-the-ground knowledge and is in conflict with the very purpose of the WRC for outreach to a variety of stakeholders and consumptive users who do not possess these attributes.

Aside from the criteria for the selection of the Predator Policy Workgroup with all of its obvious problems, the WRC has not announced or codified any formal procedures for the workings of the WRC or the Workgroup. We refer back to our July 14, 2014 letter in urging the Commission to step back and prioritize formal policies and procedures in public hearings before it proceeds with the adoption of WRC policy. SCI and other organizations and individuals have made this request numerous times in writing and during the Public Forum in both FGC and WRC meetings. We still await an answer and we continue to be subjected to WRC meetings that lack consistency and reliability in their management. For the sake of transparency, a public response to our concerns is necessary.

We urge you to consider the future of the WRC's effectiveness if a structure of fairness and openness is not provided for the participation of all stakeholders.

Sincerely,

Lisa McNamee
Co-Legislative Coordinator
California Chapters

Don Giottonini
Co-Legislative Coordinator
California Chapters

cc: Governor Edmund G. Brown, Jr.
Mr. Chris Ames, Attorney General's Office
Safari Clubs International, California Chapters

Attachment: SCI Letter to Fish and Game Commission, July 14, 2014

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0119
(916) 319-2096
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COMMITTEE STAFF

CHIEF CONSULTANT
DIANE COLBORN

PRINCIPAL CONSULTANT
TINA CANNON LEAHY

PRINCIPAL ASSISTANT
KATHY MATSUMOTO

Assembly
California Legislature

ASSEMBLY COMMITTEE ON
WATER, PARKS AND WILDLIFE
MARC LEVINE
CHAIR

November 12, 2015

California State Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Attention: Predator Policy Workgroup Nominations

Dear Commissioners:

I am writing to express my support for the nominations of Rick Hopkins, Ph.D., and Keli Hendricks, both of whom have been nominated to serve on the Commission's new volunteer Predator Policy Workgroup. I also want to commend the Commission for its foresight in creating the Workgroup and for undertaking efforts to update California's predator management policies to reflect current science and ecological conservation needs, as well as the needs of landowners and the public.

Dr. Rick Hopkins is a conservation biologist with a Ph.D. from UC Berkeley in Wildlands Resource Ecology. He has extensive experience in the management of large predator species, including bears, mountain lions and other mammalian species. He is an owner of Live Oak Associates, an ecological consulting firm based in San Jose, President of the nonprofit Cougar Fund, and serves on the board of an applied research collective known as Conservation Science Partners. He also serves on the science advisory board of Project Coyote. With his extensive experience, Dr. Hopkins seems eminently qualified to serve on the Predator Management Workgroup and I believe the Commission would be well served by his participation.

Keli Hendricks serves as the Coordinator for Project Coyote's Predator Friendly Ranching project, where she works to foster partnerships with the agricultural community and to educate the public and ranchers on wildlife friendly farming practices that allow wildlife and livestock to share the land for the benefit of both. Project Coyote is based in Marin and Sonoma Counties, which I represent, and is well known in my district for the collaborative work they do statewide with ranchers and others to find common ground and to educate the public on effective practices that can allow predator species and humans to coexist. I appreciate their interest and commitment to working on these issues.

Thank you for your consideration of these nominations, and for undertaking this project. If you have any questions, please do not hesitate to contact me or my staff.

Sincerely,

Marc Levine

MARC LEVINE

cc: Sonke Mastrup, Executive Director, CA Fish and Game Commission
Camilla Fox, Executive Director, Project Coyote

MLS

California Fish & Game Commission
PO Box 944209
Sacramento CA 94244-2090

I object to the lack of established procedures and rules governing the Wildlife Resources Committee. The WRC has now established a subcommittee known as the Predator Policy Workgroup. The PWG is a one sided group established to push through an anti-hunting agenda. The PWG is operating without oversight or regulatory guidelines and may influence policies facing the Fish & Game Commission. Please oppose any actions made by the WRC until established rules and procedures are put in place as required by California law.

Andy White

Loyalton CA

Andy White
10-1-15

From: [redacted]
To: FGC
Subject: Predatory Policy Workgroup Nomination
Date: Thursday, September 17, 2015 5:33:30 PM

Dear President Baylis, Commissioners, and Sonke Mastrup,

I am applying for an appointment to either one of the two Predator Policy Workgroups, whichever you think that my background and experience would be most useful.

I am a livestock rancher and a licensed hunter. I have a B.S. in Environmental Resources. I have participated in Commission and Workgroup meetings and am aware that the subject of Predator Management is a "thorny issue" with a variety of diametrically opposed opinions. I believe that decisions about Predator Management need to be made based on sound, unbiased, science. Not on emotion and opinion.

That being said... I have over 40 years of volunteer experience working with other volunteers from local and state wide clubs (4-H leader forever), to National all volunteer organizations. I have developed excellent negotiating skills working with individuals and groups who hold strong differing opinions. It is possible to reach consensus.

I am well versed in the State of California regulatory process from beginning to end. I retired from the California Air Resources Board after 20 years. The regulatory process and enforcement were my Job description. My negotiating skills proved to be invaluable working with staff and stakeholders to put new or revised regulations in place. It is possible to blend the concerns of local, regional, national, and international stakeholders into a coherent whole to meet State needs.

I am a member of Ducks Unlimited, the Sacramento County Farm Bureau, and the National Open Field Coursing Association. Outreach is very important. Not only to groups but to ranchers, farmers, hunters and other stakeholders who are not affiliated with any particular group. Their input is equally valuable to the rule making process. I will do this by internet, phone calls, personal visits, and speaking at meetings. The more diverse people involved, the better job we can do.

As I mentioned I am retired so I have the time and the "Willingness to commit the time for full participation..."

Thank You,

Sally Barron
[redacted]

I am a resident of Bishop, in the Eastern Sierra region, and I would like to participate in the Predator Policy Work Group under the Wildlife Resources Committee. I am willing to participate in either the drafting or reviewing group.

The development of policy related to to human-wildlife interactions inherently involves both science and values. I am qualified to identify, read, and evaluate pertinent biological literature. I have a bachelor's degree in in Biology and I excelled in undergraduate Mammalogy and Animal Behavior. I seriously considered graduate studies in wildlife biology but decided eventually to go into medicine instead. My interest in wildlife issues is undiminished and my clinical and public health training has given me strength in understanding scientific issues and writing. I am an experienced and competent writer on technical and non-technical issues issues, with publications in The Washington Post, The New England Journal of Medicine, the federal Morbidity and Mortality Weekly Report and other journals.

I have a long-standing interest in human-wildlife interactions. Apart from my recent engagement in the bobcat trapping issue I cannot claim substantive experience at the wildlife policy level. However in my professional career as a clinician and public health scientist I have demonstrated appreciation and respect for cultural diversity and I have extensive experience working with diverse stakeholders on sensitive issues, primarily in the health arena. I spent part of my career overseas with the federal government, with diplomatic status, working with foreign national governments on sensitive health policy issues, notably HIV in post-conflict Sudan. I inherently respect values and opinions different from my own.

I am computer and internet savvy, experienced with numerous programs and platforms.

I am a well-known and respected member of the Eastern Sierra community and would represent the views of a substantial proportion of our community. I also have developed a fairly extensive network of wildlife stakeholders within and well-beyond this region. I am a member of the board of directors of Friends of the Inyo, a conservation organization based in Bishop with 700 to 800 active members and supporters. Our organization was engaged in advocacy related to The Bobcat Protection Act, working with many Californians concerned about wildlife issues, in our region and across the state. I am a member of the Sierra Club and worked closely with Sierra Club staff and board members on the bobcat trapping issue. I anticipate that Friends of the Inyo and the Sierra Club Range of Light Chapter will submit letters endorsing my participation in the State predator policy development process.

In addition to my service with Friends of the Inyo I currently serve on two other community boards. I am the elected president of our community service district (Starlite CSD), which is responsible for providing water to our community and I am a long-time board member of our local home health and hospice organization (Pioneer Home Health Care). I am also a volunteer and financial supporter of our community wildlife rescue organization, Eastern Sierra Wildlife Care.

I consider myself an informed and thoughtful constituent stakeholder in wildlife and other conservation issues in California, and follow the activities of the Commission and the Department with interest. I look forward to a greater level of involvement.

Thank you for your consideration. I look forward to being a member of one of the working groups.

Sincerely,

Tom Boo, MD
[redacted]

Predator Policy Workgroup Nomination Submission

Candidate Contact Information

Josh P. Brones
[redacted]

Statement of Candidacy

I would like to take this opportunity to submit my candidacy for consideration of participation within the, "Drafting Group" of the Predator Policy Workgroup ("PWG"). In my personal and professional experience, I have the capability to solicit, organize, capture, and publish input from stakeholders from varied backgrounds, natural resource-related worldviews, and credentials. I have significant breadth and depth of experience and understanding with and of California Fish and Game Code and subsequent regulations and policies including those governing the take of predatory species. In addition, I have incredibly extensive lifelong experience and formal university education involving the biological and ecological implications concerning the management of predators.

In my professional life as an executive for an education software company, along with my graduate-level education, I have developed and demonstrated a strong ability to capture ideas verbally and in writing, and bring my analytical skills to bear in the collateral I craft. In addition, I am very capable with most conventional forms of software include Google tools (Sheets, Drive, gmail, etc), Microsoft tools (Word, Excel, PowerPoint, etc), online surveys, HTML and other webpage tools, and other assets useful for this exercise. I would use my communication skills and experience with technology (such as via email, shared Google Sheets and a PWG-centric Google Drive to capture and distribute the status, relevance, and concepts of interest to the PWG to fellow participants in the Drafting and Review groups and other stakeholders as directed by Commission staff.

Given the respect I have for the passion and dedication to an ideal that a person holds dear, I am not threatened by views that differ from my own. Instead, I have forged friendly and constructive relationships with those of differing views, and my persistent instinctive desire is to seek out and exploit those concepts or points that are mutually agreeable as the foundation for moving forward with a shared effort. In addition, given the various capacities I have served in my personal and professional life and the experience brought as a result, I believe that I can effectively incorporate localized knowledge, experience, and culture with shared or divergent values across the state.

I believe that I understand the intent and spirit of the PWG, and I embrace the opportunity to vigorously participate in this body as stakeholder, member of the public, and representative of the conservation community and can be entrusted to remain committed to its success no matter what challenges or adversity.

Current and Past Affiliations

Sportsmen's Alliance - a conservation organization advocating for the role of hunting, fishing, and trapping in the management of wildlife
Government Affairs Coordinator for Western U.S. Operations (2014-Present)

- Attend Department of Fish and Wildlife and Fish and Game Commission meetings and advocate policies of interest to community
- Advocate for and against legislation of compelling interest
- Represent interests and arguments of community with members of media
- Act as liaison for Al Taucher Conservation Coalition (consisting of thirty conservation, outdoor advocacy, and union organizations)

California Houndsmen for Conservation - a conservation organization protecting and promoting the use of hounds as the only catch-and release method of hunting
President (2004-2006 and 2010-2012), Legislative Affairs Analyst (2008-2010), Webmaster (2004-2010)

- Attended Department of Fish and Wildlife and Fish and Game Commission meetings and successfully advocated policies of interest to community
- Advocated for and against legislation of compelling interest including providing testimony in support of increased civil and penal penalties for poaching, increased opportunities for hunting, fishing, and trapping, establishment of account to collect monies for use on big game projects
- Crafted language increasing penalties for use of technology in the commercialization of black bear parts signed into law by Governor Brown
- Represented interests and arguments of constituents with members of media
- Supported programs designed to promote wildlife conversation
- Hosted Fish and Wildlife staff on two-day black bear hunt in order to provide opportunity to gather video and photographic material for Black Bear Awareness Public Service Announcement
- Accompanied Fish and Wildlife staff on visit to multiple high schools to provide cash awards for selected PSA's
- Provided instruction to students at Advanced Hunter Education Clinics

University of Santa Cruz - an institute of public higher education
Volunteer Houndsman for South Bay mountain lion studies (2010-2012)

- Assisted with capture and collaring of mountain lions in the Los Gatos/Santa Cruz region to determine implications of lack of connectivity and the Island Effect and lion movement along the Urban-Wildland Interface
- Attended tri-annual mountain lion workshops hosting biologists and ecologists from North and South America

From: [redacted]
To: [redacted]
Subject: "Predator Policy Workgroup nomination"
Date: Friday, September 11, 2015 8:05:21 PM

Steven Childs
[redacted]

I have 13 years of experience as a private investigator licensed by the state of California. My experience as an investigator has allowed me to learn to understand and respect diverse cultural and geographical backgrounds learning to work individually and in a team/group environment. With this background I feel I can meet and exceed all of the selection criteria requested;

- Provide input and feedback to the drafters
- Negotiate compromises, identifying key issues and conceptual changes
- Identify best management practices
- Thorough knowledge of predator management practices and policy
- Demonstrable ability to work collaboratively with others of diverse opinions
- Strong writing skills and ability to evaluate statute, policy, and regulations
- Ability to balance regional perspectives and local knowledge or experience with statewide needs
- Access and use of an effective communication network to reach stakeholders not attending the public meetings
- Committed to all aspects of the charge of the PWG
- Experience with web-based software.

Affiliations with groups actively involved in predator management: I am currently a member of the oldest predator hunting association in California: The California State Varmint Callers Association, Inc. which was started in the late 50's and was incorporated in 1968. We provide assistance to private property owners, ranchers and others who express a need to reduce predation on their property.

While on Active Duty with the United States Army, I served in the 111th MI Brigade where I was responsible for operating a Communications Center. This center supported a large and diverse base of clients and their organizations. I was part of a team responsible for implementing a new system for distributing classified message traffic which helped save the Intelligence brigade over $10,000.00 a year in expenditures for paper and saved thousands of dollars on associated equipment maintenance costs. After the new system was implemented, I was responsible for educating civilian and military customers base-wide on policy and procedures ensuring a smooth transition. I feel this would satisfy the request for experience in collaborative public processes.

I have participated in every Commission level meeting and associated Wildlife Resource Committee meeting since April of 2014 and intend to participate in the process until all matters are resolved regardless of whether or not I am included in the Predator Policy Workgroup.

Organizations I would communicate with would include six California based predator

hunting clubs, online forums which would reach hundreds of affected stakeholders throughout the state and staff members from both the National Rifle Association and the California Rifle & Pistol Association.

Over the last year and a half I have spent hundreds of hours reviewing documentation relating to predators, their biology, behavior, suitable habitat and regulatory history in California and throughout the U.S. I feel my experience as a private investigator allows me to use a pragmatic fact based approach which would serve the state of California and its constituents well.

Thank you for your consideration,

--
Steven Childs, CPI
S.D.Childs Investigative Services
[redacted]

James R. Conrad's Request for Nomination to the Predator Policy Workgroup

Name: James R. Conrad

Contact information:

Mailing Address: [redacted]
Phone: [redacted]
Email: [redacted]

Mr. Conrad has been a regular and active participant in the WRC meetings and particularly in the Predator Management Committee meetings. He has consistently demonstrated his ability to work collaboratively with others of diverse opinions and is always respectful, polite, and patient. With an undergraduate degree in engineering and a MBA, he has strong writing skills and the ability to evaluate complex statute, policy, and regulation issues. As a Commissioner on the San Diego County Fish and Wildlife Advisory Committee, he has a demonstrated ability to balance regional perspectives and local knowledge and experience with statewide needs.

Mr. Conrad has access to and total familiarity in the use of an effective communication network to reach stakeholders not attending the public PWG meetings (WebEx video and conference call sessions). He is committed to all aspects of the charge of the Predator Policy Workgroup. As the founder and President of SIMS Software, he is knowledgeable and experienced with all manner of software, including web-based software. Perhaps most importantly, he is willing and able to devote the requisite time for full participation on a volunteer basis.

Additional relevant areas of knowledge, expertise and participation with stakeholder groups, wildlife policy, planning and management include:

- Commissioner on the San Diego County Fish and Wildlife Advisory Commission, representing Supervisor Bill Horn, 5th District since March of 2000.

- Charter member of the Big Game and Upland Game Advisory Committees, (established as a result of 2010 legislation SB 1058 that established new dedicated accounts) representing the San Diego County Wildlife Federation and advising the California Department of Fish & Wildlife.

- Charter member of the Al Taucher Preserving Hunting and Sport Fishing Opportunities Advisory Committee (which has now become the WRC) supporting the California Fish and Game Commission.

- Charter member of the California Department of Fish and Game's Game Bird Heritage Program Advisory Committee.

- Coordinated consumptive-use inputs from the recreational hunting community for the U.S Fish & Wildlife Service San Diego National Wildlife Refuge - Public Use Workshop, January, 2007 for the Draft CCP.

- Focus Group participant in the development for the California Fish & Game Commission's Strategic Plan in July, 1998.

- Author of the California Fish and Game Commission's amended policy regarding Multiple Use of Lands Administered by the Department of Fish and Game (8/2/02).

- Past President and current Political Liaison of the San Diego County Wildlife Federation, a coalition of wildlife conservation and outdoor enthusiast organizations that include Ducks Unlimited, California Waterfowl Association, the National Wild Turkey Federation, Safari Club International, Quail Forever, San Diego Sporting Dog Club, the Sportfishing Conservancy, California Rifle & Pistol Association, North American Versatile Hunting Dog Association, San Diego County Varmint Callers and approximately a dozen similar groups.

- Past President of the National Wild Turkey Federation, San Diego Chapter where he worked with the Department of Fish and Game on the successful reintroduction of wild turkeys to San Diego County.

- Life Member of the California Waterfowl Association , Sponsor Member of Quail Unlimited, Life Member of Pheasants Forever and also a member of Safari Club International where he currently is the President of the San Diego Chapter.

CALIFORNIA FARM BUREAU FEDERATION
GOVERNMENTAL AFFAIRS DIVISION
1127-11TH STREET, SUITE 626, SACRAMENTO, CA 95814 · PHONE (916) 446-4647

September 10, 2015

Mr. Jack Baylis, President
Fish and Game Commission
1416 9th Street, Room 1320
Sacramento, CA 95814

RE: Predator Policy Workgroup Nomination

Dear President Baylis:

I am writing to request appointment to the Predator Policy Workgroup as discussed on numerous occasions by the Wildlife Resources Committee (WRC) and the Fish and Game Commission. If appointed I would represent the California Farm Bureau Federation (Farm Bureau). Farm Bureau represents more than 57,000 members as it strives to protect and improve the ability of farmers and ranchers engaged in production agriculture to provide a reliable supply of food and fiber through responsible stewardship of California's resources. Farm Bureau's members are impacted by predators on a regular basis, both through injuries and loss of their animals and through damage to their crops and property. For these reasons, it is important for their perspectives to be included in discussions by the workgroup.

As a representative of Farm Bureau, I have participated in numerous collaborative public processes related to wildlife policy and management. These efforts include serving on the Wolf Management Stakeholder Working Group, the California Fish and Wildlife Strategic Vision process, and the Coho Recovery Team. Additionally, when the WRC began its focus on predator management, I participated in the effort to review the existing policies, regulations, and statutes governing predator management in California. All of these processes have given me experience in working with numerous individuals with very diverse viewpoints to obtain common understanding of complex issues. It has also provided me with a working knowledge of the regulatory and statutory framework governing California's wildlife management.

Farm Bureau is made up of 53 county Farm Bureaus, representing farmers and ranchers in 56 counties. I work closely with our county Farm Bureaus to ensure our members have a voice before state government and to ensure our members are informed of regulatory and statutory changes affecting them. To achieve this information flow, Farm Bureau has a weekly newspaper for our members, as well as regular electronic updates of proposed regulatory and statutory changes.

If selected, I am committed to serving on this workgroup and ensuring my members voices are included in this process. Should you have any questions or need additional information, please don't hesitate to contact me by phone [redacted] or e-mail ([redacted]).

Sincerely,

Noelle Cremers
Director, Natural Resources and Commodities

CC: Sonke Mastrup, Executive Director, Fish and Game Commission

From: [redacted]
To: FGC; st[redacted]
Subject: Predator Policy work group nomination
Date: Thursday, September 10, 2015 6:39:07 PM

We would like to add our names (Ronald Stephens) & (Grandville Crow) to the predator policy work group. This can be tier 1 or tier 2.
We would like to be added to the list for meetings and agendas. Please e-mail (
).

Ronald Stephens
[redacted]
(Retired)

Grandville Crow
[redacted]
(Retired Engineer)

We have been in stakeholders predator policy for two years and have been predator hunters for 40 + years. We have always been in predator hunting clubs and are connected to and advise many predator hunting clubs and groups. We are also connected to trapper groups.
Our clubs and groups hunt or trap only predators. We are not like other groups that hunt all animals or only hunt predators once in a while. We are the largest stakeholder in Southern California for predator hunting groups.

Monday, May 11, 2015!

!

Fish & Game Commission!
California Fish and Game Commission!
1416 Ninth Street, Suite 1320 !
Sacramento, CA 95814!
(916) 653-4899!
fgc@fgc.ca.gov!

!

RE: Stakeholders' Working Groups !

!

Dear President Baylis, Commissioners and Sonke Mastrup,!

!

I'd like to formally "put my name in the hat" to be consider for one of the Five who will be helping draft the beginnings of a predator policy and suggest revisions to existing predator management regulations for your consideration.!

!

I believe I am uniquely suited for this position as I am a writer, I am self employed and can devote time to this endeavor. I am also very familiar with the regulations, in fact, I have already put some time and thought into this (see attached). !

!

I also recently submitted a first draft of Best Practices for Response, Care and Re-Wilding of Mountain Lions in California to the Department. I believe it is currently being reviewed by Nicole Carion, Steve Torres and Mark Kenyon.!

!

If I were chosen for this exclusive group, I would be representing Humane Wildlife Control Association (a national trade association) and my nonprofit, Wildlife Emergency Services. Through these two entities I am very well-connected and feel as though I could represent the voices of my colleagues in both fields !

!

If I may, I think it would be good to share the panel with someone representing the livestock industry, a sport hunter or trapper, I think it would be good to have Camilla Fox or someone she appoints to speak from her camp, and a biologist familiar with California predator species.!

!

I hope you will consider me for the Five. I have an alternate in mind - my husband Duane, who would be kept apprised and take my place should I be unavailable. If I am not one of the Five, I do hope you'll allow me to serve on the review committee of 10-20.!

!

Thank you for your time and consideration.!

!

Rebecca Dmytryk!
Owner / Humane Wildlife Control!
President / Humane Wildlife Control Association!

!

[redacted]
[redacted]

STRATEGIES TO ADDRESS PREDATOR INTERACTIONS AND CONFLICTS

Objective

Minimize the potential for predator interactions and conflicts through development and implementation of a comprehensive public education and assistance program.

Strategies

· Work with stakeholders to develop and implement a comprehensive outreach and educational program that prepares and guides citizens and livestock producers on coexisting with predators (e.g., media materials, trainings and workshops, website resources) to include ways to avoid predator interactions and depredation losses, and appropriate responses to encounters with predators.

· Work with stakeholders to develop response protocols for reported predator interaction/conflict.

· Develop a streamlined interaction/conflict reporting process (e.g., online submission form).

· Provide education, outreach and technical assistance to citizens and livestock producers to reduce predator interaction/conflict.

· Discourage activities that attract predators (e.g., accessible garbage/refuse, feeding of wildlife, accessible pet food, feral cat feeding stations) and support creation of legislation prohibiting such activities.

· Provide resources for non-lethal predator control supplies and equipment (e.g., fladry, strobe lights, hazing supplies, radio-activated guard devices, and electric fences) and referrals to organizations and businesses that offer non-lethal wildlife conflict services.

· Provide regular training to state and county personnel, volunteers and cooperators on adequate predator-proof livestock housing and management practices, the most current non-lethal techniques for reducing predator conflicts, as well as protocol for securing a depredation scene.

· Provide timely response to predator-related complaints through added assistance from district biologists and working arrangements with NGOs.

· Work with nonprofits and NGOs that offer programs that complement state efforts in reducing predator conflicts.

RESPONSE TO PREDATOR CONFLICTS

NON-INJURIOUS HARASSMENT

Non-injurious harassment of predators in the act of harassing, attempting to harass or in close proximity to pets or livestock allowed by landowners, livestock producers or their agents. Such actions can include scaring off an animal(s) making loud noises or otherwise confronting the animal(s) without doing bodily harm.

For such action to occur, the following criteria apply:

· No permit is required.
· It must not result in injury to the animal.

NON-LETHAL INJURIOUS HARASSMENT

Non-lethal injurious harassment of predators following confirmation of predator depredation on pets or livestock or other predator conflict (i.e., loitering, testing, chasing, or disrupting pets or livestock) allowed by landowners, livestock producers or their agents on private land without a permit. A permit is required on public land, and shall be issued following confirmation by the Department of predator depredation on pets or livestock or other predator conflict to permittees who are legally using public land under valid livestock grazing allotments.

Such non-lethal injurious harassment actions can include use of projectiles – paintballs, rubber bullets or bean bags, vehicle, or other pursuit-oriented hazing.

It is recommended that landowners, livestock producers or their agents confer with the Department or authorized representatives to determine the most effective tool for harassment.

For non-lethal injurious harassment to be undertaken, the following criteria apply:

· No permit is required.
· Predator may be pursued (without the requirement of an unintentional encounter).
· Actions can take place only on private land or public grazing allotment.
· No identified circumstances exist that are attracting predator-livestock conflict.
· The Department or Department-authorized representatives may assist by providing equipment, staff or both if requested.

RELOCATION

Relocation may occur when predator(s) become inadvertently involved in a situation or are present in an area that could result in conflict with humans or harm to the predator. Examples could include a predator caught in a trap set for another animal or a wolf found within or near an urban area, causing human safety concerns. This action differs from translocation in that the need is more immediate to solve a particular situation.

For relocation to occur, four criteria must be met:

· The action must be conducted by Department personnel only.
· Predator(s) will be relocated to suitable habitat at the direction of the Department or Department-authorized representatives.
· The action must be taken to prevent conflict with humans or harm to the predator.
· The predator is not known or suspected to have depredated livestock or pets.

LETHAL TAKE

Lethal take of predators will be authorized in situations of conflict with pets or livestock as described below, and human safety.

1. CAUGHT IN THE ACT

To stop a predator in the act of attacking livestock, a permit is required for landowners, livestock producers, grazing permittees (using public lands), or designated agents to use lethal force to stop a predator that is in the act of biting, wounding or killing pets or livestock.

Such permits are issued only after the Department has confirmed that predator has previously wounded or killed pets or livestock in the area and efforts to resolve the problem have been deemed ineffective. The term "in the area" refers to the area determined by the Department or Department-authorized representatives to be frequented by the predator(s).

Efforts to resolve the problem may be preventative efforts implemented specifically to minimize or avoid predator conflict before the initial depredation or non-lethal control implemented specifically to minimize or avoid predator conflict after the initial depredation.

The permit holder is required to continue implementing non-lethal actions to minimize or avoid predator conflicts during the life of the permit and issuance of future permits will be contingent upon this effort.

If a predator is taken under the "Caught In the Act" permit, the permit holder must preserve evidence (on site) of the animal(s) freshly (less than 24 hours) wounded or killed by the predator for Department or Department-authorized representatives to confirm the loss or wound was caused by the predator.

For lethal take to be undertaken, the following criteria apply:

· A permit is required on private and public land.
· The predator must be found in the act of attacking, not testing or scavenging.
· There must be fresh evidence that an attack occurred (e.g., visible wounds, chase tracks).
· The predator carcass must not be removed or disturbed.
· Any incident must be reported to the Department or Department-authorized representatives within 24 hours.

· No identified circumstances exist that are attracting predator conflict.
· Permit holder is required to implement non-lethal actions to minimize or avoid predator conflict during the life of the permit.

2. TWO STRIKES

To stop chronic predator-related depredation on private and public land: State or federal agents are authorized to use lethal force on a particular predator on public or private land at a property owner's or a permittee's request if the Department has confirmed two depredations in the area by the same predator, or one confirmed depredation following three documented attempted depredations (testing or stalking).

For such action to occur, the following criteria apply:

· The action must be conducted by authorized state or federal personnel only.
· Attempts to solve the situation through non-lethal means must be confirmed and documented.
· No identified circumstances exist that are attracting predator conflict.
· Evidence does not exist of non-compliance with applicable laws.

Controlled take of predators is not allowed.

CURRICULUM VITAE

REBECCA DMYTRYK

P.O. BOX 65, Moss Landing CA 95039 USA

PERSONAL DATA

Date of Birth: [redacted]

Place of Birth: Los Angeles, California

Interests: Wildlife, ethology, photography, video and production, journalism.

History: Rebecca Dmytryk, daughter of famous film director Edward Dmytryk and actress Jean Porter, moved to the hills above Malibu in 1974 where her fascination with wildlife and reverence for nature flourished. At age 13 she was relocating rattlesnakes from the backyard, and horseback riding in the mountains from dawn until dusk. Inspired by Jane Goodall and E. O. Wilson she went on to study animal behavior and wildlife rehabilitation. Since the mid-1980's Rebecca has used her success as a small business owner to help organize a number of wildlife rescue programs. In 1996 she founded The California Wildlife Center, based in Malibu, and managed its operations for over four years. Having established one of the first wildlife rescue programs of its kind in the United States, Rebecca has become a leading authority on first response and wildlife capture. She became a published author in 2012 with the release of her first book, *Wildlife Search and Rescue: A Guide for First Responders* (Wiley Blackwell). She currently heads the National Association for Wildlife Emergency Services and continues to pioneer in the field. Her latest work, WildHelp. a mobile app to help finders locate assistance for wild animals in distress is scheduled to debut by the end of 2015.

FORMAL EDUCATION

Pierce College, 1984: Biology

University of California, Los Angeles, 1983: Animal Behavior, Observing Animal Behavior

Diploma, Public High School, Agoura, California, 1978: Biology, Herpetology, Photography

PRESENT VOCATIONS AND POSITIONS

President and CEO, National Association for Wildlife Emergency Services (nonprofit)

President, Humane Wildlife Control Association (nonprofit)

Owner/Operator, Humane Wildlife Control (business)

Voice Talent

Author

PROFESSIONAL APPOINTMENTS AND EMPLOYMENT

2013 to present: Founder, President and CEO, National Association for Wildlife Emergency Services

2013 to present: President, Humane Wildlife Control Association

2012 to present: Owner, Humane Wildlife Control, Moss Landing, CA

2007 to 2015: Owner, Carmel Canines Mobile Pet Services, Moss Landing, CA

2000 to 2013: Founder, Director, WildRescue, a project of EarthWays Foundation

2002 to 2004: California Dept of Fish & Wildlife South Coast Region Wildlife Rehabilitation Committee

2002 to 2003: Board Member, California Council for Wildlife Rehabilitators

1996 to 2002: Founder, President and CEO, The California Wildlife Center

1993 to 2011: International Bird Rescue Oiled Wildlife Response Team. *Jobs included search and collection, lab work, intake, cage construction, washing, and video documentation. Spills included: 1992-1993 Chevron, Mobil, Almari Quarto, CA; 1993 McGrath, Ventura, CA; 1993-94 Four Corners, Santa Clarita, CA; 1994 Tidelands, Long Beach, CA; 1994 McDonnell Douglas, Long Beach, CA; 1994 Crowley, Seattle, WA; 2/95 Chevron, Venice, LA; 2/95 Metrolink/Unocal, Long Beach, CA; 3/95 Chevron, Coalinga, CA; 11/95 Newport Beach, CA; 3/96 US Navy, Shelter Island, CA; 1/97, Marina Del Rey, CA; 1997 Torch, Vandenburg, CA; 1/98 Carson, CA; 2/98 Luckenbach, Point Reyes, CA; 2/98 Ventura, CA; Huntington Beach, CA; 9/99 Humboldt, CA; 10/99 Culver City, CA; 2/00 Malibu, CA; Santa Paula, CA; 1/01 San Pedro, CA; 2/01 The Jessica, Galapagos Islands, Ecuador; 3/01 Port Hueneme, CA; 9/01 Santa Barbara, CA; 12/01- 2003 Luckenbach, San Mateo-Monterey, CA; 12/04 Pemex, Veracruz, Mexico; 1/05 VOBI I, Ventura, CA; 6/05 Hess, Venice, LA; 7/05 Westin, Marina Del Rey, CA; 6/06 Glass Bottom Boat, Malibu, CA; 3/07 VOBI III, Ventura, CA; 11/07 Cosco Busan, San Francisco, CA; 11/09 Dubai Star, San Francisco, CA; 4/10 BP Deepwater Horizon, Gulf Coast.*

1992: Secretary and Treasurer, International Center for Gibbon Studies, Saugus, CA

1991 - 1993: Co-Founder, Vice President, Marine & Mountain Wildlife Rescue, Malibu, CA

1987: Officer, Los Angeles County Animal Care and Control, Agoura, CA

1986 to 2007: Owner/Operator, Malibu Mobile Pet Services, Malibu CA

1985: Secretary, Marine Wildlife Rescue Station, Agoura, CA

1983 - 1989: Reserve Officer, Los Angeles County Animal Care and Control, Agoura CA. *Hands-on experience in the handling of domestic, wild and exotic animals, shelter operations and volunteer programs. Job included organizing and hosting public education seminars on wildlife.*

1980 to 1982: Co-Founder, Animal Rescue Care Center, Thousand Oaks, CA

SPECIAL TRAINING AND CONTINUING EDUCATION

2014: 8-HR HAZWOPER refresher. Online.

2013: Nuisance Wildlife Trapping Webinar, State Humane Assn. of California

2013: National Wildlife Rehabilitators Association annual symposium, Murfreesboro, TN

2013: Nuisance Wildlife Trapping, webinar presented by State Humane Association.

2013: 8-HR HAZWOPER refresher. Online.

2013: National Wildlife Rehabilitators Association annual symposium, Portland, OR

2012: California Council for Wildlife Rehabilitators annual symposium Yosemite, CA
2012: 8-HR HAZWOPER refresher. Online.
2012: National Wildlife Rehabilitators Association annual symposium, Baton Rouge, LA
2011: 8-HR HAZWOPER refresher. Online.
2011: International Wildlife Rehabilitation Council annual symposium, Fort Lauderdale, FL
2010: National Wildlife Rehabilitators Association annual symposium, Bellevue, WA
2010: 8-HR HAZWOPER refresher. Online.
2009: Effects of Oil on Wildlife, Tallinn, Estonia
2009: 8-HR HAZWOPER refresher. Online.
2008: 8-HR HAZWOPER refresher. Online.
2008: International Wildlife Rehabilitation Council annual symposium, Napa, CA
2007: Effects of Oil on Wildlife conference, hosted by OWCN & IBRRC, Monterey, CA
2007: International Wildlife Rehabilitation Council Rehabilitator's Certification
2007: 8-HR HAZWOPER refresher. Online.
2004: International Wildlife Rehabilitation Council annual symposium, Portland, OR
2003: International Wildlife Rehabilitation Council annual symposium, Chicago, IL
2003: Effects of Oil on Wildlife conference, hosted by IFAW & IBRRC, Hamburg, Germany
2003: 24 Hours HAZWOPER training, Hazard Communication Course 1001, San Luis Obispo, CA
2002: California Council for Wildlife Rehabilitators annual symposium, San Diego, CA
2002: ATV Safety Institute Rider Course, Rancho Cordova, CA
2002: National Wildlife Rehabilitators Association annual symposium, St. Louis , MO
2001: International Wildlife Rehabilitation Council annual symposium, Orlando, FL
2001: California Council for Wildlife Rehabilitators annual conference, Fremont, CA
2001: Oiled Wildlife Care Network Advanced Training, San Pedro, CA
2001: National Wildlife Rehabilitators Association annual symposium, Lake Tahoe, NV.
2000: International Wildlife Rehabilitation Council annual symposium, Montreal, Quebec
2000: California Council for Wildlife Rehabilitators annual symposium, Newport Beach, CA
1999: International Wildlife Rehabilitation Council annual symposium, Tucson, AZ
1999: California Council for Wildlife Rehabilitators annual symposium, Sacramento, CA
1998: National Wildlife Rehabilitators Association annual symposium, Seattle, WA
1998: California Council for Wildlife Rehabilitators annual symposium, San Rafael, CA
1998: Bird Deterrence Workshop provided by UDA, APHIS, Wildlife Services, Sacramento, CA
1997: California Council for Wildlife Rehabilitators annual conference, Morro Bay, CA
1995: International Wildlife Rehabilitator's Council, Basic Skills, Klamath Falls, OR
1995: 40 hours HAZWOPER training, Seattle, WA
1994: 24 hours HAZWOPER training, Department of Fish and Wildlife-OSPR.
1993: 16 hours OSHA / Post Emergency Oil Spill Response Training.
1993: National Wildlife Rehabilitators Association annual symposium, Sacramento, CA

1991 - 1993: Volunteer position with the International Bird Rescue and Research Center

1992 - 1993: The Marine Mammal Center, Sausalito, CA - *Extensive hands-on training in the care of infirm pinnipeds, including field rescues, tube feeding, nutrition, restraint and handling techniques*.

1992: *Shelter Management and Operations, Disaster Preparedness, Wildlife Handling*, American Humane Association Conference, San Diego, CA

1992: UC Davis' Wildlife Health Program Oil Spill and Wildlife Emergency Response Conference.

1986: *Handling of Exotics*, Los Angeles SPCA

PERMITS LICENSES AND CERTIFICATIONS

2015 to present: Pest Control Business License issued by California Dept. of Pesticide Regulation

2015 to present: Dept. of Pesticide Regulation Qualified Applicators License 135684

2013 to present: U.S. Fish & Wildlife Service, Special Purpose Education/Salvage MB05124B

2012 to present: U.S. Fish & Wildlife Service, Rehabilitation MB794662

2011 to 2012: U.S. Fish & Wildlife Service, Special Purpose Relocate MB38756A

2007: International Wildlife Rehabilitation Council, Wildlife Rehabilitation Certification

1994 to present: 24-Hour HAZWOPER Certification

2004 - 2008: NOAA NMFS Marine Mammal Stranding (Malibu)

2000 - present: U.S. Fish & Wildlife Service, Special Purpose MB794662

1998: U.S. Fish & Wildlife Service, Rehabilitation (The California Wildlife Center)

1998: California Department of Fish & Wildlife, Rehabilitation (The California Wildlife Center)

1994 - 1998: U.S. Fish & Wildlife Service, Special Purpose (individual permit)

1989 - 1995: California Department of Fish & Wildlife, Rehabilitation (individual permit)

1981: California Department of Fish & Wildlife, Rehabilitation (Animal Rescue Care Center)

CONFERENCE ACTIVITY AND PARTICIPATION

TALKS, WORKSHOPS AND PAPERS PRESENTED

2015: *Wildlife Search & Rescue Fundamentals*, National Wildlife Rehabilitators Assn., Princeton, NJ

2015: *Tips on Capturing Flighted Birds*, National Wildlife Rehabilitators Association, Princeton, NJ

2013: *Wildlife Capture and Handling*, National Wildlife Rehabilitators Association, Portland, OR

2013: *Reuniting Wildlife*, National Wildlife Rehabilitators Association, Portland, OR

2012: *Reuniting and Wild-Fostering*, National Wildlife Rehabilitators Association, Baton Rouge, LA

2012: *Reuniting Wild Birds*, California Council for Wildlife Rehabilitators, Yosemite, CA

2011: *Reuniting Raptors*, International Wildlife Rehabilitation Council, Fort Lauderdale, FL

2010: *The Importance of Reuniting, Re-nesting and Wild-Fostering*, Panel, National Wildlife Rehabilitators Association, Bellevue, WA

2009: *Oiled Wildlife Capture Techniques Workshop,* Effects of Oil on Wildlife, Tallinn, Estonia.

2009: *Oiled Wildlife Handling, Transport, and First Aid,* Effects of Oil on Wildlife, Tallinn, Estonia.

2008: *Reuniting Young*, Panel, International Wildlife Rehabilitation Council, Napa, CA

2007: *Avian Capture Techniques*, Effects of Oil on Wildlife, Monterey, CA

2003: *Wildlife Capture Techniques*, International Wildlife Rehabilitation Council, Portland, OR

2003: *On The Write Track*, International Wildlife Rehabilitation Council, Portland, OR

2003: *Shape Shifting, Spinning, and the Art of Hotline Operations*, International Wildlife Rehabilitation Council, Chicago, IL

2003: *Avian Capture Techniques*, Effects Of Oil on Wildlife, Hamburg, Germany

2002: *Training Agency Personnel*, National Wildlife Rehabilitation Association, St. Louis, MO

2001: *On The Write Track*, International Wildlife Rehabilitation Council, Orlando, FL

2001: *Emergency Response Training for Veterinarians, and Agency Personnel*, International Wildlife Rehabilitation Council, Orlando, FL

2001: *Rehab and the Wildlife Paramedic – Saving Lives*, California Council for Wildlife Rehabilitators, Fremont, CA.

2001: *Wildlife Emergency Response*, National Wildlife Rehabilitators Association, Lake Tahoe, NV.

2000: *This is Wildlife Rescue, How May We Help You*, International Wildlife Rehabilitation Council, Montreal, Quebec, Canada

1999: *Wildlife Paramedics: The Benefits of Being the First Responders to Wildlife Emergencies*, California Council for Wildlife Rehabilitators, Sacramento, CA.

OTHER PUBLIC SPEAKING ENGAGEMENTS

2015: *Non-Lethal Solutions to Urban Wildlife Conflicts*, CA Fish & Game Commission Wildlife Resource Committee, Los Angeles, CA

PUBLICATIONS

CONFERENCE PROCEEDINGS

2000: *Wildlife Paramedics: The Benefits of Being the First Responders to Wildlife Emergencies*, International Wildlife Rehabilitation Council Conference Proceedings.

BOOKS

2012: *Wildlife Search and Rescue, a guide for first responders.* Wiley Blackwell, UK

UNPUBLISHED WORKS

2014: Co-Author, *Recommended Best Practices for Response, Care and Re-Wildling of Mountain Lions in California*.

2007: Co-Author, *The Bear Dreamer*, the story of Timothy Treadwell

CURRENTLY IN PRODUCTION

2015: *WildHelp*, mobile application (in final development)

OTHER PUBLICATIONS

1998 to 2005: Numerous articles on wildlife, Malibu Surfside News, Malibu, CA

PROFESSIONAL MEMBERSHIP AND AFFILIATIONS

- National Wildlife Rehabilitators Association
- International Wildlife Rehabilitators Association
- California Council for Wildlife Rehabilitators

AWARDS AND HONORS

2015: Los Angeles Animal Services, Certificate of Appreciation for Providing Wildlife Search & Rescue Training to the Employees of LA Animal Services

2012: US Fish and Wildlife Service, Office of Law Enforcement, Certificate of Appreciation for Wildlife Rescue and Community Liaison

2012: California Council for Wildlife Rehabilitators, Certificate of Recognition for 31 Years of Service and Dedication in Wildlife Rehabilitation

2004: CA Dept of Fish & Wildlife, Certificate In Recognition of Volunteer Services.

2002: CA Dept of Fish & Wildlife, Certificate of Appreciation for Exceeding 20 Years In Wildlife Rehabilitation

2002: California Department of Fish & Wildlife, Award in Recognition of Dedicated Service

1999: Golden Rule Award Finalist for exceptional volunteer service

1998: Golden Rule Award Finalist for exceptional volunteer service

1998: Citizen of the Year, Dolphin Award, Malibu, CA

1998: L A County Commendation for dedicated service

1997: L A County Commendation for volunteer emergency assistance during 1996 wildfires

1993: L A County Animal Care and Control Commendation for volunteer emergency rescue services

1992: Webster Elementary School PTSA, Malibu, CA, Recognition for lectures on indigenous wildlife

From: [redacted]
To: FGC
Subject: Predator Policy Workgroup
Date: Friday, September 18, 2015 3:48:28 PM
Attachments: image001.png
image002.png

Good afternoon,

I am applying for the drafting group. If I am not selected for the drafting group, please discuss with me before appointing me to any other group (e.g., review group). I'm not certain I want to serve in an alternative capacity.

Nominee name and contact information, including mailing address, phone number and email address

Jennifer Fearing
Fearless Advocacy, Inc.
[redacted] email

A short statement to confirm how the applicant meets each of the selection criteria listed above

I have significant experience in all aspects of these criteria, and am particularly adept at negotiating, writing and communication.

Where appropriate, identify current and past affiliations with stakeholder groups active in wildlife resource management, particularly predator management

Participated actively in the Fish and Wildlife Vision process
Routinely included in stakeholder groups involved in wildlife protection legislation
Member of the CalTIP Rewards committee

A brief summary of past involvement in collaborative public processes to provide advice on wildlife policy, planning, or management

In addition to experience listed in prior question, I have 7+ years experience attending Fish and Game Commission meetings and participating actively with the full Commission and the WRC.

Willingness to commit the time for full participation on a volunteer basis

Yes, and I have a good track record of keeping such commitments.

Descriptions of the organizations and individuals with which the nominee will communicate about the efforts of the workgroup and the mechanisms to be utilized

Through verbal and written communication:
The Humane Society of the United States
Defenders of Wildlife
Fund for Animals Wildlife Center
Humane Society Veterinary Medical Association
San Francisco SPCA
Interested members and of the legislature and legislative staff
Other wildlife care organizations

Areas of knowledge or expertise relevant to the project

Hoping that this is known to the Commission given my years of engagement. Please let me know if I need to provide specific examples.

Thank you,

_____
Jennifer Fearing | President
Fearless Advocacy, Inc.

[redacted]

[redacted]

From: [redacted]
To: FGC
Cc: [redacted]
Subject: Predator Working Group Meeting Notice Request (Bagley-Keene Act)
Date: Thursday, October 01, 2015 11:16:16 AM

Dear California Fish and Game Commission,

I am contacting your as a citizen and hunter living in the State of California. I strongly objecting to the Commission's Wildlife Resource Committee process and to its unilateral formation of a "Predator Policy Workgroup" ("PWG"). The WRC has been a one-sided platform for anti-hunting groups seeking to push their agenda. The NRA is seeking to level the playing field by ensuring that all stakeholders, not just anti-hunting groups, can access and participate in the process of developing wildlife policy that directly affects hunters.

I also vehemently object to the Commission's ignoring of inquiries made by NRA, joined by the National Shooting Sports Foundation and Safari Club International. These organizations are not faceless entities, but are rather representatives of millions of lawful citizen/tax payers such as myself. You cannot ignore these organizations and selectively partner with organizations such as the Sierra Club, The Nature Conservancy, World Wildlife Fund, Audubon Society, etc. that seek to outlaw hunting.

The State of California is extremely heavy-handed in the development of rules, regulations and policies that affect hunters and sportsmen. Even something as seemingly minor as the Department of Fish & Game changing it's name to Fish & Wildlife is significant.

I am a working professional that has dealt with regulations and program development during my 23 year career. I work closely with members of the California Department of Fish and Wildlife - Office of Spill Prevention and Response, the US Fish & Wildlife Service, US Department of the Interior, Bureau of Land Management, California State Lands Commission, San Francisco Bay Conservation and Development Commission (BCDC), East Bay Regional Parks and the US Coast Guard. This experience as an educated outdoorsperson with significant regulatory experience makes me uniquely qualified to serve on a committee such as the Predator Policy Workgroup.

I formally request to serve as a member of the Wildlife Resource Committee and the Predator Policy Workgroup.

Please send me information on the schedule of meetings for the Wildlife Resource Committee, the Predator Policy Workgroup and all other "Workgroups" that have been established by the WRC or are in consideration for development as per the requirements of the Bagley-
Keene Open Meeting Act. (Govt. Code §§11120-11132).

Very Respectfully,

James Ferris
[redacted]

CDA
caldeer.org

October 7, 2015

Wildlife Resources Committee
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Attention: Sonke Mastrup, Executive Director
RE: Predator Policy Workgroup Nomination

Dear Mr. Mastrup:

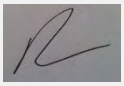
The California Deer Association is proud to nominate **Patrick Fitzmorris**, to represent the interests of the association as a member of the Commission's newly formed Predator Policy Workgroup.

As the principle non-profit conservation organization focused on increasing the health and population of California's deer herds, the California Deer Association takes a keen interest in the conservation and management of this important species. Ensuring an appropriate policy framework is established to address the myriad concerns surrounding California's predators is an important to the thousands of CDA members and nearly 150,000 deer hunters.

Mr. Fitzmorris has worked in various capacities at a number of important conservation organizations and as a member of multiple governmental advisory groups. This professional experience, combined with his education in Wildlife Management and as a hunter, uniquely qualifies him to offer an educated, reasoned, and experiential based perspective as the workgroup examines this important issue. His demeanor is non-confrontational and he is respectful of the deliberative process and will add value to the efforts of the group.

Attached is Mr. Fitzmorris' introductory letter and vitae. If I can provide any additional information for you or the selection committee, please don't hesitate to ask.

Sincerely,



Roman Porter, CEO

CDA
caldeer.org

October 7, 2015

Wildlife Resources Committee
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
Attention: Predator Policy Workgroup Nomination

To Whom It May Concern,

Please accept my application for the Predator Policy Workgroup. I am very eager to participate in this workgroup as I value California's predator populations and native wildlife for current and future Californians to enjoy. Being a native Californian myself, my mother's family emigrated to California in the 1870's, I have seen many changes to California's valuable ecosystems and I want to part of the solution to preserve natural resources and native wildlife for future Californians to appreciate.

I have participated in several workgroups in the past and I value and appreciate the opinions of others. I have been an active participant on the U.S. Department of Agriculture Natural Resources Conservation Service - State Technical Advisory Team, the Yolo Bypass Working Group, and the Central Valley Habitat Joint Venture - Delta, Yolo, and Suisun Marsh Regional Working Group. These appointments have given me great respect of working collaboratively for a common goal.

As the Senior Field Director of the California Deer Association, I work with many concerned sportsmen and sportswomen, and other caring individuals in our great state who want to make a difference in habitat restoration and wildlife conservation. If chosen for this position, I will take the appointment seriously and commit my time as a full participant. I will report on the workgroup findings and actions to our Board of Directors and our Chief Executive Officer.

Thank you for your time and considering me as a full participating member of the Predator Policy Workgroup.

Sincerely,

Patrick Fitzmorris
Senior Field Director
CA Deer Association

Patrick J. Fitzmorris

[redacted]

OBJECTIVE

To use my interpersonal skills and knowledge of wildlife conservation to make my contribution to the wise use of our predator natural resources by advancing the efforts and goals of the California Department of Fish and Game Commission, the Wildlife Resources Committee, and the Predator Policy Workgroup.

EDUCATION

Humboldt State University: Arcata, California. Bachelor of Science in Wildlife Management. Degree Awarded May, 2000

Courses included: Natural Resource Conflict Resolution, Waterfowl Management, Management of Wetlands Habitats, Scientific Writing, Plant Taxonomy, Plant Ecology, Ornithology, Wildlife Techniques, Upland Game Management, Conservation Biology, Soils, Ethology, Statistics, Zoology, Wildlife Management Principles, Botany, Mammalogy, GIS Technology.

CAREER EXPERIENCES

Title: **Senior Field Director, California Deer Association - Sacramento, CA**
Duties and Accomplishments: I currently am responsible chapter development and fundraising for the California Deer Association. We are a nonprofit conservation group dedicated to improving California deer herds and other wildlife through direct financial support for habitat and research projects. I help and guide chapters on the execution of successful fundraising events to meet annual budget projections. I also write a column and other articles for our magazine and promote CDA through the media and public speaking engagements. I maintain liaison and professional visibility with state wildlife agencies and federal wildlife and land management agencies. I am involved in our habitat and youth projects for the state and work closely with our agency partners in this regard.
Tenure: 2005 - present

Title: Regional Biologist, Ducks Unlimited, Sacramento California.
Duties and Accomplishments: I planned, designed, and conducted wetland, upland, and riparian habitat projects in the Central Valley of California on public and private lands. I developed and implemented plans and worked closely with project partners and funding agencies. I conducted and organized on-site and off-site meetings, managed project budgets, hired and supervised private contractors and invoiced bills for completed work. I searched for funding sources, wrote grant requests to help finance projects and developed management plans for private wetlands. I advised landowners of conservation easements and agency habitat programs such as the Wetlands Reserve Program, the Conservation Reserve Program, the Conservation Reserve Enhancement Program, Wildlife Habitat Incentives Program, Environmental Quality Incentives Program, the CA Wildlife Conservation Board's Inland Wetlands Program, and the USFWS Partners for Wildlife Program. I conveyed information to the general public via the media and gave presentations to private groups.
Tenure: 2001-2005

***Title*: Waterfowl Habitat Biologist, California Waterfowl Association - Sacramento, California.**
Duties and Accomplishments: In this position, I planned, designed, and conducted wetland, upland, and riparian habitat projects in the Central Valley of California on public and private lands. I developed and implemented plans and worked closely with project partners and funding agencies. I conducted and organized on-site and off-site meetings, managed project budgets, hired and supervised private contractors and invoiced bills for completed work. I searched for funding sources, wrote grant requests to help finance projects and developed management plans for private wetlands. I advised landowners of conservation easements and agency habitat programs such as the Wetlands Reserve Program, the Conservation Reserve Program, the Conservation Reserve Enhancement Program, Wildlife Habitat Incentives Program, Environmental Quality Incentives Program, the CA Wildlife Conservation Board's Inland Wetlands Program, and the USFWS Partners for Wildlife Program. I conveyed information to the general public via the media and gave presentations to private groups. I also wrote for the monthly magazine on wetland, waterfowl, and conservation issues.
Tenure: 2000 - 2001

***Title*: Research Assistant for Humboldt State University - Department of Wildlife, Arcata Californi**a
Duties and Accomplishments: I organized and conducted western Canada goose (*Branta Canadensis moffitti*) catches near Humboldt Bay, California, developing the catch program in cooperation with California Department of Fish and Game and private landowners. I managed volunteers, catch equipment and data collection. I evaluated data sets and marked geese with neck collars and USFWS metal tarsal bands.
Tenure: 1998-1999

***Title*: Biological Science Technician - U.S. Geological Survey - Cordova, Alaska**
Duties and Accomplishments: As a U.S. Geological Survey Biological Science Technician, I studied dusky Canada geese (*Branta Canadensis occidentalis*), a species of special concern that nests in the Copper River Delta region of south-central Alaska. I studied mortality, brood survival, predation, nesting and re-nesting success applying intensive nest searching skills, captures of broods on the nest at hatch using bail traps, radio marking hens and goslings, and radio telemetry. My responsibilities also included setting up monitoring cameras at nest sites to document depredation. As part of the overall monitoring effort, I took specific measurements on specimens, attached neck collars, tarsal bands, and web tags. I collected UTM coordinates using GPS and entered all data into a project specific program. In addition, I helped the Alaska Department of Fish and Game with their annual Dusky flightless molt roundup, a cooperative measure designed to capture, band, age, and sex birds by capturing them during the summer molt.
Tenure: May through August, 1998

***Title*: Biological Science Technician, U.S. Fish and Wildlife Service - Lakeview, Oregon**
Duties and Accomplishments: As a Biological Science Technician on the Sheldon-Hart Mountain National Wildlife Refuge Complex, I conducted wildlife surveys and radiotelemetry on game and non-game species, monitoring vegetation plots, keeping detailed field notes, recording data and preparing reports. As part of an antelope fawn mortality study, I captured antelope fawns for radiotelemetry marking, took various samples and monitored fawns with radiotelemetry equipment. I conducted the annual breeding bird survey, sage grouse brood surveys and radiotelemetry on marked sage grouse hens. I also used horses to survey and maintain boundary fences and responded to all livestock trespasses by herding cows off the refuge.
Tenure: 1996 - 1997

SPECIAL SKILLS

- Excellent working knowledge of Microsoft Office Applications, Power Point, Email, ArcView GIS
- Excellent skills in working with others with diverse opinions
- Excellent writing skills, both scientific and layman's
- Excellent public speaking skills
- Excellent organizational skills
- Training in natural resource conflict resolution

PROFESSIONAL COMMITTEES

- U.S. Department of Agriculture Natural Resources Conservation Service, State Technical Advisory Team – past member
- Yolo Bypass Working Group – past member
- Central Valley Habitat Joint Venture, Delta, Yolo, and Suisun Marsh Regional Working Group – past member

References Available Upon Request

PROJECT COYOTE

FOSTERING COEXISTENCE

Oct. 2, 2015

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
Attention: Predator Policy Workgroup Nominations

VIA email: FGC@fgc.ca.gov

Dear Commissioners:

Project Coyote would like to nominate two candidates for the Predator Policy Workgroup. For the Draft Group/Committee we nominate Rick Hopkins, Project Coyote Science Advisory Board member and co-owner and Senior Conservation Biologist at Live Oak Associates, Inc .:

Rick Hopkins, Ph.D.
Project Coyote Science Advisory Board
Principal and Senior Conservation Biologist, Live Oak Associates, Inc.
6840 Via del Oro, Suite 220
[redacted]

Statement of Qualifications: Rick Hopkins is co-owner and Senior Conservation Biologist at Live Oak Associates, Inc. (LOA), an ecological consulting firm based in California. LOA provides public and private clients with science-based solutions to complex natural resource questions. Rick holds a Ph.D. in Wildlands Resource Ecology from University of California, Berkeley and an M.A. in Biology at San Jose State University. His graduate research involved a 12-year study on the spatial ecology of the cougar in the Diablo Range. Rick has also provided scientific peer review assistance in evaluate proposed management actions with black bears in California, Nevada and Maine.

Conservation biologists have long recognized the importance of connecting large landscapes as integral to conservation of all carnivore species, particularly large carnivores. As such, Rick has been at the forefront advocating for methodologies and analytically approaches that best identify key landscape linkages. Rick has participated in state-wide efforts to identify the important

landscape linkages remaining in the state (i.e., Missing Linkages Conference) and in regional efforts such as the San Francisco Bay Area Upland Goals Workshop and TNC Central Coast Ecoregional Workshop. These efforts have focused Rick's interest in using theoretically grounded spatial tools to inform conservation planning at relevant spatial scales. An integral part of this process is working with applicants and landowners to identify suitable landscapes to conserve and manage to fulfill any required state or federal obligations that the regulated community may have incurred as part of their projects. Presently he is using these approaches in the development of a multi-species HCP for the 47,000-acre Elk Hills Oil Field, a cougar habitat management plan for 35,000 km^2 area of Southern California, and developing conservation strategies for large-scale solar projects in central to southern the San Joaquin Valley.

Rick is a broadly trained ecologist with experience with several threatened and endangered wildlife species and has dedicated the last 38 years to the study of mammalian carnivores. His research and interest with large carnivores has focused on conservation biology; population ecology; spatial ecology, and human/predator conflicts.

Rick was a founder and serves on the board of Conservation Science Partners (www.csp-inc.org), an applied research collective whose goals are to provide innovate analytics to solve todays conservation questions. Rick also is currently President of the Board at the non-profit Cougar Fund (www.cougarfund.org) due to his strong interest in advocating science-based conservation for cougars and serves on the Scientific Advisory Board of Project Coyote (www.projectcoyote.org).

Rick has participated as a predator expert in numerous conflict resolution workshops for large carnivores throughout the west as he believes collaboration with broad stakeholder groups is the key to long-term conservation for predators. For example, recent efforts of the Cougar Fund have been focused on finding common ground for cougar conservation among many game agencies in the west. The Cougar Fund enjoys a good working relationship with many western agencies.

As noted above, Dr. Hopkins serves on the Scientific Advisory Board for Project Coyote, a national carnivore conservation organization based in Marin County California, whose mission is to push for science and ethically based conservation of carnivores in North America.

We nominate Keli Hendricks for the Predator Working Group Review Group/Committee:

Keli Hendricks
Predator Friendly Ranching Coordinator, Project Coyote
[redacted]

Statement of Qualifications: As the Predator Friendly Ranching Coordinator for Project Coyote Keli Hendricks fosters partnerships with the agricultural community while working to educate the public and ranchers about how wildlife and livestock can share the land to benefit both.

Representing Project Coyote, Keli speaks to audiences throughout California about predator

friendly ranching practices. In 2015 she led a Non Lethal Livestock Protection Workshop for sheep ranchers at the Fibershed Symposium in Point Reyes, California and recently performed field testing of Foxlights (a non lethal livestock protection device) on several ranches in Sonoma and Marin Counties.

Over the last three years, Keli has been actively involved in predator conservation efforts in California, traveling to California Fish and Game Commission meetings and to Wildlife Resource Committee members to testify on behalf of predators.

Keli also volunteers for the Sonoma County Wildlife Rescue where she works in their hospital and rehabilitates injured and orphaned wildlife. She also assists SCWR on their Educational Barnyard Program, which demonstrates predator-proofing methods that help keep pets, livestock and wildlife safe. Keli provides consultations to ranchers who reach out to both Project Coyote and SCWR with questions pertaining to livestock protection. She collaborates with many organizations and people with differing viewpoints to accomplish various tasks for both Project Coyote and SCWR.

Keli would “like to be part of the Predator Policy Workgroup Review Committee and work towards updating our predator management policies and regulations in California so that they better reflect our current understanding of the important role predators play in our ecosystems.”

Thank you for your consideration of these nominations. Feel free to contact me at [redacted] or by email at [redacted] for any inquires or additional information about these nominees.

Camilla H. Fox
Founder & Executive Director
Project Coyote

PH: 415-945-3232 · FAX: 415-373-3826 · P.O. BOX 5007 · LARKSPUR, CA 94977
INFO@PROJECTCOYOTE.ORG · WWW.PROJECTCOYOTE.ORG

From: [redacted]
To: FGC
Cc: Mastrup, Sonke@FGC
Subject: Predator Management Writing Group - Request for Participation
Date: Friday, August 28, 2015 11:26:01 AM

California Waterfowl is interested in participating on the Predator Management Writing Group, and requests that the Commission include us as part of that group. Predation of waterfowl nests by coyotes, foxes, skunks and raccoons can have a significant effect on local waterfowl and other ground-nesting bird production, and CWA also has considerable experience in drafting legislation and other rules as it relates to F&G-related regulations. Thank you for the consideration.

Mark Hennelly, Vice President of Legislative Affairs and Public Policy
California Waterfowl
[redacted]

PROJECT COYOTE

FOSTERING COEXISTENCE

Oct. 2, 2015

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
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VIA email: FGC@fgc.ca.gov

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Principal and Senior Conservation Biologist, Live Oak Associates, Inc.
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Keli would “like to be part of the Predator Policy Workgroup Review Committee and work towards updating our predator management policies and regulations in California so that they better reflect our current understanding of the important role predators play in our ecosystems.”

Thank you for your consideration of these nominations. Feel free to contact me at [redacted] or by email at [redacted] for any inquires or additional information about these nominees.

Camilla H. Fox
Founder & Executive Director
Project Coyote

PH: 415-945-3232 · FAX: 415-373-3826 · P.O. BOX 5007 · LARKSPUR, CA 94977
INFO@PROJECTCOYOTE.ORG · WWW.PROJECTCOYOTE.ORG

From: [redacted]
To: FGC
Subject: Predator Policy Workgroup nomination
Date: Monday, September 28, 2015 2:14:48 PM

Tony Linegar
Agricultural Commissioner
County of Sonoma County

Sonoma County Department of Agriculture
[redacted]

I have been working in the Agricultural Commissioner system for over 20 years. I am currently the Ag Commissioner in Sonoma County but served as Ag Commissioner in Mendocino prior to starting with Sonoma in 2012. In both counties I employed either USDA Wildlife Specialists or County Wildlife Specialists to assist ranchers with predation issues. I have been directly involved with responding to legal challenges to the USDA program over the past three years including working on CEQA compliance issues. Through this process, I have consulted CDFW, USDA, UC Cooperative Extension and animal welfare groups. I am also active in our state association, the California Agricultural Commissioner and Sealers Association (CACASA).

Tony Linegar
Agricultural Commissioner/Sealer
County of Sonoma
[redacted]

SONOMA COUNTY DEPARTMENT OF AGRICULTURE/WEIGHTS & MEASURES

MULE DEER FOUNDATION

The Mission of the Mule Deer Foundation is to ensure the conservation of mule deer, black-tailed deer and their habitat.

September 30, 2015

California Fish and Game Commission

I would like to nominate myself for inclusion on the Predator Policy Workgroup.

Randy Morrison
[redacted]

I am and have been the California Regional Director of the Mule Deer Foundation for the last six years. I was a member of the Wolf Stakeholder Working Group throughout its two year run. As a member of that committee and two of its sub committees, I attended over 30 meetings, participated in numerous conference calls, and countless emails to help create a working draft of a California Wolf Plan.

I am also a member of CDFW's Big Game Management Account Advisory Committee, and have been since its inception.

As the Regional Director of the Mule Deer Foundation, I am the appropriate person to communicate the efforts of the workgroup to our over 5000 California members.

Given my experience and a willingness to commit to the process, I am confident that I would be a valuable member of the working group.

Thank you for your consideration,

Yours in Conservation,

Randal A. Morrison

September 22, 2015

To: The Wildlife Resources Committee (WRC)

From: Chuck Morse

Re: Nomination for appointment to the Predator Policy Workgroup (PWG)

Dear Committee members,

My name is Chuck Morse and I am the Agricultural Commissioner for Mendocino County. I request your acceptance of my nomination to the Predator Policy Workgroup (PWG) and would be honored to have Commission staff review this application and be considered for appointment to the PWG by the Commission. I feel I can provide valuable input and can work collaboratively to develop ideas and draft recommendations for the Committee relating to predator management policy and regulation in California.

I have a strong understanding of the current predator management practices and policies in California and the critical role CDFW plays in managing wildlife populations in the state. I have over 30 years' experience in reading, interpreting and enforcing various codes and regulations and more recent experience in following the development of and providing comment on the establishment of legislation and subsequent regulation.

While I live and work in the North Coast region of the State, I have a wider perspective and knowledge of predator issues around the state. Additionally, I have the ability to tap into county-level information to get current status and input on wildlife issues through the Agricultural Commissioners' system. By reaching out and communicating through this system, I would provide a balanced state-wide assessment of an issue relating to any given species. My close association with the University of California Cooperative Extension (UCCE) would provide an avenue to reach stakeholders that may not attend the public meetings.

I have worked recently with the USDA-Wildlife Services program to more fully understand the overall wildlife populations, both locally and in the state, to better understand the dynamics of predator management. Additionally, I have worked with Project Coyote to bring predator management information to Mendocino county.

My involvement in collaborative public processes to provide advice on wildlife policy, planning, or management include helping facilitate an informational presentation to my Board of Supervisors on various wildlife management options available to the county and working with the UCCE-Hopland Research and Education Center to hold a community conversation on wildlife management in December of this year.

I appreciate the work the Commissions' staff has in screening the nominations and, for the sake of brevity, I will close here. Thank you for your consideration and I hope to be included in the list of nominees. If any questions arise or more information is sought, please do not hesitate to contact me.

Sincerely,

Chuck Morse

Contact Information:

[redacted]

From: [redacted]
To: FGC
Cc: Woodson, Caren@FGC
Subject: Predator Policy Workgroup nomination
Date: Tuesday, September 22, 2015 10:22:14 PM

Hi. I would like to apply/nominate myself for the "Review Group" subgroup of the Predator Policy Workgroup. The requested information is below. Please feel free to call or email me if you have questions or need additional information. Thank you for considering my application.

Contact Information:
Damon Nagami
Senior Attorney
Director, Southern California Ecosystems Project
Natural Resources Defense Council (NRDC)
[redacted]

Applicant Statement:
I actively participated in the Wolf Stakeholder Working Group (SWG) for almost two years on behalf of NRDC, traveling from southern California to attend both full group and conservation subgroup meetings, and working constructively with other conservation groups as well as ranchers, sportsmen, and farmers who had differing views in many areas. During my time on the SWG, while I did advocate strongly for our positions on various issues, I also tried to reach, encourage, and broker compromises wherever possible, knowing that the Department would be more likely to adopt any consensus views that the SWG could agree upon. I also helped draft and submit, along with my NRDC colleagues, extensive substantive comments on changes we'd like to see in California's predator policies, and have attended and actively participated in discussions on predator policies at Commission and Wildlife Resources Committee meetings over the last couple of years. In doing this work, I've learned a great deal about predator management practices and policy, and because we have members and activists throughout California I am always trying to balance regional perspectives with considerations at the statewide level. Finally, I am either working in coalition with or loosely coordinating with many other wildlife conservation groups on wolf and predator policy issues, and in that regard would be able to disseminate information to those stakeholders if they don't attend the public meetings. For these reasons, I feel I would be a valuable addition to the Review Group.

Time Commitment:
I am willing to commit the time for full participation in the Review Group on a volunteer basis.

Executive Director Sonke Mastrup
c/o Caren Woodson
California Fish and Game Commission
1416 Ninth St., Ste. 1320
Sacramento, CA. 95814

Sept. 24, 2015

Dear Executive Director Mastrup.

It is my pleasure to nominate Mr. Tom O'Key as a candidate for the Predator Policy Review Group. Tom would be a tremendous asset, as he is fully committed to revising wildlife management, pragmatic and original in his approach to seeking solutions within a landscape of diverse objectives, familiar with law and the legislative process, and is known to the Commission and active stakeholders alike. As the administrator for several websites with large memberships, Tom has demonstrated his ability to communicate, conduct outreach and manage software. For these reasons and many more, Mr. O'Key would be a strong contributor in the task of crafting modern predator policies, and he has expressed his willingness to volunteer the time required for this important undertaking.
Thank you for your consideration of Tom O'Key.

Respectfully,
Miriam Seger/[redacted]

Contact info:
Tom O'Key,
[redacted]

Ton's current and past affiliations with groups active in wildlife management include:
-Project Bobcat –Founder
-Testimony regarding private property rights and bobcat protections on behalf Assembly Member Richard Bloom in Assembly and Senate legislative process
-Recipient, "Environmentalist of the Year, 2014", Soroptimist Int'l of Yucca Valley
-Career technical consultant in personal injury litigation and trial law technology
-Collaborative ongoing relationship with San Bernadino County Board of Supervisors regarding land use, wildlife, and other environmental issues
-Participated in outreach with relevant experts and stakeholder opinion polling through Governor's office.
-Testified during CFGC process and created public campaigns for citizen support regarding numerous wildlife-related agenda items
-Spoke in support of ending inducements for predator killing contests
-Participated in hearing with the Town of Yucca Valley regarding The Native Plant Ordinance for land use protections
-Testified in the Cadiz Valley Groundwater Pumping Conservation Plan as an opponent to ancient aquifer exploitation
-Testified in process for actions coming from the California Energy Commission actions regarding the Desert Renewable Energy Conservation Plan as a land use opponent in desert lands siting and advocate for technical alternatives
-Testified in San Bernardino County actions related to land use issues advocating for preservation of habitat and desert preservation related to industrial scale alternative energy projects, member of the Morongo Basin Dark Sky Alliance active in writing the Night Lighting Ordinance for the Desert Region of San Bernardino County
-Active in environmental efforts related to the Eagle Mountain Mine reversion to public trust with the Joshua Tree National Park
-Active in DRECP actions related to the Blythe Geo-glyph protection effort.
-Volunteered in numerous efforts to restore habitat areas and cultural artifacts

A sampling of organizations and individuals from whom Tom plans to solicit input are listed below. Many have already expressed intent to participate with comments.

Wayne Spencer, Director of Conservation Assessment and Planning, Conservation Biology Institute
Bren School of Environmental Science and Management
Mountain Lion Foundation
Project Bobcat
Urban Carnivores
Citizens for Los Angeles Wildlife
Friends of Griffith Park, Los Angeles
Joshua Tree National Park Association
Joshua Tree National Park
Morongo Basin Conservation Association
Mojave National Preserve
National Park Conservation Association
International Dark-Sky Association
Mojave Desert Land Trust

Statement by Tom regarding his expertise or knowledge relevant to the project:

I have adequate abilities in public speaking, resource research, communication and writing competence and am self-motivated and independently task capable. I have skill sets that have been considered valuable by others in similar endeavors and my experience and expertise brings novel and unique insights that often offer distinctive solutions. I have been involved as an educator, consultant and advisor in professional settings and have created events and undertakings that require full spectrum management and organization.

My past efforts in environmental activities have been engaged with concern and drive to create positive, sustainable, results with pragmatic reasoning and understanding. I am patient in substance and willing to professionally complete relative tasks, cooperatively and with flexibility.

Thank you for this exciting opportunity to participate in The Predator Policy Review Workgroup.

Sincerely,
Tom O”Key

From: [redacted]
To: [redacted]
Subject: FW: Address for request letter
Date: Monday, September 14, 2015 10:05:49 AM

Add to the list

From: Orthmeyer, Dennis L - APHIS [redacted]
Sent: Monday, September 14, 2015 9:48 AM
To: Mastrup, Sonke@FGC
Subject: FW: Address for request letter

I presume this was concerning a spot as a reviewer for the predator policy

I would be happy to be provided an opportunity to review

Thanks
Dennis

Just trying to keep up

Dennis Orthmeyer
California State Director
USDA APHIS Wildlife Services
[redacted]

From: Ono, Mark - APHIS
Sent: Friday, September 11, 2015 3:25 PM
To: [redacted]
Cc: Orthmeyer, Dennis L - APHIS
Subject: Address for request letter

Aloha Sonke,

Thank you for taking my call today. Per your request, all letters from the Commission requesting our input/opinions should be addressed to Dennis Orthmeyer at the address highlighted below. Thanks, and looking forward to helping you.

****

Mark Ono
District Supervisor, Sacramento District

USDA-APHIS-Wildlife Services

[redacted]

****

September 22, 2015

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
Attention: Predator Policy Workgroup Nominations

Caren.Woodson@fgc.ca.gov

Dear Ms. Woodson:

The California Association for Recreational Fishing (CARF) is pleased to nominate Mr. George L. Osborn to the Predator Policy Workgroup (PWG).

Many of CARF's membership are registered aquaculturists who farm fish with unique predation challenges. CARF believes that having Mr. Osborn as a member of the PWG will provide valuable perspective. Mr. Osborn is well versed in fish farming and the predation challenges faced by the operators in our industry. As more and more of the world's food supply will be provided by aquaculture, CARF believes that fish farming in California will be expanding to meet that need and predator management policy should be informed accordingly.
Following is Mr. Osborn's contact information:

George L. Osborn
Osbo[redacted]trategies, LLC

Statement:

1. Knowledge of predator management practices and policy:

   Mr. Osborn has attended all meetings of the WRC and is well versed about the unique aspects of predator management in aquaculture as well as predator management for other agricultural operations.

2. Demonstrable ability to work collaboratively with others of diverse opinions:

   Mr. Osborn has the interpersonal skills and professionalism required to work collaboratively with people on all sides of issues as demonstrated by his many years of significant involvement in the implementation of the Marine Life Protection Act (MLPA).

3. Strong writing skills and ability to evaluate statute, policy, and regulations:

   As the legislative advocate for CARF, the California Fish and Game Wardens Association (CFGWA) and others, Mr. Osborn has more than 20 years experience in analyzing and writing complex legislation, statutes, public policy and regulations. As a former newspaper columnist, Mr. Osborn's writing skills are excellent.

4. Ability to balance regional perspectives and local knowledge or experience with statewide needs:

   As the MLPA was implemented by region, Mr. Osborn was always looking to balance the needs of the different regional geographies with the broader statewide requirements to fulfill the requirements of the Act.

5. Access and use of an effective communication network to reach stakeholders not attending the public meetings:

   Mr. Osborn has access to the communications network of the CARF membership both through email and social media as well as the members of CFGWA through their President.

6. Committed to all aspects of the charge of the PWG:

   Mr. Osborn is committed to the charge of the PWG.

7. Knowledge or experience with web-based software:

   As a CPA, Mr. Osborn has extensive experience with web-based software.

Mr. Osborn has significant background in working with stakeholder groups active in wildlife resource management including, but not limited to, the California Association for Recreational Fishing, the California Sportfishing League, the California Fish and Game Wardens Association, Coastside Fishing Club, United Anglers of Southern California, and the American Sportfishing Association, among others.

Mr. Osborn was engaged in the implementation of the MLPA for several years and had the opportunity during that period to collaborate and negotiate with stakeholders many complex issues. He did so with professionalism and a keen ability to effectively communicate with all sides.

Sincerely,

Craig Elliott, Esq.
President

From: [redacted]
To: FGC
Subject: Fwd: Nomination WRC Predator Policy Working Group
Date: Friday, August 21, 2015 12:57:34 PM
Attachments: image003.jpg

Sent from my iPhone

Begin forwarded message:

From: Rick Travis <[redacted]>
Date: August 21, 2015 at 12:47:22 PM PDT
To: "[redacted]"
Cc: "Mastrup, Sonke@FGC" [redacted]
Subject: Nomination WRC Predator Policy Working Group

Sonke,

Per our conversation today, I would like to have added to the WRC Predator Policy Working Group our CRPA Legislative Director Mr. Tom Pedersen and NRA Lobbyist Mr. Ed Worley. I have included both of their contact information below. I would also like to request that I be added to the email list for meeting times and agendas. Thank you as always for your support.

Tom Pedersen
CRPA Legislative Director
[redacted]

Ed Worley
NRA Legislative Liaison
[redacted]

Thank you

Rick Travis
Program Director
California Rifle and Pistol Association
[redacted]

From: [redacted]
To: FGC
Cc: Mastrup, Sonke@FGC; Woodson, Caren@FGC
Subject: Request to Wildlife Resources Committee
Date: Wednesday, August 19, 2015 3:14:20 PM

Dear Mr. Baylis, Mr. Kellogg, and Mr. Mastrup:

I am writing to ask for your consideration in appointing me as one of the 12-16 people to the Predator Management Policy Review review group. I am currently on the Wildlife Resources Committee workgroup.

As a Board Member for the California Council for Wildlife Rehabilitators, as well as the chair of the Advocacy Committee, I feel that we should be invited to participate in any review of predator management policy. CCWR represents about 300 permitted wildlife rehabilitators, and wildlife rehabilitation organizations throughout the state. We annually treat over 60,000 animals. Our job/goal is to take in injured, ill, and orphaned wildlife, rehabilitate them and return them to the wild. The vast majority of these animals are brought into wildlife rescue organizations from the general public. Also, the majority of these animals come in because they have had some sort of a run-in with humans, their pets, their cars, their farm equipment, etc. Wildlife rehabilitators perform a valuable service to our communities.

Our members work hands on with the native wildlife in this state, and because of this they get to know these species intimately. In addition, we take classes to learn about the different species, their habits, their habitats, their benefits, their niche in nature and, we network like crazy. Because of our work, we probably know more about these animals than most people. In addition, one of our biggest jobs is educating the public about wildlife. It is a very important part of our work and one that we spent a lot of time on. We explain to people why they should not feed wildlife, why they can't keep that baby raccoon, why they should keep their cats indoors, trapping rules, etc. There is so much misinformation out there about wildlife! I feel strongly that educating the public about wildlife is one of the most important things we can do.

Since I am the one requesting to be on the review group, I will tell you something about me. I've been a wildlife rehabilitator for 12 years. I operate as a satellite branch of Sonoma County Wildlife Rescue and operate out of my home. My specialty is raising and releasing orphaned mammals. I have given presentations on this topic both at CCWR and at our national organization, The National Wildlife Rehabilitators Association. For the past few years I have been writing a monthly column, LIVING WITH WILDLIFE, for my local paper, The Kenwood Press. My goal being to educate the locals about wildlife. I was instrumental in getting CCWR to finally have an Advocacy Committee, and since that time, I have been attending as many DFGC meetings as possible, as well as WRC meetings. I might add that I am doing that on my own dime. I advocate for wildlife on a daily basis. I consider it a very rare privilege to work with wildlife and feel that it the most rewarding thing I ever done.

It is my hope that you will give my request to be on the review group of the Predator Management Policy Review your serious consideration.

Thank you.

Sharon Ponsford
Board Member
Chair, Advocacy Committee

CCWR
CALIFORNIA COUNCIL FOR WILDLIFE REHABILITATORS

From: [redacted]
To: FGC
Subject: "Predator Policy Workgroup nomination
Date: Thursday, September 10, 2015 6:19:40 PM

Greetings, Commissioners and Sonke ,

Kimberly Richard
[redacted]

I worked for World Wildlife Foundation for 36 years before leaving, I have been a advocate for Wildlife sense I was 17 years old .
I have a great knowledge of how things works when to comes to legislation and working with both sides of the aisle . As Chair for the Environmental and Wildlife Democrats of Napa Valley. I know I can work well with other even if their views are different then mine, There is always room for a compromise.

I have gone and partaken in 2 workshops so far, as well as gone to Wildlife Resource Meeting as well. I am able to work from home so that free me up to be able go and fully commit to either Reviewer or Draft where ever you feel I would be best able to help.

In 1980 I help WWF with the ban of Ivory into the US and bringing to light the plight of Tigers and Rhinos and to this day I am still fighting the poaching , weather it is on the phone with Politicians or calling the White House.

I was a member of Greenpeace in my younger days and still am active. I am also in the process of applying for Matt Pope seat which is Napa Valley Planning Commission.

If you need any more info i am open anytime.

Kimberly Richard

From: [redacted]
To: Woodson, Caren@FGC
Cc: Bill Saksa
Subject: Re: Request for Nominations to WRC Predator Workgroup
Date: Friday, September 11, 2015 7:28:08 PM

Dear Karen,

I would like to be nominated for the Predator Policy work group and here is a some of my background.

I represent the largest key stakeholder in California. The Predator Callers of Orange County. I am a past president and hold a board position. I am an active sportsmen and a conservationist. I am a life member of the NRA and CRPA. I have done volunteer work and supported the Water for Wildlife program. I have worked as a Fisheries Resource Volunteer Corps in the San Bernardino mountains. I have done Wildlife Calling seminars for the Boy Scouts of American supporting the Sportsmen Alliance. I am retired after 38 years from the Boeing Aircraft Company as a manager over the Quality Assurance functional test laborites.

Please send me a reply confirmation e-mail so I know you have received my request.

Thank you very much for your help and support.

Bill Saksa
[redacted]

On Sep 11, 2015, at 12:49 PM, California Fish and Game Commission <fgc@fgc.ca.gov> wrote:

FGC_Logo

California
Fish and Game
Commission

www.fgc.ca.gov

California Wool Growers Association
Unifying the voice of the **California Sheep Industry** since 1860

1225 H Street, Suite 101 - Sacramento, California 95814
Phone (916) 444-8122 - Fax (916) 443-1506
Email: info@woolgrowers.org - Website: www.woolgrowers.org

September 11, 2015

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
Attn: Predator Policy Workgroup Nominations

To Wildlife Resources Committee,

California Wool Growers Association (CWGA) represents nearly 500 California sheep producers consisting of large scale commercial sheep operations, farm flock producers, lamb feeders, and affiliated industry stakeholders. Since 1860, CWGA has been the voice of the California sheep industry and is the second largest sheep inventory state in the United States. California's sheep producers continue to face challenges in the protection of their sheep, as sheep are the most frequent victims from predators. Coyotes are the number one predator of sheep and lambs in the State. Therefore, it is essential that California Wool Growers Association is actively involved in the Predatory Policy Workgroup and nominates Erica Sanko, Executive Director of CWGA to serve on either the Predator Policy Workgroup Drafting Group or Review Group.

As Executive Director of CWGA, Erica has the professional and personal skillset required to serve on either of the two Predator Policy work groups. As a leader and stakeholder in the California and national sheep industry, Erica has thorough knowledge of predator management practices and policy on both a State and Federal level. As Executive Director of a producer trade association, Erica has proven to have the ability to work collaboratively with others of diverse opinions and relies on effective communication methods such as newsletters, electronic communication, and personal interaction, to reach sheep industry stakeholders. CWGA represents all sheep producers and industry stakeholders pertaining to predator management issues on all levels and balances regional perspectives and local knowledge of its members with the needs of the State regarding wildlife and predator management.

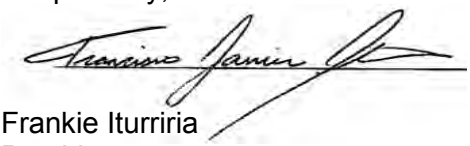
Since 2012, Erica has worked collaboratively with the American Sheep Industry Association (ASI) and USDA's Agricultural Marketing Service (AMS) on improving current Mandatory Price Reporting for Lamb policies and regulations. This endeavor included a thorough analysis of the policies and regulations of the program as well as recommendations on how best to improve the program (policies and statutes) to align with current and future sheep industry needs. Prior to joining CWGA, Erica served as an Agricultural Economist with the California Department of Food and Agriculture Dairy Marketing Branch. Her responsibilities included economic market analysis, dairy policy analysis, and assisting the California dairy industry in the development and feasibility of proposed legislative and marketing policy changes. Given her career experiences, Erica possess strong writing skills and ability to evaluate statute, policy, and regulations at all levels.

California Wool Growers Association Executive Directors have and continue to be an active participant in Wildlife Resource Management Groups and affiliated groups. Currently these groups include:

- American Sheep Industry Association Big Horn Sheep Taskforce
- American Sheep Industry Association Legislative Action Council (establishes industry policy on National and subsequently State predator management)
- California Grey Wolf Stakeholder Working Group
- California Livestock, Poultry and Dairy Coalition
- California Farm Bureau Federation Sheep & Goat Member Advisory Committee

Predator management is a high priority issue not just for sheep producers but for other types of livestock as well as public health and safety. It is essential that CWGA have a seat at the table regarding predator policies in California given the impacts these polices will have on the nearly 500 sheep producers in California. On behalf of these producers, I strongly recommend Erica Sanko, Executive Director of CWGA be appointed to the Predator Policy Workgroup Drafting Group or Review Group to ensure the State's sheep producers are represented.

Respectfully,



Frankie Iturriria
President

Cc: Ryan Indart, Vice President
Dan Macon, Treasurer

Predator Policy Workgroup Nomination

From: Robert R. Smith, President, San Diego County Wildlife Federation (SDCWF)

To: Wildlife Resources Committee (WRC)

This note is to volunteer (nominate myself) to serve on the Review Group of the Predator Policy Workgroup. I have attended most of the WRC meetings over the last few years, and attend as many of the Fish & Game Commission (F&GC) meetings as possible. I have heard testimony from all sides on the various issues related to predator policy and believe I have a good grasp of the current policy and recommended to changes to that policy. I am a long-time hunter for deer, elk, antelope and upland game birds. I do not personally hunt predators but have talked to several who do and I understand their rationale for doing so. I believe I can represent their point of view but also agree no animal should be killed unless there is a valid reason to do so. My experience in working collaboratively with others comes primarily from my Government career as a project manager, where I helped formulate national research programs that included members from multiple laboratories, including some who were competitors. I understand fully the importance of listening politely to others, trying to understand their rationale and striving to find common ground.

I have developed writing skills from my research and project management and have written several letters to the F&GC to state the positions taken by SDCWF. My most recent letter was to express the support of SDCWF to ban coyote killing contests. I clearly understand that California is a diverse state, both in terms of eco-systems and public perceptions. I consider myself fortunate to have homes in San Diego and in Plumas Counties, so I understand both urban and rural perceptions on wildlife and habitat. My attendance at various WRC and F&GC meetings has provided me with exposure to different perspectives throughout the State. My communication network is primarily with pro-hunting organizations, as I am President of a coalition of 20 organizations in the San Diego area whose interests are as diverse as hunting dog training, target shooting, predator hunting, habitat conservation and fishing. You can find the broad scope of these organizations by visiting our web site www.sdcwf.org. Our member organizations strongly support my nomination and have offered to fund my travel and take up some of my workload to allow me to attend all of the Review Group meetings. I also attend many of the meetings of the San Diego County Fish and Wildlife Commission (SDCFWAC) and personally know many of the Commissioners and can communicate issues and updates to them.

I am supportive of what the WRC is trying to accomplish by convening the Predator Policy Workgroup and understand the many challenges in coming up with a comprehensive policy. In spite of the difficulties involved, I am committed to the success of the effort. Regarding web-based software, I am fluent in use of the Internet, as well as office productivity tools. I have very little experience with software used to create web sites.

I have worked with the Department of Fish and Wildlife (DFW) as a stakeholder, representing the interests of our hunting dog training clubs. I believe that we achieved regulatory changes for hunting

dog training on DFW-owned lands that was acceptable to both the hunting dog training community and to DFW. I have attended meetings of the Upland Game Bird Advisory Group in the absence of the sitting member, Jim Conrad, and feel that I made meaningful contributions in a collaborative manner. I have no specific experience as a stakeholder regarding predator management. However, I serve on the Urban Coyote Sub-Committee of SDCWF, established to address approaches for minimizing coyote-human encounters. I performed a thorough assessment of a Metro Denver symposium, which has issues with coyotes similar to Southern California. I prepared a viewgraph summary of the symposium, which is available upon request.

If I am selected as a member of the Review Group, I will strive to attend every meeting. As described above, I have made arrangements to off-load some of my other volunteer duties, and will make participation in the Review Group my highest priority. Being retired will help. I will communicate primarily via meetings of SDCWF and SDCFWAC. Specifically, I will communicate with the San Diego County Varmint Callers; however, I will not take a hard line to oppose any change if change is warranted by data. Of course, I will communicate with others on the Review Group to gain perspectives, no matter what their position on the issues.

Finally, I consider my education will be valuable in understanding the issues. Although I have a Doctorate in Mathematics, not Biology, I understand the rigor required to do research and prepare peer-reviewed papers. I can read and understand wildlife-related articles and know how to backtrack through references to find relevant material. I also have access to the library at the University of California, San Diego. What I don't know, I know how to find.

Respectfully,

Robert R. Smith
[redacted]

From: [redacted]
To: FGC
Cc: FGC
Subject: Revised Predator Policy Workgroup nomination
Date: Wednesday, September 30, 2015 8:17:40 AM
Importance: High

I am resending my nomination information for this workgroup. I've added more references for the information provided and corrected a few typos. Please confirm when you have received this nomination.

Thanks, Dale

To Whom It May Concern:

I am providing information concerning my background experience and interest in joining the predator working group. I understand the PWG is being formed to gather input and make recommendations for predator management policy and regulation in California. I am qualified and willing to help with this important effort.

I have provided summary information below as requested and would be happy to answer questions or provide additional information if necessary.

Thorough knowledge of predator management practices and policy:
During my career as a professional biologist with the California Department of Fish and Wildlife (2000-2013) I regularly worked on complex issues involving predator management issues and policy. This work included research funding and permits, coordination on conflict/issues management, regulations and legal discussion involving depredation issues, and policy review. I also have experience with these issues coordinating with other states and the federal government.

Demonstrable ability to to work collaboratively with others of diverse opinions:
Like many others, I learned about wildlife conservation through sport hunting with family members and friends growing up in California. I recognize the importance of this tradition and support the value of sport hunting for wildlife management. I also acknowledge the challenges and changes faced by those who hunt. I have worked professionally and collaboratively on wildlife issues of local, regional, statewide, national and international significance. Examples include regional habitat conservation and statewide recovery plans, wildlife regulations, the California Wildlife Action Plans, and representing CDFW and California on border wildlife issues involving other states and Mexico. I managed the Nongame Wildlife Program for CDFW and worked on conservation and policy issues throughout this period.

Strong writing skills and ability to evaluate statute, policy, and regulations:
Throughout my career in California I developed and applied writing skills in the review and evaluation of wildlife statutes, draft policies and existing ones, and participated in the FGC process to evaluate many petitions and other regulatory processes involving wildlife.

Ability to balance regional perspectives and local knowledge or experience

with statewide needs:
I worked my entire career of over 33 years in the state of California on complex local, regional, and statewide environmental and wildlife issues requiring me to consider and balance the many inputs that come with such efforts. This includes CEQA, CESA, NEPA, FESA, FGC and CDFW public processes. With CDFW I was responsible for diverse statewide nongame wildlife issues across all major species groups and supervised technical staff experts for the Department.

Access and use of ineffective communication network to reach stakeholders not attending the public meetings:
I regularly use online tools including webcasts, video conferencing, social media, group software as well as written and speaking tools to share information. I am a member of several professional and stakeholder wildlife organizations and very aware and familiar with the need to inform such groups and others throughout a public process.

Committed to all aspects of the charge of the PWG:
I followed and participated in predator policy, conservation, and management activities before retiring in late 2013. I continue to follow these issues now and am committed to the complete charge of the PWG.

Knowledge or experience with web-based software is helpful:
I have knowledge and experience with online tools including webcasts, video conferencing, social media, and group software as part of my professional career and personal activities. I see these tools as both powerful and necessary to adequately reach diverse stakeholders and maintain an open public process.

Where appropriate, ID current and past affiliations with stakeholder groups active in wildlife resource management, particularly predator management:
For example, Channel Island Fox Working Group, California State Wildlife Action Plans, California Condor Recovery Team/Group, Non-lead Ammunition Regulations, Wolf Status Review/Petition Evaluation, Reptile Captive Breeding policy, Aquatic Invasive Species Management Plan, CA/NV Golden Eagle Working Group, Pika Consortium, Tricolor Blackbird Working Group, Falconry Regulations, Bird/Mammal/Fish/Reptile & Amphibian Species of Special Concern updates, etc. These efforts and others included close ongoing coordination with many wildlife agencies and organizations, stakeholder groups and the public at large.

Brief summary of past involvement in collaborative public processes to provide advise on wildlife policy, planning, or management:
Examples of my involvement in public process related to wildlife include both California Wildlife Action Plans, the Wolf Stakeholder Group, Reptile Captive Breeding policy group, Non-lead Ammunition regulations adoption, Various species recovery plans approvals, Western Governors Association Border Wildlife subcommittee, FWS Trilateral Committee, etc.

Willingness to commit the time for full participation on a volunteer basis:
I am retired in good health and committed to actively participate on this issue. I have similar ongoing commitments with several local and regional natural resource issues now.

Descriptions of the organizations and individuals with which the nominee

will communicate about the efforts of the workgroup and the mechanisms to be utilized:
Environmental organizations such as California Audubon, Defenders of Wildlife, National Wildlife Federation, Nature Conservancy, TWS, Society for Conservation Biology, Ecological Society of America, and any other stakeholder groups & individuals as needed.

Areas of knowledge or expertise relative to the project:
Wildlife Conservation, Recovery, Research Permitting, Regulations, Policy, Grant Funding, specific predator species in California including conflict issues such as island fox/golden eagle, mesocarnivores/land management, furbearers/trapping, urban wildlife, invasive species, wildlife care, falconry, and sport hunting, etc.

References for the information provided including former managers, supervisors, and collaborators:
Noelle Cramer, Farm Bureau
Kim Delfino, Exec. Director California Office, Defenders of Wildlife
Kevin Hunting, Chief Deputy Director, CDFW
Eric Loft, Wildlife Branch Chief, CDFW
Sonke Mastrup, Fish and Game Commission
Scott Morrison, Director Conservation Science, Nature Conservancy
Dennis Orthmeyer, California State Director, Wildlife Services
Mark Stopher, Senior Policy Advisor, CDFW
Day Taylor, Audubon California, retired
Dan Yparraguirre, Deputy Director, CDFW

I have worked professionally with nongame wildlife, including predators, on research, conservation, recovery and management issues throughout my career in California. This included research permitting and grant funding, hunting and nongame regulations, legislation, and policy both within the California Department of Fish and Wildlife and the Fish and Game Commission process. I regularly coordinated with other state and federal agencies, stakeholder groups, organizations and the public at large and recognize the importance of doing so. My range of wildlife experience and knowledge would be an asset for the complex issues and perspectives associated with predator management and policy. I see this as an important and necessary step for California to address this challenging subject. I'm willing to help gather input and ideas needed to prepare recommendations for predator management policy and regulation in California. I would draw from my time and experience working with CDFW and FGC and elsewhere to provide professional independent input for this process.

In summary, predator management and policy is a very important and sensitive subject needed now in California. I believe I have good background experience, knowledge and interest to constructively and independently contribute through the committee being formed to help the Fish and Game Commission.

Sincerely,

Dale T. Steele,
[redacted]

From: [redacted]
To: FGC
Subject: Predator policy work group nomination
Date: Friday, September 11, 2015 5:36:48 PM

I would like to add my name to the list of people that are working on the predator policy work group. I would like tier 1 or tier 2 .
I have been hunting for 40+ years. I have always been in predator hunting clubs. I advise several hunting groups and clubs. All the groups that I am involved with are predator hunting and trapping only.

Ronald Stephens
[redacted]

CENTER for BIOLOGICAL DIVERSITY Because life is good.

Sent via electronic mail to fgc@fgc.ca.gov and sonke.mastrup@fgc.ca.gov

November 16, 2015

President Jack Baylis
Vice President Jim Kellogg
Commissioner Jacque Hostler-Carmesin
Commissioner Eric Sklar
Commissioner Anthony Williams
Director Sonke Mastrup

California Fish and Game Commission ("the Commission")
1416 Ninth Street, Room 1320
Sacramento, CA 95814
Fax: (916) 653-5040
fgc@fgc.ca.gov

Re: Predator Policy Workgroup Nomination of Jean Su for Drafting Group

Dear Commissioners Baylis, Kellogg, Hostler-Carmesin, Sklar and Williams and Director Mastrup:

I am writing to seek appointment as a member of the Drafting Group of the Predator Policy Workgroup under the Commission's Wildlife Resources Committee. My contact information can be found in the signature block below.

I believe that I am a strong candidate for a position on the Drafting Group because I meet the requisite criteria and am committed to being a productive member of the group. Drafting Group members are required to receive input from both reviewers and qualified experts, review existing policies, regulations and concepts, and produce output of draft policies, best management practices and guidelines for regulatory proposals. As a staff attorney with the Center for Biological Diversity ("the Center"), I regularly engage with a range of stakeholders—including scientists, experts, government officials, allies and communities—to solicit their viewpoints and expertise to inform legal arguments and policy, as well as engage with diverse perspectives. In actively participating in the rulemaking process for AB1213 (the Bobcat Protection Act) and previous Wildlife Resources Committee meetings, I have engaged with multiple stakeholders in productive conversation and produced written output with allies, including Project Coyote, the Humane Society, Natural Resources Defense Council, and Mountain Lion Foundation—organizations that represent millions of Californians. As a Drafting Group member, I look forward to respectfully and productively engaging with other members of the Group to understand the reasoning behind positions and create recommendations that take these perspectives—and ultimately, those of the greater California public—into account.

Critically, I have strong writing skills as a lawyer, with the ability to draft policy documents, petitions and amendments to regulatory language, which will be vital as a member of the Drafting Group. My familiarity with the Fish and Game Code, the California Code of Regulations, and other California statutes will also allow me to efficiently and effectively understand the implications of amendments on

Alaska . Arizona . California . Florida . Minnesota . Nevada . New Mexico . New York . Oregon . Vermont . Washington, DC
Jean Su, Staff Attorney . 1212 Broadway, Suite 800 . Oakland, CA 94612
Phone: 510-844-7100 x 339 . Fax: 510-844-7150 . jsu@biologicaldiversity.org

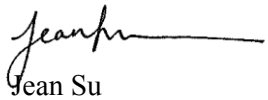
one set of rules to other pieces of law. These writing and analytical skills will be helpful to the Drafting Group.

Further, I have a solid knowledge base in predator policy management issues, most recently fortified during my active engagement in the administrative rulemaking process of AB 1213 (the Bobcat Protection Act) and comment letters to the Wildlife Resources Committee on proposed amendments to trapping and other predator management regulations. In those examples, I worked with multiple groups to understand both their local issues as well as extrapolated state-wide concerns. Ultimately, I also bring the substantive expertise of the Center, which remains a leading organization on the forefront of science-based wildlife policy and law in California and across the country. I look forward to working with other members of the Drafting Group to leverage their scientific expertise and on-the-ground knowledge from their constituents to inform good, reasonable and progressive policy.

Finally, I am committed to dedicating hard work and a can-do attitude to the Drafting Group. I believe, sincerely, in the health of our predator populations and the critical role that human management plays on their populations and the greater ecosystem of which they are at the apex. I also believe the very special role that California has at bringing predator management into the 21st century and look forward to working toward this effort with my fellow stakeholders and Commission and Department members.

Thank you for your consideration of my nomination.

Sincerely,



Jean Su
Staff Attorney
Center for Biological Diversity
[redacted]

CALIFORNIA CATTLEMEN'S ASSOCIATION

1221 H STREET - SACRAMENTO, CALIFORNIA - 95814-1910

SERVING THE CATTLE COMMUNITY SINCE 1917

PHONE: (916) 444-0845
FAX: (916) 444-2194
www.calcattlemen.org

September 14, 2015

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
Attention: Predator Policy Workgroup Nominations

Dear President Baylis and Members:

I am writing to formally request that the Commission place me upon *either* the Drafting Group or the Review Group for the Predator Policy Workgroup. As a full-time Director of Government Affairs for the California Cattlemen's Association (CCA), I am fully available to participate in any predator policy discussions the Commission deems necessary, and I also have the legal and policy experience necessary to effectively participate in the workgroup.

Qualifications

Below, I have addressed each of the selection criteria included in the Draft Request for Nominations. Please note that many of these responses address other information requested by the Commission (e.g., current and past affiliations with stakeholder groups active in wildlife resource management) and I have thus not included that information in separate sub-sections.

Thorough knowledge of predator management practices and policy

Predator management is a primary concern of CCA and its members, and I have actively engaged in predator policy discussions with the Fish and Game Commission, the Department of Fish and Wildlife (including the Department's own Predator Management Group and the Stakeholder Working Group consulting in the development of California's Wolf Management Plan), and federal agencies.

Demonstrable ability to work collaboratively with others of diverse opinions

My position often requires that I work collaboratively with a wide range of diverse interests, from various sectors of agriculture to sportsmens groups to environmental groups. I participated in CDFW's Wolf Management Stakeholder Working Group as one of 15 stakeholders, and nearly every regulatory effort in which CCA is involved requires similar collaboration with widely-varying organizations, individuals, and viewpoints. I am firmly committed to participating in such collaboration civilly and professionally.

Strong writing skills and ability to evaluate statute, policy, and regulations

I graduated from the University of the Pacific McGeorge School of Law in 2012 and passed the California Bar Exam. Throughout my time at McGeorge I not only evaluated statute, policy, and regulations for coursework, but also for scholarly articles which were published in the *McGeorge Law Review*. I have worked in Government Affairs for CCA for two years, regularly conducting legal research and writing for public comment and CCA's publications.

Ability to balance regional perspectives and local knowledge or experience with statewide needs

As a statewide trade association with 35 affiliated local associations, CCA is well-acquainted with the necessity of balancing regional perspectives with statewide needs. During my two years at the Association, I have become well-versed in this balancing act. Additionally, though CCA has statewide policy positions, I regularly advocate for local associations' individual perspectives where they do not conflict with the Association's statewide policy.

Access and use of an effective communication network to reach stakeholders not attending the public meetings

Through a weekly electronic newsletter, monthly print newsletter, and monthly magazine (all of which I contribute to), CCA reaches more than 2,700 members, including more than 1,700 cattle ranchers.

Committed to all aspects of the charge of the PWG

I am committed to the PWG charges as enumerated in the Draft Request for Nominations, and firmly believe that my background in law and in policy development over the past two years enable me to faithfully execute those charges.

Knowledge or experience with web-based software is helpful but not required

I routinely use web-based software both personally and professionally, and am a "quick study" where technology is concerned.

Conclusion

I respectfully request that the Commission consider appointing me as a member of *either* the Drafting Group or Review Group for the Predator Policy Workgroup. Such selection will ensure appropriate representation of California's cattle ranchers, and I believe that my background in law and policy will be of service to the Workgroup.

Sincerely,

Kirk Wilbur
Director of Government Affairs
California Cattlemen's Association
[redacted]

From: [redacted]
To: FGC
Subject: Fwd: Nomination WRC Predator Policy Working Group
Date: Friday, August 21, 2015 12:57:34 PM
Attachments: image003.jpg

Sent from my iPhone

Begin forwarded message:

From: Rick Travis <[redacted]>
Date: August 21, 2015 at 12:47:22 PM PDT
To: "[redacted]
Cc: "Mastrup, Sonke@FGC" <[redacted]
Subject: Nomination WRC Predator Policy Working Group

Sonke,

Per our conversation today, I would like to have added to the WRC Predator Policy Working Group our CRPA Legislative Director Mr. Tom Pedersen and NRA Lobbyist Mr. Ed Worley. I have included both of their contact information below. I would also like to request that I be added to the email list for meeting times and agendas. Thank you as always for your support.

Tom Pedersen
CRPA Legislative Director
[redacted]

Ed Worley
NRA Legislative Liaison
[redacted]

Thank you

Rick Travis
Program Director
California Rifle and Pistol Association
[redacted]

From: [redacted]
To: FGC
Subject: Predator Policy Workgroup nomination
Date: Thursday, September 24, 2015 12:40:36 PM

I am applying for a place on the Predator Policy Workgroup:

Les Wright
Fresno County Agricultural Commissioner
[redacted]

I would represent the California Agricultural Commissioners and Sealers Association (CACASA) through this process of developing a predator management policy. Agricultural Commissioners throughout the state administer wildlife services programs to protect the citizens and agriculture of their respective counties. I currently serve the association as chairman of the Weed and Vertebrate Pest Committee.

Personally I started this career as a wildlife trapper, and have been involved with the family ranch most of my life. I have a thorough knowledge of predator behavior and understand the balancing act of having predators in the eco-system without them causing economic or physical danger to human societies.

As an Agricultural Commissioner, we deal with diverse opinions daily in our work life, from pesticide use to predator management. We are an enforcement agency and understand laws, regulations, and policy and their differences. As a representative of CACASA, I represent all counties in the state and can balance their opinions and communicate effectively to the other commissioners, industry, and other agencies. I believe that a good, sound, and peer reviewed science based policy to guide the Fish and Game Commission in making future regulation decisions is one of the most important goals that the commission has endeared itself to.

Thank you for considering my application.

State of California
Department of Fish and Wildlife

Memorandum

Date: November 10, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for the December 9-10, 2015 Fish and Game Commission Meeting: *Recommendations for designation of new Wild Trout Waters by the Department of Fish and Wildlife for 2015, as required by Fish and Game Code, Section 1727(b).***

Fish and Game Code, Section 1727(b), requires the California Department of Fish and Wildlife (Department) to prepare a list of no less than 25 miles of stream or stream segment and at least one lake deemed suitable for designation as wild trout waters and to submit this list to the Commission. To comply with these requirements, the Department proposes the following waters:

Little Kern River drainage, including tributaries, from the confluence with the Kern River upstream to the headwaters (Tulare County). This proposed designation incorporates 137 miles of perennial stream habitat, the majority of which are located on public lands administered by the U.S. Forest Service (USFS) Sequoia National Forest. The Little Kern River contains a self-sustaining population of Little Kern Golden trout within their native drainage and is a fast-action fishery (> 2 fish per hour) located in the remote and scenic Golden Trout Wilderness area. Little Kern golden trout are endemic to this drainage and found nowhere else in the world, making this fishery a unique resource in the state and a candidate for designation as a Heritage Trout Water. The Heritage and Wild Trout Program (HWTP) has conducted extensive fisheries and habitat assessments across the Little Kern drainage since 2012, including barrier assessments, population estimates, angling surveys, age and growth analyses and post-fire impact evaluations.

Maggie Lake (Tulare County). "Maggie" Lake (the northeastern-most of the cluster of three Maggie Lakes located in the Little Kern River drainage at 9032' elevation and at the latitude/longitude of 36.27812N, 118.62107W, approximately one mile north of Maggie Mountain) is a fast-action fishery (>2 fish per hour). It is unknown whether the fish population in this lake is hybridized with rainbow trout and, until further genetic analyses are conducted, we propose designation as a Wild Trout Water since it may not meet the criteria for designation as a Heritage Trout Water. Maggie Lake encompasses approximately four surface acres and is located in a remote and scenic wilderness setting. This lake was singled out of the three Maggie Lakes for proposed designation as it supports a more robust sport fishery than the other two lakes in this complex.

The HWTP has conducted angling assessments, gill net surveys and visual reconnaissance of spawning habitat, all of which support designation as a high quality lake fishery.

The recommended streams and lakes meet existing criteria to satisfy the requirements for designation as Wild Trout Waters and no changes in angling regulations are necessary at this time.

If you have any questions or need additional information, please contact Stafford Lehr, Chief, Fisheries Branch at (916) 327-8840 or via email at Stafford.Lehr@Wildlife.ca.gov.

Attachments

ec: Stafford Lehr, Chief
Fisheries Branch
Stafford.lehr@widlife.ca.gov

Roger Bloom, Environmental
Program Manger
Roger.bloom@wildlife.ca.gov

bec: Dan Yparraguirre, Deputy Director
Fisheries Wildlife Division
Dan.Yparraguirre@wildlife.ca.gov

Jeff Weaver, Senior Environmental Scientist
Fisheries Branch
Jeff.Weaver@widlife.ca.gov

Karen Mitchell, Senior Environmental Scientist
Fisheries Branch
Karen.mitchell@wildlife.ca.gov

Proposed Changes to the Commission Designated Wild Trout Waters Policy

It is the policy of the Fish and Game Commission to:

I. Designate certain state waters to be managed exclusively for wild trout. Commission designated wild trout waters should provide a quality experience by providing the angler with an opportunity to fish in aesthetically pleasing and environmentally productive waters with trout populations whose numbers or sizes are largely unaffected by the angling process.

Waters designated by the Commission for wild trout management shall meet the following criteria:

A. Angler Access:

1. Open for public angling with unrestricted access when of sufficient dimensions to accommodate anglers without overcrowding; or

2. Open for public angling with controlled access under a plan approved by the Commission setting forth the number of anglers and the method of distribution.

B. Able to support, with appropriate angling regulations, wild trout populations of sufficient magnitude to provide satisfactory trout catches in terms of number or size of fish.

II. Wild trout waters shall be managed in accordance with the following stipulations:

A. Domestic strains of catchable-sized trout shall not be planted in designated wild trout waters.

B. Hatchery-produced trout of suitable wild and semi-wild strains may be planted in designated waters, but only if necessary to supplement natural trout reproduction.

C. Habitat protection is of utmost importance for maintenance of wild trout populations. All necessary actions, consistent with State law, shall be taken to prevent adverse impact by land or water development projects affecting designated wild trout waters.

III. The Department of Fish and Wildlife (Department) shall prepare and periodically update a management plan for each water designated as a wild trout water.

IV. Certain designated wild trout waters may be further designated by the Commission as "Heritage Trout Waters", to recognize the beauty, diversity, historical significance, and special values of California's native trout. Heritage Trout Waters shall meet the following additional criteria:

A. Only waters supporting populations that best exemplify indigenous strains of native trout within their historic drainages may qualify for designation.

B. Heritage Trout Waters shall be able to provide anglers with the opportunity to catch native trout consistent with the conservation of the native trout present.

V. Recognizing the importance of native trout to California's natural heritage, the Department shall emphasize education and outreach efforts to inform the public about our native trout, their habitats, and the activities for restoration of native trout when implementing the Heritage Trout Program.

A. Implement a Heritage Trout Angler Recognition Certificate through which anglers will have the opportunity to have their catches of California native trout recognized by the Commission. The criteria for receiving the formal recognition shall be maintained by the Department's Heritage and Wild Trout Program. To receive a certificate of recognition, anglers shall submit an application with supporting materials to the Department for review.

The following waters are designated by the Commission as "wild trout waters":

1. American River, North Fork, from Palisade Creek downstream to Iowa Hill Bridge (Placer County).
2. Carson River, East Fork, upstream from confluence with Wolf Creek excluding tributaries (Alpine County).
3. Clavey River, upstream from confluence with Tuolumne River excluding tributaries (Tuolumne County).
4. Fall River, from Pit No. 1 powerhouse intake upstream to origin at Thousand Springs including Spring Creek, but excluding all other tributaries (Shasta County).
5. Feather River, Middle Fork, from Oroville Reservoir upstream to Sloat vehicle bridge, excluding tributaries (Butte and Plumas counties).
6. Hat Creek, from Lake Britton upstream to Hat No. 2 powerhouse (Shasta County).
7. Hot Creek, from Hot Springs upstream to west property line of Hot Creek Ranch (Mono County).
8. Kings River, from Pine Flat Lake upstream to confluence with South and Middle forks excluding tributaries (Fresno County).
9. Kings River, South Fork, from confluence with Middle Fork upstream to western boundary of Kings Canyon National Park excluding tributaries (Fresno County).

10. Merced River, South Fork, from confluence with mainstem Merced River upstream to western boundary of Yosemite National Park excluding tributaries (Mariposa County).
11. Nelson Creek, upstream from confluence with Middle Fork Feather River excluding tributaries (Plumas County).
12. Owens River, from Five Bridges crossing upstream to Pleasant Valley Dam excluding tributaries (Inyo County).
13. Rubicon River, from confluence with Middle Fork American River upstream to Hell Hole Dam excluding tributaries (Placer County).
14. Yellow Creek, from Big Springs downstream to confluence with the North Fork of the Feather River (Plumas County).
15. Cottonwood Creek, upstream from confluence with Little Cottonwood Creek, including tributaries (Inyo County).
16. Klamath River, from Copco Lake to the Oregon border (Siskiyou County).
17. McCloud River, from Lake McCloud Dam downstream to the southern boundary of Section 36, T38N, R3W, M.D.B. & M. (Shasta County).
18. Deep Creek, from confluence with Green Valley Creek downstream to confluence with Willow Creek (San Bernardino County).
19. Middle Fork Stanislaus River, from Beardsley Afterbay Dam to Sand Bar Diversion Dam (Tuolumne County).
20. Truckee River, from confluence with Trout Creek downstream to the Nevada State line (excluding the property owned by the San Francisco Fly Casters Club) (Nevada and Sierra counties).
21. Sespe Creek, a 25-mile section between the Lion Campground and the boundary of the U.S. Forest Service, Los Padres National Forest (Ventura County).
22. East Fork Carson River, from Hangman's Bridge near Markleeville downstream to the Nevada state line (Alpine County).
23. Bear Creek, Bear Valley Dam (impounding Big Bear Lake) downstream to the confluence with the Santa Ana River (San Bernardino County).
24. Lavezolla Creek (Sierra County).
25. Laurel Lake #1 and Laurel Lake #2 (Mono County).
26. Middle Fork San Joaquin River - Northern boundary of the Devils Postpile National Monument downstream to the Lower Falls (3.6 miles); and footbridge just above the confluence with Shadow Creek downstream to the footbridge just above upper Soda Springs Campground (4 miles) (Madera County).
27. South Fork Kern River watershed from its headwaters downstream to the southern boundary of the South Sierra Wilderness (Tulare County).
28. Golden Trout Creek drainage, including tributaries, from confluence with the Kern River upstream to the headwaters (Tulare County).
29. Eagle Lake, north of Susanville (Lassen County).
30. Upper Kern River, from the Forks of the Kern, upstream to Tyndall Creek in Sequoia National Park (Tulare County).
31. Heenan Lake, near Markleeville and Monitor ~~Pass,~~ Pass (Alpine County).

32. Upper Truckee River, including tributaries, upstream from the confluence with Showers Creek (El Dorado and Alpine counties).
33. Sacramento River, including tributaries, from Box Canyon Dam downstream to Scarlett Way in Dunsmuir (Siskiyou County) and from the county bridge at Sweetbriar downstream to Lake Shasta (Shasta County).
34. Long Lake (Plumas County).
35. Piru Creek, including tributaries, upstream of Pyramid Lake (Ventura and Los Angeles counties).
36. Upper Stony Creek including tributaries, upstream from Mine Camp Campground (Colusa, Glenn, and Lake counties).
37. Lower Honeymoon Lake (Fresno County).
38. Upper East Fork San Gabriel River, including tributaries, upstream from Heaton Flat (Los Angeles County).
39. Royce Lake # 2 (Fresno County).
40. Lower Yuba River, from Englebright Dam to the confluence with the Feather River (Yuba and Nevada counties).
41. Parker Lake (Mono County).
42. South Fork San Joaquin River and all tributaries from Florence Lake upstream to the boundary of Kings Canyon National Park including the Piute Creek drainage (Fresno County).
43. Sallie Keyes Lakes (Fresno County).
44. Sacramento River from Keswick Dam downstream to the Red Bluff Diversion Dam (Shasta and Tehama counties).
45. Pauley Creek from the confluence with the Downie River upstream to the headwaters (Sierra County).
46. Caples Creek from the confluence with the Silver Fork American River upstream to Caples Lake Dam (El Dorado and Alpine counties).
47. Putah Creek from Lake Solano upstream to Monticello Dam on Lake Berryessa (Solano and Yolo counties).
48. Lake Solano (Solano and Yolo counties).
49. Milton Reservoir (Nevada and Sierra counties).
50. Gerle Creek Divide Reservoir (El Dorado County).
51. Manzanita Lake (Shasta County).
52. Maggie Lake (Tulare County).
53. Little Kern River drainage, including tributaries, from the confluence with the Kern River upstream to the headwaters (Tulare County).

The following "wild trout waters" are further designated by the Commission as "heritage trout waters".

1. Clavey River, upstream from confluence with Tuolumne River, excluding tributaries (Tuolumne County).
2. Golden Trout Creek drainage, including tributaries, from confluence with the Kern River upstream to the headwaters (Tulare County).
3. Eagle Lake, north of Susanville~~,~~ (Lassen County).

4. Upper Kern River, from the Forks of the Kern, upstream to Tyndall Creek in Sequoia National Park (Tulare County).
5. Heenan Lake, near Markleeville and Monitor Pass (Alpine County).
6. Upper Truckee River, including tributaries, upstream from the confluence with Showers Creek (El Dorado and Alpine counties).
7. Piru Creek, including tributaries, upstream of Pyramid Lake (Ventura and Los Angeles counties).
8. Upper Stony Creek including tributaries, upstream from Mine Camp Campground (Colusa, Glenn, and Lake counties).
9. Upper East Fork San Gabriel River, including tributaries, upstream from Heaton Flat (Los Angeles County).
10. Lower Yuba River, from Englebright Dam to the confluence with the Feather River (Yuba and Nevada counties).
11. Little Kern River drainage, including tributaries, from the confluence with the Kern River upstream to the headwaters (Tulare County).

(Amended: 01/04/94; 06/22/95; 03/06/97; 11/06/98; 04/02/99; 12/08/00; 04/03/03; 12/12/08, 11/04/09, 10/21/10, 11/17/11; 11/07/12, 11/06/13, 12/03/14, 12/10/15)

Section 1727, Fish and Game Code

(a) In order to provide for a diversity of available angling experiences throughout the state, it is the intent of the Legislature that the commission maintain the existing wild trout program, and as part of the program, develop additional wild trout waters in the more than 20,000 miles of trout streams and approximately 5,000 lakes containing trout in California.

(b) The department shall prepare a list of no less than 25 miles of stream or stream segments and at least one lake that it deems suitable for designation as wild trout waters. The department shall submit this list to the commission for its consideration at the regular October commission meeting.

(c) The commission may remove any stream or lake that it has designated as a wild trout fishery from the program at any time. If any of those waters are removed from the program, an equivalent amount of stream mileage or an equivalent size lake shall be added to the wild trout program.

(d) The department shall prepare and complete management plans for all wild trout waters not more than three years following their initial designation by the commission and update the management plan every five years following completion of the initial management plan.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Section 670.5
Title 14, California Code of Regulations
Re: Animals of California Declared to Be Endangered or Threatened

I. Date of Initial Statement of Reasons: October 1, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: June 4, 2014
Location: Fortuna, CA

(b) Discussion/Adoption Hearing: Date: December 10, 2015
Location: San Diego, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Section 670.5 of Title 14, CCR, provides a list, established by the Fish and Game Commission (Commission), of animals designated as endangered or threatened in California. The Commission has the authority to add or remove species from this list if it finds that the action is warranted. Currently, gray wolf (*Canis lupus*) is not included on the list in Section 670.5.

The proposed regulatory action would add gray wolf to the Section 670.5 list as an "endangered" species. Once added to the Section 670.5 list, Fish and Game Code (FGC) Section 2080 prohibits the "taking" of a species unless the "take" is authorized pursuant to a California Endangered Species Act ("CESA") permit or is exempt from CESA's take prohibition.

On March 12, 2012, the Commission received the "Petition to List the Gray Wolf as endangered under the CESA" (March 12, 2012; hereafter, the Petition), as submitted by the Center for Biological Diversity, Big Wildlife, the Environmental Protection Information Center, and the Klamath-Siskiyou Wildlands Center (collectively "Petitioners"). Commission staff transmitted the Petition to the Department of Fish and

Wildlife (Department) pursuant to FGC Section 2073 on March 13, 2012, and the Commission published formal notice of receipt of the Petition on April 13, 2012 (Cal. Reg. Notice Register 2012, No. 15-Z, p. 494). After evaluating the Petition and other relevant information the Department possessed or received, the Department determined that based on the information in the Petition, there was sufficient scientific information to indicate that the petitioned action may be warranted, and recommended the Commission accept the Petition. The Commission voted to accept the Petition and initiate a review of the species' status in California on October 3, 2012. Upon publication of the Commission's notice of determination, the gray wolf was designated a candidate species on November 2, 2012 (Cal. Reg. Notice Register 2012, No. 44-Z, p. 1610).

Following the Commission's designation of the gray wolf as a candidate species, the Department notified affected and interested parties and solicited data and comments on the petitioned action pursuant to FGC Section 2074.4. (see also Cal. Code Regs., tit. 14, § 670.1(f)(2).) Subsequently, the Department commenced its review of the status of the species. On February 5, 2014 the Department delivered a status review to the Commission pursuant to FGC Section 2074.6, including a "narrowly tailored" recommendation that, based upon the best scientific information available to the Department, the petitioned action is not warranted. However, in the transmittal memorandum accompanying the status review, the Department recognized that CESA allows the Commission, in making its decision whether or not to list a species, to consider information beyond just the Department's narrowly prescribed scientific recommendation. (*see* Cal. Code Regs., tit. 14, § 670.1(h).) The Department's report also included a preliminary identification of habitat that may be essential to the continued existence of gray wolf, as well as management recommendations.

On April 16, 2014, at its meeting in Ventura, California, the Commission took up consideration of the Petition and received public testimony on the matter. However, in an effort to hear testimony from members of the public in northern areas of the State the Commission voted to table consideration as to whether the petitioned action is warranted until it could receive that additional testimony at its June meeting in Fortuna, California.

The Commission also asked for additional explanation from the Department regarding its recommendation to list gray wolf as a "species of special concern," the status of the Department's draft wolf plan, the potential for future listing of the gray wolf if it were not to happen in response to the current petition, and other regulatory options available to limit impacts to gray wolf in California.
The Commission received additional public and Department testimony at the June 4, 2014 meeting in Fortuna, California confirming that OR7, the

gray wolf that had been intermittently living in California over the past several years, had likely successfully bred with a female wolf and produced a litter of pups in an area of Oregon close to the California border. Both the existence of another wolf in the area and the confirmation that OR7 had probably successfully bred, were new pieces of information for the Commission's consideration. After receiving this additional information and oral testimony and considering the Petition, the Department's 2012 Candidacy Evaluation Report, the Department's Status Review, and other information included in the Commission's administrative record of proceedings at its meeting in Ventura, California on April 16, 2014, and at its meeting in Fortuna, California on June 4, 2014, the Commission determined, based on the requirements of CESA and the evidence before it, that listing gray wolf as an endangered species under CESA is warranted. (Fish & G. Code, § 2075.5(a); Cal. Code Regs., tit. 14, § 670.1, subd. (i)(1)(A).)

The proposed regulatory change is necessary to protect gray wolves in the petitioned area. The Commission finds that substantial evidence supports its determination under CESA that the continued existence of gray wolf in the State of California is endangered by one or a combination of the following factors:

1. Overexploitation;
2. Predation;
3. Disease;
4. Other natural occurrences or human-related activities.

This finding is supported by all of the information in the record of administrative proceedings, including the following facts:

- It is likely that wolves historically occurred in California and were widely distributed in the State. Status Review at 10 ("While limited the available information suggests that wolves were distributed widely in California, particularly in the Klamath-Cascade Mountains, North Coast Range, Modoc Plateau, Sierra Nevada, Sacramento Valley, and San Francisco Bay Area. The genetic evidence from southeastern California suggests that the Mexican wolf may have occurred in California, at least as dispersing individuals. While the majority of historical records are not verifiable, for the purposes of this status review, the Department concludes that the gray wolf likely occurred in much of the areas depicted (CDFW 2011a) (Figure 1)); 2012 Candidacy Evaluation Report at 4 ("As to the science available at this time and the reasonable inferences that can be drawn from that information, it indicates to the Department at this time that wolves were likely broadly distributed in California historically …"); *id*. at 10 ("In summary, historic anecdotal

observations are most consistent with a hypothesis that wolves were not abundant, but widely distributed in California.").

- There is sufficient evidence to conclude that wolves occurred historically in California. However, by the late 1920s, the species was extirpated from the state. Status Review at 4 ("2012 Candidacy Evaluation Report at 4) ("As to the science available at this time and the reasonable inferences that can be drawn from that information … humans likely purposefully extirpated the species in California early in the twentieth century.")

- Following listing of the gray wolf under the federal Endangered Species Act in 1974 and recovery efforts during the 1990s, a population of gray wolves in the Northern Rocky Mountain states has been re-established through a federal recovery program, and dispersing wolves from this population have established territories and several packs in Washington and Oregon. 2014 Status Review at 28.

- In September 2011, a radio-collared, sub-adult gray wolf known as "OR7" dispersed from the Imnaha pack in northeastern Oregon and arrived in California on December 28, 2011, marking the first documented individual of the species in California since the 1920s. 2012 Candidacy Evaluation Report at 4 ("a single lone wolf, a dispersing young male named 'OR7,' entered California in December 2011, remaining largely in the State since that time"); *id*. at 10 ("The first gray wolf detected in California after many decades occurred in December 2011 with the arrival of 'OR7,' a radio-collared, sub-adult gray wolf that dispersed from a pack in Oregon."); *id*. ("OR7 dispersed from the Northeastern Oregon's Imnaha pack in September 2011.")

- The gray wolf is once again present in California, on at least an intermittent basis, and foreseeably will continue to be present in California, as discussed below. OR-7's range now includes California and Oregon. OR7 has established a range that includes portions of Northern California, as this wolf is known to have crossed back and forth across the Oregon-California border since 2011 and to have been present in California in each of those years. Status Review at 4 ("The lone radio-collared gray wolf, OR7, dispersed from northeastern Oregon's wolf population to California in December 2011 and has been near the Oregon/California border since that time, crossing back and forth."); *id*. at 18 ("As far as the Department is aware, there is one gray wolf (OR7) that is near the Oregon/California border such that it may be in either state at any time."); 2012 Candidacy Evaluation Report at 11 ("OR7 has passed back and forth over the California/Oregon border several times over the last five months …"); California Department of

Fish and Wildlife, Gray Wolf OR7: Updates on wolves migrating to California (available at http://californiagraywolf.wordpress.com); *see also* Oregon Department of Fish and Wildlife, OR-7 Timeline of Events (available at http://www.dfw.state.or.us/wolves/rogue_pack.asp) (documenting OR7's presence in California in each of 2011, 2012, 2013, and 2014).

- OR7 has utilized areas of suitable habitat, primarily on public lands, comprised of ponderosa pine forests, mixed conifer forests, lava flows, sagebrush shrublands, juniper woodlands, as well as private lands including timberlands and agricultural lands, and has exhibited normal dispersal behavior for a young male gray wolf as he has sought to find other wolves, to establish his own pack, or to become part of an established wolf pack. 2012 Candidacy Evaluation Report at 10 ("It is believed that OR7 is exhibiting normal dispersal behavior for young male wolves, seeking to find other wolves, to establish his own pack, and/or to become part of an established wolf pack."); *id*. at 11 ("OR7 has passed through ponderosa pine forests, mixed conifer forests, lava flows, sagebrush shrublands, juniper woodlands, and agricultural lands"); *id*. ("Although OR7 has used private lands (timberlands in particular), most of its route has traversed public lands.").

- On June 4, 2014, the State of Oregon Department of Fish and Wildlife confirmed that OR7 had mated with a female wolf of unknown origin, and that the pair was denning with a litter of at least two pups on public land in southwestern Oregon. *See* Press Release, Oregon Department of Fish and Wildlife, Pups for wolf OR7 (June 4, 2014) ("Wolf OR7 and a mate have produced offspring in southwest Oregon's Cascade Mountains, wildlife biologists confirmed this week."); Comments of Pamela Flick, Defenders of Wildlife (June 4, 2014 Commission hearing) (reporting breaking news that a remote camera in southwestern Oregon has detected at least two pups).

- As the gestation period for gray wolves is 62-63 days and OR7 was documented in northern California on February 5, 2014, it is likely that OR7's mate was traveling with OR7 in California at the time. Status Review at 10 ("The gestation period for wolves is 62-63 days."); Testimony of Amaroq Weiss, June 4, 2014 Commission Meeting (Powerpoint slides at 15) ("A breeding population is likely on the border right now and a pregnant female was likely present in California already this year."); L.D. Mech & L. Boitani, editors. Wolves: behavior, ecology, and conservation. University of Chicago Press, Chicago, Illinois, USA (cited in 2012 Candidacy Evaluation Report and Status Review) (discussing in Chapter 2 the reproductive behavior of wolves, and how

wolves spend many months together leading up to impregnation and gestation).

- The evidence in the record regarding wolf migration and dispersal behavior at a minimum indicates that wolves other than OR7 have similarly dispersed or will disperse to California, as most wolves from Oregon packs are not collared with radio transmitters and their presence in California may not otherwise have been detected ("we have acknowledged that we know of one [wolf, OR7]" and that "there could be others that we don't know about"); U.S. Fish and Wildlife Service, Montana Fish, Wildlife & Parks, Nez Perce Tribe, National Park Service, Blackfeet Nation, Confederated Salish and Kootenai Tribes, Wind River Tribes, Washington Department of Wildlife, Oregon Department of Wildlife, Utah Department of Wildlife Resources, and USDA Wildlife Services. 2011. Rocky Mountain Wolf Recovery 2010 Interagency Annual Report. C.A. Sime and E. E. Bangs, eds. USFWS, Ecological Services, 585 Shepard Way, Helena, Montana. 59601. (2011) at 2 (noting that "it is difficult to locate lone dispersing wolves."); Carroll (2013) (Peer Review) at 5-6 ("[n]ot all Oregon wolves are detected and collared" so "it is possible that not all wolves dispersing to California have been detected"). Petition at 15 ("… it is impossible to rule out the possibility that previous dispersal events to California may … have occurred, which simply went un-detected because it is difficult to locate and track dispersing individual wolves"); Comments of Eric Loft (April 16, 2014 Commission Hearing).

- The presence of wolves in California is small and is likely to remain small for the foreseeable future. Eisenberg (2013) (Peer Review) at 2 ("Any wolves becoming established in California will initially constitute a small population.").

- Dispersing wolves and small wolf populations are inherently at risk due to demographic and environmental stochasticity and in the case of wolves, of being killed by poachers, or hunters that mistake them for coyotes. Status Review at 5 ("A small population in California would be at some inherent risk although the species has demonstrated high potential to increase in other states. Dispersing individuals and small packs would likely be at highest risk due to population size."); *id*. at 19 ("It is possible that a coyote hunter could mistake a gray wolf for a coyote, particularly at a long distance."); *id*. at 22 ("With at least one gray wolf near the border of Oregon/California, and the knowledge that populations or species ranges are typically so large that they could range across both states …, an individual wolf, or a small number of wolves would be threatened in their ability to reproduce depending on the number and sex of the animals present in the range."); 2012

Candidacy Evaluation Report at 6 (“Wolves are often confused with coyotes (*Canis latrans*) and domestic dogs (*C. lupus familiaris*), and wolf hybrids, which result from the mating of a wolf and a domestic dog.”).

- Despite losses of areas of the gray wolf’s historic range in California, large tracts of habitat remain in the State that are sufficient to support a wolf population, particularly in the Modoc Plateau, Sierra Nevada, and Northern Coastal Mountains. Status Review at 17 (“Habitat Suitability Modeling: There are studies that have modeled potential suitable wolf habitat in California. Carroll (2001) modeled potential wolf occupancy in California using estimates of prey density, prey accessibility and security from human disturbance (road and human population density). Results suggested that areas located in the Modoc Plateau, Sierra Nevada, and the Northern Coastal Mountains could be potentially suitable habitat areas for wolves.

- Since entering California, there have been threats to harm or kill OR7 or other wolves found in the State. (See e.g. May 6, 2013 Center for Biological Diversity letter to Department of Fish and Wildlife, p.13.) Although many people are supportive of gray wolves as a component of wildland ecosystems, wolves are considered a threat to livestock and wild ungulates by many other people, and are considered a threat to people by some. For example, the administrative record includes reports of statements by county supervisors from Modoc, Siskiyou, and Lassen counties expressing a desire to kill wolves in the area, a sentiment which represents an imminent threat to wolves that are dispersing to the State. Status Review at 4-5 (“It is believed that limiting human-caused mortality through federal protection has been one of the key reasons that recovery efforts in the northern rocky mountains were successful.”); *id*. at 18-19 (“Public perception of wolf attacks on people, the documented losses of livestock, and the sometimes photographed killing of livestock or big game, continues to influence human attitudes toward wolves.”); Lassen County Board of Supervisors Hearing (Feb. 21, 2012) (quoting Lassen County supervisor to CDFW spokesperson) (“If I see an animal in my livestock, I kill it. If I kill a wolf, you going to throw me in jail? I don’t care what it is.”) (from notes taken at board meeting by Amaroq Weiss, Center for Biological Diversity); Modoc County Board of Supervisors Meeting (quoting Modoc County Supervisor) (“If I see a wolf, it’s dead.”) (Modoc County Board of Supervisors January 24, 2012 Hearing, Audio Archive); Chair of the Siskiyou County Board of Supervisors (“People are pretty much at their wits’ end trying to make a living with all the environmental protections that are being foisted upon them” and “we would like to see [wolves] shot on sight”) (*Los Angeles Times* (Dec. 24, 2011)) (available at http://articles.latimes.com/2011/dec/24/local/la-me-wolf-oregon-20111225).The Commission considers these statements

and others like them to be compelling evidence of a threat to the continued existence of gray wolf in California. In a small early population of the species, loss of even one individual from human causes could significantly impact the ability of the species to thrive for years to come. CESA would criminalize such behavior in a more significant way than currently exists and act as a deterrent that may assist in allowing the early members of California's gray wolf population to persist.

- Humans are the primary factor in the past decline of wolves in the conterminous United States, including California, and humans remain the largest cause of wolf mortality as a whole in the western United States. Humans impact wolf populations through intentional predation (shooting or trapping) for sport or for protection; through unintentional killing, as gray wolves are often confused with coyotes (*Canis latrans*), domestic dogs (*C. lupus familiaris*), and wolf hybrids; through vehicle collisions; and through exposures to diseases from domestic animals.For example, the administrative record demonstrates that on more than one occasion, staff from the California Department of Fish and Wildlife have been fearful that OR7 and other unknown wolves that could be in California would be mistaken for a coyote and shot or harmed. Limiting human-caused mortality through federal protection has been one of the key reasons that the recovery effort in the Northern Rocky Mountains has been successful. Status Review at 4-5 ("It is believed that limiting human-caused mortality through federal protection has been one of the key reasons that recovery efforts in the northern rocky mountains were successful."); *id*. at 19 ("Human-caused mortality of wolves is the primary factor that can significantly affect wolf populations (USFWS 2000, Mitchell et al. 2008, Murray et al. 2010, Smith et al. 2010)"); *id*. at 20.

- Gray wolves are susceptible to several diseases including canine parvovirus and canine distemper, which has been responsible for extremely high rates of wolf pup mortality and suppression of wolf populations and which can be contracted from domestic dogs. Wolves are also susceptible to mange; mange-associated wolf population declines in Yellowstone National Park have led to pack extinction. Status Review at 23 (Wolves are vulnerable to a number of diseases and parasites, including, mange, mites, ticks, fleas, roundworm, tape worm, flatworm, distemper, parvovirus, cataracts, arthritis, cancer, rickets, pneumonia, and Lyme disease."); *id*. ("The transmission of disease from domestic dogs, e.g. parvovirus, is a grave conservation concern for recovering wolf populations (Paquet and Carbyn 2003; Smith and Almberg 2007). Recently, two wolves and two pups in Oregon were found to have died from parvovirus (ODFW 2013b). The disease is not thought to significantly impact large wolf populations, but it may hinder the recovery of small populations (Mech and Goyal 1993)."); *id*. ("Canine

distemper and canine infectious hepatitis: Both diseases are known to occur in wolves and more recently canine parvovirus has become prevalent in several wolf populations (Brand et al. 1995)"); E.S. Almberg, P.C. Cross, A.P. Dobson, D.W. Smith and P.J. Hudson. 2012. Parasite invasion following host reintroduction: a case study of Yellowstone's wolves. *Philosophical Transactions of the Royal Society Bulletin*. 367, p. 2840-2851).").

- Listing the gray wolf under CESA will allow the species to benefit from CESA's protections, and would further the intent of the Legislature and be consistent with the objectives of CESA, *i.e.*, the conservation, protection, restoration, and enhancement of species in their range in California. Protecting the gray wolf under CESA will also strengthen the Department's existing stakeholder process to develop a state wolf plan, by providing clarity as to the management tools and options that will be available to the Department and to stakeholders. Status Review at 33 ("If the gray wolf species is listed under CESA, it may increase the likelihood that State and federal land and resource management agencies will allocate funds towards protection and recovery actions."); Carroll (2013) (Peer Review) at 6 ("Rather than using a dubious interpretation of CESA to decline to list a species due to its temporary and uncertain absence from state, California should follow the example of Washington and Oregon in using the relevant state statutes to protect colonizing wolves while at the same time developing multi-stakeholder plans that proactively restore wolf conservation and management issues.").

- The gray wolf is currently listed as endangered throughout portions of its range, including California, under the federal Endangered Species Act ("ESA"). Wolves that enter California are therefore protected by the ESA from activities that result in "take." The ESA defines "take" to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." However, the United States Fish and Wildlife Service ("USFWS") is proposing a rule that would remove the ESA protections for gray wolves in the lower 48 states, with the exception of Mexican gray wolves, which would maintain their listed status as an endangered subspecies. If the federal delisting occurs, there would be more limited protections for gray wolves in California. Listing the species under CESA would reinforce the existing federal protections in place now, and preserve protections for the gray wolf in the event of federal delisting.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Section(s) 240, 2070, 2075.5 and 2076.5, Fish and Game Code.

Reference: Section(s) 1755, 2055, 2062, 2067, 2070, 2072.7, 2074.6, 2075.5, 2077, 2080, 2081 and 2835, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None

(d) Identification of Reports or Documents Supporting Regulation Change:

A petition to list this species; the Department's petition evaluation report; the Department's status review; the Department's related recommendations; written comments received from members of the public, the regulated community, various public agencies, and the scientific community; and other evidence included in the Commission's record of proceedings.

(e) Public Discussions of Proposed Regulations Prior to Notice publication:

Public comments were heard at the April 16, 2014 Fish and Game Commission meeting in Ventura, California and at the June 4, 2014 Commission meeting in Fortuna, California. During the candidacy period the Department also solicited comments from landowners and other affected and interested parties.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified.

(b) No Change Alternative:

If the Commission were not to add gray wolf to the list of endangered species, valuable State mechanisms to protect the species would not be available. The Commission would fulfill its statutory obligation in adopting the proposed regulation.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law..

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment, therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

While the CESA statutes do not specifically prohibit the consideration of economic impact in determining if listing is warranted, the Attorney General's Office has consistently advised the Commission that it should not consider economic impact in making a finding on listing. This is founded in the concept that CESA was drafted in the image of the federal Endangered Species Act. The federal act specifically prohibits consideration of economic impact during the listing process.

The CESA listing process is basically a two-stage process. During the first stage, the Commission must make a finding on whether or not the petitioned action is warranted. By statute, once the Commission has made a finding that the petitioned action is warranted, it must initiate a rulemaking process to make a corresponding regulatory change. To accomplish this second stage, the Commission follows the statutes of the Administrative Procedure Act (APA).

The provisions of the APA, specifically sections 11346.3 and 11346.5 of the Government Code, require an analysis of the economic impact of the proposed regulatory action. While Section 11346.3 requires an analysis of economic impact on businesses and private persons, it also contains a subdivision (a) which provides that agencies shall satisfy economic assessment requirements only to the extent that the requirements do not conflict with other state laws. In this regard, the provisions of CESA leading to a finding that listing is warranted are in apparent conflict with Section 11346.3, which requires an agency to consider economic impacts of its proposed regulations.

Since the finding portion of CESA is silent as to consideration of economic impact, it is possible that subdivision (a) of Section 11346.3 requires the preparation of an economic impact analysis. While the Commission does

not believe this is the case, an abbreviated analysis of the likely economic impact of the proposed regulation change on businesses and private individuals is provided. The intent of this analysis is to provide disclosure, the basic premise of the APA process. The Commission believes that this analysis fully meets the intent and language of both statutory programs.

Designation of gray wolf as endangered will subject the species to the provisions of CESA. This act prohibits take and possession except as may be permitted by the Department.

Presently the gray wolf is listed as endangered throughout portions of its range, including California, under the federal Endangered Species Act of 1973 (16 U.S.C. § 1531 *et seq.*) (ESA). Wolves that enter California are therefore protected by the ESA. Under the ESA, the U.S. Fish and Wildlife Service has lead responsibility for wolves in California.

For species listed as endangered or threatened under the ESA, activities that result in “take” of the species are prohibited. The ESA defines "take" to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Harass is further defined as “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering” (50 CFR 17.3).

As long as the gray wolf remains federally listed, concurrent listing under the CESA, should not result in a significantly greater economic impact. As a result of the federal or State listing, the economic impacts on commercial timber and other industries’ whose activities occur near wolf den or rendezvous sites could be significant. To avoid prohibited take under CESA and ESA, may require consultation with the Department and federal counterparts as to the timing of activities and potentially incidental take permitting. Based on these considerations, the Commission finds that the amendment of this regulation may have a significant adverse economic impact on business.

The Commission has made an initial determination that the amendment of this regulation may have a significant, statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The Commission has considered proposed alternatives that would lessen any adverse economic impact on business and invites you to submit proposals. Submissions may include the following considerations:

(i) The establishment of differing compliance or reporting requirements or timetables that take into account the resources

available to businesses.

(ii) Consolidation or simplification of compliance and reporting requirements for businesses.

(iii) The use of performance standards rather than prescriptive standards.

(iv) Exemption or partial exemption from the regulatory requirements for businesses.

In most cases, conservation measures implemented by the Department for newly listed endangered species have relatively little effect on members of the public. That effect, if any, usually arises from requiring persons to avoid any take of endangered species, or implementing the conditions of an incidental take permit. Fish and Game Code Section 2081(b) addresses the requirements for an incidental take permit:

- Take must be incidental to an otherwise lawful activity.
- Impacts of authorized take must be minimized.
- Impacts of the authorized take must be "fully mitigated."
- The permit applicant must ensure adequate funding to implement the measures required for minimizing and fully mitigating the impacts of authorized take, and for monitoring compliance with and effectiveness of those measures.
- A permit cannot be issued if the Department determines that issuance of the permit will jeopardize the continued existence of the species.

Designation of threatened or endangered status, per se, would not necessarily result in any significant cost to private persons or entities undertaking activities subject to the California Environmental Quality Act ("CEQA"). CEQA currently requires private applicants undertaking projects subject to CEQA to consider *de facto* endangered or threatened species to be subject to the same protection under CEQA as though they are already listed by the Commission in Section 670.5 of Title 14, CCR (CEQA Guidelines, Section 15380).

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

If the potentially significant economic impact identified above occurs, there could be an adverse impact on new or existing jobs, an adverse impact on creation of new businesses or elimination of existing businesses, and an adverse impact on business expansion. The magnitude of these impacts will depend on the extent to which commercial activities result in take of

gray wolf, and the costs of minimizing and mitigating for that take. The Commission does not anticipate benefits to the health and welfare of California residents or to worker safety. The Commission anticipates benefits to the environment by protecting the gray wolf under CESA.

(c) Cost Impacts on a Representative Private Person or Business:

A representative private person or business may experience economic impacts as described in section (a) above.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

As a project applicant, a state agency may realize costs associated with projects involving the incidental take of gray wolf as described in section (a) above.

The proposed regulatory change is not expected to significantly affect federal funding to the State, but there could be an increase in the likelihood that State and federal land and resource management agencies would allocate funds to the State for protection and recovery actions.

(e) Nondiscretionary Costs/Savings to Local Agencies:

As a project applicant, a local agency may realize costs associated with projects involving the incidental take of gray wolf as described in section (a) above.

(f) Programs mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VII. Economic Impact Assessment:

As long as the gray wolf remains federally listed, concurrent listing under the CESA, should not result in a significantly greater economic impact. As a result of

the federal or State listing, the economic impacts on commercial timber and other industries' whose activities occur near wolf den or rendezvous sites could be significant. To avoid prohibited take under CESA and ESA, may require consultation with the Department and federal counterparts as to the timing of activities and potentially incidental take permitting.

Effects of the Regulation on the Creation or Elimination of Jobs within the State

There could be an adverse impact on new or existing jobs. The magnitude of these impacts will depend on the extent to which commercial activities result in take of gray wolf, and the costs of minimizing and mitigating for that take.

Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses within the State

There could be an adverse impact on creation of new businesses or elimination of existing businesses. The magnitude of these impacts will depend on the extent to which commercial activities result in take of gray wolf, and the costs of minimizing and mitigating for that take.

Effects of the Regulation on the Expansion of Businesses Currently Doing Business within the State

There could be an adverse impact on business expansion. The magnitude of these impacts will depend on the extent to which commercial activities result in take of gray wolf, and the costs of minimizing and mitigating for that take.

Benefits of the Regulation to the Health and Welfare of California Residents

The Commission does not anticipate any benefits to the health and welfare of California residents.

This regulatory proposal will amend Section 670.5, Title 14, CCR, adding the gray wolf to the list of endangered species.

Benefits of the Regulation to Worker Safety

The proposed regulations are not anticipated to impact worker safety conditions.

This regulatory proposal will amend Section 670.5, Title 14, CCR, adding the gray wolf to the list of endangered species.

Benefits of the Regulation to the State's Environment

The proposed regulation will benefit the environment by protecting the gray wolf under CESA.

Informative Digest/Policy Statement Overview

Section 670.5 of Title 14, CCR, provides a list, established by the California Fish and Game Commission (Commission), of animals designated as endangered or threatened in California. The Commission has the authority to add or remove species from this list if it finds that the action is warranted.

At its June 4, 2014 meeting in Fortuna, California, the Commission made a finding that gray wolf warrants listing pursuant to the California Endangered Species Act (CESA). Specifically, the Commission determined that gray wolf (*Canis lupus*) should be listed as an endangered species.

The Commission therefore proposes to amend Section 670.5 of Title 14, CCR, to add gray wolf to the list of endangered species.

This proposal is based upon the documentation of threats to gray wolf to the point that it meets the criteria for listing by the Commission as set forth in the CESA. The Commission is fulfilling its statutory obligation in making this proposal which, if adopted, would afford gray wolf in California with the recognition and protection available under CESA.

EVALUATION OF INCOMPATIBILITY WITH EXISTING REGULATIONS:

Section 20, Article IV, of the State Constitution specifies that the Legislature may delegate to the Commission such powers relating to the protection and propagation of fish and game as the Legislature sees fit. The Legislature has delegated to the Commission the power to establish a list of endangered species and a list of threatened species (Fish and Game Code Section 2070). Commission staff has searched the CCR and has found that the proposed regulation is neither inconsistent nor incompatible with existing state regulations.

Subsection (a)(6) of Section 670.5, Title 14, CCR is amended to read:

§670.5(a). Animals of California Declared to Be Endangered or Threatened.
The following species and subspecies are hereby declared to be endangered or threatened, as indicated:

[No changes to subsections 670.5(a)(1) through (a)(5)]

(a) Endangered:
(6) Mammals:

(A) Riparian brush rabbit *(Sylvilagus bachmani riparius)*
(B) Morro Bay kangaroo rat *(Dipodomys heermanni morroensis)*
(C) Giant kangaroo rat *(Dipodomys ingens)*
(D) Tipton kangaroo rat *(Dipodomys nitritoides nitratoides)*
(E) Fresno kangaroo rat *(Dipodomys nitritoides exilis)*
(F) Salt-marsh harvest mouse *(Reithrodontomys raviventris)*
(G) Amargosa vole *(Microtus californicus scirpensis)*
(H) California bighorn sheep *(Ovis canadensis californiana)*
(I) Gray Wolf *(Canis Lupus)*

[No changes to subsections 670.5(b)(1) through (b)(6)]

Note: Authority cited: Sections 240, 2070, 2075.5 and 2076.5, Fish and Game Code. Reference: Sections 1755, 2055, 2062, 2067, 2070, 2072.7, 2074.6, 2075.5, 2077, 2080, 2081 and 2835, Fish and Game Code.

COLUSA COUNTY FISH & GAME ADVISORY COMMISSION
546 Jay Street, Suite 202
Colusa, CA 95932

October 29, 2015

Department of Fish & Wildlife
1416 9th Street, 12th Floor
Sacramento, CA 95814

To Whom It May Concern:

At their recent Fish & Game Commission meeting the Commission discussed the matter of the protection of the gray wolves within the State of California. The Commission feels the wolves are a threat to our state and the people served. They would like to address the issue of liability should there be any losses incurred. If the State would like to protect the wolves, they should also ready be prepared to be responsible for the outcome.

The Commission would ask that you take this matter into serious consideration. Please feel free to call if you have any questions or if you need any additional information. I can be reached at (530) 458-0408 or via email at hgallagher@countyofcolusa.com.

Thank you,

Holly Gallagher
Commission Secretary

From: [redacted]
To: FGC
Subject: Gray Wolf
Date: Friday, October 23, 2015 3:07:41 PM

Regarding adding the Gray Wolf to the endangered species list. The Gray Wolf is not an indignities species is it???? Either way, without a natural predictor it's numbers can get out of hand quickly. In some states they have declared hunting seasons because of this, in an effort to keep their numbers in check. Our deer and elk herds don't need the added pressure, nor no other species such as rabbets and ground nesting birds. I think this is a case where "If it ain't broke don't fix it" applies. A balance, of sorts, has been established and your meddling can have unintended consequences.

Michael Payne

Redding, CA

Shasta County Sportsmen's Association

November 24, 2015

Jack Baylis, President
California Fish and Game Commission
1416 9th Street, Room 1320
Sacramento, CA 95814

Re: Adoption of proposed changes to endangered or threatened animals regulations to add gray wolf (*Canis lupus*) to the list of endangered species (Section 670.5, Title 14, CCR)

Dear President Baylis:

The California Cattlemen's Association (CCA), California Farm Bureau Federation (CFBF), and California Wool Growers Association (CWGA) welcome the opportunity to comment on the proposal to amend Section 670.5, Title 14 of the California Code of Regulations to list the gray wolf as an endangered species in California. Our organizations remain strongly opposed to listing of the gray wolf as endangered under the California Endangered Species Act (CESA), and we urge the Commission to **reject** the proposed regulatory amendment which would list the gray wolf as endangered in California. The many legal, policy, and factual considerations that our organizations have addressed to the Commission since 2012 continue to weigh against endangered status for the gray wolf, and we urge the Commission to halt the listing process by not adopting the proposed regulatory amendment.

I. THE GRAY WOLF IS NOT LEGALLY ELIGIBLE FOR LISTING AS ENDANGERED UNDER § 670.5

A. The gray wolf is not "in serious danger of becoming extinct throughout…its range" as required by CESA

The term "range" under CESA is susceptible of at least two (though likely more) interpretations. For instance, "range" may be interpreted as "the species' overall geographic range without regard to physical or political geographic boundaries," or it may be interpreted as "the species' California range only," as the California Third District Court of Appeals held in *California Forestry Association v. California Fish and Game Commission*.[1]

Importantly, under either interpretation of "range," gray wolves were likely not legally listable within § 670.5 at the time that the Commission determined such listing was warranted.

If the former interpretation is applied (that "range" is the species overall geographic range), then gray wolves are clearly not at danger of becoming extinct. In fact, the overall population of gray

[1] No other California case appears to have considered the meaning of "range" under CESA. *See* Section I. B. for further analysis of *Cal. Forestry Ass'n v. Cal. Fish & Game*, distinguishing that case from the present scenario under analysis of the California Administrative Procedures Act.

wolves is robust and increasing, especially throughout the American West, and gray wolves have made such a great population resurgence that the US Fish and Wildlife Service is currently considering delisting populations of the species under the federal Endangered Species Act and the state of Oregon recently delisted the species from its list of endangered species.

If the latter interpretation of "range" is applied (that "range" means a species' extent within the borders of California), the same conclusion results: the species is not at risk of extinction throughout its range. This was particularly true at the time that the Commission made its decision to list the gray wolf, as no wolves were present within California. If a species is not present within the state, it cannot be at risk of *becoming* extinct. The Commission's Initial Statement of Reasons for Regulatory Action (ISOR) confirms that no gray wolves were present within California at the time the Commission determined the species warranted inclusion on the endangered species list. As the Commission notes, "[o]n June 4, 2014 [the date the Commission determined listing was warranted], the State of Oregon Department of Fish and Wildlife confirmed that OR7…was denning…on public land in southwestern Oregon."[2] OR7 was the only wolf known to the Commission to have been present (on an intermittent basis) within California, and the Commission was aware that OR7 was not present in California on the date that the Commission determined listing was warranted.

Nor was OR7's prior intermittent presence in California a sufficient basis to list the gray wolf as endangered under CESA. Not only was OR7 not present at the time of listing, but his forays into California were relatively brief and impermanent, lacking sufficient regularity over a reasonable span of time for the species to be deemed to occupy "range" within California.

Regardless of how one interprets "range" under CESA, it is clear that the Commission had insufficient legal basis to determine that gray wolves warranted listing as endangered.

B. The Commission's interpretation of "range" as meaning "California range" is an underground regulation in violation of the California APA

As demonstrated above, the term "range" as used in CESA is ambiguous, clearly susceptible of more than one interpretation. "Range" is not defined within CESA itself nor within any regulation formally adopted by the Commission to implement and enforce CESA. Nevertheless, the Commission has interpreted "range" to mean "California range."

Importantly, however, the Commission has never engaged in the required rulemaking to establish its standard that "range" means only range *within California*. The Commission's application of this interpretation in adopting subsequent regulations (including the regulatory amendment currently under consideration) is a violation of the California Administrative Procedures Act (APA). By establishing a "guideline…standard of general application, or other rule" without engaging in the formal rulemaking required by the APA, the Commission has effectively developed an "underground regulation" in violation of the APA.

It is not sufficient that legal precedent has on one occasion interpreted "range" to mean "range *within California*," as held in *California Forestry Ass'n v. Cal. Fish & Game Comm'n* and noted

[2] Initial Statement of Reasons for Regulatory Action at 5.

by Petitioners at the April 2014 and June 2014 hearings. In that case, the court was not presented with the question of whether such an interpretation was legally defensible without formal rulemaking under the APA, but only the question of whether the term "range" within CESA was *susceptible* of such a limited definition.

To avoid running afoul of the APA, we urge the Commission to reject the proposed amendment to the list of endangered species—rooted as it is in the legally-deficient interpretation of "range."

C. Gray wolves are not provably "native" to the state of California as required by CESA

CESA defines an endangered species as "a *native* species or subspecies . . . which is in serious danger of becoming extinct throughout all, or a significant portion, of its range."[3]

Petitioners did not sufficiently demonstrate this threshold requirement in their petition, nor has additional information subsequently provided by the California Department of Fish and Wildlife (CDFW) provided sufficient evidence to prove that the gray wolf is native to California.[4] In fact, CDFW Wildlife Programs Branch Chief Eric Loft stated on October 3, 2012 that "historically we do not have much more than anecdotal information on the history of gray wolves" in California.[5] It would be a mistake, then, to assume that these anecdotal reports add up to certainty of a historic native population of gray wolves in California. As Mr. Loft stated, "we do not know that" there was a significant native population, and CESA requires just such knowledge as a precondition to listing.

CDFW was only highly confident of the accuracy of 3 reports of gray wolf presence in California prior to June 4, 2014—one of which was OR7 himself. The remaining two high-confidence records are anecdotal at best. Three specimens are necessarily insufficient to demonstrate that there was an established*, native* population of gray wolves historically present within California. Indeed, it is entirely possible that these exceedingly few specimens arrived in California not as the result of a native population, but instead in the same manner as OR7—a brief foray into the state.

D. The legislative intent behind CESA was to protect species in decline, precisely the opposite scenario presented by gray wolves in California

CESA defines an endangered species as one "which is in serious danger of becoming extinct throughout all, or a significant portion, of its range."[6] However, the presence of the gray wolf in California presents exactly the ***opposite*** scenario. The gray wolf was not present in California for many decades prior to the passage of CESA, and indeed may never have been a well-established

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[3] CAL. FISH & GAME CODE § 2062 (emphasis added).
[4] For a detailed discussion of the scant evidence that gray wolves are "native" to California, *see* Letter from the California Cattlemen's Association, California Farm Bureau Federation, and California Wool Growers Association to Michael Sutton, President, California Fish and Game Commission (Oct. 6, 2014).
[5] Video recording: Meeting of October 3, 2012, held by the California Fish & Game Commission, at 3:58:21 (Oct. 3, 2012) (*available at* http://www2.cal-span.org/media.php?folder[]=CFG).
[6] CAL. FISH & GAME CODE § 2062.

native species, but it may now expand into the state because there are no significant threats to the species' survival.

The change CESA is meant to guard against is the *disappearance* of a species. CESA has historically only been used where species are on the *decline* within the state because of this fear for the disappearance of a species. However, the situation presented by the gray wolf is precisely the opposite scenario: any appearance of the gray wolf within California would necessarily be an *increase* in the species. The legislature did not intend CESA to apply in instances where species were *appearing* in the state or increasing in number, but rather intended to guard against the decline of native species within the state. As a matter of law and policy, endangered species listing is not the proper means for protecting the gray wolf in California.

II. REJECTING THE PROPOSED AMENDMENT ALLOWS CDFW TO BETTER MANAGE THE SPECIES AND REDUCE HARMS ASSOCIATED WITH LISTING THAT ARE OUTLINED IN THE ISOR

CDFW continues to develop a Wolf Management Plan, which has been developed with the input of a diverse Stakeholder Working Group, upon which representatives of each of our organizations sat. Unfortunately, many nuanced, thoughtful, and balanced management policies being considered by CDFW throughout the development of the wolf management plan had to be abandoned in the wake of the Commission's decision that the species warranted listing as endangered, as some of those management policies ran afoul of the rigid, inflexible requirements of CESA.

In the ISOR, the Commission notes that "the amendment of this regulation may have significant, statewide adverse economic impact directly affecting business."[7] Indeed, endangered listing of gray wolves is likely to result in significant economic hardship for ranchers.

As predators, wolves are extraordinarily detrimental to the life and health of livestock, and consequently to the livelihood of ranchers. Not only are gray wolves known to directly kill livestock, but scientific study has shown that "[t]he regular presence of wolves in close proximity to livestock may result in a chronic stress situation for the domestic animals" and that "[m]any infectious diseases result from a combination of viral and bacterial infections and are brought on by stress."[8] Stress can result in increased susceptibility to disease and weight loss, reduction in the value of meat, and can interfere with reproduction.[9] One study demonstrates that where wolf-pack territories overlapped cattle grazing areas on ranches where there was at least one confirmed prior depredation, the average calf had an average end-of-season weight 3.5% lower than the overall average.[10] In the study, this reduction in weight meant a total loss of $6,679 for an average affected livestock producer.[11]

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[7] ISOR at 13.
[8] Faries, Floron C., Jr. and L. Garry Adamn, 1997. Controlling bovine tuberculosis and other infectious diseases in cattle with total health management. Texas Agricultural Extension Service, Texas A&M University. Publication 24M-2-97.
[9] Fanatico, Anne, 1999. Sustainable beef production, NCAT Agriculture Specialists, ATTRA Publication #IPO18/18.
[10] Kellenberg, Derek et al., 2014. Crying wolf? A Spatial analysis of wolf location and depredations on calf weight. Journal of Agricultural Economics.
[11] *Id.*

Because of the devastating direct and indirect effects of gray wolves upon livestock, and due to the limited effectiveness of livestock protection measures such as fladry, RAG boxes, and other measures, it is important that ranchers have available to them as many options as possible to protect their livestock and their livelihoods. The statutory restrictions attending CESA listing foreclose many of these protection measures, even some non-lethal measures.

Thus, in order to avoid the significant harm and suffering to livestock and the significant economic damage to ranchers that will attend listing the gray wolf as endangered, our organizations urge the Commission to reject the proposed amendment, and instead defer to CDFW to establish nuanced policies which will better strike a balance between conserving gray wolves and protecting livestock and ranchers.

CONCLUSION

Because the gray wolf is not legally eligible for endangered status under CESA, and because such endangered status will result in significant harm to livestock, ranchers, and the state of California, we urge the Commission to reject the proposed amendment which would list gray wolves as endangered under Section 670.5.

Sincerely,

Kirk Wilbur

California Cattlemen's Association

Noelle Cremers

California Farm Bureau Federation

Erica Sanko

California Wool Growers Association

BEFORE THE CALIFORNIA FISH AND GAME COMMISSION

A Petition to List the Tricolored Blackbird (*Agelaius tricolor*) as Endangered under the California Endangered Species Act and Request for Emergency Action to Protect the Species

tricolor blackbird, Agelaius tricolor, Dave Menke, USFWS

Notice of Petition

For action pursuant to Section 670.1, Title 14, California Code of Regulations (CCR) and Sections 2072 and 2073 of the Fish and Game Code relating to listing and delisting endangered and threatened species of plants and animals.

I. SPECIES BEING PETITIONED:

Common Name: Tricolored Blackbird (*Agelaius tricolor*)

II. RECOMMENDED ACTION: Immediate Listing as Endangered with Emergency Regulations

The Center for Biological Diversity submits this petition to list the Tricolored Blackbird (*Agelaius tricolor*) as endangered throughout its range in California, under the California Endangered Species Act (California Fish and Game Code §§ 2050 et seq., "CESA"). This petition demonstrates that the Tricolored Blackbird clearly warrants listing under CESA based on the factors specified in the statute.

This petition provides identical information as contained in the Center's 2014 petition with the addition of an addendum providing new research.

III. AUTHORS OF PETITION:

Name:	Lisa Belenky, Senior Attorney, Center for Biological Diversity, and Monica Bond, Wild Nature Institute
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I hereby certify that, to the best of my knowledge, all statements made in this petition are true and complete.

Signature:  Date: August 19, 2015

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Executive Summary

The Tricolored Blackbird ("Tricolor;" *Agelaius tricolor*) is a colonial-nesting passerine largely endemic to California. It forms the largest colonies of any passerine in North America since the extinction of the Passenger Pigeon (*Ectopistes migratorius*, Bent 1958). Colonially nesting birds are particularly vulnerable to extinction because a small number of colonies can include a large proportion of the population; thus human activities can have catastrophic effects by killing adults or chicks or destroying habitat (Cook and Toft 2005). Such was the fate of the colonial Passenger Pigeon, Carolina Parakeet (*Conuropsis carolinensis*), and Great Auk (*Pinguinus impennis*) and will be the fate of the Tricolored Blackbird if immediate action is not taken. As scientists working with the Tricolored Blackbird noted, early actions are needed to protect colonial bird species from rapid collapse.

> **"Surely the legacy of Passenger Pigeon should be our understanding of how such extinctions can occur rapidly in extremely abundant organisms because of non-linear population dynamics and thresholds caused by inverse density dependence. Failure to address the impact of habitat and human activities on reproductive success of Tricolored Blackbird may again lead to the extinction of a once-abundant bird**." (Cook and Toft 2005:86.)

Tricolored blackbird populations are declining at an alarming rate in large part due to the direct loss and degradation of habitat from human activities. This includes historical market hunting of blackbirds, poisonings and shootings to protect crops from blackbirds, pesticide use, and harvest of grain crops grown for dairy silage and other agricultural grain crops and routine plowing of weedy fields throughout most of its range during nesting season. For example, every year, thousands of Tricolors, often entire colonies of tens of thousands of birds representing the largest known colonies in a given year, nest unsuccessfully on agricultural lands because their eggs and nests are destroyed during harvest or weed abatement activities (Beedy and Hamilton 1999, Hamilton 2004, Cook and Toft 2005, Meese 2006, 2007, 2008, 2009a, 2011). The concentration of most of the known Tricolor population in a few large breeding colonies increases the risk of major reproductive failures, especially in vulnerable habitats such as active agricultural fields (Cook and Toft 2005, Meese 2013). Moreover, entire colonies are often predated by rats, egrets, herons, coyotes, and other species, some colonies are partially or completely destroyed by storms, and insufficient insect prey in foraging areas near to nesting substrates appears to be causing widespread reproductive failure even in colonies unperturbed by harvest, predation, or storms (Meese 2006, 2007, 2008, 2009a, 2011, 2013). Because these factors are contributing annually to significant breeding failure, efforts to reduce and reverse population decline are critically needed. Unfortunately, voluntary measures undertaken over the past decade have not stopped the decline of the species or destruction of nesting habitat. Therefore, in order to ensure survival of the species the California Fish and Game Commission ("the Commission") should immediately list the Tricolored Blackbird as endangered and adopt emergency regulations to protect its nesting habitat.

The geographic range of Tricolors is generally restricted to California's Central Valley and surrounding foothills, and sparsely throughout coastal and inland locations north of the Central Valley and in southern California (Beedy and Hamilton 1999). California supports more than 99% of the population, but the species has also been reported in small numbers in southern

Oregon and northernmost western coastal Baja California with a single colony of 60 birds in western Nevada, and a similar number in central Washington (Beedy and Hamilton 1997, 1999, DeHaven 2000). The Tricolor's basic requirements for selecting breeding sites are open accessible water, a protected nesting substrate such as flooded or thorny or spiny vegetation, and adequate insect prey within a few kilometers of the nesting colony (Beedy and Hamilton 1999, Shuford and Gardali 2008). Historically, rivers flowing into the Central Valley would flood and create extensive marshes, providing abundant high-quality breeding habitat for Tricolors and other wetland-dependent species, but much of this habitat has been obliterated. Tricolors have demonstrated some flexibility in shifting breeding from marshes to other spiny and thorny vegetation types such as non-native Himalayan blackberry and thistles as well as newly developed silage crops such as Triticale. However, none of these new nesting habitat types are given any regulatory protection, rendering entire colonies vulnerable to complete reproductive failure during the active nesting season due to agricultural activities. In addition, Tricolor colonies often switch nesting locations from year to year, substantially complicating conservation efforts.

The Tricolor is sympatric with and morphologically similar to the Red-winged Blackbird ("Red-wing;" *A. phoeniceus*). However, unlike Red-wings, Tricolors breed in dense colonies, often traveling long distances to forage for their chicks, and males defend relatively smaller territories within their colonies, mating with one to several females per year (Beedy and Hamilton 1999). The overall distribution and location of nesting sites vary from year to year, and Tricolors are itinerant breeders, i.e., they may nest more than once at different locations during the breeding season (Hamilton 1998).

Tricolors form the largest breeding colonies of any North American landbird, and breeding colonies recently consisted of tens of thousands of birds at a single site. While Tricolor colonies can consist of thousands of breeding birds, thus giving an appearance of high local abundance to casual observers, the status of the bird is of great concern because the overall population has declined dramatically over the past 70 years, a decline that appears to have accelerated in the past 6 years (Meese 2014), its geographical range is largely restricted to California, and its gregarious nesting behavior renders colonies vulnerable to large-scale nesting failures due to destruction of active nests in its agricultural habitats and high levels of predation in its little remaining native emergent marsh habitat, predominately cattails and bulrushes. Every year, Tricolors experience large losses of reproductive effort to crop-harvesting and other agricultural activities, and predation, and suffer habitat losses to land conversions from rangeland to vineyards, orchards, and urban development and an unknown number are killed in autumn in rice paddies in the Sacramento Valley . Despite awareness of widespread reproductive losses over the past two decades, FWS, the Commission, and DFW have failed to take any serious regulatory action. The Center for Biological Diversity submitted a petition to list the Tricolor as an endangered species under the California and Federal Endangered Species Acts in 2004 due to the documented population decline from historical number and the serious threats from agricultural harvest and habitat loss, but the petition was denied and the threats continued. Consequently, the population of Tricolors continued to drop precipitously to the point where the need for emergency action is now unequivocal.

The Tricolored Blackbird was once considered one of the most abundant bird species throughout much of its range (Cook and Toft 2005). In 1859, Heermann wrote that wintering flocks of Tricolors would "darken the sky for some distance by their masses," a description similar to that of the now-extinct Passenger Pigeon (Cook and Toft 2005). Beginning in the 1930s and continuing until 2014, numerous efforts have been made to estimate abundance of Tricolors (Neff 1937, DeHaven et al. 1975, Hamilton et al. 1995, Beedy and Hamilton 1997, Hamilton 2000, Kelsey 2008, Kyle and Kelsey 2011, Meese 2014). Numbers of Tricolors estimated in the 1930s compared with numbers estimated in 2014 very clearly and unequivocally demonstrate an extremely precipitous decline in the population of Tricolors in the Central Valley, the historical stronghold of the species, and elsewhere including the Central Coast and southern California. Population trends of Tricolors in the Central Valley indicated a decline of at least 50% between the 1930s and early 1970s (DeHaven et al. 1975), and an additional decline of approximately 56% of the remaining population was reported from 1994 to 2000 (Hamilton 2000). More recent statewide surveys included greatly expanded efforts with more sites, and these surveys documented additional dramatic declines: from an initial survey count of 395,000 birds in 2008, numbers declined dramatically to a count of about 145,000 in 2014—despite the fact that this was the largest effort ever expended to census the entire population of Tricolored Blackbirds, this was the smallest population ever recorded. The situation is dire indeed.

Petitioner requests immediate protection of the Tricolored Blackbird. The Center is extremely concerned about the continued destruction of Tricolor nests on dairy farms and other agricultural lands in the Central Valley and the failure of voluntary measures to stem the decline in abundance. The Center is also concerned with the failure of the wildlife agencies to adequately protect active nests and birds in this critical Tricolor nesting habitat—which currently supports some of the biggest colonies of Tricolors comprising a large proportion of the remaining population. Other important nesting substrates, such as Himalayan blackberry, are occasionally destroyed by herbicide application (Meese 2011). Widespread reproductive failures are regularly documented even in the species' native marsh habitat, due to predation and lack of insects with which to feed young (Meese 2013). As a result, through this letter, the Center is requesting immediate action by the California Fish and Game Commission prohibiting (or at a minimum delaying) harvesting and plowing activities on private lands used for Tricolor breeding during the upcoming 2015 nesting season. These activities are already in clear violation of the California Fish and Game Code section 3503 which protects all birds' nests and eggs from destruction (Cal. Fish & G. Code § 3503 ["It is unlawful to "take, possess, or needlessly destroy the nest or eggs of any bird"]). Furthermore, these activities are in large part responsible for current precipitous decline of the species that necessitates immediate listing under the California Endangered Species Acts as discussed in detail below.

Petitioner acknowledges that the California Department of Fish and Wildlife ("CDFW") and other partners have been engaging in "public/private cooperation" to address the ongoing violations of the applicable statutes and the resultant large-scale nesting failures. Thanks to these voluntary measures, many thousands of nests have been saved from destruction during crop harvest. However, while laudable, these measures are only acceptable mitigation if they are consistently negotiated and proven effective at significantly reducing Tricolor nest failures. Given the past efforts, it is unsurprising that CDFW takes the position that crop purchases or

reimbursements for delayed harvest are not a feasible long-term solution for Tricolor habitat management on private agricultural lands. Petitioner agrees that such voluntary and cooperative methods will not be sufficient to slow or reverse the Tricolor's recent precipitous decline. For example, in 2011 (the last year for which detailed data were available on colony fates) 56% of all nests in silage fields were destroyed despite efforts to contact farmers and coordinate buy-outs of harvest delays (Meese 2011). Numerous voluntary recommendations to halt the population declines have been proposed in the reports on the 2008, 2011, and 2014 statewide surveys, but these recommendations have not been widely adopted and as a result the populations continue to plummet. The Tricolored Blackbird Working Group set a recovery goal of 725,000 Tricolored Blackbirds in 2007 but every year since then the population has declined, so it has rapidly become much more difficult to meet the recovery goal. Because CDFW cannot demonstrate that concrete measures will be implemented immediately to protect critical nesting sites on private lands in the 2015 breeding season under the voluntary and cooperative partnerships, listing is necessary and establishment of regulatory protective measures to reduce known sources of Tricolored Blackbird mortality.

Even with some voluntary public/private cooperation in place for this nesting season, the Tricolor indisputably warrants listing under the California Endangered Species Acts as discussed more fully below. As a result, pursuant to the California Endangered Species Act, California Fish & Game Code §§ 2070, *et seq*., the Center for Biological Diversity hereby formally petitions the California Fish and Game Commission to list the Tricolored Blackbird as "endangered" under the California Endangered Species Act. In addition, the Center hereby requests that the Commission immediately adopt emergency regulations to list the Tricolored Blackbird as endangered under California Fish and Game Code Section 2076.5.

Procedural History

As the Commission is aware, the Center for Biological Diversity petitioned for an emergency listing of the Tricolored Blackbird in 2004 under both the California Endangered Species Act ("CESA") and the Federal Endangered Species Act ("ESA") based on the then-already precarious status of the species due to declining populations. The petition was denied by both the Commission and the U.S. Fish and Wildlife Service (*see* Federal Register 2006). Currently the Tricolor is a nongame species of management concern and California Species of Special Concern, the Bureau of Land Management listed it as a sensitive species, and it has been on the IUCN red list of endangered species since 2006 (IUCN 2011), but given precipitous population declines even since 2004, clearly the Tricolor requires the safety net of the California Endangered Species Act.

While the Tricolored Blackbird is considered a non-game bird of management concern by FWS, this designation does not provide any specific legal protection to the species. Furthermore, while the species is theoretically afforded protection under the federal Migratory Bird Treaty Act (MBTA), the statute is rarely if ever enforced against private parties.

The Tricolor is also designated a species of special concern by CDFW and theoretically must be considered during project actions subject to the California Environmental Quality Act

("CEQA"). However, this status does not protect the species from activities that do not trigger CEQA's environmental review requirements, and even when considered, CEQA's substantive mandates for environmental protection have not been implemented with regards to protection of the Tricolor. The California Fish and Game Code section 3503 protects all active nests and eggs from destruction or "take", however this statutory prohibition has not been consistently if ever enforced by CDFW to protect the Tricolor from impacts on agricultural fields during the nesting season.

The CESA Listing Process and Standard for Acceptance of a Petition

Recognizing that certain species of plants and animals have become extinct "as a consequence of man's activities, untempered by adequate concern for conservation," (Fish & G. Code § 2051 (a)), that other species are in danger of extinction, and that "[t]hese species of fish, wildlife, and plants are of ecological, educational, historical, recreational, esthetic, economic, and scientific value to the people of this state, and the conservation, protection, and enhancement of these species and their habitat is of statewide concern" (Fish & G. Code § 2051 (c)), the California Legislature enacted the California Endangered Species Act.

The purpose of CESA is to "conserve, protect, restore, and enhance any endangered species or any threatened species and its habitat...." Fish & G. Code § 2052. To this end, CESA provides for the listing of species as "threatened"[1] and "endangered."[2] The Commission is the administrative body that makes all final decisions as to which species shall be listed under CESA, while the CDFW is the expert agency that makes recommendations as to which species warrant listing.

The listing process may be set in motion in two ways: "any person" may petition the Commission to list a species, or the CDFW may on its own initiative put forward a species for consideration. Fish & G. Code § 2072.7. In the case of a citizen proposal, CESA sets forth a process for listing that contains several discrete steps. Upon receipt of a petition to list a species, a 90-day review period ensues during which the Commission refers the petition to CDFW, as the relevant expert agency, to prepare a detailed report. The CDFW's report must determine whether the petition, along with other relevant information possessed or received by the Department, contains sufficient information indicating that listing may be warranted. Fish & G. Code § 2073.5.
During this period interested persons are notified of the petition and public comments are accepted by the Commission. Fish & G. Code § 2073.3. After receipt of CDFW's report, the Commission considers the petition at a public hearing. Fish & G. Code § 2074. At this time the

[1] "Threatened species" means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Fish & G. Code § 2067.
[2] "Endangered species" means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." Fish & G. Code § 2062.

Commission is charged with its first substantive decision: determining whether the petition, together with CDFW's written report, and comments and testimony received, present sufficient information to indicate that listing of the species "may be warranted." Fish & G. Code § 2074.2. This standard has been interpreted by courts as the amount of information sufficient to "lead a reasonable person to conclude there is a substantial possibility the requested listing could occur." *Natural Resources Defense Council v. California Fish and Game Comm*. 28 Cal.App.4th at 1125, 1129. If the petition, together with CDFW's report and comments received, indicates that listing "may be warranted," then the Commission must accept the petition and designate the species as a "candidate species." Fish & G. Code § 2074.2.

Once the petition is accepted by the Commission, then a more exacting level of review commences. CDFW has twelve months from the date of the petition's acceptance to complete a full status review of the species, seek peer review of the draft report, make the final report available to the public for at least 30 days, and recommend whether such listing "is warranted;" CDFW may seek an extension of up to six months if needed to complete peer review and public review. Fish & Game Code § 2074.6. Following receipt of CDFW's status review, the Commission holds an additional public hearing, which may be continued, and determines whether listing of the species "is warranted." Fish & Game Code §2075.5. If the Commission finds that the species is faced with extinction throughout all or a significant portion of its range, it must list the species as endangered. Fish & G. Code § 2062. If the Commission finds that the species is likely to become an endangered species in the foreseeable future, it must list the species as threatened. Fish & G. Code § 2067.

Notwithstanding these listing procedures, the Commission may adopt a regulation that adds a species to the list of threatened or endangered species at any time if the Commission finds that there is any emergency posing a significant threat to the continued existence of the species. Fish & G. Code § 2076.5. Petitioner asks that the Commission do so here.

1.0 Population Status and Trend

> **If a flock of goldfinches is called a "charm," and a flock of crows, a "murder," what is a flock of Tricolored Blackbirds (*Agelaius tricolor*) called? Whatever the word, it could not possibly be adequate to describe the mind-boggling energy and excitement generated by a flock of over 50,000 Tricolors settling at a colony. Whether an avid birder or weekend naturalist, you can't help but be amazed by this sight, for it is one of the Central Valley's most spectacular natural phenomena. (**Edson and Green, Central Valley Bird Club Bulletin 2004:Volume 7.)

Tricolored Blackbirds form the largest breeding colonies of any North American landbird, a distinction once held by the now-extinct Passenger Pigeon. In the 1800s and early 1900s, the Tricolored Blackbird was considered one of the most abundant bird species throughout much of its range, which consists of low-elevation wetlands and grasslands of Central, Coastal, and Southern California (Cook and Toft 2005). In 1859, Heermann wrote that wintering flocks of Tricolors would "darken the sky for some distance by their masses," a description notably similar to that of the Passenger Pigeon (Cook and Toft 2005). However, a history of market hunting and massive loss of native marshland habitat drastically reduced the population by the

mid-twentieth century. The majority of the population, with the last statewide survey counting fewer than150,000 birds, can still breed in colonies of tens of thousands, but there remain few such large nesting colonies, and those that remain are extremely vulnerable to human activities such as crop harvesting while nests are still active and loss or degradation of suitable foraging habitats (Cook and Toft 2005). This species is on a clear trajectory towards extinction.

Much information is readily and publicly available regarding historical and current population status and trend of the Tricolored Blackbird. The best source of information is from the excellent Tricolored Blackbird Portal that is maintained by the University of California, Davis and available at: tricolor.ice.ucdavis.edu. The Portal provides on-line data entry to hundreds of users and provides access to field data, reports, and published articles about the Tricolored Blackbird. The Portal provides a history of research on population status and trend of the Tricolored Blackbird, which is paraphrased below.

Although the Tricolored Blackbird is mentioned in several articles and books dating to the mid-20th century, the first field work that was focused on Tricolors was conducted by Johnson Neff, a biologist who worked for the Bureau of Biological Survey, the forerunner of today's U.S. Fish & Wildlife Service. Neff's work was primarily focused on the Sacramento Valley, but he also worked at sites in the San Joaquin Valley and in southern California in conjunction with other state and federal biologists and volunteers. After widespread reports of the birds' disappearance from coastal locations, Neff conducted six years of field surveys (from 1931–1936), and additional banding of nestlings until 1940, to determine the status of the birds in the Central Valley.

After 1940, perhaps in response to Neff's finding of fairly large numbers of remaining birds (e.g., over 736,000 adults in eight counties and 282,000 nests at one site in Glenn County in 1934), there followed a more than 20-year period of relatively little research into Tricolor status and biology. Then, during the 1970s, Richard DeHaven of FWS conducted surveys for Tricolors in first the Central Valley and then the entire breeding range (excluding Baja California). These efforts were undertaken to determine changes in the population status of the Tricolor since the last surveys in the 1940s.

In the 1980s Edward (Ted) Beedy began field investigations of Tricolors with an emphasis on estimating the abundance of the species and determining factors responsible for the observed nesting failures of colonies in the Central Valley. Shortly thereafter, William (Bill) Hamilton of U. C. Davis began his field investigations. Hamilton's work extended for 13 field seasons, through 2005, and covered a wide range of topics, including population estimation, productivity estimation, foraging ecology, and the phenomenon known as "itinerant breeding," whereby individuals breed once in one location and then fly northward to a different location to breed again. Beedy and Hamilton wrote the *Birds of North America* treatment of the Tricolored Blackbird (Beedy and Hamilton 1999).

Beedy and Hamilton suggested using volunteers to conduct a statewide survey during a 3-day interval in April to best estimate the global population of the species. Early attempts at statewide surveys to assess population status and trend were conducted in 1994, 1997, 2000, 2001, and

2005. Of these, surveys conducted in 1994, 1997, and 2000 were similar enough in scope and effort to enable the detection of a significant downward trend in the population during this period (Cook and Toft 2005).

Beginning in 2008, the triennial statewide survey was revamped to include a strict new hierarchical coordination structure to standardize methodology and ensure more equal survey effort and thus more comparable results. The Statewide Survey, which occurs in mid-to-late April, is a volunteer effort with participants from most lower-elevation regions of California within the range of the Tricolor, and directed by a statewide coordinator. The 2008 survey was the first to use county coordinators—local experts with extensive experience with Tricolors on the local level—and this new hierarchical protocol (statewide coordinator, county coordinators, local participants) was used in the 2008, 2011, and 2014 surveys. The survey protocol is designed to document both presence and absence at a site, along with an estimate of the number of Tricolors and characteristics of occupied sites (nesting substrate, distance to water, presence of stored grains). These three most recent statewide surveys provide current, relatively more reliable information on the numbers and distribution of Tricolored Blackbirds throughout California and are a means to document trends in the population. These surveys also complement more intensive field efforts that provide insights into the factors causing the observed population decline.

Below this petition describes both the historical and more recent survey methodology and results.

1.1 Historical Population Estimates

The first surveys and population estimates for Tricolors were instigated by Neff in the early 1930s. During the 1960s, other researchers focused their studies on ecology and behavior of the species (e.g., Orians 1960, 1961a, 1961b,Orians and Collier 1962, Payne 1969), but did not provide range-wide population estimates. DeHaven et al. (1975) conducted a second set of more comprehensive range-wide surveys to determine changes in the population status of Tricolors since Neff's work in the 1930s.

From 1930 to 1936, Neff (1937) estimated the population of Tricolors using several methods. The author and cooperators checked the active population of colonies numerous times by conducting flight-line counts (i.e., counting the birds flying in or out across a base line for five minutes); checking distance from base line to feeding ground or nesting site, and estimating probable time required for each trip. Nests were counted by walking nest transects: detailed observations in a randomly-chosen subset of a colony that counted all nests within a 6-foot wide strip and extrapolating from this sample to estimate the total number of nests. Generally, the number of nests rather than the number of breeding adults was reported.

Based on number of nests reported and multiplying by 1.5 (mean estimated sex ratio of 2 females breeding with each male), Beedy and Hamilton (1997) calculated that the surveyors in the 1930s observed as many as 736,500 adults per year in just 8 counties. Neff (1937) documented numerous large colonies, including one in 1934 in Glenn County that contained about 200,000 nests (300,000 breeding adults), over an area greater than 24 ha. Several other colonies in

Sacramento and Butte Counties contained more than 100,000 nests. Hamilton et al. (1995) calculated that Neff observed about 1,105,100 individual Tricolors. Neff, however, concentrated most of his effort in the Sacramento Valley so most likely underestimated total population size at the time.

In 1969 and 1970, DeHaven et al. (1975) surveyed the Central Valley Tricolor breeding range by car, and in 1971, the entire breeding range (excluding Baja California) was surveyed. In 1972, the authors surveyed from the northern San Joaquin Valley to southern Oregon. Additional information was provided to the authors by volunteer ornithologists. Population estimates were made by counts and by projections based on research findings that each Tricolor female attends one active nest and that males mate with on average two females.

DeHaven et al. (1975) estimated the number of breeding birds at 157 colonies. Of these, 40 colonies (25%) had fewer than 1,000 birds, 97 colonies (62%) had from 1,000 to 10,000 birds, and 20 colonies (13%) had more than 10,000 birds. All colonies outside the Central Valley contained fewer than 10,000 Tricolors. They found fewer colonies, fewer non-breeding Tricolors, no nesting areas even approaching the size of some of the previously reported colonies, fewer birds in the largest colonies, and fewer total Tricolors than Neff (1937). Overall, DeHaven et al. (1975) concluded that the population of Tricolors has likely been reduced by more than 50% below levels reported in the 1930s, and that downward trajectory was continuing.

Beedy et al. (1991) summarized all historical and recent breeding accounts, including unpublished observer reports from a variety of sources. Based upon this information they concluded that the Tricolor had declined further from population estimates by DeHaven et al (1975), and that this decline was coincident with continuing losses of wetland habitats in the Central Valley. They reported a range of about 35,000–110,000 breeding adults per year in the 1980s, with an approximate average of 52,000 breeding adults reported per year in that decade (from Beedy and Hamilton 1997). Unfortunately their population estimates were not based well enough on field surveys and so cannot be considered adequate for evaluating the population for the period addressed. For example, Beedy et al. (1991) estimated a 76% decline in colony size between the 1930s and 1970s, whereas Graves et al. (2013), using a more comprehensive database, documented a 63% decline in mean colony size specifically from 1935 to 1975. Further, Beedy et al. (1991) documented a 62% decline in average colony size from the 1970s to the 1980s and Cook and Toft (2005) demonstrated a decline in average colony size from 1994 to 2000. Although Graves et al. (2013) found no decline from the 1970s to 2009, that study appears to have combined data that were not truly comparable. Since 2009, there has been a well documented marked decline in average colony sizes (Meese 2014), discussed below.

Three even more comprehensive surveys were conducted in 1994, 1997, and 2000 (Hamilton et al. 1995, Beedy and Hamilton 1997, Hamilton 2000). These surveys were co-sponsored by FWS and CDFW to document the Tricolor's population status, including investigating size and location of colonies, nesting habitat characteristics, behavior, reproductive success as correlated with habitat type, patterns of land ownership, and total population size and distribution. The surveys were coordinated by experienced Tricolor researchers at U.C. Davis and included these researchers in addition to numerous local volunteer ornithologists and agency personnel as

participants. U.C. Davis researchers often provided follow-up confirmation of the larger volunteer-reported colonies.

The total number of Tricolors counted during the 1994 statewide survey was estimated to be 369,359 individuals. This suggests a decrease in population abundance of at least 50% (and probably more) based on Neff's (1937) results between the 1930s and early 1990s and a clear downward trend in the population. The ten largest colonies located during the survey and additional full season range-wide surveys in 1994 included 60.5% of all breeding individuals, pointing to the importance of protecting large breeding colonies and their nesting and foraging habitat, if the species is to be conserved. Importantly, full season survey results indicated that 70% of all Tricolor nests and 86% of all foraging by nesting birds occurred on private agricultural land in 1994 (Hamilton et al. 1995). Approximately 54% of all observed Tricolor nesting efforts were associated with agricultural crops, primarily grain crops grown for silage at dairies (Beedy and Hamilton 1997).

The total number of Tricolors counted during the 1997 survey was estimated to be 232, 960 individuals. This suggests a decrease in the population by approximately 37% between 1994 and 1997. Population declines were most apparent in the species' historical stronghold in the Central Valley, including Sacramento, Fresno, Kern, and Merced Counties. Approximately 75% of all breeding adults located during the survey were concentrated within the 10 largest colonies.

The total number of Tricolors located during the 2000 survey was estimated to be 162,508 individuals. This suggests an additional decrease in the population by approximately 30% between 1997 and 2000 and an overall decline of approximately 56% between 1994 and 2000. Fewer colonies were located in 2000 than in 1994 (Hamilton 2000) and colonies were smaller on average in 2000 compared to 1994 (Cook and Toft 2005). These data likely underestimate the true magnitude of change that occurred during this time period. The reliability of the censuses to estimate the Tricolor population likely increased over time because the number of participants grew and participants were better informed about colony locations in each succeeding year Hamilton (2000) states "…the method of the Census and the survey, to reinvestigate all known breeding places and to search for new ones, has become an increasingly complete assessment of Tricolored Blackbird distribution and abundance. The 2000 Census probably located a greater proportion of the entire population that did censuses in previous years."

More than 40% of all Tricolor reproductive effort in 2000 was associated with dairies in the San Joaquin Valley and southern California (Hamilton 2000). Hamilton (2000) pointed out that conditions were more favorable for breeding Tricolors in 2000 than 1999, including the buy-out of the Tevelde and George Colonies in Tulare County and the success of the Delevan NWR and Hills Duck Club (Colusa County) and Merced NWF (Merced County) colonies. However, at least four large colonies, one in Fresno County, two in Kings County, and one in Tulare County, were lost to crop harvest in 2000.

Despite the favorable conditions in 2000, Hamilton (2000) stated that "...the central conclusion of the census and survey is that tricolors are continuing to decline precipitously in numbers … The conclusion that tricolor numbers are plummeting is based not only upon these data, but also

on the collective experience of local experts throughout California who have observed tricolors over long intervals." One of the participants in the 2000 survey was DeHaven, who surveyed the same area in the 1970s, and who wrote in a FWS white paper "[e]vidence of habitat loss, from urban expansion and agricultural conversions from such high-value (for Tricolors) uses as livestock forage production, to low- or no-value uses such as vineyards and orchards, was widespread." He further noted "[t]hese present observations support a conclusion of another large population decline between the 1970s and today."

In 2001, Point Reyes Bird Observatory (PRBO) coordinated the Tricolored Blackbird survey in California. The PRBO effort did not entail a robust count, but rather cited reports submitted by participants over several months (Humple and Churchwell 2002). The survey included season-long coverage instead of just 2–3 days in April to include colonies that might be completely missed if depredation or draining occurred prior to the visit date. However, this methodology is problematic because as itinerant breeders some of the birds were probably double-counted. Data were available for a total of 48 sites visited: 142, 045 breeding birds were counted and the largest colony size was approximately 30,000 (Humple and Churchwell 2002).

In sum, survey results from 1994 to 2001 show that the number of Tricolors counted plummeted from an estimated 370,000 in 1994, to 240,000 in 1997, to 162,000 in 2000, to 142,045 in 2001. Numbers are unknown from the 2005 survey. These population data suggest a decline of 62% in less than a decade. Fewer colonies were located in 2000 than in 1994 (Hamilton 2000) and colonies were smaller on average in 2000 compared to 1994 (Cook and Toft 2005). The earlier surveys were important in assessing general trends in population and colony sizes in different regions, but starting in 2008 the surveys provided even more comprehensive coverage of the state, and utilized a means for the public to input data with the advent of the Tricolored Blackbird Portal Taken together, the available data and information shows a clear and alarming downward trend of the Tricolored Blackbird population in California.

1.2 Recent Population Estimates

The 2008 statewide survey was coordinated by Audubon California (Kelsey 2008). The goal of the survey was to "develop the best statewide population estimate possible, using volunteers across the state." Audubon California placed particular emphasis on expanding overall geographic coverage and on thoroughly surveying southern California counties. The survey used a three-tiered system:

1st tier is a statewide coordinator,
2nd tier is county coordinators, and
3rd tier is volunteer participants.

This three-tiered structure allowed for increased recruitment of volunteers, improved survey coverage, and was more thoroughly based on the local knowledge embodied in the county coordinators. The 2008, 2011, and 2014 surveys all were conducted using the same three-tiered structure and same survey protocols for recruiting and training volunteers and conducting the surveys (e.g., identifying birds, estimating colony size, and recording colony attributes such as

nesting substrates, distance to open water, and presence of stored grains). And significantly, the USFWS funded the development of the Tricolored Blackbird Portal prior to the 2008 survey, which enabled for the first time the on-line entry of records of observations of breeding birds.

The 2008 survey was carried out April 25 to 27. However, during this time several large colonies nesting in silage were harvested, thus complicating the count (Kelsey 2008). In response, the 2011 survey was conducted April 15 to 17, earlier than previous surveys to better avoid the harvest time of silage crops. The 2014 survey was conducted from April 18 to 20. The three-day window captures as many birds as possible on colonies during their first breeding attempt of the year while using a narrow window to ensure birds are not double-counted, as colonies and individual birds can shift locations over relatively short periods of time during the breeding season. Below are the population results.

2008—A total of 155 volunteers participated in the 2008 survey, visiting 361 historical and new sites in 38 counties within California. The census total was 394,858 birds at 180 sites. During the survey, 135 sites were documented as breeding colonies with an estimated 392,581 breeding birds. Out of 38 counties surveyed, there were 32 in which Tricolored Blackbirds were detected.

Regional distribution was similar to that reported from previous surveys, with the vast majority of birds (86.4%) occurring in the San Joaquin Valley. Nine of the top 10 and 15 of the top 20 colonies were in the San Joaquin Valley, with 63% of the population occurring at only five colony sites in Merced, Tulare, and Kern counties. In southern California, 5,487 birds were counted at 24 sites. Several known historical sites occurred on private land and volunteers were unable to gain access. As a result, this may be an underestimate of the number of birds, but Kelsey (2008) noted that there is no reason to suspect that a large number of birds were left uncounted in southern California.

2011—A total of 100 volunteers participated in the 2011 statewide survey, visiting 608 historical and new Tricolored Blackbird colony sites in 38 counties. The statewide population estimate was 259,322 birds at 138 sites in 29 counties.

The majority of Tricolored Blackbirds (89%) again were counted in the San Joaquin Valley and Tulare Basin, matching the results in prior surveys. The three largest concentrations of birds occurred in Merced (54%), Kern (24%), and Tulare (9%) counties. The top 10 largest colonies for 2011 were found in these three counties and 16 of the top 22 were from the San Joaquin Valley or Tulare Basin. Notably, 65% of the population was consolidated into only six colony sites in Merced, Kern, and Tulare counties. The southern California subpopulation was estimated to be 5,965 individuals at 32 sites in three counties, with a total of 74 sites visited.

2014—Overall, 38 county coordinators and 143 volunteers participated in the survey. A total of 145,135 birds were counted in 37 counties, out of 41 counties and 802 locations surveyed. Tricolored blackbirds were observed at a total of 143 locations. This represents a near-quadrupling of the number of locations surveyed since the 2000 statewide survey, when only 206 sites were surveyed (Hamilton 2000).

1.3 Summary

In 2014, 75 new location records were added by 27 different Portal users as result of the statewide survey. This is the same number of new location records that were added as a result of the 2011 statewide survey. In 2008, 180 sites were visited, while in 2011, 608 sites were visited and in 2014, 802 sites were visited. Despite this substantial increase in sites that were visited, the total number of birds counted declined dramatically, from 394,858 birds in 2008 to 259,322 birds in 2011 to just 145,135 birds in 2014.

Every major study of *A. tricolor* published since the 1970s has sounded the alarm bell regarding the precipitous conservation status of the species:

> "Further research is needed to determine whether this downward trend, which may have reduced the Central Valley population by more than 50%, is continuing, and whether it has yet reached the point of concern.…" (DeHaven et al. 1975)

> "Reported tricolor colony size estimates in 1994 compared to the total count in 1997...indicated that the total tricolor population declined by about 37%, and the greatest declines occurred in Sacramento, Fresno, Kern, and Merced Counties, which hosted about 72% of the total adults observed in April 1994...In some portions of their range, tricolors have definitely declined or been eliminated, including local extirpation in portions of the Central Valley where they were once abundant...and many historical sites in coastal southern California counties." (Beedy and Hamilton 1997)

> "The central conclusion of the Census and survey is that tricolors are continuing to decline precipitously in numbers, from millions in the 1930s...to an estimated 750,000 in 1975..., 370,000 as of the 1994 Census and 162,000 in this account for 2000. The conclusion that tricolor numbers are plummeting is based not only upon these data, but also on the collective experience of local experts throughout California...Tricolors are a diminished natural spectacle in the Central Valley and in Southern California, the former strongholds of this species." (Hamilton 2000)

> "The long-term population trends and patterns in reproduction reported in this study reveal that the Tricolored Blackbird possesses most of the traits that ultimately led to the extinction of the Passenger Pigeon in the same ecological circumstances. These factors include the loss of vast areas of native wetland along with the increasing loss of upland, non-native vegetation favorable for nesting, the trend of decreasing colony size in a highly social breeder, a habit of itinerant breeding, and wholesale mowing down of the largest breeding colonies in agricultural harvest." (Cook and Toft 2005)
> "We interpret our results to provide clear evidence that extinction is imminent for Tricolored Blackbird if current land-use trends continue, as they certainly will, and if measures are not implemented immediately to protect breeding colonies in non-native nesting substrates. Overall the current decline of the population is strongly correlated with its persistent use and re-use of attractive habitats where reproduction often fails, combined with continuing losses of productive nesting substrates of all kinds… The

protection of native emergent marshes is not the solution to reverse the declining population because this habitat provides attractive population sinks. Under current protections, Tricolored Blackbird may therefore be falling through the policy "cracks", because it is not targeted directly as an officially endangered species and protecting its native breeding habitat under current environmental policy is not sufficient to reverse the declining population." (Cook and Toft 2005)

"In 1994 and 2000 the top 10 colonies accounted for 60% and 59% of the total population estimate, respectively. In 2008, this has increased to 77.5%. This increase in concentration of individuals at fewer colonies increases the chances of reproductive failure for a significant proportion of the population in any given year." (Kelsey 2008)

"This year's population estimate represents a substantial decrease from 2008 of approximately 135,000 birds, or a 34% decline (far more than would have been missed by any gaps in coverage). This number is more similar to the population estimate in 2005. One important probable cause of this decline is low reproductive success that has been documented in reports over the past three years (Meese 2008, 2009a, 2010). Several of the largest colonies in recent years have had an average nest success rate of 0.25 young fledged per nest and the reproductive success of these colonies has been declining for several years... This may be a major factor in the observed population decline despite continued conservation efforts (Meese 2009a)." (Kyle and Kelsey 2011)

"The 2014 statewide survey is believed to have been the most thorough ever conducted. Concerned citizens have entered dozens of new location records into the Portal, resulting in a rapid increase in knowledge of where the birds breed, and the number of locations surveyed increased from 361 in 2008 to 802 this year. Yet despite this rapid increase in knowledge, the number of birds in California as estimated by the Statewide Survey again declined sharply." (Meese 2014)

"Bird numbers were down markedly from the two previous statewide surveys in the San Joaquin Valley, especially in Kern and Merced counties, where the breeding birds had recently been most concentrated... Overall, the number of breeding birds in the San Joaquin Valley dropped 78% in 6 years, from 2008 to 2014…, and the number of birds seen in counties along the Central Coast was less than 10% of that seen in 2008..." (Meese 2014)

Graves et al. (2013) analyzed a dataset comprising 2463 records of the size of breeding colonies from 1907 to 2009. The resulting database included 1964 records of breeding or non-breeding birds from 1183 sites in 46 counties. The authors conducted a systematic statistical evaluation of trends for Tricolors to determine the magnitude of overall decline and whether it is continuing, whether trends were apparent across regions, whether trends varied among different types of breeding habitats, whether the geographic distribution of the species has changed, and if so whether distributional changes were linked to changes in habitat used for breeding.

Statewide, colony size, as indexed by the number of birds per record, declined significantly and substantially from 1935 to 1975 (Graves et al. 2013). The authors did not detect a decline in average colony size from 1980 to 2009, however, this may have been due to attempts to combine data that were not comparable. On a regional basis, both the number of birds per breeding site (colony) and total birds per region decreased drastically before and after 1980 (Figure 1). Regions included Central Coast, North Coast, Northeast Interior, Sacramento valley, San Francisco Bay, San Joaquin Valley, and Southern California.

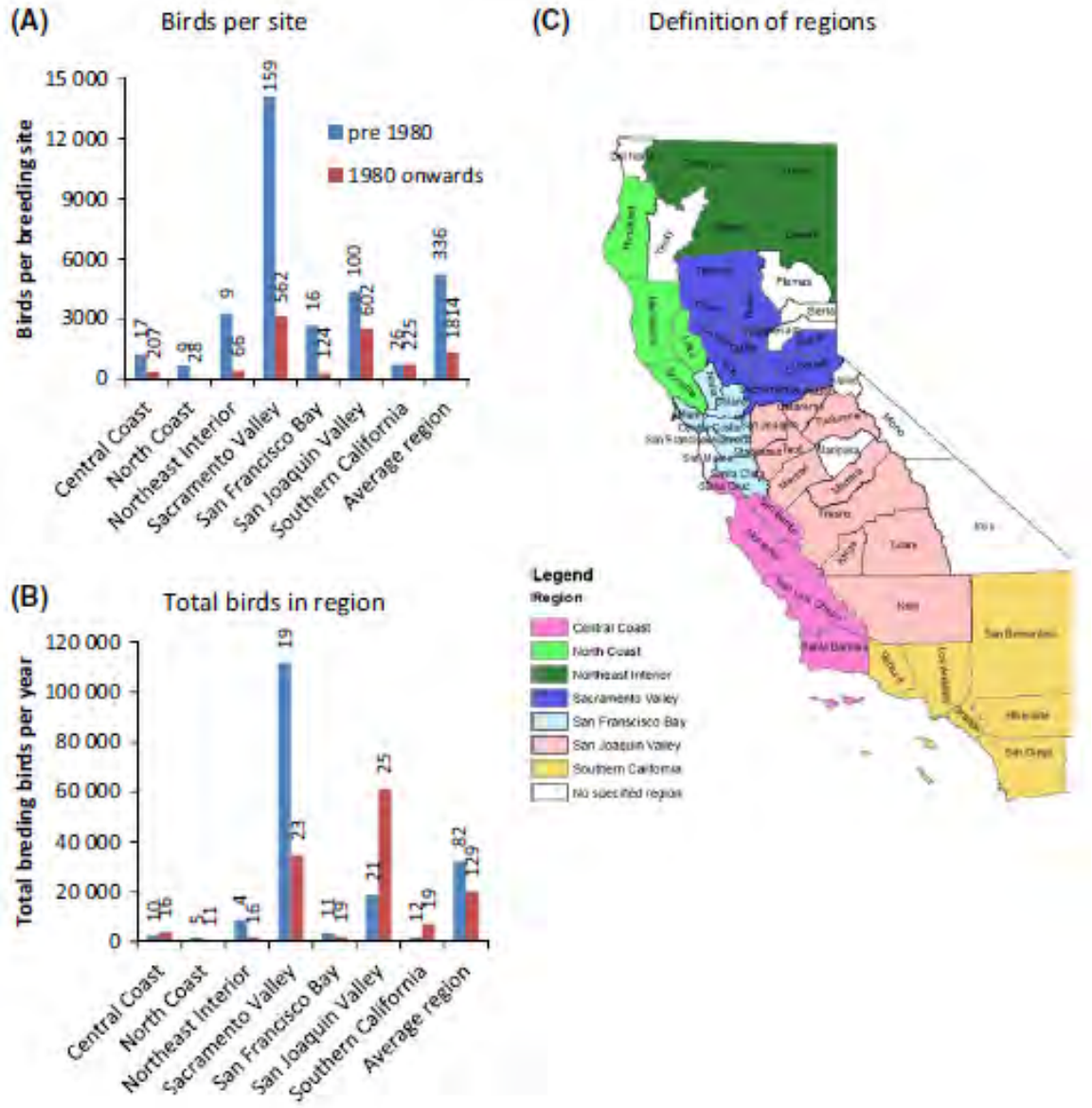


Figure 1: Number of Tricolored Blackbirds Per Breeding Site and Total Number of Breeding Birds Per Year Before and After 1980 By Region

There was evidence for geographical variation in the average size of breeding colonies over time. Prior to 1980, the Sacramento Valley supported far larger populations than any other region, while after 1980 the San Joaquin Valley held that distinction. One of the most hard-hit regions appeared to be the Central Coast. The authors noted on page 4: "In 1935 the Central Coast had 72% larger colonies than the average across all regions but subsequent to this these sites declined 80% more rapidly than colonies in other regions." Results of the 2014 statewide census survey showed continuing drastic declines in the Central Coast region, with the number of birds counted in that region were only 10% of those counted in 2008 (Meese 2014).

Since 2009 (the last year in the Graves et al. dataset), two more state-wide census surveys were conducted, and additional data were recorded during intervening years regarding colony sizes. The 2014 census reported a substantial downward trend in the sizes of the largest colonies over the past decade. Meese (2014:11) stated "A total of 93,000 birds was seen in the 10 largest colonies, 64% of the total. This is a much lower percentage of the total than was seen in the 10 largest colonies in 2011, when 208,800 birds, or 81% of the total, were seen in the 10 largest colonies, and in 2008, when 306,00 birds, 77.5% of the total, were seen in the 10 largest colonies." Figure 2 below shows the 10-year trend in the sizes of the largest colonies, from Meese (2014:11).

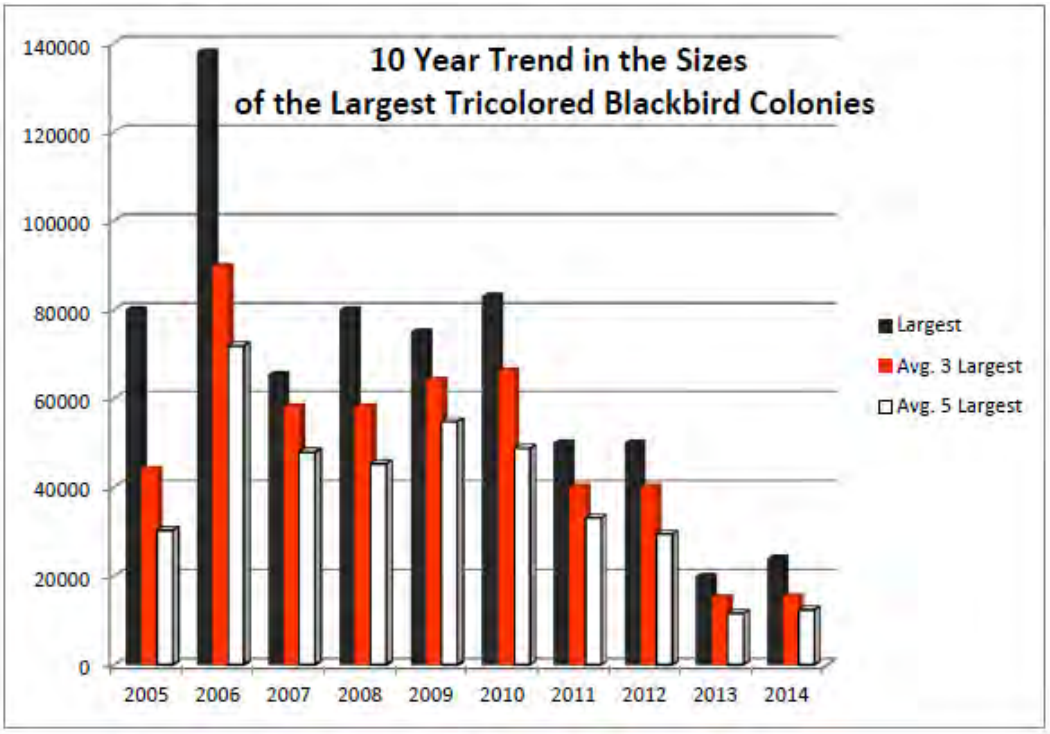


Figure 2: 10-Year Trend in Sizes of Largest Tricolored Blackbird Colonies

In addition to average colony size, the size of the largest colony has declined precipitously since the first reported surveys. Neff (1937) documented numerous large colonies, including one in

1934 in Glenn County that contained about 300,000 breeding adults over an area greater than 24 ha. Several other colonies in Sacramento and Butte Counties contained more than 100,000 nests. In stark contrast, Bob Meese reported that in 2014 the numbers of birds seen at occupied locations ranged from 1 to just 24,000, with only a single colony in Madera County (Road 12 Avenue 24) consisting of more than 20,000 birds and only 3 colonies consisting of 10,000 or more birds. This is a dramatic and extremely troubling decline in the size of the largest nesting colonies compared with historical data, even incorporating the recently described phenomenon of "mega" colonies nesting in silage crops, because forming large colonies is likely an adaptive trait against predation and colony size is positively correlated with reproductive success (Meese 2013). For a species such as the Tricolored Blackbird, bigger colonies are better.

In sum, extensive range-wide surveys for the Tricolor provide clear and unequivocal evidence that the species has experienced and is continuing to experience a precipitous population decline. Total numbers of birds counted, average colony sizes, and size of the largest colony all decreased over time. Further, as documented below, there is no evidence that many of the factors implicated in this decline are being prevented or alleviated, including ongoing destruction of grain silage colonies, failure to protect highly productive nesting substrates (i.e. Himalayan blackberry thickets, thistles, and other productive upland breeding habitats), permanent loss of nesting and foraging habitat due to increasing urbanization and vineyard and orchard deployment in the Central Valley and southern California, continued high levels of predation in marsh nesting habitats by herons and other predators, spraying of agricultural contaminants throughout the range of the species, and shooting of birds in rice fields in the Central Valley. Without the legal protection offered by the California Endangered Species Act, current trends are likely to continue and the Tricolor is likely to become extinct in the foreseeable future.

2.0 Range and Distribution

2.1 Species' Range

More than 99% of Tricolored Blackbirds live in California, with just a few scattered populations in Oregon, Washington, coastal Baja California, Mexico and a single breeding colony in western Nevada (Beedy and Hamilton 1999). The range of the Tricolor is largely restricted to southernmost Oregon and the Modoc Plateau of northeastern California, south through the lowlands of California west of the Sierra Nevada to northwestern Baja California (Neff 1937, Orians 1961a, DeHaven et al. 1975, Beedy and Hamilton 1999) with some rare reports from Nevada and Washington (Beedy and Hamilton 1999). The elevational range of the Tricolor is documented to extend from sea level to approximately 1220 meters (4,000 feet) in Shasta County to 1280 meters (4,200 feet) on Klamath Lake (Neff 1937). Although most of the Tricolor population and the largest colonies are currently found in the San Joaquin and Sacramento valleys, the species also breeds in several southern California counties where, a century ago, it was considered to be the most abundant bird species (Baird in Cooper 1870).

The range of the Tricolored Blackbird is similar to that reported early in the previous century although contractions in some areas, particularly southern California, are apparent as discussed

below. Shuford and Gardali (2008: 438–439) describe the historical and recent range of the Tricolored Blackbird as follows:

> "The Tricolored Blackbird's known historical breeding range in California included the Sacramento and San Joaquin valleys, the foothills of the Sierra Nevada south to Kern County, the coastal slope from Sonoma County south to the Mexican border, and, sporadically, the Modoc Plateau (Dawson 1923, Neff 1937, Grinnell and Miller 1944). Historical surveys, however, did not include large areas of the species' currently known breeding range and consequently did not document its full extent at the time (see below)…
>
> "The overall range of the species is little changed since the mid-1930s (Beedy and Hamilton 1999), though more recent surveys have documented occurrence in some areas lacking extensive prior coverage that likely were occupied historically (Hamilton et al. 1995; Beedy and Hamilton 1997; Hamilton 2000, 2004; Green and Edson 2004). This mostly includes documentation of local populations at the periphery of the range, such as those on the coast north to Humboldt County, in northeastern California, and in the western Mojave desert, and of new colony sites within the overall historic range (see map). Since 1980, active breeding colonies have been observed in 46 California counties; all of the largest (>20,000 adults) were in the Central Valley or at the Toledo Pit, Riverside County [*sic*: Toledo Pit is in Tulare County]."

The southern California population (in the Los Angeles Basin, Inland Empire/Riverside, and San Diego regions south of the Transverse Range) appears to have been geographically isolated since the 1970s-1980s (R. Cook pers. comm.). There are no recent records from Santa Barbara or Ventura Counties and relatively small numbers in coastal Los Angeles and Orange County. While there have been from time to time, colonies of as much as 5000 birds in the very northern part of Los Angeles and San Bernardino Counties, those are undoubtedly due to migrations of flocks from the Central Valley (R. Cook pers. comm.).

Within its range, the species is nomadic and highly colonial; large flocks appear suddenly in areas from which they have been absent for months, they breed and then quickly withdraw (Orians 1961a). In one season nesting colonies have been found widely scattered, and in another there have been great concentrations in relatively restricted districts (Neff 1937). The size and location of colonies vary from year to year, although certain sites are regularly used (Orians 1961a, Hamilton et al. 1995, Cook 1996, Hamilton 2000, Kelsey 2008, Kyle and Kelsey 2011, Meese 2014).

Wintering Tricolored Blackbird populations move extensively throughout their range in the nonbreeding season. Major wintering concentrations occur in and around the Sacramento–San Joaquin River Delta and coastal areas, including Monterey and Marin counties, where they are often associated with dairies (Shuford and Gardali 2008). Small flocks also may appear at scattered coastal locations from Sonoma County south to San Diego County, and sporadically north to Del Norte County (Beedy and Hamilton 1999, Unitt 2004). They are rare in winter in the southern San Joaquin Valley and in the Sacramento Valley north of Sacramento County

(Beedy and Hamilton 1999). In Riverside County Tricolor populations appear to be residential with similar numbers of birds observed in winter in the same areas where they breed in the spring (R. Cook; unpublished data).

2.2 Historical Distribution

The Tricolor's requirements for selecting breeding sites are open accessible water; a protected nesting substrate, including either flooded or thorny or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few kilometers of the nesting colony (Beedy and Hamilton 1999, Shuford and Gardali 2008). Historically, rivers flowing into the Central Valley would flood and create extensive marshes, providing abundant breeding habitat for Tricolors and other wetland-dependent species. In the 19th century, autumn flocks of thousands of Tricolors were described in the Shasta area, and a wintering flock observed in Solano County "...numbering so many thousands as to darken the sky for some distance by their masses," (Baird 1870 in Beedy and Hamilton 1999). J. G. Cooper noted that the Tricolor was "the most abundant species near San Diego and Los Angeles, and not rare at Santa Barbara," (Baird 1870 in Beedy and Hamilton 1999).

The first systematic range-wide surveys of the population status and distribution of the Tricolor were conducted by Neff (1937). These surveys found Tricolor breeding colonies in at least 26 counties in California, although the survey of the range was still incomplete. Neff (1937) estimated abundance at 252 colonies, mostly associated with freshwater emergent wetlands in rice-growing areas of California, and numerous very large colonies were reported.

Population surveys and banding studies carried out from 1969–1972 by DeHaven et al. (1975) found 168 breeding colonies at 113 locations, each at least 1.6 km apart. About 78% (131) of the colonies were in the Central Valley, with 80 in the Sacramento Valley and 51 in the San Joaquin Valley. The remaining 22% (37) of colonies were in other parts of California and in southern Oregon. The counties where the most colonies were found in a single season were Sacramento, Merced, Stanislaus, Glenn, and Colusa.

The survey results from DeHaven et al. (1975) indicated that the geographic range and major breeding areas of the species had not changed since the first surveys were conducted by Neff in 1937. However, DeHaven et al. (1975) found fewer colonies, fewer non-breeding Tricolors, no nesting areas even approaching the size of some of the previously reported colonies, fewer birds in the largest colonies, and fewer total Tricolors.

It is worth noting that even the earliest surveys had been conducted after most of the Central Valley's wetlands were already lost. Thus, the historical distribution and population abundance of Tricolors prior to the profound and widespread loss of their native wetland and grassland habitats are unknown.

2.3 Current Distribution

Overall, a comparison of the historical and current distribution of the species shows that in some portions of their range, Tricolors have declined or been eliminated (Beedy and Hamilton 1997). Local near or complete extirpation has occurred in portions of the Central Valley where the species was once abundant, and in many historical sites in coastal southern California counties, including Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties (Beedy and Hamilton 1997, Meese 2014). Thus the species has been extirpated or nearly extirpated in portions of its former range.

Since 1980, active Tricolor breeding colonies have been observed in 46 counties in California, and most of the largest colonies are still located in the Central Valley (Beedy and Hamilton 1999). The species currently breeds throughout the Central Valley west of the Cascade Range and west of the Sierra Nevada (into the foothills), and from Humboldt and Shasta Counties, south to extreme southwestern San Bernardino County, western Riverside County, and western and southern San Diego County. Breeding also occurs in marshes of the Klamath Basin in Siskiyou and Modoc Counties, Honey Lake Basin in Lassen County and in some central California coastal counties.

Outside California, the Tricolor has bred in southern Klamath and southern Jackson Counties and in northeast Portland (Multnomah County), near Clarno and Wamic (Wasco County), at the John Day Fossil Beds National Monument (Wheeler County), near Stanfield (Umatilla County), and at Summer Lake (Lake County). A small colony reportedly nested in Grant County, Washington in 1998, and small colonies were identified in Douglas County, Nevada and in northern Baja California (Beedy and Hamilton 1999). Several small colonies totally fewer than 500 birds were reported in Baja California in 2013 (Feenstra 2013).

In 1991 researchers at U.C. Davis initiated a large-scale study of Tricolors, investigating size and location of colonies, nesting habitat characteristics, behavior, reproductive success as correlated with habitat type and patterns of land ownership. This study was expanded in 1994 to include a FWS and CDFW sponsored range-wide population census led by the U.C. Davis researchers and including a volunteer base of experienced local ornithologists. The results of this census and additional season long survey data are reported in Hamilton et al. (1995). Census participants located individuals nesting in 74 colonies in 32 California counties, with breeding occurring in 26 counties. In 1994, the largest Tricolor colonies were found in Merced, Colusa, Tulare, Glen, Kern, Sacramento, and Yuba Counties (Beedy and Hamilton 1997).

Annual population censuses were henceforth attempted in 1995 and 1996 but efforts and methods were not comparable to those of 1994. A second comparable census and additional season long surveys were conducted in 1997 using the same coverage, methods, and surveyors as in 1994 (Beedy and Hamilton 1997). Census results reported individual Tricolors in 32 California counties, including 50 non-breeding adults in Klamath County, Oregon, and 950 breeding adults in northwestern Baja California.

In 1997, the largest Tricolor colonies were found in Colusa, Tulare, Kings, Riverside, Kern, Sacramento, and San Joaquin Counties (Beedy and Hamilton 1997). The two largest observed colonies during the 1997 breeding season were found in Colusa and Tulare Counties. The Colusa County colony formed in May, after the volunteer survey ended, by birds that probably nested elsewhere earlier on in the season. One of the largest colonies found in 1997, of about 23,300 nests, was found at a wetland created in 1994 in San Jacinto, Riverside County. "Although Riverside remains the stronghold for the species in southern California, numbers have declined by 89% since 1997 and 66% since 2005." (R. Cook, 2014).

During the 2000 census, 25 colonies were located, with the largest colonies occurring in Tulare, Merced, Riverside, and Colusa counties. It is notable that the large colonies that formed in Sacramento county in the early 1990s (including 1994) were absent in surveys conducted between 1997 and 2003.

During the 2008 survey, 135 breeding colonies were documented, with the largest "mega" colonies in Merced, Tulare, and Kern counties, all in the San Joaquin Valley. Again, very large colonies were absent from Sacramento county (Kelsey 2008). In 2011 the three largest concentrations of birds also were found in Merced, Kern, and Tulare counties, with 65% of the population consolidated into only six colony sites in these three counties (Kyle and Kelsey 2011). In 2014, the largest nesting colonies occurred in Tulare, Madera, and Merced counties, but these colonies all supported drastically fewer numbers of Tricolors than in the previous two census surveys (Meese 2014). However, Placer and Sacramento counties saw a marked increase in the number of birds (Meese 2014).

The number of birds observed differed markedly by bioregion in 2014, Southern California (Ventura, the far southern part of Kern, Los Angeles, Orange, San Bernardino, Riverside, and San Diego counties) had 12,386 birds, the San Joaquin Valley (from Kern County in the south to San Joaquin County in the north) had 73,412 birds, coastal locations (from Alameda County to Santa Barbara County) had 1,732 birds, the Sierra foothills (Amador, Calaveras, El Dorado, Placer, and Sacramento counties) had 25,717 birds, and the Sacramento Valley (from Yolo County in the south to Tehama County in the north) had 31,531 birds.

Table 1 below shows the locations surveyed, locations occupied, number of birds, and proportion of total from the most recent statewide census survey in 2014 (Meese 2014:8).

Table 1: Locations Surveyed and Occupied, Number of Tricolored Blackbirds, and Proportion of Total by County (Meese 2014 Table 1:8)

County	Locations Surveyed	Locations Occupied	Number of Birds	Proportion of Total
Alameda	27	1	50	0.034
Amador	6	2	5500	3.793
Butte	6	1	60	0.041
Calaveras	9	5	404	0.279

Colusa	23	0	0	0
El Dorado	9	5	1375	0.948
Fresno	25	1	6	0.004
Glenn	29	1	300	07207
Kern	64	12	3977	2.743
Kings	15	1	5000	3.448
Lake	6	1	150	0.103
Lassen	2	1	232	0.16
Los Angeles	11	6	4707	3.246
Madera	10	2	27166	18.735
Mariposa	1	1	13	0.009
Mendocino	5	1	100	0.069
Merced	46	5	10532	7.263
Monterey	22	6	399	0.275
Napa	11	1	70	0.048
Orange	17	1	14	0.01
Placer	20	4	17600	12.138
Riverside	28	9	4368	3.012
Sacramento	98	19	29272	20.188
San Benito	13	1	80	0.055
San Bernardino	10	6	1380	0.952
San Diego	30	6	1417	0.977
San Joaquin	9	2	515	0.355
San Luis Obispo	29	5	98	0.068
Santa Barbara	18	7	935	0.645
Santa Clara	6	0	0	0
Santa Cruz	8	0	0	0
Shasta	15	1	250	0.172
Solano	15	3	610	0.421
Sonoma	4	0	0	0
Stanislaus	36	10	8852	6.105
Sutter	18	1	8	0.006
Tehama	5	2	300	0.207

Tulare	30	5	18259	12.592
Tuolumne	8	3	825	0.569
Yolo	33	2	81	0.056
Yuma	25	3	268	0.185

The largest numbers of breeding Tricolors were historically found in the Central Valley; Orians (1961a) and DeHaven et al. (1975) reported that the species' center of breeding abundance and the largest colonies were in this region. In 1994 and 1997, more than 75% of all breeding adults were located there (Beedy and Hamilton 1997). In 2000 approximately 70% of the population was located in the Central Valley (Hamilton 2000). In 2008, 86.4% of the population was found in the San Joaquin Valley, and in 2011, 89% of the population occurred in the San Joaquin Valley and Tulare Basin. However, in the 2014 census only 50% of the population was documented in the San Joaquin Valley, with more birds counted in the Sacramento Valley than at any time since the 1990s. Meese (2014:10) stated "the 29,272 birds seen in Sacramento County exceeded the total seen in any statewide survey since 1997, when 31,338 birds were seen in the county (Beedy and Hamilton 1997)." Yet the numbers of birds counted in the Sacramento Valley are still a fraction of the hundreds of thousands of birds documented in the 1930s by Ness.

A detailed Distribution Map is provided below in section 11.

3.0 Abundance

3.1 Historical Abundance

Shuford and Gardali (2008: 438) describe the historical abundance of the Tricolored Blackbird as follows:

> "Few 19th-century accounts exist of the abundance of Tricolored Blackbirds in California. Heermann (1859:53) described fall flocks of thousands in the Shasta region and a wintering flock in Solano County "numbering so many thousands as to darken the sky for some distance by their masses." Belding (1890) observed an "immense" colony in San Joaquin County. According to J. G. Cooper, the Tricolored Blackbird was "the most abundant species near San Diego and Los Angeles, and not rare at Santa Barbara" (Baird 1870:266; Baird et al. 1874:166). Grinnell (1898) reported them in "considerable numbers" throughout the year in Los Angeles County.
>
> "Neff (1937) conducted the first systematic surveys of the species' population status and distribution. In 1934, he observed as many as 736,500 adults in just eight Central Valley counties. From 1931 to 1936, he found 252 colonies in 26 California counties. The largest colony, in Glenn County, contained >200,000 nests (about 300,000 adults) and covered almost 24 ha; several others in Sacramento and Butte counties contained

>100,000 nests (about 150,000 adults). Most large colonies were associated with freshwater emergent wetlands in rice-growing areas of the Sacramento Valley."

3.2 Current Abundance

Meese (2014) noted that "the rate of decline in the number of tricolors appears to be increasing. From 2008 to 2011 the number of tricolors dropped by 34%, from 395,000 to 258,000 birds (Kyle and Kelsey 2011), but from 2011 until this year the number of tricolors dropped by 44%, from 258,000 to 145,000 birds." Figure 3 below shows the downward trend in abundance during the three recent statewide surveys, from Meese (2014:7). The total number of Tricolors counted was down 44% in 3 years, and 64% in 6 years.

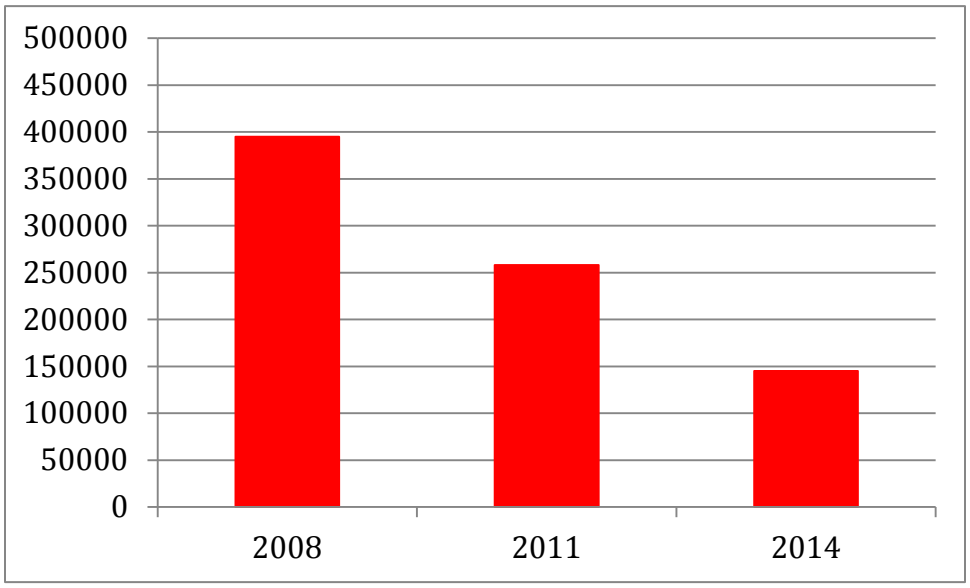


Figure 3: Trends in Abundance of Tricolored Blackbirds from Census Surveys

Meese (2014:12) summed the troubling results of the three most recent statewide surveys, which represent the best estimates of the abundance of Tricolored Blackbirds over the past decade:

> "The results of the 2014 Tricolored Blackbird Statewide Survey show that there are far fewer birds now than in the recent past. The results of the past 3 statewide surveys (2008, 2011, and 2014) are most directly comparable due to similar methods and levels of effort . . . . And the development of the Tricolored Blackbird Portal in 2008 provided a previously unavailable public resource that has met the needs of concerned citizens and encouraged their participation in tricolored blackbird conservation efforts while greatly improving data quality and management.

> "The rate of decline in the number of tricolors is alarming and appears to be accelerating: a comparison of the results of the 2008 to 2011 interval shows that the number of tricolors declined by 34%, from 395,000 to 258,000 birds. But from 2011 to 2014 the number of birds declined by 44%, from 258,000 to 145,000 birds…Thus, conservation efforts to date have been insufficient to stem the decline in the number of tricolors and the rate of decline is increasing."

4.0 Life History

The highly synchronous and colonial nesting behavior of the Tricolored Blackbird is likely an adaptation that increases reproductive success through predator saturation and mutual defense against predators (Cook and Toft 2005). Much fascinating information has been learned about the adaptive traits of highly colonial nesting birds from studies of the Tricolor, beginning in the 1960s. The Tricolored Blackbird portal administered by U.C. Davis states:

> "In the 1960's, two graduate students from U.C. Berkeley, Gordon Orians and Robert Payne, conducted seminal research on blackbirds, including Tricolors, that focused on behavior and adaptations for marsh nesting (Orians) and reproductive physiology (Payne) and helped to provide an ecological and evolutionary context for tricolor breeding, food preferences, and habitat selection and compared and contrasted tricolors with other blackbird species.
>
> "In the late 1960's, Frederick Crase, a Bureau of Reclamation biologist, and Richard DeHaven, who worked for the U.S. Fish & Wildlife Service, began working on the tricolored blackbird and studied food habits, habitat relationships, population status, and movement patterns. This work was described in a number of publications from the mid-1970's until the late 1980's. This work confirmed the continuing decline in the number of tricolored blackbirds and highlighted the dependence of food supplies, especially insect abundance, on colony productivity, and suggested that otherwise apparently suitable nesting sites might be abandoned if surrounding foraging habitats were not sufficiently productive or extensive."

The portal further notes that in the 1980s Ted Beedy began field investigations of Tricolors with an emphasis on estimating the abundance of the species and determining factors responsible for the observed nesting failures of colonies in the Central Valley. Shortly thereafter, Bill Hamilton began his field investigations. Hamilton's work continued for 13 field seasons, through 2005, and covered topics such as population estimation, productivity estimation, foraging ecology, and the phenomenon known as "itinerant breeding," whereby individuals breed once in one location and then fly northward to a different location to breed again. Hamilton's graduate student, Liz Cook, conducted and published important work on nesting dynamics, and his colleague Bob Meese began banding studies in 2007 and reported extensively on colony fates and productivity. These studies are described below.

4.1 Species Description

The Tricolor is medium-sized and sexually dimorphic, breeding in dense colonies largely in California's Central Valley, Coast Ranges, and southern California (Beedy and Hamilton 1999). Total length ranges from 18-24 cm, and body mass ranges from 40–70 g depending on the season (Beedy and Hamilton 1999).

The sexes of the Tricolor differ in size, plumage and behavior. Beedy and Hamilton (1999) offered a detailed description of the species:

> "In general, males are larger than females; have striking red, white, and black plumage; and display when breeding. Adult males are entirely black with a blue gloss in full sunlight, with bright brownish-red lesser wing coverts forming a red patch on the epaults (wing shoulder), and median coverts buffy (August-February) to pure white (February-July), depending on the season. Adult females are mostly black with grayish streaks, relatively whitish chin and throat (rarely with faint pinkish or peach wash), and small but distinct reddish shoulder patch. Immature males are similar to adult males but with duller black plumage mottled with gray (August-March), becoming almost entirely dull black (April-June), and with shoulder patch mixed with black (August-March only). Immature females are similar to adult females but the wing lacks the reddish patch. Immatures of both sexes usually retain some brownish or grayish underwing coverts, which contrast with newer adjacent black feathers. Juveniles of both sexes (April-August) are similar to adult females, but much paler gray and buff."

The plumage of the Tricolor and Red-wing is so similar that museum specimens are sometimes misidentified (Orians 1961a). The adult male Tricolor has a bluish luster to its black plumage, and the red of the epaulets is bright scarlet in contrast to the dull orange-red of the male Redwing (Orians 1961a). Both sexes of Tricolors are distinguished from Red-wings by bill shape, tail shape, and primary feathering formula; the outermost primary (P9) is longer than P6 in Tricolors and shorter in Red-wings (Beedy and Hamilton 1999). In addition, Tricolors have longer outer primaries, creating a narrower and more pointed wing shape than other blackbirds (Beedy and Hamilton 1999). The most conspicuous feature of the male plumage is the broad white border to the middle wing coverts (Orians 1961a).

In most races of the Red-wing these feathers are tipped with buffy, but in those races occupying the central Coast Ranges and Central Valley of California, where the Tricolor is most abundant, these feathers are black so that the wing lacks the light-colored stripe (Orians 1961a). Orians (1961a) noted that "[t]his plumage difference between males is not only conspicuous to the human observer, it is the most important means of species identification used by the birds themselves. Occasional Red-wings in a flock of Tricolors are singled out for special attack by a resident male Redwing in whose territory the flock lands." Orians (1961a) also described the difference between female Tricolors and Red-wings: "[i]n general, female Tricolors are more uniformly sooty than female Redwings, there being less contrast between throat and breast. In the autumn, female Redwings are strongly tinged with rusty on the back, a feature never shown by the female Tricolor." Females of both species are more difficult to distinguish because,

although female Tricolors are darker than most races of the female Red-wing, female Red-wings are actually the darkest in the region of distributional overlap. Interestingly, there appears to be a convergence of female plumage where the two species overlap, in contrast to a divergence of plumage in the males (Orians 1961a).

Sexual dimorphism in size is less in the Tricolor than in the Red-wing. Male Tricolors are smaller than male Red-wings in wing, tail, tarsus, and bill depth, but are larger in culmen, whereas female Tricolors are larger than female Red-wings in wing, tail, tarsus, and culmen, but are smaller in bill depth (Orians 1961a). This longer, narrow bill of the Tricolor is one of the most reliable morphological differences between the species (Orians 1961a).

Flight of the Tricolor consists of long, shallow undulations and flocks tend to be compact (Beedy and Hamilton 1999).

4.2 Taxonomy and Population Genetics

Mitochondrial DNA (cytochrome *b*) studies indicate that the nine *Agelaius* species are a polyphyletic assemblage of ecologically similar species (Beedy and Hamilton 1999). . "Within *Agelaius sensu lato*, *A. tricolor* clusters with four species, what might be called the true *Agelaius* (i.e., *sensu stricto*): *A. phoeniceus* (the Red-winged Blackbird of North and Central America), *A. assimilis* (the Red-shouldered Blackbird of western Cuba), *A. humeralis* (the Tawny-shouldered Blackbird of Hispaniola and Cuba), and *A. xanthomus* (the Yellow-shouldered Blackbird of Puerto Rico) (Lowther et al. 2004)." (Meese et al. 2014).

Behavioral difference between the Central Valley and southern California populations and an absence of exchange of individual banded birds between the two areas suggests the Tehachapi Mountains may act as a potential dispersal barrier (Berg et al. 2010). Elena Berg and colleagues at U.C. Davis used two complementary molecular markers, nuclear DNA microsatellites and mitochondrial DNA sequences, to examine the genetic structure of seven colonies of Tricolored Blackbirds in the Central Valley. Microsatellites evolve rapidly and are highly variable, and therefore are effective at determining the amount of gene flow among populations. In contrast, maternally inherited mitochondrial DNA (mtDNA) does not recombine, thus allow the description of historical changes in population size (by detecting maternal bottlenecks) and temporal variation in gene flow. The researchers found no evidence for population structuring within the seven areas, suggesting that the Central Valley colonies are a single population at the genetic level.

Berg and colleagues then used similar techniques to determine whether gene flow occurred between northern and southern populations, and whether there was population structuring within the southern populations (Berg et al. 2010). Microsatellite and sequencing results revealed no evidence of significant population structuring between the southern California and Central Valley Tricolor populations, indicating either considerable movement and genetic exchange between regions and few if any isolated populations, or that any isolation is very recent and not yet reflected in the population genetic signatures. Furthermore, the higher allelic diversity of the southern California population, despite its smaller overall population size compared to the

Central Valley population, suggests that the southern California population is an important reservoir of genetic variation for the species overall (Berg et al. 2010). Berg et al. (2010) noted however that "the genetic signature of a recent and dramatic decrease in effective population size in southern California is of high concern, since it suggests that despite the lack of evidence for recent bottlenecks in this species, there are many fewer birds breeding in southern California than in the recent past."

4.3 Reproduction and Growth

Males begin singing as early as late February. Nesting is initiated in late March to early April, primarily in the San Joaquin Valley, and again in May to June in the rice-growing region of Sacramento Valley and foothill areas (Hamilton 1998, Beedy and Hamilton 1999). Male Tricolors may arrive before females at the colony sites, but sometimes by less than one day, and sometimes both sexes arrive together and begin breeding activity the same day (Beedy and Hamilton 1999). Dense concentrations of birds will gather and suddenly fly to another place, changing locations frequently and then returning to potential nest sites. This is described as "prospecting behavior" (Beedy and Hamilton 1999). Requirements for breeding colony sites are accessible water, protected nesting sites such as flooded or spiny, stinging, or otherwise armored or protective vegetation, and adequate amounts of suitable foraging areas within a few kilometers of the nesting colony (Beedy and Hamilton 1997). Most adults at a colony site begin nesting 2–3 days after prospecting begins. When Tricolors arrive at a breeding site, previously established breeding Red-wings and Yellow-headed (*Xanthocephalus xanthocephalus*) blackbirds may be excluded from territories by extremely large numbers of Tricolors.

Females construct their nest within the small territory of the male, and one male will breed with 1–4 females (Beedy and Hamilton 1999). Extreme synchrony is characteristic of most colonies of Tricolors—even in colonies of up to 100,000 nests, all eggs may be laid within one week (Orians 1961a). Males do not assist with nest construction or incubation, but do assist with food gathering and feeding of the young.

During the breeding season, Tricolors exhibit itinerant breeding whereby individuals often move after their first nesting attempts and breed again at a different geographical location (Hamilton 1998). At some colonies a second wave of nesting follows fledging of the initial cohort (Beedy and Hamilton 1999).

4.4 Diet and Foraging Ecology

Tricolors are opportunistic foragers, taking any locally abundant insect including grasshoppers (Orthoptera), beetles and weevils (Coleoptera), caddis fly larvae (Trichoptera), moth and butterfly larvae (Lepidoptera), dragonfly larvae (Odonata), and lakeshore midges (Diptera), as well as grains, snails, and small clams (Beedy and Hamilton 1999). In earlier studies Tricolors were described as grasshopper followers (Orians 1961b; Payne 1969) and losses of grasslands and reduced grasshopper abundance may have contributed to the decline of the Tricolor population observed between the 1930s and 1970s (Crase and DeHaven 1977). Recently,

however, grasshoppers have been abundant enough locally to support some large Tricolor colonies (Meese 2013).

Tricolors forage in all seasons in pastures, dry seasonal pools, agricultural fields including alfalfa with continuous mowing schedules, rice fields, feedlots, and dairies (Beedy and Hamilton 1997). The birds will also forage in riparian scrub, saltbush (*Atriplex* spp.) scrub, borders of marshes, and grasslands. They do not forage regularly in weed-free row crops and intensively managed orchards and vineyards (Beedy and Hamilton 1997). Rangeland that is not heavily grazed is also important foraging habitat for Tricolors in some portions of their range (Cook 1996).

Adult Tricolors, when foraging for themselves, will consume the most easily obtained food; in many agricultural settings, this means the utilization of feed grains provided to livestock in feeding troughs and/or stored silage (e.g., cracked corn, sometimes available in huge quantities). Where such animal feeds are not available, as in colonies situated outside of livestock rearing areas, adults typically foraged close to the colony on abundant and easily-obtained foods such as spilled rice and unharvested grains (Hamilton and Meese 2006).

The hatching of eggs results in an immediate shift to foraging for animal prey. Foraging behavior exploits the most-abundant and most easily obtained foods that meet immediate dietary needs of nestlings. Animal matter is essential for 0–9 day old nestlings but grains and seeds are utilized by adults and > 9-day-old nestlings. Animal prey fed to nestlings is diverse, including caterpillars of several Lepidopteran species, grasshoppers, aquatic larvae of water scavenger beetles (Coleoptera: Hydrophilidae), midges, beetles, and other invertebrates (Hamilton and Meese 2006).

Hamilton and Meese (2006) found that when foraging for themselves, adults rarely travel more than 3 km from breeding colonies, and frequently take advantage of super-abundant food resources at or near dairies (e.g., stored grains, cracked corn, livestock feed) but will travel greater distances, occasionally more than 8 km, in search of animal prey with which to feed their young. Occasional forays of up to 13 km from the colony have been documented (Beedy and Hamilton 1997), although sustained short-distance foraging within sight of the colony is also observed (Cook 1996). There are some indications that the size of the foraging arena may correlate to nestling starvation as adults travel longer distances to find food (Liz Cook, pers. comm.).

Only a portion of the area within commuting distance from the nest is used for foraging. Many unsuitable areas, including cultivated row crops, orchards, vineyards, and heavily grazed grasslands, are associated with high-quality Tricolor foraging habitat such as irrigated pastures, lightly grazed rangelands, dry seasonal pools, mowed alfalfa, fields, feedlots, and dairies (Beedy and Hamilton 1999, Hamilton and Meese 2006). Wintering Tricolors in the Sacramento Valley appear to forage heavily on the seeds of plants such as rice, grains, and weeds (Crase and DeHaven 1978).

Orians (1961a) demonstrated that the Tricolor's colonial social structure is more energetically demanding than the territorial structure of the Red-wing due to the high energetic requirements

of flying back and forth from distant feeding sites when foraging for young. Tricolors require food supplies that can be rapidly exploited once they reach the feeding site. Thus, the species has an unpredictable breeding distribution and poorer reproductive success than the Red-wing in unfavorable years (Orians and Collier 1962).

4.5 Mortality and Population Regulation

Band recovery data suggest that Tricolors live at least 13 years, although data are currently insufficient to estimate survival rates. Bob Meese of U.C. Davis initiated a number- and color-banding program in 2007. The color-banding continued until 2009 and the banding with USGS aluminum bands has continued through 2014 and has resulted in the banding of nearly 57,000 birds and the recapture of over 1,100 unique individuals. His band and re-sight samples of birds with number bands have been used to estimate an average annual adult survival of 60% (Meese unpub.).

Known causes of mortality include exposure to inclement weather (see "Other Natural or Anthropogenic Factors"); predation (see "Disease and Predation"); starvation (Meese 2010) and possible brood reduction via removal of live chicks from nests by females (Hamilton et al. 1995); competition with other species, including Great-tailed Grackles (*Quiscalus mexicanus*) which are aggressive towards Tricolors and may represent a serious future threat (Beedy and Hamilton 1999); agricultural contaminants and shooting for crop protection (see "Other Natural or Anthropogenic Factors"); widespread destruction of nesting substrate during the nesting season that results in direct mortality of nestlings, as well as historical and ongoing loss of nesting and foraging habitat (see "Present Or Threatened Destruction, Modification, or Curtailment of Habitat or Range").

5.0 Kind of Habitat Necessary for Survival

The Tricolored Blackbird forms the largest breeding colonies of any North American landbird (Cook and Toft 2005). As many as 20,000 to 30,000 nests have been recorded in cattail (*Typha* spp.) marshes of 4 hectares or less, with individual nests <0.5 meters from each other (Neff 1937, DeHaven et al. 1975b). Nest heights range from a few centimeters to about 1.5 meters above water or ground at colony sites in freshwater marshes (Neff 1937) and up to 3 meters in the canopies of willows (*Salix* spp.) and other riparian trees; rarely, they are built on the ground. The Tricolor's basic requirements for selecting breeding sites are open accessible water; a protected nesting substrate, including either flooded or thorny or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few kilometers of the nesting colony (Beedy and Hamilton 1999, Shuford and Gardali 2008).

Tricolors are nomadic and highly colonial, and males defend relatively small territories within the colony (Orians and Collier 1962). Territories average about 35 square feet, or 1.8 m^2 to 2.35 m^2 in size, and one to three females construct nests within these small territories (Orians and Collier 1962, Beedy and Hamilton 1999). Unlike Red-wing Blackbirds, who gather food on and adjacent to their territories which average about 500–30,000 square feet in size, Tricolors do not forage on their territories but exploit the area around the colony (Orians and Collier 1962).

Historically most Tricolored Blackbird colonies were in the extensive native marshlands, riparian shrubs, upland shrubs, and grasslands of California, but the loss of these native habitats has forced a shift in nesting to largely non-native vegetation. Shuford and Gardali (2008:439–440) stated:

> "The colonial breeding system of the Tricolored Blackbird probably evolved in the Central Valley, where the locations of surface waters and rich sources of insect food were ephemeral and varied annually (Orians 1961). Before its rivers were dammed and channelized, the Central Valley flooded in many years, forming a vast mosaic of seasonal wetlands, freshwater marshes, alkali flats, native grasslands, riparian forests, and oak savannas. Virtually all these habitats once supported nesting or foraging Tricolored Blackbirds. The evolution of a colonial breeding system enabled this species to assess changing local conditions rapidly and exploit outbreaks of locusts and other ephemeral insects over large areas to meet their food demands. Nomadic, colonial social organization in birds evolves most frequently in semiarid areas with great annual fluctuations in climate (Orians 1961).
>
> "With the loss of a natural flooding cycle and most native wetland and upland habitats in the Central Valley, Tricolored Blackbirds now forage primarily in artificial habitats. Ideal foraging conditions for this species are created when shallow flood-irrigation, mowing, or grazing keeps the vegetation at an optimal height (<15 cm). Preferred foraging habitats include crops such as rice, alfalfa, irrigated pastures, and ripening or cut grain fields (e.g., oats, wheat, silage), as well as annual grasslands, cattle feedlots, and dairies (Beedy and Hamilton 1999). These blackbirds also forage in remnant native habitats, including wet and dry vernal pools and other seasonal wetlands, riparian scrub habitats, and open marsh borders. Vineyards, orchards, and row crops (tomatoes, sugar beets, corn, peas, beets, onions, etc.) do not provide suitable nesting substrates or foraging habitats for Tricolored Blackbirds."

Most Tricolored Blackbirds forage within 5 km of their colony sites (rarely up to 13 km; Orians 1961, Beedy and Hamilton 1997). Proximity to suitable foraging habitat may be a determinant in the establishment of colony sites, as Tricolored Blackbirds often forage, at least initially, in the field containing the colony site (Cook 1996). However, often only a minor fraction of the area within the commuting range of a colony provides suitable foraging habitat (Beedy and Hamilton 1999, Hamilton and Meese 2006).

Itinerant breeding of Tricolors suggests that they may be philopatric to more than one nesting site (Beedy and Hamilton 1999). Hamilton et al. (1995) found that 19 of 72 (26%) colonies used the same nesting sites during surveys conducted between 1992 and 1994. Eleven (15%) colonies in 1994 repeated either their 1992 or 1993 nesting location but not both. These results may indicate a low to moderate degree of site tenacity and/or that suitable breeding habitat is limited (Cook and Toft 2005). The yearly shifts in breeding distribution of Tricolors are likely related to insect supplies and other unknown breeding requirements (DeHaven et al. 1975).

Wintering Tricolored Blackbirds often congregate in huge, mixed-species blackbird flocks that forage in grasslands and agricultural fields with low-growing vegetation and at dairies and feedlots (Shuford and Gardali 2008). In February, however, this species segregates into pure Tricolored Blackbird flocks, which may subdivide further into age- and sex-specific flocks (Shuford and Gardali 2008). At this time, foraging flocks roam across the landscape until they find a suitable nesting substrate with an abundant insect source nearby.

Historically, nesting substrate consisted mostly of native emergent marsh vegetation dominated by cattails *(Typha* spp.) or tules (*Scirpus* spp; Neff 1937). Neff (1937) documented about 93% of nests (n = 252 colonies) in cattails, bulrushes and willows (*Salix* spp.) with some in nettles (*Urtica* spp.) and thistles (*Cirsium* spp.). However, Tricolors have been flexible in their choice of nesting substrates and have shown an increasing trend towards use of upland substrates for nesting following the 1930s, and many of these new substrates consisted of non-native plant species that would not have been present in the California landscape prior to the arrival of Europeans (Cook and Toft 2005). As noted by Cook and Toft (2005), the apparent shift from using wetland to upland habitats is "surely due to the loss of 96% of California wetlands over the last 150 years from 1,500,000 ha before European settlement." The use of freshwater marshes as breeding colony sites decreased from 93% in the 1930s (Neff 1937) to 54% (n = 158 colonies) in the 1970s (DeHaven et al. 1975b). Orians (1961a) found 64% of colonies in the Sacramento Valley nesting in cattails and other emergent vegetation; other nests were in agricultural fields, and one colony nested in trees along a river. DeHaven et al. (1975) reported that about 69% of colonies had nests built in marsh vegetation including cattails, bulrushes, willows, or some combination, and 49% were in cattails only.

Within the Central Valley, DeHaven et al. (1975) also documented breeding colonies in the rice-growing regions of the Sacramento Valley and in the pasturelands of the lower Sacramento Valley and San Joaquin Valley. In the rice lands, the annually flooded rice was the dominant crop, but small grains, hay, safflower, sugar beets, corn, and beans were also grown. The pasturelands consisted largely of irrigated fields of introduced grasses, alfalfa, hay, and small grains. In both areas, insects in flooded fields probably provide the primary food for breeding Tricolors. Colonies outside the Central Valley were found in a diverse array of habitat types, including within chaparral covered hills (Riverside and Colusa Counties), orange and avocado groves interspersed with grass-covered hills (San Diego County), sagebrush grasslands (Siskiyou County), and salt-marsh habitat of San Francisco Bay (Alameda County) (DeHaven et al. 1975).

An increasing percentage of colonies since the 1970s have been reported in Himalayan blackberry (*Rubus armeniacus*) and thistles (DeHaven et al. 1975b, Hamilton et al. 1995, Cook 1996). The most commonly used substrates today include native emergent marshes, grain silage at dairies, and Himalayan blackberry. Other less commonly used nesting substrates include safflower (*Carthamus tinctorius*), tamarisk (*Tamarix* spp.), elderberry/Western Poison Oak (*Sambucus* spp. and *Toxicodendron diversilobum*), Giant Reed (*Arundo donax*), and riparian scrublands and forests (e.g., *Salix* spp., *Populus* spp., *Fraxinus* spp.; Beedy and Hamilton 1999, Shurford and Gardali 2008).

In recent decades some of the largest Tricolor colonies have been found in triticale and other grain fields in the San Joaquin Valley (many of which are planted for silage) (Collier 1968, Hamilton et al. 1995, Beedy and Hamilton 1999, Meese 2006). The largest colonies occur in fields of triticale, a wheat-rye hybrid the name of which is an acronym of *Triticum* [wheat] and *Secale* [rye]. These fields of triticale are frequently harvested while nests are still active (Cook and Toft 2005, Meese 2007, 2008, 2009a, 2011). In 1994 approximately 40% of all breeding birds located throughout the nesting season were found in silage grain fields while approximately 47% nested in native emergent marshes and 31% in thickets of the introduced Himalayan blackberry (Cook and Toft 2005). In 2000, 17% of the breeding effort occurred in silage grain fields, while 54% of nesting was in emergent marsh and 12% in Himalayan blackberry, and additional colonies nested in other flooded and upland habitats. In 2014, 41% of nesting substrate was Himalayan blackberry and 38% was triticale, with cattails making up only 8.8% (Meese 2014:9; Table 2 below).

Graves et al. (2013) examined records from all surveys conducted from 1907 until 2009, portrayed in Table 2 below. For all records, the dominant breeding habitat was cattails, which comprised 48% of breeding records and 65% of breeding birds. Triticale was also important, with 9% of birds but only 1% of records due to the very large colony sizes (and only appearing as a substrate in recent years since it was not planted in earlier years). Bulrushes contained 7% of breeding birds and 9% of records. Other important upland breeding vegetation included Himalayan blackberry with 6% of breeding birds and 11% of records, and thistles with 5% of birds and 9% of records.

Table 2: Number of Records and Total Number of Breeding and Non-breeding Tricolored Blackbirds in Different Vegetation Types, 1907–2009 (Graves et al. 2013 Appendix A1:14)

	Total		Breeding		Non breeding	
Habitat	Records (%)	Total birds (%)	Records (%)	Total birds (%)	Records (%)	Total birds (%)
Cattails	400 (34%)	2,848,874 (53%)	326 (48%)	1,843,704 (65%)	74 (14%)	1,005,170 (43%)
Unknown	209 (18%	238,137 (5%)	19 (3%)	74,968 (2%)	190 (35%)	163,169 (7%)
Blackberry	157 (13%)	648,137 (12%)	72 (11%)	175,518 (6%)	85 (16%)	472,619 (20%)
Bulrush or tule	95 (8%)	380,706 (7%)	63 (9%)	202,550 (7%)	32 (6%)	178,156 (8%)
Thistles	83 (7%)	227,486 (4%)	59 (9%)	142,850 (5%)	24 (4%)	84,636 (4%)
Stinging nettle	47 (4%)	65,263 (1%)	32 (5%)	19,000 (1%)	15 (3%)	46,263 (2%)
Grassland	36 (3%)	8085 (0.2%)	0 (0%)	0 (0%)	36 (7%)	8085 (0.3%)
Grain fields						
Triticale	14 (1%)	437,300 (8%)	8 (1%)	261,650 (9%)	6 (1%)	175,650 (7%)

Rice paddy	13 (1%)	8027 (0.2%)	5 (1%)	3150 (0.1%)	8 (2%)	4877 (0.2%)
Barley	5 (0.4%)	15,540 (0.3%)	1 (0.1%)	4000 (0.1%)	4 (1%)	11,540 (1%)
Wheat	6 (0.4%)	78,775 (2%)	6 (1%)	45,500 (2%)	0 (0%)	33,275 (1%)
Other grain fields	4 (0.3%)	6625 (0.1%)	1 (0.1%)	6000 (0.2%)	3 (1%)	625 (0.03%)
Agricultural fields						
Pasture	22 (2%)	37,801 (1%)	0 (0%)	0 (0%)	22 (4%)	37,801 (2%)
Mustard	18 (2%)	106,667 (2%)	6 (1%)	65,250 (2%)	12 (2%)	41,417 (2%)
Feedlot	6 (1%)	3713 (0.1%)	0 (0%)	0 (0%)	6 (1%)	3713 (0.2%)
Alfalfa	5 (0.4%)	5300 (0.1%)	1 (0.1%)	1000 (0.03%)	4 (1%)	4300 (0.2%)
Other ag. fields	3 (0.2%)	65,600 (1%)	1 (0.1%)	65,000 (2%)	2 (0.4%)	600 (0.03%)
Trees/Orchards						
Willows	26 (2%)	70,984 (1%)	23 (3%)	51,079 (2%)	3 (1%)	19,905 (1%)
Riparian trees	4 (0.3%)	8050 (0.2%)	0 (0%)	0 (0%)	4 (1%)	8050 (0.3%)
Tamarisk	2 (0.2%)	2787 (0.1%)	2 (0.3%)	2787 (0.1%)	0 (0%)	0 (0%)
Other trees/orchards	10 (1%)	12,948 (0.2%)	2 (0.3%)	2200 (0.1%)	8 (2%)	10,748 (1%)
Shrubs and herbs						
Giant reed	5 (0.4%)	5651 (0.1%)	2 (0.3%)	3900 (0.1%)	3 (1%)	1751 (0.1%)
Atriplex or salt bush	7 (1%)	6536 (0.1%)	7 (1%)	4536 (0.2%)	0 (0%)	2000 (0.1%)
Other shrubs/herbs	1 (1%)	47,565 (1%)	0 (0%)	0 (0%)	1 (0.2%)	47,565 (2%)
Other habitats						
Marsh	1 (0.1%)	1050 (0.02%)	0 (0%)	0 (0%)	1 (0.2%)	1050 (0.04%)
Wildflower field	1 (0.1%)	450 (0.01%)	0 (0%)	0 (0%)	1 (0.2%)	450 (0.02%)

Graves et al. (2013) documented that since 1980 the majority of nesting birds were recorded in upland nesting substrate types, 29% of breeding birds were recorded in cattails, 21% in triticale, 13% in Himalayan blackberry, 7% were in unknown habitat types, 5% in bulrush, 5% in prickly lettuce (*Lactuca serriola*), 4% in wheat, 4% in thistle, 3% in mustard, 3% in willows, 1% in stinging nettles, 1% in saltbush, and <1% in alfalfa, barley, giant reed, citrus groves, rice paddy, tamarisk, and wild rose. (*See also* Cook and Toft 2005.) Average colony sizes declined for all habitat types except for colonies in native stinging nettles, although nettles did not support large number of either breeding or non-breeding Tricolors. Mean colony size in cattails was 34%

larger in the early years of records as compared to those in blackberry, bulrush, and thistle, but declined 38% more rapidly than in those other substrates (Graves et al. 2013:6).

The proximity of breeding sites to nearby quality foraging areas is an important determinant of whether a colony will settle in an area for nesting, as described in "Diet and Foraging Ecology" section above.

Another important indicator of breeding-site selection for Tricolor colonies is the presence of young, rapidly and vigorously growing nesting substrates such as cattails, bulrush, and milk thistle (Meese 2007). The plants must be strong enough to support nests for the duration of the breeding period. Thus, not just any spiny or thorny substrate will provide suitable breeding habitat.

The number of birds or colonies nesting in a particular substrate is an important indicator of the value of that habitat, but even more insightful is the reproductive success in different habitat types. Both Cook and Toft (2005) and Meese (2013) reported on reproduction of Tricolored Blackbirds in different nesting substrates using multiple years of data. Cook and Toft (2005) found mean number of chicks per nest varied among nesting substrates, with nests in non-native vegetation fledging significantly more offspring than those in native vegetation. Table 3 below (from Cook and Toft 2005:82) shows mean reproductive success (number of chicks per nest at 8 days after first egg hatched) of colonies by substrate and study region from 1992–2003.

Table 3: Reproductive Success of Tricolored Blackbirds by Nesting Substrate

	Number of chicks per nest		
	n	Mean	SE
Nesting Substrate			
Emergent marsh	40	0.5	0.09
Himalayan blackberry	23	2.0	0.16
Silage – all	26	0.2	0.08
Silage [a]	4	1.0	0.26
Other flooded plants	6	1.2	0.51
Other upland plants	7	1.2	0.37
Total native plants	46	0.6	0.11
Total non-native plants [a]	34	1.7	0.15

[a] *Excluding colonies that were lost to crop harvesting.*

Tricolors nesting in Himalayan blackberry had greater reproductive success than those nesting in grain silage, but colonies in grain silage were far larger than those in any other upland nesting substrate, and where nests were not destroyed by silage harvest, number of fledglings per nest was higher than in native marsh habitat (Table 3; Cook and Toft 2005). These results suggest that the annual loss of nests due to harvest of grain silage during the Tricolor breeding season is a significant factor contributing to the decline of the species.

Meese (2013) documented reproductive success of 870,000 nests from 11 colonies over a 6-year period from 2006 to 2011. He found that only 11% of colonies studied fledged an average of one or more young per nest, revealing chronically low (below-average from previous studies) reproductive success throughout the Central Valley. Importantly, the abundance of insects was positively correlated with reproductive success. The colony with the highest reproductive success of 1.44 fledglings per nest was in milk thistle in Merced County in 2010, surrounded by open rangeland where grasshoppers were super-abundant.

Suitable Tricolor habitat therefore can be more than meets the human eye: factors such as insect availability in proximity to nest sites, age of vegetation, or other currently unknown habitat characteristics provide crucial breeding requirements for Tricolors in addition to suitable nesting substrates (Meese 2013). While many colonies are found in the same location year after year, colonies often move, nesting a second time in one breeding season in a different location, and in different locations in subsequent years. Therefore, it is critical at present to protect the habitat that is documented to be used by Tricolors (each year or occasionally), rather than assuming that protecting habitat that superficially appears suitable but is not actually used (i.e., relying solely on currently protected public lands that do not at present support breeding Tricolors) will be sufficient to conserve the species.

6.0 Factors Affecting the Ability to Survive and Reproduce

Under the California ESA, a petition must include information regarding the population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce (*see supra*). The petition must also include information about the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, the availability and sources of information, information regarding the kind of habitat necessary for species survival, and a detailed distribution map, all of which are both satisfied below. Cal. Fish & Game Code § 2072.3.

Cited reasons for decline of Tricolors include historical and ongoing loss of suitable breeding and foraging habitats, direct destruction of nests from agricultural harvesting during breeding season, historical market hunting of blackbirds, extensive predation of entire colonies by rats, egrets, herons, coyotes, and other species, poisonings and shootings to protect crops from blackbirds, pesticide use, and an ongoing failure of existing regulatory mechanisms to prevent such threats despite awareness of population declines for decades.

6.1. Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

The greatest threats to this species are the direct loss and degradation of habitat from human activities (Beedy and Hamilton 1999). Most native habitats that once supported nesting and foraging Tricolored Blackbirds in the Central Valley have been replaced by urbanization and agricultural croplands unsuited to their needs. In Sacramento County, a historical breeding center of this species, the conversion of grassland and pastures to vineyards expanded from 3,050 hectares in 1996 to 5,330 hectares in 1998 (DeHaven 2000) to 6,762 hectares in 2003 (Calif. Agri. Statistics Serv., www.nass.usda.gov/ca/). Conversions of pastures and grasslands to vineyards in Sacramento County and elsewhere in the species' range in the Central Valley have resulted in the recent loss of several large colonies and the elimination of extensive areas of suitable foraging habitat for this species (Cook 1996, DeHaven 2000, Hamilton 2004, Cook and Toft 2005).

DeHaven et al. (1975) pointed out that many marshes and other "apparently suitable" nesting sites were unused by Tricolors each year. Graves et al. (2013) documented a decline of breeding populations in the Sacramento Valley including both a reduction in average colony size and the total breeding population, and hence the number of sites occupied, from 1907 until 2009. These colonies declined in average size despite the fact that many of the marsh (cattail and bulrush/tule) sites in this region were in wildlife refuges and protected from modification. Increased management for wintering waterfowl may have altered the marshes from their historical conditions, or something other than absolute amount of breeding substrate may be affecting breeding populations, such as insect abundances in foraging habitat (e.g., Meese 2013). The 2014 census documented a resurgence of breeding Tricolors in Sacramento County, which supported 20% of the population, but the overall population for the entire species was so low that this only amounted to fewer than 30,000 birds (Meese 2014). In another example, the coastal population of Tricolors declined 91% in 6 of the last years, yet there has been no direct loss of nests due to agricultural harvests, again suggesting other unknown factors such as lack of sufficient insect prey base to support successful reproduction,

6.1.1 Destruction of Native Habitats

Destruction of Tricolor breeding habitat has been documented as far back as the first published population studies on the species. Neff (1937) stated "...the destruction of nesting habitats by man is of most importance. Reclamation and drainage have destroyed many favorable habitats. Areas in the vicinity of San Francisco and Los Angeles are now so highly developed that it is doubtful whether or not any colonies could exist there. Other habitats have been destroyed by the dredging or cleaning of reservoirs, marshes, and canals in order to destroy the growths of cattails and tules." The surveyors documented specific instances of destruction of known colony sites, including draining and burning of some surveyed localities.

DeHaven et al. (1975) also noted the loss of breeding habitat leading to the loss of colonies where they formerly occurred. Colonies studied near Davis in Yolo County during the 1960s were not located again due to the near-complete loss of nesting habitat. No nesting habitat was

found near Riego Road in Sacramento County where Orians (1961a) found colonies, and at Cache Creek in Kern County where Collier (1963) found colonies.

The vast majority of the native habitat for Tricolors has been lost or degraded. Only 560,500 of an original 4,000,000 acres (about 14%) of wetlands in the Central Valley were extant in 1939 (Beedy and Hamilton 1997). By the mid-1980s, an estimated 480,000 acres of freshwater emergent marshes, or 85% of the total remaining freshwater wetlands in 1939, were reduced by one-half to about 243,000 acres (Beedy and Hamilton 1997). Graves et al. (2013) found declines in sizes of colonies in the Central Coast resulted from four early records, and three of these came from cattails in which declines were rapid: remaining marsh nesting habitat has been reduced to small isolated patches of habitat that also support high densities of Tricolor predators. Further, native perennial grasslands—prime Tricolor foraging habitat—have been reduced by more than 99% in the Central Valley and surrounding foothills (Beedy and Hamilton 1997).

6.1.2 Colony Destruction by Agricultural Activities

The relatively recent phenomenon of Tricolors nesting in grain silage fields at dairies was not mentioned by DeHaven et al. (1975) (but see Collier 1968), however silage is well-documented as a primary attribute of present-day Tricolor nest site selection (Beedy and Hamilton 1997, Beedy and Hamilton 1999, Cook and Toft 2005, Meese 2007, 2008, 2009a, 2011). Harvest of grain silage is conducted in relation to moisture content of the forage, the timing of which coincides with Tricolors using the crops for nesting (USFWS 2000). This causes nest destruction and direct mortality, which in turn is threatening much of the remaining breeding population of the species (USFWS 2000). In addition, many former agricultural areas within the range of the Tricolor are now being urbanized, and the trend is projected to continue (Beedy and Hamilton 1997).

Dairy grain silage consists of varieties of wheat, often triticale, but also barley, oats, and other crops. Crops can be monocultures or mixtures of grain plants and may also be infested with weeds such as prickly lettuce (*Lactuca serriola*) and thistles (*Cirsium* spp.). These plants may grow to 3–4 feet in height and appear to provide some protection against predators on Tricolor nests because of their dense growth, somewhat spiny/irritating character, and typically monotonous relief in the landscape.

Silage fields around dairies are probably highly attractive to breeding Tricolors because of relative protection from predators but also because crops at a single location may cover tens of acres or more. Because they are intensely colonial, tens of thousands of Tricolors can potentially occupy a silage field as small as 20–40 acres in size. Nest densities in these fields are often not as great as in some other upland substrates but approximately one nest per square meter is not uncommon (Liz Cook, pers. comm.). In addition to providing a suitable nesting substrate, dairies typically provide abundant grain sources at their feedlots for settling adult Tricolors, large amounts of nearby foraging habitat for insects (e.g. alfalfa), and reliable water supplies.

Silage is grown to be an early cut green feed. Crops are planted in late winter/early spring and mature to harvest stage usually between about mid-April and the first week in May. Harvest

stage occurs when the plants contain the highest amount of moisture in their seed heads (milk stage). This stage may last about a week within which time the plants are most valuable as silage feed. The crop is chopped, often in a single day, into fine pieces and allowed to ferment into the final product that is fed to dairy cows. Fields that grew silage are almost immediately turned over to a second crop such as corn (Liz Cook pers. comm. with David Hardt, refuge manager, Kern National Wildlife Refuge).

Tricolors begin establishing nesting colonies in grain silage in late March/April when the plants are tall and sturdy enough to support nests. This means that the timing of silage harvest usually coincides closely with the late nestling/early fledgling stage of Tricolor offspring. The timing of silage harvest and the Tricolor nesting cycle is such that colonies in silage are always lost unless there is intervention on their behalf or for some other unlikely reason that the crop is not harvested (Liz Cook, pers. comm.).

The concentration of most of the Tricolor reproductive effort into a few large colonies that are selecting grain silage as a nesting substrate has greatly increased the risk of extinction should the annual destruction of such a large proportion of nests continue unabated (Cook and Toft 2005). In 2014, Meese (2014) reported 38% of all nesting substrate was in silage (triticale) although data are not available as to how many colonies or individual birds were lost to harvest during that year. This underscores the heavy reliance on this nesting substrate by these imperiled birds concurrent to the decimation of other suitable breeding habitats such as vast areas of cattail marshes that occurred earlier in the 20th century.

Table 4 below provides examples of breeding failures because of harvest of grain silage from 1993 to 2011. For example, approximately half of the documented Tricolor population in 2000 nested in two silage fields in 2003, and the vast majority of this breeding effort was destroyed. In 2008, 45% of all nests in silage were destroyed, amounting to 140,000 nests in Tulare, Madera, Merced, and Fresno counties. As late as 2011—seven years after the formation of the Tricolored Blackbird Working Group and two years after the updated *Conservation Plan for the Tricolored Blackbird* was published—56% of all nests in silage were still destroyed by harvest. Meese (pers. comm.) reported more colonies lost to harvest in both 2013 and 2014 despite efforts to financially compensate landowners to prevent or delay harvest. Hundreds of thousands of additional nests would certainly have been lost over the years without the concerted effort of a handful of dedicated individuals, who monitored Tricolor colonies and attempted to coordinate buy-outs or harvest delays of the biggest colonies. From 1993 to 2011, more than one million nests were documented to have been destroyed by harvest and certainly many more undocumented nests have been obliterated over the years on private lands.[3] Sources for Table 4 below include Hamilton 1993, Hamilton et al. 1995, Beedy and Hamilton 1997, Hamilton et al. 1999, Hamilton 2000, Hamilton and Meese 2005, Meese 2006, 2007, 2008, 2009a, 2011, and Liz Cook unpublished data. This is not a complete summary of all colonies that nested in silage, only a sample of monitored sites.

[3] There were likely tens if not hundreds of thousands of nests destroyed by harvest over the years for which there is no data due to their locations on private property.

Table 4: Tricolor Blackbirds Breeding in Silage by County, Estimated Number of Nests Saved by Crop Buy-out or Harvest Delay, and Estimated Number of Nests Destroyed

Year	County	Number of Breeding Birds	Number Saved by Buy-out or Harvest Delay	Estimated Nests Destroyed)
1993	Tulare	48,000		48,000
1994	Fresno	70,000		70,000
1994	Kern	11,600		11,600
1994	Tulare	50,000		50,000
1995	Fresno	50,000		50,000
1995	Tulare	50,000		50,000
1996	Fresno	50,000		50,000
1996	Tulare	50,000		50,000
1997	Fresno	52,500		52,500
1997	Tulare	40,000		40,000
1998	Fresno	40,000		40,000
1998	Tulare	40,000		40,000
1999	Tulare	14,000		14,000
2003	Tulare	20,000		20,000
2003	Kern	50,000	20,000	30,000
2006	Kern	158,000	138,000	20,000
2006	Tulare	76,000		76,000
2006	Merced	110,824	70,824	40,000
2007	Tulare	122,870		106,750
2008	Tulare	140,000	110,000	30,000
2008	Madera	10,000		10,000
2008	Merced	55,000		55,000
2008	Fresno	45,000		45,000
2008	Kern	60,000	60,000	0
2009	Merced	20,000		20,000
2009	Fresno	35,000		Unknown
2009	Madera	15,000		Unknown
2009	Kern	18,000	18,000	0
2009	Tulare	144,000	31,500	Unknown
2011	Kern	50,000		30,000
2011	Fresno	20,000		20,000
2013	Riverside	2000		1330
TOTAL				**≥1,000,000**

Prior to 1980, the Sacramento Valley held the largest number of birds, whereas from 1980 onwards the San Joaquin Valley supported the largest total breeding populations of Tricolored

Blackbirds (Graves et al. 2013). Graves et al. (2013) postulated one reason for the decline in average colony size in the San Joaquin Valley and decline in total breeding population was that colonies in triticale were all within the San Joaquin Valley (or Sacramento County), all during the last 20 years, and they were >40 times larger than colonies in other habitats during this period. These are the very colonies that were often destroyed.

Other agricultural activities such as sheep grazing can destroy Tricolor colonies. At Owens Creek in Merced County in 2010, a colony of 15,000 birds nesting in milk thistle and mustard produced only 1,500 fledglings after intensive grazing of the vegetation by domestic sheep (Meese 2010).

6.1.3 Destruction of Other Suitable Upland Breeding Substrates and Surrounding Habitats

Cook and Toft (2005) found Himalayan blackberry supported the highest densities of nesting Tricolors among all used substrates and reproductive success was significantly higher in these than other most commonly used substrates (emergent marsh and silage) using data from 1992 to 2003 (Table 4). However, Himalayan blackberry nesting sites are currently not protected and many important traditionally used sites have been lost in recent years (Cook and Toft 2005).

Other important upland nesting substrates, including thistles and prickly lettuce, are likewise not protected because they are considered to be non-native plants and often occur on private property. For example, the 2010 Owens Creek colony in milk thistle and mustard described above was destroyed by grazing sheep. In Merced County in 2011, two large colonies were reported in milk thistle: Owens Creek with 20,000 birds and South of Childs with 10,000 birds: both of these colonies were entirely destroyed by cutting of the thistle (Meese 2011). That same year, Meese (2011:12) also noted that at least four colony sites in Himalayan blackberry substrates on private property were all apparently sprayed with herbicides since 2010. These included Hulen Levee in Merced County, Central American 1 in Stanislaus County, Openshaw Road in Butte County, and Ostrom Road in Yuba County. A colony of 50,000 Tricolors at Sandy Mush and 99 in Merced County in 2011 was reduced to just 15,000 due to harvest of the fava bean crop in which they were nesting.

6.2 Inadequacy of Existing Regulatory Mechanisms

The Tricolored Blackbird is not protected by existing regulatory mechanisms. The Yolo Audubon Society submitted a petition to the Commission to list this species as endangered under the state Endangered Species Act in 1991, but the petition was withdrawn in 1992 (Beedy and Hamilton 1997:19-20). Based on concerns about the Tricolor's population status, FWS included this species as a Category 2 candidate for federal listing as either threatened or endangered. *See, e.g.,* 59 Fed. Reg. 58992 (November 15, 1994).[4] However, FWS later decided to discontinue the

[4] Category 2 candidates are species for which information in the possession of FWS indicates that proposing to list as endangered or threatened is possibly appropriate, but for which persuasive data on biological vulnerability and threat are not currently available to support proposed rules.

practice of maintaining a list of Category 2 candidates. 61 Fed.Reg. 64,481 (December 5, 1996). The Center for Biological Diversity submitted a petition to emergency list the species as endangered under the state and federal Endangered Species Acts in 2004, but this was denied.

Currently, the Tricolored Blackbird is only considered a FWS non-game bird of management concern (species are of concern because of (1) documented or apparent population declines, (2) small or restricted populations, or (3) dependence on restricted or vulnerable habitats) and a species of special concern by CDFW (animals not listed under the federal Endangered Species Act or the California Endangered Species Act, but which nonetheless (1) are declining at a rate that could result in listing, or (2) historically occurred in low numbers and known threats to their persistence currently exist). These designations do not provide any specific legal protection to the bird aside from the requirement that project's triggering CEQA review must analyze the impacts of the proposed action on the Tricolor. *See, e.g.,* 14 Cal. Code Regs.§§ 15065, 15380. However, its special status does not protect the species from activities that do not trigger CEQA review. Furthermore, while the nests and eggs of this species are protected under the California Fish & Game Code § 3503 *see supra,* CDFW has failed to enforce the law to end the devastating annual "take" by private property owners during Tricolor nesting season.

6.3 Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Neff (1942) reported that:

> "Market hunting of blackbirds in the interior valleys of California became a thriving business in about 1928 or 1929, and a dependable market for them was developed largely through Italian produce firms in the larger cities. During the depression years the number of men so engaged increased markedly, but decreased by 1936 or 1937. Using automatic shotguns and firing into dense masses of blackbirds feeding on rice stubble, these market hunters killed large numbers of all species of blackbirds; one group of market hunters shipped nearly 400,000 dressed blackbirds from one Sacramento Valley shipping point in five seasons, and during the winter season of 1935-1936 they shipped about 88,000 birds."

6.4 Disease or Predation

Historical accounts documented the destruction of nesting colonies by a diversity of avian, mammalian, and reptilian predators (Beedy and Hamilton 1999). Historically, terrestrial predators have probably included wolves (*Canis lupus*), coyotes (*Canis latrans*), gray foxes (*Urocyon cinereoargenteus*), raccoons (*Procyon lotor*), mink (*Mustela vison*), striped skunks (*Mephitis mephitus*) and spotted skunks (*Spilogale gracilis*), gopher snakes (*Pituophis catenifer*), non-native rats (*Ratus ratus*), western rattlesnakes (*Crotalus viridis*), and king snakes (*Lampropeltis getulus*). Avian predators are reported to be Black-crowned Night-Herons (*Nycticorax nycticorax*), Great Blue Herons (*Ardea herodias*), Common Ravens (*Corvus corax*), Cooper's Hawks (*Accipter cooperii*), Burrowing Owls (*Athene cunicularia*), American Crows (*Corvus brachyrhynchos*), Swainson's Hawks (*Buteo swainsoni*), Northern Harriers (*Circus*

cyaneus), Barn Owls (*Tyto alba*), Short-eared Owls (*Asio flammeus*), Yellow-billed Magpies *(Pica nuttalli*), and Merlins (*Falco columbarius*). Predation by feral cats (*Felis catus*; Beedy and Hamilton 1997), rats (*Rattus* spp.; Meese 2010) and Cattle Egrets (*Bubulcus ibis*; Meese 2013), has recently been reported. Tricolors respond to predators by sitting silently rather than attempting to attack them, as do Red-wings (Beedy and Hamilton 1997, 1999).

Predation is a major cause of large-scale nesting failures in many Tricolor colonies, especially those nesting in native emergent marshes (Hamilton et al. 1995, Beedy and Hamilton 1997; Hamilton 2000). Cook and Toft (2005) found that reproductive success was significantly lower in native emergent marshes than other substrates, excluding silage that was not lost to harvesting operations (Table 3). Heron and raccoon predation upon colonies nesting in marshes, especially, can destroy all or nearly all nests within colonies (Hamilton et al. 1995, Hamilton 2000). For example, Tricolor nesting at Kern NWR, Kern County and at Maxwell I and Maxwell II colonies in Colusa County failed due to night-heron predation. Black-crowned Night Heron predation—which often results in the nest failure of an entire colony —is particularly troubling at national wildlife refuges, which are becoming increasingly important nesting sites for both Night Herons and Tricolors as private range and dairy lands are converted to vineyards and orchards or urban uses, and as grain silage fields are subject to harvest during nesting season. Some large colonies (up to 100,000 adults) may lose >50% of nests to coyotes (*Canis latrans*), especially in silage fields, but also in freshwater marshes when water is withdrawn (Hamilton et al. 1995). Thus, water management by humans often has the effect of increasing predator access to active colonies (Shuford and Garaldi 2008).

Nesting over water provides some protection from predators (Weintraub and George 2012), but the reduction of native wetlands to less than 4% of their original extent has probably concentrated predator populations in the remaining wetlands more than was true historically (Cook and Toft 2005). As noted above, water management in some areas results in reduced water, and because cattails do not have armaments such as thorns or stinging hairs, nesting blackbirds are exposed to higher rates of predation (Meese 2013). Cook and Toft (2005) found that from 1992 to 2003, a larger proportion of colonies in native wetlands than in upland substrates suffered complete reproductive failure attributable primarily to predation. In particular, some of the largest breeding colonies in wetlands, such as those in the Sacramento Valley, failed completely despite the fact that colonial nesting is considered an adaptation against predation.

More recent studies have documented wholesale reproductive failure of entire colonies due to predation by Cattle Egrets (Meese 2013). Since 2006, predation by Cattle Egrets on eggs and nestlings has caused nearly complete reproductive failures of even very large colonies, but this currently is limited to Tulare County. In contrast to Cook and Toft (2005) which found a correlation between nesting substrate and reproductive success, Meese (2013) documented widespread reproductive failures of entire colonies from 2006 to 2011 that appeared unrelated to nesting substrate. Instead, Meese found that insect abundance around these colonies was insufficient to support successful breeding, resulting in nestling starvation and failure of females to lay eggs. Meese (2014:110) states "[t]his loss of foraging habitat may result in a decline in productivity over a period of years that is difficult to detect, but that decline may ultimately lead

to the situation where, despite the availability of suitable nesting substrate, tricolors abandon colonies or decline to extinction in an area where they formerly were abundant." If this is correct, then colonies adjacent to dairies, which recently represent the largest colonies of breeding Tricolors, may appear to be ecological traps, fledging relatively few young in most years even when not lost to silage harvest (Meese 2013).

Cook and Toft (2005) note that in earlier studies, colony settlement was reported to be sporadic and unpredictable (Neff 1937, Orians 1961) and banded nestlings were only somewhat philopatric (DeHaven et al. 1975b). More recent data, however, indicate repeated settlement of many sites despite poor breeding outcomes. The recent losses of known breeding sites were concomitant with the decline in local breeding populations despite an abundance of what appear to be other suitable sites which do not become used. This trend toward apparent increased philopatry probably reflects the now extremely limited availability of suitable nesting habitat.

6.5 Other Natural or Anthropogenic Factors

6.5.1 Storms and Droughts

Severe storms are documented to cause near-complete reproductive failures of colonies. At the Plumas Arboga colony in Yuba County in 2009, a colony of 20,000 Tricolors nesting in cattails produced fewer than 1,000 fledglings after a severe storm (Meese 2009a). Colony monitoring in 2010 reported hundreds of dead nestlings found on the ground beneath nests in milk thistle at the 2,000-bird colony on San Felipe Ranch in Merced County after a severe storm; this colony ultimately produced only 200 young (Meese 2010). Also during 2010 a second colony of 10,000 birds nesting in mustard and milk thistle at Merced NWR was destroyed by storm, with only 500 fledglings produced.

Meese (2010:11) wrote: "[s]pring storms, and especially the winds associated with storms, played a major role in limiting the productivity of several colonies in 2010, especially those established in milk thistle in Merced County. The second settlement at Merced National Wildlife Refuge Duck Slough appeared to be nearly wiped out due to a storm with high winds on May 20, affecting a colony visually estimated to consist of 15,000 breeding birds. The nearby San Felipe Ranch colony was affected by the same storm, and when surveyed on May 27 was visually estimated to have suffered a greater than 50% mortality of nestlings, as hundreds of dead nestlings were observed on the ground beneath the milk thistle nesting substrate. The Bear Creek colony, also established in milk thistle, was not as severely impacted but hundreds of nests were observed to have been affected, most apparently shaken sideways during strong winds. The eggs in these nests were likely spilled out on to the ground while the nestlings were either ejected or forced to cling precariously to horizontal nest cups."

Drought also may have adverse effects on Tricolored Blackbird populations, but no empirical data are available (Bob Meese, pers. comm.) Beedy (2014:3) wrote that "the recent drought and effects of climate change have noticeably reduced the extent of suitable nesting and foraging habitat in the Central Valley compared to conditions when I first began my intensive studies of this species in the mid-1980s. The effects of the drought on the available wetlands and moist,

insect-producing agricultural fields, was especially apparent during this year's Statewide Survey—in the third year of a severe drought." However, the Tricolored Blackbird population had been steadily declining from 2008 to 2014, so drought cannot be implicated in the decline for the entire time period.

The Tricolored Blackbird evolved over millennia in a region (California) that is naturally susceptible to periodic drought and severe storms. However, their population size and available habitat has been so reduced by humans over the past century that natural weather events now have a more pronounced effect on the overall population—this is precisely the problem when small, endangered populations with little remaining habitat are faced with large-scale natural stochastic (unpredictable) events such as droughts and severe storms. Drought and severe storms may have adverse effects on reproductive success, but this only makes protecting active nesting colonies from damaging human activities such as harvest, pesticides, grazing sheep, or poor water management all the more critical.

6.5.2 Poisons and Contaminants

Various poisons and contaminants have caused mass mortality of Tricolored Blackbirds (Shuford and Garaldi 2008). McCabe (1932) described the strychnine poisoning of 30,000 breeding adults as part of an agricultural experiment. Neff (1942) considered poisoning to regulate numbers of blackbirds preying upon crops (especially rice) to be a major source of mortality. This practice continued until the 1960s, and thousands of Tricolored Blackbirds and other blackbirds were exterminated to control damage to rice crops in the Central Valley.

Beedy and Hayworth (1992) observed a complete nesting failure of a large colony (about 47,000 breeding adults) at Kesterson Reservoir, Merced County, and selenium toxicosis was diagnosed as the primary cause of death. Hosea (1986) attributed the loss of at least two colonies to aerial herbicide applications.

Beedy and Hamilton (1997) documented more evidence of Tricolor mortality due to contaminants. A large Tricolor breeding colony of nearly 50,000 birds at Kesterson Reservoir in Merced County experienced a complete nesting failure in 1986 (Beedy and Hayworth 1992). Some of the dead nestlings had club feet; other shorebirds and water birds collected at the reservoir had similar deformities. Pathological examinations of the Tricolor nestlings indicated heart muscle degeneration, and liver sampled showed higher concentrations of selenium than in Red-wing nestlings collected in an uncontaminated area at Merced NWR (Beedy and Hayworth 1992). The cause of the 1986 Tricolor nestling deaths was suspected to be selenium toxicosis (Beedy and Hamilton 1997). A recent incident reported to CDFW was the death of Tricolors from in Riverside County that were poisoned by bait left out for ground squirrels (R. Cook, pers. comm.).

Hamilton observed a colony sprayed by mosquito abatement operators in Kern County, and all sprayed eggs failed to hatch, and the loss of at least two Tricolor colonies was attributed to herbicide applications (Beedy and Hamilton 1999). While the link between environmental contaminants and nesting failure of Tricolors is largely unstudied, enormous amounts of

chemicals are introduced into the environment every year by the California agriculture industry, particularly in the Central Valley, which is the historical stronghold of the Tricolor and the most intensive agricultural region in the state. Table 5 shows amount and type of pesticides applied in five of the counties that support the some of the greatest numbers of breeding Tricolors.

Table 5. Type and Amount of Pesticides Used in Fresno, Merced, Sacramento, San Joaquin, and Tulare Counties (California Department of Pesticide Regulation 2002)

County	Chemical	Pounds Applied	Chemical	Pounds Applied
Fresno	Aluminum Phosphide	15,080.9830	Metam-Sodium	1,981,875.2816
	Bacillus Thuringiensis I	1,690.3241	Methoprene	15.6594
	Chlorophacinone	0.1511	Methyl Bromide	417,510.3194
	Chlorpyrifos	321,888.9509	Oryzalin	11,850.1164
	Copper Sulfate	115,084.1100	Petroleum Oil	2,329,338.9000
	Diazinon	70,289.4242	Phosmet	95,969.6584
	Diphacinone	0.7339	Pyrethrins	162.6464
	Malathion	43,158.9558	Strychnine	40.7266
	Mancozeb	37,528.9088	Zinc Phosphide	35.7129
Merced	Aluminum Phosphide	2,971.6662	Metam-Sodium	422,398.3113
	Bacillus Thuringiensis I		Methoprene	157.8358
	Chlorophacinone	1.1929	Methyl Bromide	131,116.9563
	Chlorpyrifos	61,795.4767	Oryzalin	2,594.6929
	Copper Sulfate	105,569.4900	Petroleum Oil	569,390.7400
	Diazinon	23,995.9920	Phosmet	9,044.3520
	Diphacinone	0.8929	Pyrethrins	590.9544
	Malathion	17,868.8865	Strychnine	89.1223
	Mancozeb	8,991.6591	Zinc Phosphide	265.5314
Sacramento	Aluminum Phosphide	1,957.8636	Metam-Sodium	34,853.1512
	Bacillus Thuringiensis I	77.9603	Methoprene	278.8712
	Chlorophacinone	0.1346	Methyl Bromide	9,339.2350
	Chlorpyrifos	29,307.3649	Oryzalin	6,544.5375
	Copper Sulfate	49,294.402	Petroleum Oil	223,652.1400
	Diazinon	14,780.1577	Phosmet	8,031.6110
	Diphacinone	0.3048	Pyrethrins	71.4711
	Malathion	2,852.0994	Strychnine	0.8122
	Mancozeb	11,154.9237	Zinc Phosphide	60.1408
San Joaquin	Aluminum Phosphide	2,362.2914	Metam-Sodium	10,122.7993
	Bacillus Thuringiensis I	562.7223	Methoprene	95.2427
	Chlorophacinone	0.1439	Methyl Bromide	176,519.4093
	Chlorpyrifos	52,076.1370	Oryzalin	6,757.1516
	Copper Sulfate	100,613.6600	Petroleum Oil	534,153.4400

	Diazinon	17,664.0315	Phosmet	10,195.7060
	Diphacinone	0.3140	Pyrethrins	260.5963
	Malathion	11,265.6954	Strychnine	35.1823
	Mancozeb	23,385.1615	Zinc Phosphide	12.6028
Tulare	Aluminum Phosphide	2,786.4064	Metam-Sodium	117,861.9303
	Bacillus Thuringiensis I	198.8293	Methoprene	0.6954
	Chlorophacinone	0.2265	Methyl Bromide	123,817.5579
	Chlorpyrifos	202,428.6137	Oryzalin	6,219.4719
	Copper Sulfate	267,978.4700	Petroleum Oil	2,978,688.3000
	Diazinon	43,560.2082	Phosmet	81,260.5161
	Diphacinone	1.1976	Pyrethrins	46.7505
	Malathion	25,292.3724	Strychnine	57.4777
	Mancozeb	16,267.6174	Zinc Phosphide	1.6000

While Tricolors were not studied directly, many of the chemicals used within the breeding range of the Tricolor are known to be highly toxic to birds. For example, malathion, chylorpyrifos, and diazinon are organophosphorus pesticides that bind with cholinesterase in animals and disrupt neural functioning. Chlorpyrifos is moderately to very highly toxic to birds (EXTOXNET 2004). Birds are quite susceptible to diazinon poisoning: in 1988, the EPA concluded that the use of diazinon in open areas poses a "widespread and continuous hazard" to birds. Bird kills associated with diazinon use have been reported in every area of the country and at all times of the year. Birds are significantly more susceptible to diazinon than other wildlife (EXTOXNET 2004).

Malathion is moderately toxic to birds. The reported acute oral LD50 values are 167 mg/kg in blackbirds and starlings (EXTOXNET 2004). The precise oral or inhalation median lethal doses for aluminum phosphide or phosphine in birds are not known, but exposure of turkeys and hens to 211 and 224 mg/meters cubed for 74 and 59 minutes respectively resulted in labored breathing, swelling of organs, tonic-clonic convulsions and death (EXTOXNET 2004).

Methoprene is slightly toxic to birds, but non-lethal effects that may affect survival of the birds appeared at acute oral doses of 500 mg/kg, and included slowness, reluctance to move, sitting, withdrawal, and incoordination (EXTOXNET 2004). These effects may decrease bird survival by making them temporarily more susceptible to predation (EXTOXNET 2004).

Phosmet is documented to be highly toxic in Red-wings, with a reported acute oral LD50 of 18 mg/kg (EXTOXNET 2004). Zinc phosphide is highly toxic to wild birds, although blackbirds were found to be less sensitive than other taxa (EXTOXNET 2004).

6.5.3 Killing Blackbirds for Crop “Protection”

Historically, blackbirds were reportedly shot in great numbers by ranchers in order to drive the flocks away from crops, or by pleasure hunters utilizing blackbirds for target practice, and poison

to regulate blackbird damage to crops was a major source of adult mortality (Neff 1942). Beedy and Hamilton (1997) noted that this practice continued until the 1960s, during which thousands of Tricolors were killed in the Central Valley. Reduction in numbers of blackbirds and improved harvesting methods has resulted in a decrease in blackbird extermination programs in the region, but the practice of shooting blackbirds has not ended. A history of widespread persecution of blackbird species has contributed to the Tricolor population decline documented over the past century, and may account for some of the ongoing population decline.

The killing of blackbirds in autumn in paddies of ripening rice in the Sacramento Valley is a known but unquantified source of mortality to post-breeding adult Tricolored Blackbirds. Due to the similarity in appearance to Red-wings, rice farmers who shoot blackbirds kill both species, and perhaps others (Bob Meese, pers. comm.). As noted by Meese (2009a:16):

> "Colonies in the Sacramento Valley are much less dependent upon ephemeral substrates than are those in the San Joaquin Valley, but Sacramento Valley birds have their own serious threats. This year, two birds that I banded in 2008 were shot by a rice farmer outside Richvale in Butte County and subsequently reported to me by staff at Sacramento National Wildlife Refuge. Although only two Tricolors were confirmed killed, these were apparently turned in to federal wildlife officials because of the bands that were found on their legs and serve to suggest a potentially much larger problem. One wonders how many Tricolors are shot each summer in the Sacramento Valley? Previously, in 2006, I was told by two Colusa County staff that flocks of blackbirds were annually shot in Colusa County and that such shooting did not require a permit. This is true for most blackbird species, but not for Tricolors, which are protected under the Migratory Bird Treaty Act. Additionally, a rice farmer in Yuba County told me in July, 2008 that he knows of several rice farmers who annually "herd" and then shoot blackbirds. The shooting of blackbirds during the breeding and post-breeding seasons is in all probability a source of additive mortality, that is, mortality in addition to that which would normally occur due to other factors (starvation, disease, etc.), as it involves primarily breeding and post-breeding adults, and thus may be especially important as a limiting factor in population growth in Tricolors."

6.5.4 Allee Effect of Small Population Size

As noted above, small populations, especially those that are squeezed into ever-smaller areas of suitable habitat, are more vulnerable to stochastic (unpredictable) events such as storms and droughts. Cook and Toft (2005) also raised an alarm bell about the effects of a small population size to a species with socially facilitated breeding. With these species, reduced populations may become extinct through Allee effects, or "inverse density dependence," defined as a positive relationship between population density and survival and reproduction (Allee 1931, Stephens and Sutherland 1999). Conversely, as population density and colony size decreases, so too does survival and reproduction, even if there may remain several hundred thousand individual birds. The Passenger Pigeon, once the most abundant bird in North America, may have ultimately succumbed to extinction following widespread hunting and habitat loss because it could not survive at low population densities (Stephens and Sutherland 1999).

Cook and Toft (2005:85) stated:

> "Like Passenger Pigeons, Tricolored Blackbirds breed colonially and are now adapted to the patchy distribution of a habitat that was widespread before European immigration to North America. The extinction of the Passenger Pigeon has been attributed to a combination of highly social and nomadic breeding, the fragmentation of the mast forests that provided abundant forage, and intense commercial hunting (Stephans and Southerland 1999). Together these factors pushed the population past a lower threshold of inverse density dependence (the Allee effect) and on to the alternative stable state of global extinction (Stephans and Southerland 1999). Importantly, Passenger Pigeon was once the most abundant bird species in North America, with flocks reported to darken the skies for hours (Wilcove 1999), similar to descriptions of flocks of Tricolored Blackbird in California's Central Valley in the mid-1800s (Heermann 1859)."

Cook and Toft pointed out that because local populations of Tricolored Blackbirds are still found in dense breeding colonies, they can leave a false impression of abundance upon casual observers. The long-term population trends and patterns in reproduction show that the Tricolored Blackbird possesses most of the traits that ultimately led to the extinction of Passenger Pigeon in the same ecological circumstances. These factors include the loss of vast areas of native wetland along with the increasing loss of upland, non-native vegetation favorable for nesting, the trend of decreasing colony size in a highly social breeder, a habit of itinerant breeding (Hamilton 1998), and wholesale slaughtering of the largest breeding colonies in agricultural harvest.

7.0 Degree and Immediacy of Threat And Request for Emergency Action

7.1 Degree and Immediacy of the Threat

The San Joaquin Valley and Sacramento Valley have historically been the heart of the Tricolor's range and supported the largest populations. The recent population decline has been most severe in the San Joaquin Valley and along the Central Coast. The number of birds counted in the San Joaquin Valley plummeted 78% in 6 years, from 340,700 to about 73,500 birds, and the decline in especially alarming in Kern and Merced counties (Meese 2014). Efforts to provide water in private duck clubs adjacent to dairies in Kern and Tulare counties have been largely ineffective at halting the steep decline in the number of breeding birds in Kern County over the past 3 years, to an all-time low (Bob Meese, pers. comm). Along the Central Coast, the number of birds is down 91% in 6 years, from 7,014 to 627 birds. For many years few birds were recorded nesting in their historical stronghold of Sacramento County where once entire colonies of 100,000 birds were observed (Neff 1937); in 2014 fewer than 30,000 total birds were recorded in the County. Active nesting colonies of the extremely imperiled Tricolored Blackbird continue to be destroyed by crop harvest, grazing sheep, pesticide use, and poor water management, all of which have caused failures of entire of nearly entire colonies in recent years (Meese 2007, 2008, 2009a, 2010, 2011). Further, an unknown number of Tricolors are shot and killed each year while foraging in rice paddies in the Sacramento Valley during autumn.

The population in southern California remains highly endangered as well with an average of fewer than 6,000 birds observed during springtime breeding surveys conducted since 2005. Although Meese (2014) reported an increase of 126% in southern California over the 2008 census, as R. Cook (2014) explained: "this magnitude of change cannot be accounted for by local reproduction and recruitment. On closer examination, it is apparent that the increase occurred predominantly in Los Angeles County, and specifically the Mojave Desert area between the San Gabrielle Mountain range and the Kern County border. In 2014, 4,500 birds were reported from Holiday Lake alone versus 840 in all of Los Angeles County in 2011. Holiday Lake is only 45 linear miles from the city of Bakersfield in the southern San Joaquin Valley and only slightly further through the Tehachapi Pass. The number of birds in this area has varied between survey years from approximately 600 to 5,000. However, the data reflect no concomitant changes elsewhere in southern California which suggests that these fluctuations are local and do not impact population dynamics in the rest of southern California. The most plausible explanation for the apparent increase this year and the changes observed in Los Angeles County throughout the life of the surveys is occasional and temporary influx of birds from the Central Valley."

Currently the entire global population of Tricolored Blackbirds counted during surveys is less than half the size of a single colony that was reported in 1934 (Neff 1937, Meese 2014). The travesty is that the dire situation of the Tricolor has been known for the past two decades by state and federal agencies, and despite heroic efforts of several dedicated individuals, the trajectory towards extinction has not been reversed. It is time for immediate regulatory action under the California Endangered Species Act to ensure the conservation of nesting and foraging areas known to be important to Tricolored Blackbirds, to prevent the direct killing of blackbirds at rice paddies, and to provide funding for habitat improvement projects such as those proposed by Lowell Young and the Yosemite Area Audubon Society (see "Recommended Management and Recovery Actions.") If such action is not taken, the Tricolored Blackbird will follow the Passenger Pigeon into the dark abyss of extinction.

7.2 Request for Emergency Action

For the reasons provided above, petitioner requests that the Commission take immediate action on this petition and issue emergency regulations to list the Tricolored Blackbird. The California Fish and Game Code Section 2076.5 permits the Commission to issue emergency listing rules to provide imperiled species with immediate substantive protection. As discussed above, the Tricolor is in immediate need of protection from the severe nesting failures caused each year by agriculture harvesting and plowing activities.

8.0 Impacts of Existing Management Efforts

8.1 Silage Buy-outs and Harvest Delays

The two main grain-field specific conservation actions include silage buy-outs or harvest delays (Meese 2009b). Silage buy-outs involve the payment to landowners of the full market value of the triticale in the portion of the field occupied by nesting Tricolors. Harvest delays are financial

compensation to landowners for the reduction in the value of their crop from the delay in its harvest until the young Tricolors have fledged from their nests. Meese (2009b) explains that the key difference between a harvest delay and a silage buy-out is the timing of the harvest of the crop following the fledging of the young Tricolors. In the silage buy-out, the farmer agrees to wait until essentially all birds, including the breeding adults plus the newly fledged young, have departed and are fully independent of the field. In a harvest delay, the farmer agrees to delay the harvest only until the young have fledged (left the nests). Thus, in a harvest delay, the young are still present in the field on the day of harvest, being fed by adults during the day and roosting there at night. This difference may be due to the desire to minimize the impact of the harvest delay on the yield and nutritional quality of the crop.

The practice of buying out farmers or delaying harvest of silage to prevent nest destruction during active breeding undoubtedly has saved hundreds of thousands of birds. From 2005 to 2009, these efforts resulted in the conservation of the breeding efforts of a low of 16% in 2007 to a high of 86% in 2005 of the birds nesting in silage fields, thus contributing to Tricolor productivity (Meese 2009b:5). Over the five years from 2005 to 2009, payments totaling $331,921 were made to conserve 11 breeding colonies consisting of 546,000 birds which subsequently produced 396, 025 young (Meese 2009b:6). However, this practice has not always been reliable and depends upon the volunteer cooperation of the farmer and available funds. As evidenced in Figure 4 below (from Meese 2009b:4), in some years the vast majority of breeding effort was not conserved.

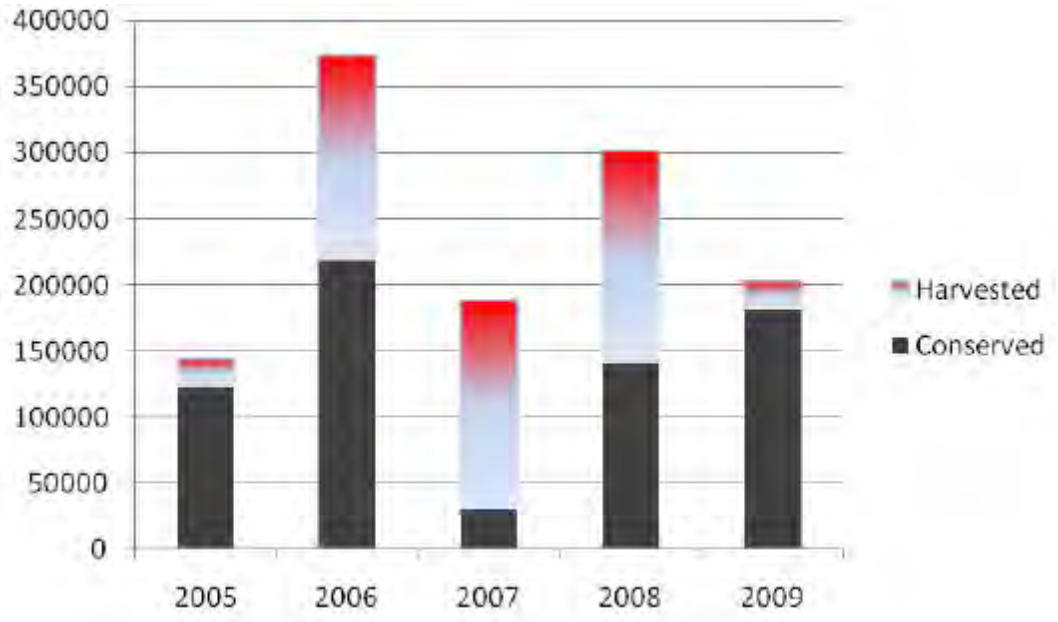


Figure 4: Fates of Tricolored Blackbirds in Silage Fields, 2005 to 2009

Many of the most important recent colonies have been destroyed before it was too late to save them, despite concerted efforts to do so by Tricolor biologists and the FWS. For example,

Meese (2006:5-6) noted: "Deer Creek Dairy, Tulare County, was destroyed days after the owner told Scott Frazer, USFWS biologist, that he would not cut the field until after the birds had fledged. This harvest was reported to the Fresno Field Office, Enforcement Division of the USFWS, and harvest was halted by direct intervention by the USFWS officer but not until an estimated 60% of the colony had been harvested, including a single pass through the center of the colony."

In 2011, the year for which the most recent data are available on the Tricolor portal regarding specific colony fates, many instances of nest destruction by crop harvesting were documented, with many colonies destroyed, seemingly willfully:

> "Colonies from Kern County to Merced County were destroyed by harvest or the cutting of the nesting substrate in 2011. The West Poso colony in Kern County was destroyed by harvest just as the young had begun to fledge from their nests. The Producer's Dairy colony in Fresno County was destroyed a week after it was discovered. The owner had preferentially harvested the portion of his triticale field that was occupied by the breeding tricolors as only this portion of this field had been harvested when the site was observed on April 12. The Owens Creek and South of Childs colonies in Merced County were destroyed when the weedy fields in which they were situated were cut. The Sandy Mush and Highway 99 colony, also in Merced County, was cut in half despite on-going conversations with the farmer that sought to conserve the colony through a harvest delay whereby the farmer was to be compensated for his lost revenue that would have resulted from the delay in the harvest of his field of fava beans. Only 10-15,000 birds out of an original colony of 50,000 birds remained after half of the field was harvested." (Meese 2011:12)

Efforts to protect partial colonies have failed to save the nesting effort, even with the cooperation of the farmer, such as this example from 2007: "[n]egotiations between the Service and the landowner, who had prior experience with nesting tricolors and the silage buy-out process, resulted in the signing of a contract to sell the silage occupied by the nesting birds while allowing the farmer to harvest the triticale not occupied. The harvest of the unoccupied triticale proceeded as scheduled, but the day following harvest in excess of 90% of the tricolors deserted the site. The landowner was immediately contacted to inform him of the departure of the birds and to request that the contract be canceled." (Meese 2007:17).

In 2013, four silage colonies were destroyed due to harvest, including the largest colony in southern California in Riverside County. This harvest occurred despite the fact that the landowner had been contacted and an agreement for financial compensation apparently was in its final stages, yet he harvested his field without informing anyone (R. Cook, pers. comm). In 2014, at least two silage colonies were lost to harvest in Merced County, and an additional is suspected (Bob Meese, pers. comm).

Meese (2009b:6) noted that "a permanent solution to the dilemma between the needs of the nesting birds and the needs of the farmers does not consist of annual negotiations between U.S. Fish & Wildlife Service staff and San Joaquin Valley farmers; rather, it consists of the provision

of permanent nesting habitats surrounded by productive foraging habitats that provide a secure alternative to nesting in triticale fields (Tricolored Blackbird Working Group 2007). Previous attempts to create such alternative nesting habitats (e.g., ECLA Pond in Kern County, Toledo Pit in Tulare County) have met with limited success, but unless the tricolor modifies its breeding distribution, this is the only realistic resolution to the conflicts. Recent changes including intense predation by cattle egrets (*Bubulcus ibis*) and the loss of formerly productive alfalfa foraging habitats to conversion to orchards and vineyards may be reducing the suitability of the southern San Joaquin Valley to tricolor breeding (Meese 2009a), only complicating future attempts to increase the abundance of the species."

Clearly, however any such voluntary measures to buy-out silage crops or delay harvest over the past decade have not worked. The Tricolor population has declined precipitously despite all efforts to date, and the global population is currently less than half that of a single colony that was reported in 1934 in Glenn County. The species unequivocally warrants immediate listing under the California Endangered Species Acts.

8.2 Tricolored Blackbird Working Group and Conservation Plan

The Tricolored Blackbird Working Group is a voluntary group of state and federal agency biologists, non-governmental organizations, industry representatives, and academic scientists who "share concern for the Tricolored Blackbird and a desire to work cooperatively to help to enhance and sustain the birds and their habitats."

The Tricolored Blackbird Working Group meets twice per year to discuss both long-term, strategic efforts as well as short-term immediate actions necessary to conserve Tricolors. The Working Group (1) assesses the needs for and effectiveness of strategies and efforts that are already implemented, and (2) identifies steps yet to be taken that are necessary to conserve breeding colonies and surrounding foraging habitats. Generally, a spring meeting emphasizes the needs for the upcoming breeding season, while the fall meeting reviews results of the breeding season and sets priorities for next steps. The Working Group crafted the *Conservation Strategy for the Tricolored Blackbird* from 2004 to 2007 (Tricolored Blackbird Working Group 2007), and designed and prepared for distribution a pamphlet describing the Tricolored Blackbird and efforts underway to try to conserve it. Numerous, less formal communications and meetings occur among Working Group members year-round.

The Tricolored Blackbird Working Group includes: Audubon California; California Association of Resource Conservation Districts; California Farm Bureau Federation; California Cattlemen's Association; California Department of Fish and Game; California Department of Food and Agriculture; Central Valley Bird Club; Central Valley Joint Venture; Natural Resources Conservation Service; Pacific Gas and Electric Company; PRBO Conservation Science; Sonoran Joint Venture; Sustainable Conservation; University of California, Agriculture and Natural Resources; Western Riverside County MSHCP; U.S. Fish and Wildlife Service; U.S. Geological Survey; and the Western United Dairymen.

There are a number of scientific efforts underway by agency and non-agency groups that are part of the Tricolored Blackbird Working Group to monitor the population of Tricolored Blackbirds and understand natural and anthropogenic factors correlated to breeding-site selection and reproductive success. These efforts include:

- annual field work to detect and monitor (i.e. document the fates of) the largest colonies in the Central Valley and Southern California to help to prioritize colonies for conservation actions, to estimate the numbers of breeding adults, to estimate the numbers of young produced (i.e. derive an estimate of colony productivity), and to attempt to identify the factors responsible for observed patterns of productivity
- annual banding of primarily adults birds at several breeding colonies to help to document spatial and temporal movements, estimate life history parameters, and to evaluate patterns of site fidelity
- education and outreach, including the production and distribution of a brochure to describe the efforts being made on behalf of the tricolored blackbird and to encourage agency field personnel and birders to report observations of banded birds
- development of the web portal to provide information on the Tricolored Blackbird and to accumulate, document, and disseminate data on colonies and observations of banded birds and aggregations, both breeding and non-breeding.

These scientific efforts have provided a vast literature documenting population size by region, colony locations and fates, and variables correlated with reproductive success and selection of breeding sites. These intensive scientific efforts have provided clear and unequivocal evidence of severe population declines and confirm the significant adverse effects of silage harvest, water management, depredation by rats and Cattle Egrets, and other factors that are implicated in the Tricolor's current predicament.

Science is important but on-the-ground action is needed. However, it is abundantly clear that volunteer efforts to save active nesting colonies have failed in recent years. The *Conservation Plan* was developed in 2007 and updated in 2009, but few conservation efforts to actually improve habitat on the ground have been implemented, and as noted above, numerous efforts to save colonies from silage harvest were shunned by the landowners and the nestlings were brutally mowed down despite funding available to prevent it. Meese (2013) emphasized the importance of high-quality foraging habitats close to nesting colonies that provide abundant insect prey for high reproductive success, but these habitats have continued to be eliminated, which likely led to the chronic very low reproductive success of colonies documented in recent years (Meese 2013). Habitat-improvement efforts including ideas to lure birds to protected high-quality nesting sites have been suggested, but no funding has been provided to support these efforts.

9.0 Recommended Management and Recovery Actions

Meese (2014) provided the following recommendations for management and recovery of the Tricolored Blackbird:

1. Eliminate all known sources of mortality, including the losses of eggs and young via harvest of their nesting substrate and adults in autumn when causing depredations in rice.

2. It is essential to develop a mechanism for conserving at-risk colonies. A mechanism is required that consists of 1) field workers who *detect settlements* of birds in ephemeral nesting substrates (e.g., triticale fields), 2) a person or persons to whom the field worker *reports the presence of birds in ephemeral, at-risk locations* and who has the responsibility of contacting landowners and informing them of the protected status of the birds and of funding available to compensate them, 3) a cooperative extension specialist or other independent expert who *estimates the loss in value* of the crop as a result of the harvest delay, 4) a field worker who *monitors and documents the results* of conservation actions (successful delay until a week past average date of fledging, an estimate of the number of young fledged, a description of the process of harvest in those cases where fledglings are still present in the field when it is being harvested with an emphasis on the effects on the behavior of the fledglings post-harvest). 5) All of these *actions should be documented and then be reported* to a meeting of the Working Group and provided in a report that is posted to the Portal.

3. A legislative fix to eliminate exemption of protection under the MBTA is needed for red-winged blackbirds in California. If red-wings cannot be shot and shooting stops in autumn in rice, this will also save the lives of an unknown number of post-breeding adult tricolors that are shot by "mistake" as tricolors and red-wings are superficially nearly identical in appearance and flock together during autumn.

4. Better document conditions which result in relatively high reproductive success. Examine patterns in RS to determine whether, on a time-averaged basis, there is relatively higher RS in colonies in some geographic regions or that are established in different nesting substrates. Use these insights to make recommendations for management actions.

5. Study the effects of harvest on populations of fledglings in crèches that persist on nesting substrates until moments before they're harvested to best document effects on birds. In some situations, fledglings persist on the original nesting substrates until moments before the substrates are harvested. Study these colonies and document where the birds go when the harvester shows up and what do they do when they return to the just-harvested field.

6. Take an 'all hands on deck' approach to tricolored blackbird conservation that includes representation by all industries that may be affected by a listing and all systems of protected areas, including the National Wildlife Refuge System, State Wildlife Areas, DOD installations, and private preserves.

7. Work with landowners in foothill and other locations with extensive rangelands where the availability of nesting substrate may be limiting reproduction; add nesting substrates where they are lacking, enhance nesting substrates where they are limiting, and protect nesting substrates where necessary. Fund landowners who want to conserve tricolors but who incur a cost in doing so.

8. Provide supplemental insect foods (meal worms, possibly others) to investigate whether supplemental feeding may increase RS.

9. Provide meal worms or other insects to settling birds at desired locations to see whether the supplemental foods may influence breeding site selection.

10. Focus efforts on regions with a recent history of successful reproduction (e.g., Sierra Nevada foothills) and, where appropriate, seek to create additional breeding sites.

11. Expand monitoring and research into regions which have historically been under-studied (central Sierra foothills, coastal locations) and suggest strategies to sustain or increase reproductive output in these regions. Perhaps fund a volunteer effort by reimbursing volunteers for food and mileage costs for monitoring efforts.

12. Encourage and/or provide monetary incentives to farmers to grow alfalfa, sunflowers, and rice within 3 miles of active tricolored blackbird colonies without insecticides or to delay their use until after the young have fledged and left the area.

13. Investigate the relative abundance of insects in rice paddies under organic culture to that in commercial rice paddies to document whether organic rice provides a better foraging substrate than does commercial rice (as has been suggested by relatively high RS at the Conaway Ranch in Yolo County, where both organic and commercial rice is grown).

14. Provide additional funding and guidance for landowners to provide essential resources for nesting tricolors on private property.

15. Actively maintain all wetlands recently used by breeding tricolors, and especially those in coastal locations, to provide the youthful conditions preferred by nesting birds.

16. Develop and disseminate via the Portal handbooks that illustrate best practices for maintaining wetlands and other nesting substrates for breeding by tricolored blackbirds.

17. Conduct threat assessments of all areas currently used by breeding tricolors and work with local officials to identify these threats and seek ways to reduce or eliminate them.

18. Assess the concentrations of neonicotinoid insecticides in regions with the lowest insect abundances and highest rates of decline in tricolored blackbirds.

Beedy (2014) offered additional suggestions specifically regarding cattle ranching:

1. Recognize that cattle ranching and most other range management activities have mostly beneficial effects on this species and do not result in incidental take;

2. Consider authorizing limited incidental take consistent with typical cattle ranching and range management activities;

3. Establish financial incentive programs to encourage ranchers and farmers to voluntarily create and manage suitable habitats in the context of their normal operations;

4. Educate ranchers, farmers, and other members of the public about the benefits of this species in the control of harmful insect pests that damage agricultural crops.

The Tricolored Blackbird Action Group of the Yosemite Area Audubon Society has created a database of shovel-ready projects to lure Tricolored Blackbirds to secure breeding habitat. These sites include an assessment of the availability of insect-rich foraging habitat and water sources. Similar projects could be expanded to other areas as well outside of the Sierra Nevada foothills.

In addition, efforts are needed by the State and Federal agencies to enhance breeding habitat on wildlife areas and other public lands.

The Center strongly encourages funds to be made available for the highest-priority of these projects, along with funding for scientific monitoring of results.

10.0 Availability and Sources of Information

Literature cited in this petition is listed below. A disk with many of the critical documents cited will be send via U.S. Mail to the Commission along with a paper copy of the petition.

Allee, W. C. 1931. Animal aggregations. A study in general sociology. Chicago, IL: University of Chicago Press.

Beedy, E. C., S. D. Sanders, and D. Bloom. 1991. Breeding status, distribution, and habitat associations of the tricolored blackbird (*Agelaius tricolor*) 1850-1989. Prepared by Jones & Stokes Associates for U. S. Fish and Wildlife Service, Sacramento, CA.

Beedy, E. C., and A. Hayworth. 1992. Tricolored Blackbird nesting failures in the Central Valley of California: general trends or isolated phenomena? Pp. 33-46 in Endangered and sensitive species of the San Joaquin Valley, California. California Energy Commission, Sacramento, California.

Beedy, E. C. 2014. Comments in Support of the Emergency Listing of the Tricolored Blackbird. August 2, 2014 letter to the California Fish and Game Commission.

Beedy, E. C. and W. J. Hamilton III. 1997. Tricolored Blackbird Status Update and Management Guidelines. Prepared for the U. S. Fish and Wildlife Service, Portland, Oregon, and the California Department of Fish and Game, Sacramento, California.

Beedy, E. C. and W. J. Hamilton III. 1999. Tricolored Blackbird (*Agelaius tricolor*). In A. Poole and F. Gill, eds. The Birds of North America, Number 423.

Bent, A. C. 1958. Life histories of North American blackbirds, orioles, tanagers, and allies. Dover Publications, Inc., New York, NY.

Berg, E.C., Pollinger, J.P. and Smith, T.B. 2010. Population structure of the Tricolored Blackbird (*Agelaius tricolor*) in California: are northern and southern populations genetically distinct? Calif. Dept. Fish and Game, Nongame Wildlife Program Rpt. 2010-05 and Audubon California, Sacramento, CA. 25 pp.

California Department of Pesticide Regulation (CDPR). 2002 data available at http://www.cdpr.ca.gov/docs/pur/purmain.htm (See also 2010 data and 2010 summary report at: http://www.cdpr.ca.gov/docs/pur/pur10rep/10sum.htm#pestuse

Collier, G. 1968. Annual cycle and behavioral relationships in the Red-winged and Tricolored Blackbirds of southern California. Ph.D. diss., Univ. of California, Los Angeles.

Cook, L. 1996. Nesting adaptations of Tricolored Blackbirds (*Agelaius tricolor*). Master's thesis, University of California, Davis, California.

Cook, L. and C. A. Toft. 2005. Dynamics of extinction: Population decline in the colonial Tricolored Blackbird (*Agelaius tricolor*). Bird Conservation International 15:73-88.

Cook, R. 2014. Statement in Support of an Emergency Listing of the Tricolored Blackbird (*Agelaius tricolor*) under the California Endangered Species Act, July 31, 2014.

Crase, F. T. and R. W. DeHaven. 1978. Food selection by five sympatric California blackbird species. Calif. Fish Game 64:255-267.

DeHaven, R. W. 2000. Breeding Tricolored Blackbirds in the Central Valley, California: A Quarter-Century Perspective. U.S. Fish and Wildlife Service, June 2002.

DeHaven, R. W., F. T. Crase, and P. D. Woronecki. 1975. Breeding status of the Tricolored Blackbird, 1969-1972. California Fish and Game 61:166-180.

EXTOXNET (The Extension Toxicology Network, U. C. Davis). 2004. EXTOXNET web site data visited 2004.

Feenstra, J. S. 2013. Breeding Survey of Tricolored Blackbirds in Baja California, Mexico, 2013.

Graves, E. E., M. Holyoak, T. R. Kelsey, and R. J. Meese. 2013. Understanding the contribution of habitats and regional variation to long-term population trends in tricolored blackbirds. Ecology and Evolution. doi: 10.1002/ece3.681

Hamilton, W. J. III. 1993. Tricolored Blackbird. Final Report, CF&G, USFWS, 1993 Report prepared for the U. S. Fish and Wildlife Service, Portland, Oregon and the California Department of Fish and Game.

Hamilton, W. J. III. 1998. Tricolored Blackbird itinerant breeding in California. The Condor 100:218-226.

Hamilton, W. J. III. 2000. Tricolored Blackbird Status Report 2000. Report prepared for the U. S. Fish and Wildlife Service, Portland, Oregon.

Hamilton, W. J. III and R. J. Meese, 2006. Habitat and population characteristics of Tricolored Blackbird colonies in California. Final Report to California Department of Fish and Game.

Hamilton, W. J. III, L. Cook and R. Grey. 1995. Tricolored Blackbird Project 1994. Report prepared for the U. S. Fish and Wildlife Service, Portland, Oregon, and California Department of Fish and Game, Sacramento, California.

Hamilton, W. J. III, L. Cook and K. Hunting. 1999. Tricolored Blackbird 1999 status report. Report prepared for the U. S. Fish and Wildlife Service, Portland, Oregon, and California Department of Fish and Game, Sacramento, California.

Heermann, A. L. 1859. Report upon birds collected on the survey. In E. G. Beckwith, ed. Reports of Explorations and surveys 1953–6, vol x. Washington, D. C.: Beverley Tucker, Printer, 1855–1859, US War Department.

Hosea, R. C. 1986. A population census of the Tricolored Blackbird, *Agelaius tricolor* (Audubon), in four counties in the northern Central Valley of California. Master's thesis, Calif. State Univ., Sacramento.

Humple, D. and R. Churchwell. 2002. Tricolored Blackbird Survey Report 2001: Draft. Prepared for U. S. Fish and Wildlife Service, April 2002.

Kelsey, R. 2008. Results of the Tricolored Blackbird 2008 Census. Audubon California.

Kyle, K, and R. Kelsey. 2011. Results of the 2011 Tricolored Blackbird Statewide Survey. Audubon California.

McCabe, T. T. 1932. Wholesale poison for the Red‐wings. The Condor 34:49-50.

Meese, R. J. 2006. Settlement and Breeding Colony Characteristics of Tricolored Blackbirds in 2006 in the Central Valley of California. Final Report to U.S. Fish and Wildlife Service and Audubon California.

Meese, R. J. 2007. Settlement, Breeding, Productivity, and Color-banding of Tricolored Blackbirds in 2007 in the Central Valley of California. Final Report to U.S. Fish and Wildlife Service and Audubon California.

Meese, R. J. 2008. Detection, Monitoring, and Fates of Tricolored Blackbird Colonies in 2008 in the Central Valley of California. Final Report to California Department of Fish and Game and U.S. Fish and Wildlife Service.

Meese, R. J. 2009a. Detection, Monitoring, and Fates of Tricolored Blackbird Colonies in 2009 in the Central Valley of California. Final Report to California Department of Fish and Game and U.S. Fish and Wildlife Service.

Meese, R. J. 2009b. Contribution of the Conservation of Silage Colonies to Tricolored Blackbird Conservation from 2005-2009. Final Report to U.S. Fish and Wildlife Service.

Meese, R. J. 2010. Detection, Monitoring, and Fates of Tricolored Blackbird Colonies in 2010 in the Central Valley of California. Final Report to California Department of Fish and Game and U.S. Fish and Wildlife Service.

Meese, R. J. 2011. Reproductive Success of Tricolored Blackbird Colonies in 2011 in the Central Valley of California. Final Report to California Department of Fish and Game.

Meese, R.J. 2013. Chronic low reproductive success of the colonial Tricolored Blackbird from 2006 to 2011. Western Birds 44: 98-113.

Meese, R. J. 2014. Results of the 2014 Tricolored Blackbird Statewide Survey. U.C. Davis.

Meese, R. J., E. C. Beedy and W. J. Hamilton, III. 2014. Tricolored Blackbird (Agelaius tricolor), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/423 doi:10.2173/bna.423

Neff, J. A. 1937. Nesting distribution of the Tri-colored Red-wing. The Condor 39:61-81.

Neff, J. A. 1942. Migration of the Tri-colored Red-wing in central California. The Condor 44:45-53.

Orians, G. H. 1960. Autumnal breeding in the Tricolored Blackbird. The Auk 77:379-398.

Orians, G. H. 1961a. The Ecology of Blackbird (*Agelaius*) social systems. Ecological Monographs 31:285-312.

Orians, G. H. 1961b. The Social stimulation within blackbird colonies. The Condor 63:330-337.

Orians, G. H. and G. Collier. 1962. Competition and blackbird social systems. Evolution 17:449-459.

Payne, R. 1969. Breeding seasons and reproductive physiology of Tricolored Blackbirds and Rewinged Blackbirds. University of California Publications in Zoology, Volume 90. University of California Press, Berkeley, California.

Picman, J., Milkes Maynard, L. and Leptich, M. 1993. Patterns of predation on passerine nests in marshes: effects of water depth and distance from edge. The Auk 110:89-94.

Shuford, W. D. and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Stephens, P. A. and Sutherland, W. J. 1999. Consequences of the Allee effect for behavior, ecology and conservation. Trends in Ecology and Evolution 14:401-405.

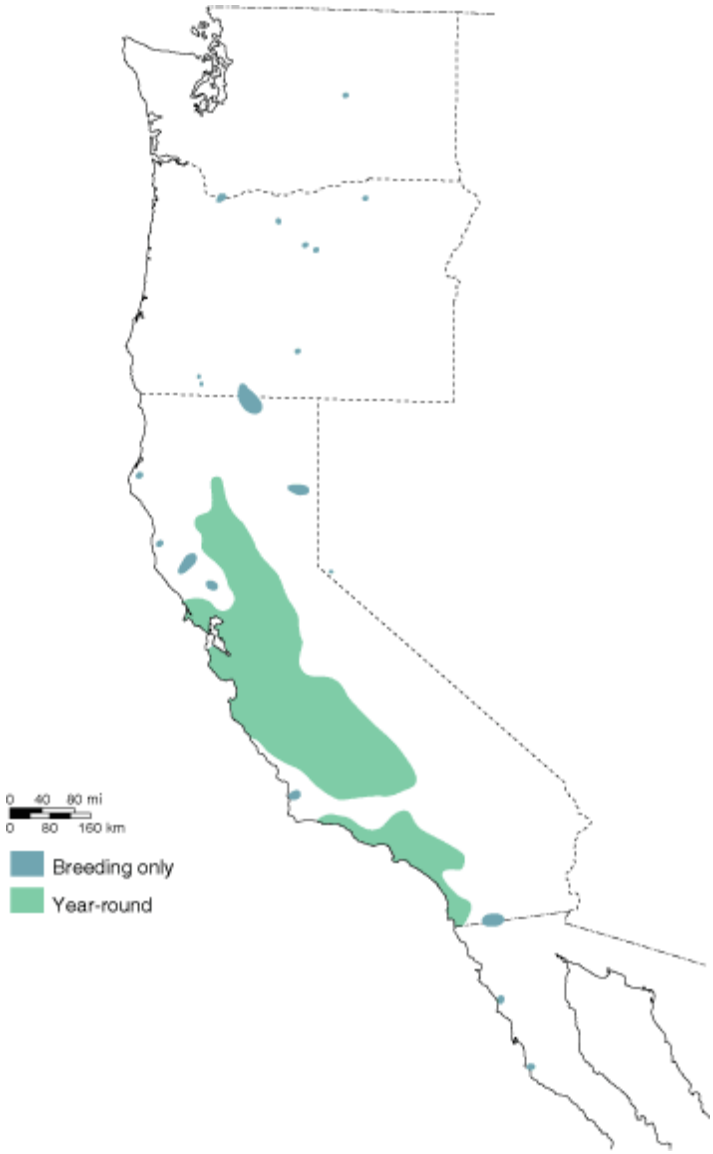
Tricolored Blackbird Working Group. 2007. Conservation Plan for the Tricolored Blackbird (*Agelaius tricolor)*. Susan Kester (ed.). Sustainable Conservation. San Francisco, CA.

Unitt, P. 2004. San Diego County bird atlas. Proceedings of the San Diego Society of Natural History 39.

U. S. Fish and Wildlife Service (USFWS). 2000. Strategy for Exit from the Dilemma of Tricolored Blackbirds Nesting in Dairy Silage Fields in the San Joaquin Valley, California.

Weintraub, K. A and T. L. George. 2012. Nest Survival of Tricolored Blackbirds in California's San Joaquin Valley 2011 Annual Report to U. S. Fish and Wildlife Service.

11. Detailed Distribution Map



Distribution of Tricolored Blackbirds (Meese et al. 2014)

2015 Addendum to
Petition to List the Tricolored Blackbird (*Agelaius tricolor*) as Endangered under the California Endangered Species Act and Request for Emergency Action to Protect the Species

In response to the Center for Biological Diversity's 2014 petition, the Commission provided Emergency Listing Protections for the species from December 29, 2014 through June 30, 2015. With the expiration of those emergency protections, Tricolored Blackbird remains at significant threat of extinction.

Two new relevant studies are attached hereto as an addendum to the petition and incorporated by reference. Holyoak et al. 2014 analyzed declines in breeding success of the Tricolored Blackbird and Meese 2015 reviews and evaluates efforts to document the status of the Tricolored Blackbird since 1931.

Holyoak M., Meese R.J., Graves E.E. 2014. Combining Site Occupancy, Breeding Population Sizes and Reproductive Success to Calculate Time-Averaged Reproductive Output of Different Habitat Types: An Application to Tricolored Blackbirds. PLoS ONE 9(5): e96980. doi:10.1371/journal.pone.0096980

Meese R.J. 2015. Efforts to Assess the Status of the Tricolored Blackbird from 1931 to 2014. Central Valley Bird Club Bulletin. No. 2-4. Special Issue on the Status, Ecology, and Conservation of the Tricolored Blackbird. 17:37-50.

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PLOS ONE

Combining Site Occupancy, Breeding Population Sizes and Reproductive Success to Calculate Time-Averaged Reproductive Output of Different Habitat Types: An Application to Tricolored Blackbirds

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Abstract

In metapopulations in which habitat patches vary in quality and occupancy it can be complicated to calculate the net time-averaged contribution to reproduction of particular populations. Surprisingly, few indices have been proposed for this purpose. We combined occupancy, abundance, frequency of occurrence, and reproductive success to determine the net value of different sites through time and applied this method to a bird of conservation concern. The Tricolored Blackbird (*Agelaius tricolor*) has experienced large population declines, is the most colonial songbird in North America, is largely confined to California, and breeds itinerantly in multiple habitat types. It has had chronically low reproductive success in recent years. Although young produced per nest have previously been compared across habitats, no study has simultaneously considered site occupancy and reproductive success. Combining occupancy, abundance, frequency of occurrence, reproductive success and nest failure rate we found that that large colonies in grain fields fail frequently because of nest destruction due to harvest prior to fledging. Consequently, net time-averaged reproductive output is low compared to colonies in non-native Himalayan blackberry or thistles, and native stinging nettles. Cattail marshes have intermediate reproductive output, but their reproductive output might be improved by active management. Harvest of grain-field colonies necessitates either promoting delay of harvest or creating alternative, more secure nesting habitats. Stinging nettle and marsh colonies offer the main potential sources for restoration or native habitat creation. From 2005–2011 breeding site occupancy declined 3x faster than new breeding colonies were formed, indicating a rapid decline in occupancy. Total abundance showed a similar decline. Causes of variation in the value for reproduction of nesting substrates and factors behind continuing population declines merit urgent investigation. The method we employ should be useful in other metapopulation studies for calculating time-averaged reproductive output for different sites.

Citation: Holyoak M, Meese RJ, Graves EE (2014) Combining Site Occupancy, Breeding Population Sizes and Reproductive Success to Calculate Time-Averaged Reproductive Output of Different Habitat Types: An Application to Tricolored Blackbirds. PLoS ONE 9(5): e96980. doi:10.1371/journal.pone.0096980

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Competing Interests: The authors have declared that no competing interests exist.

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Introduction

A common conservation aim is to understand the relative roles of altered habitat characteristics versus fragmentation in population declines. Armstrong [1] stated this as the need to distinguish between the habitat and metapopulation paradigms. Specifically, that we needed to identify how population declines and dynamics are influenced by habitat characteristics (e.g., in species' distribution or niche models [2]), and the metapopulation processes of extinction and colonization [3,4]). Here we tackle the question of how to evaluate the contribution to long-term regional dynamics of breeding populations in habitat patches of different types when patches do not remain continuously occupied. Our focus is on breeding populations because our study species, the Tricolored Blackbird (*Agelaius tricolor*), is widely dispersed when it is not breeding, and consequently it is difficult to census outside of the breeding season. Spatial concentration of numbers during the breeding season is also observed in a variety of organisms, including various land birds, pond-breeding amphibians and aquatic insects. Additionally in our study species, Tricolored Blackbirds, low breeding success has been highlighted as a problem during 2006–2011 [5]. We calculate a time-averaged index of reproduction that we believe will be of interest to those studying metapopulations of other organisms that do not use the same sites in all breeding seasons.

The Tricolored Blackbird, a medium-sized songbird that is geographically restricted to California and small portions of adjacent states in the western United States, experienced declines in total abundance on the order of 89% from the 1930's to 1980's [6] and average colony size declines of over 60% between the 1930's and 1970's [7]. The species receives legal protection under the Migratory Bird Treaty Act and is classified as a bird species of conservation concern by the US Fish and Wildlife Service [8], and California Species of Special Concern since 1990 [9]. Additionally,

it is treated as a sensitive species by the Bureau of Land Management since 1999 [10], and it has been listed on the IUCN red list of endangered species since 2006 [11]. The Tricolored Blackbird is the most colonial extant songbird in North America [12], and historically breeding colonies consisting of up to 200000 nests were recorded [13]. The species historically nested primarily in cattail (*Typha* spp.) or tule (*Schoenoplectus* spp.) marshes, but was observed to nest in a wide variety of wetland and upland habitats [13]. From the 1970's onwards the species was increasingly recorded nesting in invasive Himalayan blackberry (*Rubus armeniacus* [9], and silage crops, especially "triticale" [14,15]. The largest recently recorded colonies have mostly occurred in triticale, a wheat [*Triticum*] x rye [*Secale*] hybrid grain grown for dairy cows, and are at risk of being destroyed when the fields are harvested before the young have fledged [5,14,15]. Recently, a federally funded program has paid farmers to delay the harvest of triticale fields occupied by breeding tricolors until after the young have fledged and left the area [16]; however, participation in this program is voluntary and not all eligible farmers participate. We previously showed that long-term (1930's to 1980's) trends in the average size of breeding colonies (numbers of birds) varied both among geographical regions and nesting substrates [7]. Cook and Toft [15] also reported that reproductive success (number of 7–9 day old chicks per nest) was greater for colonies nesting in Himalayan blackberry than for those in native cattail or tule marshes. Additionally, silage colonies had low average reproductive success because of harvest before young birds fledged [15]. Considering only non-harvested colonies, Cook and Toft [15] found that silage colonies produced more offspring per nest than cattail or tule marsh colonies. Meese [5] found no differences in reproductive success among nesting substrate types in a sample of 47 colonies. Weintraub [17] also examined whether reproductive success of colonies in silage differed from that in marsh colonies as part of a Master's thesis study, but found no differences for the 14 colonies studied. Overall, while there have been several studies of population trends (or size) and some studies of reproductive success, no study has simultaneously considered occupancy of sites and reproductive success to determine the time-averaged net value of different habitats for conservation and management.

The occupancy of breeding habitat areas, the sizes of breeding populations, and the reproductive success of breeding efforts are often readily documented, but demographic data for the rest of the life cycle are much harder to obtain. This is especially the case for species that are more widely dispersed in the non-breeding season than when breeding, such as many imperiled birds, amphibians, and aquatic insects. We often lack a good understanding of both the dispersal between populations and survival outside of the breeding season. This arises because dispersal and survival are difficult to measure (e.g., [18,19,20]). These data gaps are typically found in imperiled species where low abundances or restricted distribution may limit study or present ethical considerations. Consequently, conservation biologists have adopted a variety of techniques to look at habitat effects on population dynamics.

One common method is to calculate finite growth rates and apply a source-sink approach [21,22]. However, without information about movement there is a risk of confusing habitat-specific demography with movement [23]. A source-sink approach can also be applied by using available information for reproduction in different habitats and assuming that survival has a constant value [24] and that movement does not confound measurement of finite growth rates. Such additional assumptions (about survival and dispersal) are frequently masked and increase uncertainty in the predictions made about population status. More directly, data on reproductive success is often used to identify ecological traps (e.g., [25]), although such an approach usually ignores data on the occupancy and population size in different habitats (e.g., reviewed by [26]). Of course there are studies of both source-sink dynamics and ecological traps for cases where more complete year-round data are available and movement was quantified, but this is often not the case for imperiled species. We here use a simple parsimonious method for calculating the net value for reproduction of sites in different breeding habitats by combining occupancy, abundance and reproductive data. We believe that our time-averaging approach will be useful for other species for which occupancy, abundance, and reproductive success data are available but where survival or movement data are lacking. Our approach has a more direct connection to existing data and avoids using additional assumptions to make conservation and management recommendations.

We evaluated the net value of typical sites in different breeding habitats for reproduction of Tricolored Blackbirds. Our focus was on the nesting substrate rather than the habitat surrounding nesting sites, which is used for foraging [14], and within which insect abundance at foraging locations is related to reproductive success [5]. We evaluated the net value of different nesting habitats for production of offspring by looking at the following questions: (1) Does frequency of occupancy, site extinction, or site recolonization vary by nesting substrate? (2) Does the duration of occupancy vary by nesting substrate? (3) Does reproductive success vary by nesting substrate? (4) Statewide, how frequently are breeding colonies recorded in different substrates, what are their sizes, and have their frequencies and sizes changed in recent decades? (5) Is it useful to combine the above information to obtain an overall idea of the net value of colonies in different nesting substrates in a typical year? Answering these questions allows us to provide new conservation recommendations for Tricolored Blackbirds and a methodology that is likely of broader interest to those studying the value of different breeding habitats for imperiled species.

Methods

Ethics

No animals were handled as a part of this study and no permits were required. The study species is not currently protected by the state or federal Endangered Species Acts which would require such permits. Some study sites are privately owned and the landowners of these sites provided access or they were viewed from nearby public rights of way without accessing the land.

Data sources and availability

We use data from three different sources that are all publicly available:

Dataset 1. For colony occupancy and reproductive success from 2006 to 2011 we used data collected by RJM together with 2005 data collected jointly by RJM and William J. Hamilton, III. These data are already available through the public Tricolored Blackbird Portal (http://tricolor.ice.ucdavis.edu) and the explicit dataset will be made available and archived through *Dryad* (http://datadryad.org/) when this manuscript is published. This dataset includes 26 distinct sites and a total of 45 records for which reproductive success values were estimated [5].

Dataset 2. For a broader view of reproductive success we used data collected during extensive fieldwork by the late William J. Hamilton, III (WJH) between 1992 and 2005 (a few colonies were sampled jointly with RJM in 2005). These data are available in a public archive, the Knowledge Network for Biocomplexity [27]. WJH's data represent the most extensive source of information on

reproductive success available for this species: it includes assessment of 128 distinct breeding sites containing colonies, and 191 records including repeated annual measurements at the same colonies, during 1992-2005. There were 2–30 colonies per year. These data up to 2000 are also discussed by Hamilton [28] but were not then formally analyzed or summarized. We have not included WJH as a coauthor since we have no way of knowing whether he would have agreed with the messages in our paper and instead directly cite the data source [27]. We did not use this dataset for occupancy analyses because it is not always clear which colonies were checked when reproductive success data were not collected.

Dataset 3. We used statewide survey data to obtain a broader view of the frequency of colonies in different breeding substrates and the size of such colonies. These data were used by Graves et al. [7] and are available in the public *Dryad* data archive ([29], file "Graves_et_al_data1.csv").

Empirical evaluations of reproductive success

Fieldwork generally began in late March in the southern San Joaquin Valley, where breeding commences earliest in the Central Valley, and progressed to the Sacramento Valley as the season progressed and birds move to breed again [30]. A full description of field methods are given by Meese [5], and these reflect general protocols as used by WJH. For example, the number of breeding birds in a colony was estimated either visually at the time of nesting and/or by nest sampling following the breeding season. Nest numbers were multiplied by 1.5 to estimate the number of breeding birds, which reflects that on average each male nests with two females [14]. If visual estimates of the numbers of breeding birds differed from estimates derived from direct counts of nests, the estimate derived from the direct count of nests was used because it was thought to be more accurate.

Analyses of Occupancy, Cessation of Use, Colonization and Survival of Breeding Colonies

Breeding colonies can be treated in analogous ways to populations within a metapopulation [3] with rates of patch occupancy resulting from extinction and colonization. However, because the breeding birds using colonies do not in most cases die, we avoid referring to extinction of colonies and instead refer to "cessation of use" for breeding each year. It should however be noted that in metapopulations when a local population experiences an extinction the individuals may also have moved to another habitat patch, so the metapopulation analogy is quite strong. Analyses in this section used occupancy information from Dataset 1.

We scored nesting sites as "occupied" when birds were present and breeding, and "unoccupied" when sites were visited but breeding birds were not found at any point during the annual monitoring period (the species' breeding season); hence sites with no information were not recorded as either unoccupied or occupied. Occupancy was analyzed using linear mixed effects models (using *lmer* in the *lme4* package in *R* [31]) with a logit link function and binomial error distribution, which are appropriate for binary data (occupied or not). In this analysis and all similar analyses, p-values ("pMCMC") were calculated using Markov-chain Monte Carlo sampling using the function pvals.fnc from R library language [32]. Models used year as a random factor to account for repeated measures in the error structure (we also investigated using site identity as a random factor but model fit was not improved, as measured using AICc, and results were similar). We excluded substrates that had less than five total records because the sample sizes were too small to provide reliable estimates of occupancy; these included colonies situated in *Arundo donax*, buttonbush (*Cephalanthus occidentalis*), mesquite (*Prosopis* sp.), and oats (*Avena sativa*). Sample sizes for included substrates are given as the numbers above the bars in Figure 1A. We attempted to include models with the number of breeding birds as a covariate (including interactions with breeding substrate type), or the same for the area of occupied habitat prior to extinction, but neither improved model fit and we therefore do not report the results further. Because preliminary analyses indicated substantial variation in occupancy from year to year we included year as a fixed effect in the model (in addition to as a random effect to allow for repeated measures; removing the random effect of year also did not produce substantial changes in the fixed effect for year, indicating that temporal autocorrelation was weak).

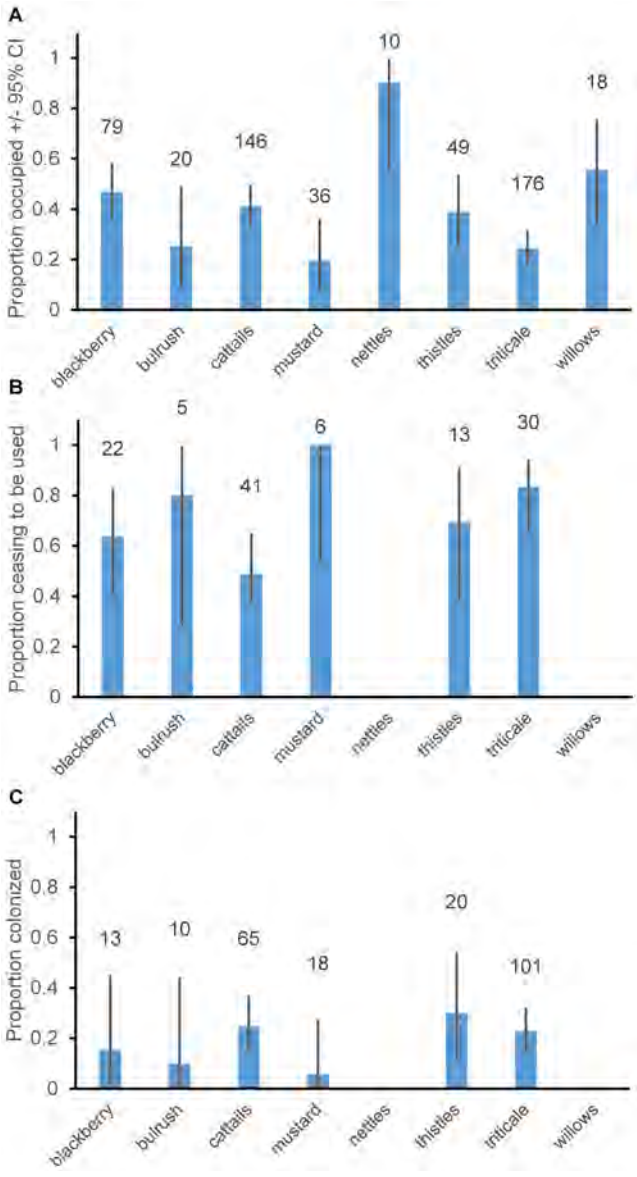

Figure 1. Mean proportion of breeding sites A. occupied, B. showing extinction or C. colonization per year. Numbers above bars indicate sample sizes. Error bars show 95% confidence intervals from a binomial distribution. Nettles and willows are not shown in b and c because sample sizes were less than 5.
doi:10.1371/journal.pone.0096980.g001

Table 1. ANOVA-style results of linear mixed effects models testing for differences in occupancy.

Fixed Effects:	SS	DF	MS	F	p	h^2
Substrate	8.52	7	1.22	5.79	0.001	0.07
Year	4.33	6		38.46	0.003	0.04
Error	109.55	520	0.21			

The whole model adjusted R^2-value was 11%. Random effects were: Year (Intercept) variance = 0.11423, standard deviation = 0.33798, from 534 observations in 7 groups (years). Effect size is given as the proportion of variance explained by explanatory variables, partial eta-squared (h^2) = (SS_{effect})/(SS_{effect}+SS_{error}).
doi:10.1371/journal.pone.0096980.t001

A "cessation of use" event was recorded as occurring when a site was occupied by breeding birds in year *t*-1 and was not occupied in year *t*, which could have occurred either because the habitat became unsuitable (e.g., many triticale fields) or because the habitat was present and suitable, but birds no longer used it for breeding. Cessations of use were recorded as possible when a site was occupied in year *t*-1 and was monitored for nesting birds in year *t*; this procedure avoided censoring of the data. For the probability of cessation-of-use analyses we used linear mixed effects models in the same way as for occupancy listed above including covariates and year as a fixed effect. Only nesting substrate improved model fit based on delta AIC values and for brevity we do not report the factors and covariates that did not improve model fit. We included nesting substrates if there were at least 5 possible extinctions within each (sample sizes in Figure 1B), and this restriction resulted in exclusion of *Arundo*, bulrush, buttonbush, mesquite, nettles, oats, and willow substrates.

A "colonization" was recorded for sites from 2006 onwards if a site was unoccupied in year *t*-1 and became occupied in the current year *t*. Our data represent a mix of colonizations of sites that were likely unoccupied during our study and recolonizations of sites that had experienced cessations of use during our study period. Analysis was conducted in the same way as for occupancy and cessations of use, and sample sizes for included substrates are reported in Figure 1C.

We also analyzed for how many years colonies remained occupied in common breeding substrates (blackberry, cattails, thistle and triticale), and refer to this as "colony longevity." (We use the term as a shorthand while recognizing that colonies may relocate rather than dying, hence colony longevity represents the duration of occupancy of a site.) The analysis was formerly a survival analysis using the *survreg* function from library *Survival* in *R* [33]. Preliminary analyses showed that parametric survival analyses were more informative than non-parametric (Cox's proportional hazards) analyses, and that models with a Weibull hazard function (describing instantaneous risk of death) were a significantly better fit to the data than those with an exponential hazard function. The analysis recognized that data are censored both because some colonies remained occupied by breeding birds during the breeding seasons throughout the study period and we do not know when some sites were colonized.

Analyses of Reproductive Success

Datasets 1 and 2 were used to assess reproductive success (RS) of colonies. RS was defined as the number of chicks alive per nest at c. 7–9 days after hatching of the first egg. RS was estimated either by visual estimates or by sampling. Visual estimates of RS were derived from the estimates of the number of breeding birds obtained during monitoring and the number of fledglings observed at the end of the breeding season. Because one male breeds, on average, with two females [14], each two nests have three birds

Table 2. Parameter values from linear mixed effects models testing for differences in occupancy.

Parameter type	Group	Parameter	SE	z	p
Mean	cattails, 2005	0.058	0.30	0.19	0.85
difference in mean	mustard	-1.11	0.46	−2.40	0.02
difference in mean	blackberry	0.34	0.29	1.16	0.25
difference in mean	bulrush	−0.78	0.55	−1.42	0.16
difference in mean	nettles	2.98	1.08	2.74	0.006
difference in mean	thistle	−0.02	0.35	−0.06	0.95
difference in mean	triticale	−0.82	0.25	−3.32	0.001
difference in mean	willow	0.69	0.53	1.31	0.19
difference in mean	2006	−0.44	0.38	−1.17	0.24
difference in mean	2007	−0.37	0.39	−0.96	0.34
difference in mean	2008	0.12	0.35	0.34	0.73
difference in mean	2009	−0.34	0.36	−0.96	0.34
difference in mean	2010	−0.48	0.38	−1.27	0.20
difference in mean	2011	−1.23	0.36	−3.46	0.001

The mean value of logit-transformed occupancy is given for cattails in 2005, and then other rows of the table give the difference (in logit-transformed mean occupancy) from this value for the groups indicated.
doi:10.1371/journal.pone.0096980.t002

Table 3. ANOVA-style results of linear mixed effects models testing for differences in the proportion of colonized sites where occupancy for breeding ceased per year.

Fixed Effects:	SS	DF	MS	F	P	h^2
Substrate	2.93	5	0.59	2.82	0.019	0.11
Error	23.07	111	0.21			

Random effects were: Year (Intercept) variance = 3.8×10^{-13}, standard deviation = 6.2×10^{-7}, from 117 observations in 6 groups (years). Effect size is given as the proportion of variance explained by explanatory variables, partial eta-squared (h^2) = (SS_{effect})/(SS_{effect}+SS_{error}).
doi:10.1371/journal.pone.0096980.t003

associated with them, so the product of the number of breeding birds multiplied by 2/3 (0.67) provides an estimate of the number of nests constructed. The number of young fledged divided by the estimate of the number of nests constructed yields an estimate of the number of young fledged per nest (RS).

Average reproductive success (RS) combines the numbers of offspring in successful nests with zero values that come from failed nests. Nests may fail entirely because of physical conditions (destruction during high winds, extreme temperatures, etc.) as well as predation [9]. It is therefore useful to separately consider rates of nest failure from reproduction in nests that were successful. To this end Hamilton calculated the reproductive rate for the subset of nests that were successful up to 7–9 days old, termed RSS (reproductive success of successful nests).

Because of differences in timing and observers we initially analyzed the two datasets separately. However, both visual plots and individual *lmer* models failed to find differences between the datasets, and so here we report a combined analysis. We used linear mixed effects models with colony identity as a random factor to allow for repeated measurements from individual colonies. Year, substrate and collector identity (Hamilton or RJM) were factors with fixed effects, and we also assessed year by substrate interactions but found no significant ($P<0.1$) effects for such interactions and do not report these results further. Collector identity (and interactions with other factors) also produced an increase in the AICc value of the model indicating that a simpler model without this variable was preferred and we therefore do not report this effect further.

Analyses of Colonies in Different Substrates and Colony Size

We used Dataset 3 and specifically records from 1980 through 2011. We summarized the proportion of records in each breeding substrate per decade and average colony size (number of birds ln-transformed) by decade (1980–1989, 1990–1999, 2000–2009, and 2010–11). Recent colony sizes were calculated using ln(birds) per colony from 2000 to 2011 inclusive.

Recent colony sizes and reproductive success (RS) estimates from either Datasets 1 or 2 were used to estimate the total predicted production of chicks (to day 8) for average size colonies in each of the common substrates. To give an idea of variation in chick production per spring breeding per colony in each substrate we calculated a standard deviation: Standard deviations of the numbers of chicks produced were calculated as $x.\sqrt{(s_1{}^2+s_2{}^2)}$, where x is the estimated number of chicks produced for a particular substrate, s_1 is the proportional standard deviation for colony size (standard deviation of colony size/mean colony size), and s_2 is the proportional standard deviation for reproductive success in the same substrate. Lastly, to allow for the fact that not all sites are occupied in all years we multiplied chick production by occupancy to calculate chick production across an average site of each substrate. A measure of variation could not easily be calculated for this measure but the standard deviation would likely encompass zero values (no chicks produced) for all substrates because variation in RS, colony size, and occupancy are all relatively large.

Results

Occupancy, Cessation of Use, Colonization and Longevity of Colonies

Average proportional occupancy of breeding sites varied widely across sites and substrates (Figure 1A). Average breeding site occupancy was significantly lower for triticale and mustard growing as a weed within grain fields, than for other breeding substrates with sufficient sample sizes (cattails, blackberry, bulrush, nettles, thistle and willow). Cattails, blackberry, bulrush, nettles, thistle and willow were similar (at $P>0.1$) to one-another in their levels of site occupancy (Figure 1A for differences and Tables 1, 2

Table 4. Parameter values from linear mixed effects models testing for differences in the proportion of colonized sites where occupancy for breeding ceased per year.

Parameter type	Group	Parameter	SE	z	p
Mean	cattails	−0.049	0.31	−0.16	0.88
difference in mean	mustard	16.6	1615	0.01	0.99
difference in mean	blackberry	0.61	0.54	1.12	0.26
difference in mean	bulrush	1.44	1.16	1.24	0.22
difference in mean	thistle	0.86	0.68	1.27	0.20
difference in mean	triticale	1.66	0.58	2.85	0.004

The mean value of logit-transformed proportion of sites with cessation of breeding is given for cattails, and then other rows of the table give the difference (in logit-transformed mean proportion) from this value for the groups indicated.
doi:10.1371/journal.pone.0096980.t004

Table 5. ANOVA-style results of linear mixed effects models testing for differences in the proportion of vacant sites with colonizations per year.

Fixed Effects:	SS	DF	MS	F	P	h^2
Substrate	0.86	5	0.17	1.01	0.41	0.02
Error	37.6	221	0.17			

Random effects were: Year (Intercept) variance = 0.004, standard deviation = 0.066, from 227 observations in 6 groups (years). Effect size is given as the proportion of variance explained by explanatory variables, partial eta-squared (h^2) = (SS_{effect})/(SS_{effect}+SS_{error}).
doi:10.1371/journal.pone.0096980.t005

for statistics). Nettle sites had higher than average occupancy, and showed significantly higher occupancy than other substrates except willows (Figure 1A and Tables 1, 2).

The rate of cessation of breeding at sites that were used for breeding in previous years was generally frequent, with an average of 66% of sites per year ceasing to be occupied by breeding birds. This rate was significantly higher for triticale fields (83% of sites per year) than for cattail sites (49%; Figure 1B; Tables 3, 4). Data on cessation of use of breeding sites were sparse for blackberry, bulrush, mustard, nettle and willow sites (Figure 1B), which might account for a lack of any statistical differences (at $P<0.1$) in the frequency of cessation of use of sites in these substrates compared to other substrates. Although with a small sample size it is noteworthy that like triticale sites, mustard sites showed a high average rate of extinction (100%). This likely reflects either that annual crops were not planted in the same place each year or that weeds in such fields were removed by herbicide application, forcing extinction through a lack of habitat in the form of both the crop itself and mustard as a weed within such crops.

For the six substrates with calculable rates at which they ceased to be used for breeding, these rates were strongly negatively correlated with occupancy (Pearson's $r = -0.87$, $P<0.025$ in a 1-tailed test). The overall pattern is that the two temporary habitats, triticale and mustard, showed lower occupancy (Figure 1A) and higher observed rates of cessation of use (Figure 1B) than other types of breeding site. This likely reflects habitat loss either through herbicide use on weeds that Tricolored Blackbirds frequently nest in (e.g., mustard) or because of crop rotations. The two substrates for which rates of cessation of use could not be calculated (because $n<5$) were nettles and willows, both of which showed very high occupancy (Figure 1A) and thus experienced very few cessations of use.

Colonization rates were generally low, with only 21.1% of sites per year being colonized each year. *LMER* models showed no significant difference (at $P<0.1$) for any substrate or overall (Tables 5, 6). Across the full suite of sites for which we had occupancy data the low colonization rates (21%/year) relative to cessation rates (66% sites/year) could either reflect a declining (nonequilibrium) metapopulation or that colonizations are under-recorded.

Analysis of the numbers of years for which sites remained in use by breeding colonies using survival analysis revealed that the slope of survivorship versus age of colonies declined with colony age (scale parameter = 0.436, Table 7). Hence colonies that were occupied for more than 1 year were less likely to cease being occupied during their second year than their first year (Figure 2). Continued use of sites in cattail marshes was more likely than for triticale sites (Figure 2, Table 7). This accords with the high per year cessation-of-use rates of triticale colonies compared to cattail marsh colonies (Figure 1B, Tables 3, 4). Survivorship slope declining less sharply in older colonies can most clearly be seen in cattail colonies (Figure 2), whereas triticale colonies frequently ceased to be used after one year, and sample sizes were small because there were few uncensored records for blackberry and thistle colonies.

Reproductive Success

Reproductive success (RS) varied substantially among nesting substrates, and for habitats with at least 5 RS values substrate accounted for 59% of the variation in RS values (Tables 8, 9). Himalayan blackberry colonies had a greater average reproductive success than marshes, grain fields, and thistle habitats (Tables 8, 9; Figure 3A). The sample size for RS estimates from nettles was low (Figure 3A) and statistically there was no difference from other substrates (Tables 8, 9), but RS values were high and grouped together with blackberry. There were only 4 RS estimates from colonies in willows and the RS values were low and seemed similar to thistle, marsh and grain field colonies. The analysis reported in

Table 6. Parameter values from linear mixed effects models testing for differences in the proportion of vacant sites colonized per year.

Parameter type	Group	Parameter	SE	z	P
Mean	cattails	−1.12	0.29	−3.87	0.001
difference in mean	mustard	−1.72	1.07	−1.61	0.11
difference in mean	blackberry	−0.59	0.82	−0.71	0.48
difference in mean	Bulrush	−1.08	1.09	−0.99	0.32
difference in mean	Thistle	0.27	0.57	0.48	0.63
difference in mean	triticale	−0.10	0.37	−0.27	0.79

The mean value of logit-transformed proportion colonized is given for cattails, and then other rows of the table give the difference (in logit-transformed mean proportion colonized) from this value for the groups indicated.
doi:10.1371/journal.pone.0096980.t006

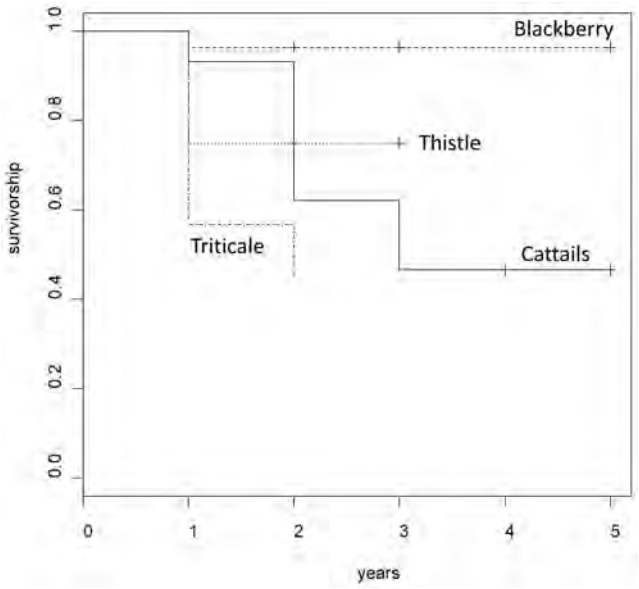

Figure 2. Survivorship for breeding colonies in different substrates. The vertical crosses (plus symbols) indicate that datapoints were constrained by censoring of the data. Note that for Blackberry there was only one non-censored event and so the survivorship values are limited by sample size and are likely not reliable.
doi:10.1371/journal.pone.0096980.g002

Tables 8, 9 did not find any significant ($P<0.1$) effects of observer (Hamilton or Meese) or year on RS values and so the above results represent a compilation of the datasets. Colony size (estimated number of birds) did not have any statistical effects on RS in the linear mixed effects models, nor did colony area (square meters) in the Meese data (and was not collected for the Hamilton data).

Reproductive success results in part from complete failure of nests, from sampled nests in which eggs were never laid, and in part from reduced numbers of chicks in nests that survive to the time of recording (day 7–9). Figure 3C shows that a low proportion of nests was successful at rearing young in marsh habitats compared to those in Himalayan blackberry and grain field sites. Stinging nettle sites appeared intermediate and variable (likely because of small sample sizes; Figure 3C). Interestingly nesting substrate accounted for only 15% of variance in RSS compared to the 54% in RS, indicating that nesting substrate had a more predictable effect on whether nests failed or succeeded in raising some chicks rather than on the numbers of chicks produced. As with RS, RSS was relatively high for Himalayan blackberry colonies (Tables 10, 11, Figure 3B). Grain fields had lower RSS than Himalayan blackberry colonies, and nettle colonies had higher RSS than Himalayan blackberry colonies (and grain fields; Tables 10, 11, Figure 3B). Marsh colonies had lower reproductive success than Himalayan blackberry colonies but significance was marginal (pMCMC = 0.056; Tables 10, 11), reflecting small sample size for RSS from marshes. RSS for marsh colonies was similar to that from grain field colonies (Figure 3B).

Frequencies of Colonies in Different Substrates and Colony Size

Figure 4A shows that colonies were most frequent in marsh habitats (cattails and bulrush) followed by blackberries and thistles. Records in grain fields (primarily triticale but also mustard within triticale) have grown steadily to represent 8.6% of colonies in 2010–2011. The proportion of records grew through time for both nettles (reaching 10.2% of records in 2010–11) and thistle (12.7% of records in 2010–11). Conversely the proportion of records in marsh habitats declined steadily through time (Figure 4A), from 51.7% in the 1980's to 33% in 2010–11. With the exception of thistle colonies, the average size (number of birds) of colonies in common substrates was smaller in 2010–11 than in previous decades (Figure 4B). The decline was most dramatic for grain crops (Figure 4B). For the period 2000 to 2011 inclusive, representing recent records (without putting too much emphasis on 2010–11) Figure 4C shows average colony sizes. Grain field colonies were by far the largest on average size, with a mean of 995 birds. Other colonies on average had 312 birds in blackberry, 290 for thistle (and milk thistle, *Silybum marianum*), 224 birds for nettle, 215 birds in marsh substrates and the few willow sites were smallest of all (135 birds).

Predictions of the numbers of chicks that would have been produced by average size colonies were in general highly variable, reflecting that both the RS estimates and colony size estimates were also variable. Putting together RS estimates and average (2000–2011) colony sizes leads to the prediction that blackberry and grain field colonies produced the most chicks on average (Figure 4D). This was followed by stinging nettle colonies and then thistle colonies (Figure 4D). Marsh sites produced smaller numbers of chicks on average but they were still about twice as productive as willow sites (Figure 4D). Incorporating occupancy into our analysis across the years shows that nettle sites were the most productive (with a mean of 221 chicks per site per year; Figure 4D) because they have high occupancy, followed by blackberry sites (174 chicks/site/year). (An average grain field in an average year produced 65 chicks, but this figure is not very relevant because grain fields are generally not conserved from year to year). Thistle sites produced an average of 44 birds/site/year, and surprisingly marsh sites produced an average of only 34 birds/sites/year reflecting that their occupancy was low. The few willow sites produced an average of 26 birds per year. Clearly conserving triticale (grain) fields when they are occupied is especially valuable and this is possible because the habitat is not permanent. Apart

Table 7. Results of parametric survival analysis for breeding colonies using a Weibull hazards function.

Parameter type	Group	Parameter	SE	z	p
Mean	Cattails	1.355	0.169	8.03	0.001
difference in mean	blackberry	0.582	0.476	1.22	0.21
difference in mean	Thistles	−0.334	0.301	−1.11	0.27
difference in mean	Triticale	−0.805	0.202	−3.99	0.001

The model was significantly preferred over an intercept-only model (Chi-squared = 22.44 with 3 degrees of freedom, $p<0.001$). Weibull scale parameter = 0.436. The mean value of survival is given for cattails, and then other rows of the table give the difference from this value for the groups indicated.
doi:10.1371/journal.pone.0096980.t007

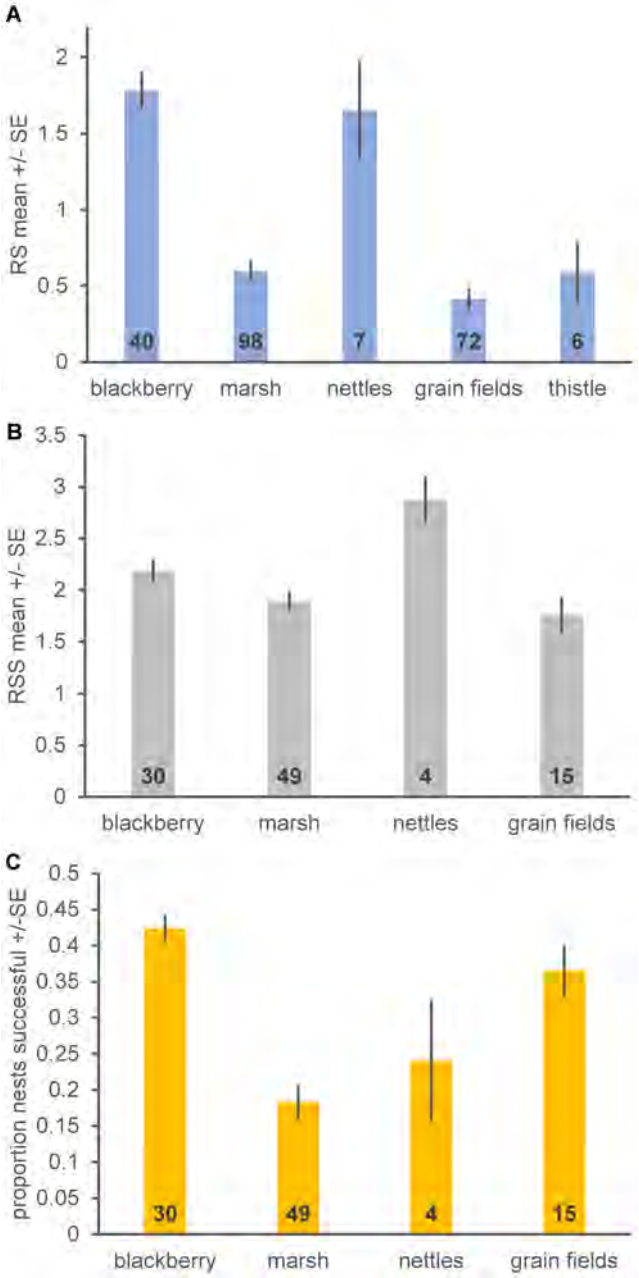

Figure 3. Reproductive success estimates for different breeding substrates. Estimates of **A**, reproductive success (RS), defined as the average number of chicks per nest at c. 8 days after the first egg hatched, **B** reproductive success of nests that were successful in rearing some young to day 8 (RSS), and **C** the proportion of nests that were successful in rearing some young to 7–9 days-old. Data in **A** come from Hamilton and RJM, and those in **B** and **C** come from Hamilton. Bars indicate standard errors. Numbers inside the base of bars indicate sample sizes (colonies x years, reflecting that these data include some repeated measurements).
doi:10.1371/journal.pone.0096980.g003

from this, considering occupancy leads to the prediction that average nettle sites are disproportionately important in chick production, as are blackberry sites, whereas thistle sites are less important and marsh sites are close to least important of the nesting substrates commonly used by Tricolored Blackbirds.

Discussion

Our analyses demonstrate a simple direct method for combining data on breeding site occupancy, breeding population sizes and reproductive success to calculate the net metric for the value of different habitats for reproduction. In our case because we had time series of occupancy values for each site, we calculated time-averaged values for reproductive success, but such calculations could also be made using one-time (snapshot) estimates of occupancy, abundance and reproduction. Such direct calculations avoid making additional assumptions about survival (outside of the breeding season) and dispersal that would be required to apply a source-sink model (e.g., [21]) to species where we have data only on breeding populations. We believe that such calculations would also benefit studies of other imperiled bird species, as well as other taxa where we can readily obtain data only on breeding success and breeding populations because individuals are more widely dispersed when not breeding. It is surprising that previously (as far as we can determine) such an index has not been described. Our calculations assume that there is turnover of occupancy in sites, as is usually the case in fragmented populations and metapopulations [20].

Calculation of the average number of offspring produced per site in an average year provides a method of assessing the conservation value of different breeding substrates (Figure 4D). An assessment of the components making up this number, like that in Table 12, helps us understand multiple components of the value of colonies, in particular breeding substrates, average breeding colony size, occupancy, nest failure rates, and numbers of young surviving to a given point in time. It is useful to consider each substrate in turn, which we do below from highest to lowest time-averaged total estimated number of chicks produced for an average colony.

We showed the following for Tricolored Blackbirds: (1) The frequency of occupancy and site extinction (cessation of use) varied substantially among different nesting substrates, but we found no differences in rates of site recolonization by nesting substrate. (2) As predicted by different frequencies of extinction (cessation of use), the duration of occupancy varied among nesting substrates. (3) Reproductive success showed substantial differences among nesting substrates. (4) Statewide average sizes of breeding colonies in different substrates and frequency of occurrence in different substrates (number of sites) changed through time. The pattern was generally with traditional marsh sites being used less frequently and supporting smaller colonies relative to colonies in native nettles and invasive thistles. Himalayan blackberry colonies are fairly typical in size, occupancy and longevity, and occur with a typical frequency. However Hamilton's data indicate that these colonies have a low failure rate and a higher reproductive success and lower rates of nest failure than other breeding substrates (Figure 3). Consequently long-term breeding productivity of an average blackberry site is expected to be high (Figure 4D). This accords with the findings of Cook and Toft [15], who recorded higher reproductive success for nests in Himalayan blackberry than in other substrates. Unfortunately, Himalayan blackberry is a high risk nonnative invasive species [34] and so it cannot be planted as a component of many federally-funded conservation programs and is frequently removed or attempted to be removed [35]. Himalayan blackberry is problematic because of competition with native plant species, reducing soil moisture and as a potential fire hazard [34]. As Cook and Toft [15] point out there is a conflict between this invasive weed and habitat for Tricolored Blackbirds.

Table 8. ANOVA-style results for linear mixed effects model analyses of reproductive success (RS) for both the Hamilton and Meese datasets.

Fixed Effects:	SS	DF	MS	F	p	h^2
Substrate	58.3	4	14.6	31.6	<0.001	0.59
Error	98.8	214	0.46			

The analysis was limited to breeding substrates with at least 5 measurements. Collector identity and year of collection were removed in model simplification and are not reported further. Effect size is given as the proportion of variance explained by explanatory variables, partial eta-squared (h^2) = (SS_{effect})/(SS_{effect}+SS_{error}). Random effects were: Colony identity (intercept) variance = 0.136, standard deviation = 0.368, from 219 observations in 138 groups (colony identities).
doi:10.1371/journal.pone.0096980.t008

Stinging nettle sites had high occupancy, longevity and reproductive success, and low rates of failure. Consequently nettle sites on average have high long-term breeding productivity (Figure 4D). Stinging nettle sites are however infrequent in occurrence (Figure 4A). Previous studies of reproductive success have lacked sufficient data to evaluate nettle sites. Stinging nettles are native and could be planted to provide breeding substrate for Tricolored Blackbirds but require a reliable supply of fresh water before and during the tricolor's breeding season so may be limited as a conservation tool due to water scarcity.

Marsh colonies (cattails and bulrushes) are the most frequent colony type yet are average compared to other colony types in all aspects measured, including occupancy, longevity, size, reproductive success, and rate of nest failure. The lack of any more positive aspects to marsh sites relative to other colony types makes the net breeding productivity of an average site relatively low (Figure 4D), and consequently their conservation value for Tricolored Blackbirds is more limited than blackberry and nettle sites. Cook and Toft [15] found similar results. Tricolored blackbirds prefer marshes containing vegetation that is young, lush, and rapidly growing, and will avoid older cattail and bulrush marshes containing much thatch and many lodged, dead stems. Hence, marsh management consisting of actions designed to remove old, dead stems and encourage regrowth of new vegetation is needed to promote the use of marsh habitats. In most cases, annual burning is required to rejuvenate marshes and to provide the conditions preferred by breeding tricolors. Water levels are also critical to reducing predator access, as raccoons (*Procyon lotor*), the tricolor's most serious predator in freshwater marshes, prefer to wade than to swim, and typically will not cross deep channels around the perimeter of cattail stands. To this end, the management of marshes for Tricolored Blackbirds by private duck clubs is a potentially important component of a comprehensive conservation strategy since Tricolored Blackbirds and a host of wetland-dependent species may benefit from the springtime availability of water.

Cereal grain fields, including triticale, wheat, and mustard (*Brassica* spp.) growing as a weed within such fields, have since the 1980's held by far the largest colonies (Figure 4C) but have relatively low net reproductive success because of a high rate of colony destruction through harvest (Table 12; Figures 3, 4D). Triticale colonies are frequently destroyed through harvest because the crop ripens before the young fledge and farmers harvest their fields when the seed heads reach maturity [14]. The fact that grain field occupancy is low (even replanted sites are frequently not reused; Figure 1A) and reproductive success is moderate means that a more dynamic conservation strategy is needed (and used) for cereal grain crops; temporary large breeding colonies in grain crops are best targeted when they are present. Cook and Toft [15] also found that colonies in triticale crops that were not harvested had relatively high reproductive success (mean RSS = 1.0), but not as high as the larger dataset used here (mean RSS = 1.76; Figure 3B). Overall the findings for triticale crops accord with both the recommendations of the Tricolored Blackbird Working Group [16] and the use of federal funds to encourage farmers to volunteer to delay harvest of triticale crops containing Tricolored Blackbird breeding colonies. It is not clear that a more permanent preservation of repeatedly planted sites are especially valuable for Tricolored Blackbird conservation because they have a low occupancy by breeding colonies through time. While we recognize that birds breeding in farmers' fields contains great inherent risks, given the relatively large number of birds that breed in grain fields adjacent to dairies and the absence of nearby alternative nesting substrates, it is essential as a core component of a comprehensive conservation strategy that all of these colonies be protected until the young have fledged. In the longer term, additional protected breeding substrates must be provided to give birds secure nesting habitats while ensuring the farmer's right to harvest his crop.

Table 9. Parameter values from linear mixed effects model analyses of reproductive success (RS) for both the Hamilton and Meese datasets.

Mean	Blackberry	1.78	0.12	15.2	0.0001
difference in mean	Marsh	−1.16	0.14	−8.25	0.0001
difference in mean	Nettles	−0.10	0.29	−0.34	0.66
difference in mean	Grain fields	−1.32	0.15	−8.46	0.0001
difference in mean	Thistle	−1.19	0.30	−3.93	0.0001

The analysis was limited to breeding substrates with at least 5 measurements. P-values ("pMCMC") were obtained using Markov-chain Monte Carlo sampling using the function pvals.fnc from R library language [32]. Collector identity and year of collection were removed in model simplification and are not reported further. The mean value of reproductive success is given for marsh habitat, and then other rows of the table give the difference from this value for the groups indicated.
doi:10.1371/journal.pone.0096980.t009

Table 10. ANOVA-style results for linear mixed effects model analyses of reproductive success of nests that were successful in rearing at least one chick to day 8 after first egg hatch (RSS) for the Hamilton dataset.

Fixed Effects:	SS	DF	MS	F	p	h^2
Substrate	5.53	3	1.84	4.56	0.005	0.15
Error	37.6	93	0.40			

The analysis was limited to breeding substrates with at least 5 measurements. Effect size is given as the proportion of variance explained by explanatory variables, partial eta-squared (h^2) = (SS_{effect})/(SS_{effect}+SS_{error}). Random effects were: Colony identity (intercept) variance = 0.006, standard deviation = 0.08, from 97 observations in 74 groups (colony identities).
doi:10.1371/journal.pone.0096980.t010

Colonies in thistle (e.g., bull thistle, *Cirsium vulgare* and milk thistle, *Silybum marianum*) substrates are relatively infrequent but are typical in occupancy, longevity, reproductive success (but data on failure rates are lacking), and size; consequently they have a typical net long-term productivity per site that is similar to that for grain fields despite the much smaller colony size in thistle sites. In one year (2010) the largest known colony was in milk thistle and had an estimated 83000 birds, which also illustrates that year-to-year variation is high. Again there is the problem that both of these plant species are invasive, although the impacts of milk thistle are limited [34]. Hence a conservation strategy preserving sites and maintaining vegetation type would likely be effective for thistle and milk thistle sites, but nettle substrate is both native and more valuable. Lastly, although data were sparse for willow sites, colonies were small and infrequent, making their net breeding productivity relatively low and consequently their conservation value also low.

A question that arises from our analyses is what is the mechanism (or mechanisms) by which nesting substrate influences reproductive success. Meese [5] showed a clear correlation between insect abundance (food) in habitats around nesting colonies and RS of those colonies in the same year, and only colonies with abundant insects were successful at rearing some young. Meese's analysis produced a correlation between ranked values of 0.74, and hence accounted for 54% of the variation in ranked RS values. It is possible that nesting substrates reflect neighborhood insect abundances, although other effects are also possible. In our analyses breeding substrate accounted for 54% of variation in RS (the same as insects in Meese's study [5]). More importantly, breeding substrate accounted for only 15% of variation in RSS (reproductive success of successful nests), which is consistent either with nesting substrate having greater predictive ability for whether nests succeed or fail, rather than in the number of chicks that produced, or with there being a threshold effect such that RS is more likely to become zero in certain breeding substrates. Beedy, and Beedy and Hamilton [9,14] report that the basic requirements for successful breeding are nesting substrates that are protected by virtue of being flooded, or possess thorny or spiny leaves or stems, and that occur in proximity to foraging habitats. Other studies have reported colony failures because of both predation (e.g., [5,9,17,36,37]), loss of standing water in marsh sites (which also may increase predation, (e.g., [38])) harvest of grain crops (above), and habitat destruction (e.g., [39])). Hence we expect that breeding substrate could have a direct role on colonies by reducing rates of predation. Large losses from colonies have been reported due to predation by Black-crowned Night-herons (*Nycticorax nycticorax*), Cattle Egrets (*Bubulcus ibis*), White-faced Ibis (*Plegadis chihi*), Common Ravens (*Corvus corax*), Coyotes (*Canis latrans*) [5,9,17,36,27]. Avian predators can access nests even in flooded habitats, whereas terrestrial predators can more easily access dried out marshes or terrestrial habitats. Thorny and spiny terrestrial habitats and nests sufficiently far above the ground (e.g., 3-m above the ground in willows [9]) may offer some protection from most predators. The degree to which different habitats differ in predation rates needs more systematic study (as also suggested by [9]). In the central coast of California numbers of some predatory herons and egrets have increased since 1991 [40], and although data are sparse for the Central Valley of California (the area containing most Tricolored Blackbirds), some species have increased nationally (see references in [40]). Beyond the obvious effect of harvesting of colonies in grain fields, the relative extent of disturbance in different habitats requires further evaluation. The kinds of effects are exemplified by Meese [39] who reported a Himalayan blackberry colony that was defoliated causing the birds to abandon the site, and two milk thistle colonies that were destroyed by cutting. Weintraub [17] also reported that some more terrestrial sites (Tamarisk and mesquite) were only used when they were flooded, and hence flooding of sites and conditions more generally might affect site at the time of habitat selection, prior to nesting.

Table 11. Parameter values from linear mixed effects model analyses of reproductive success of nests that were successful in rearing at least one chick to day 8 after first egg hatch (RSS) for the Hamilton dataset.

Parameter type	Group	Parameter	SE	t	pMCMC
Mean	Blackberry	2.19	0.12	18.681	0.0001
difference in mean	Marsh	−0.29	0.15	−1.958	0.056
difference in mean	Nettles	0.69	0.34	2.035	0.046
difference in mean	Grain fields	−0.43	0.20	−2.124	0.038

The analysis was limited to breeding substrates with at least 5 measurements. The mean value of RSS is given for marsh habitat, and then other rows of the table give the difference from this value for the groups indicated. P-values ("pMCMC") were obtained using Markov-chain Monte Carlo sampling using the function pvals.fnc from R library language [32].
doi:10.1371/journal.pone.0096980.t011

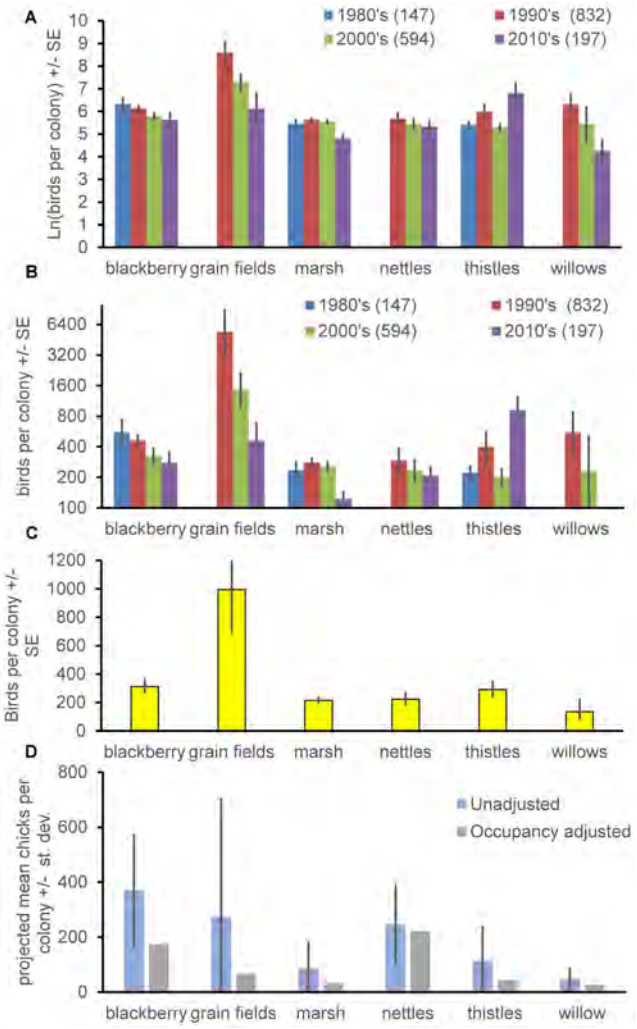

Figure 4. Frequency of colonies, colony size and projected net chick production per colony. A. Proportion of colonies in different substrate types by decade, with total sample sizes in parentheses. **B**. Size of colonies in different substrates by decade (color key same as in a). **C**. Size of recent (2000–2011) colonies. **D** Projected number of chicks produced per colony of average size using reproductive success estimates from Figure 3A and also the same estimates adjusted for the fact that an average site is not occupied in every year (using analyses in Figure 1A). In B and C error bars show +/− 1 SE to facilitate comparison, whereas in D error bars are +/− 1 standard deviation to give an idea of variation. Error bars (standard deviations) are not readily calculable for the occupancy-adjusted projected chicks per colony but likely overlap zero because they represent the summation of at least 3 sources of error (compared to 2 for the other two estimates in D).
doi:10.1371/journal.pone.0096980.g004

Our results in conjunction with Meese's [5] study of food availability in areas surrounding breeding sites indicate that we need to disentangle the effects of nesting substrate, habitats available within the foraging area of breeding Tricolored Blackbirds, and food availability. All three of these things may be correlated or they may be independent. They may also not be mutually exclusive. The problem of analyzing the foraging habitats is made difficult by birds traveling up to 5 to 9km from their nesting sites [5,14,41,42], but as Hamilton and Meese [43] point out, only a small fraction of the total possible area may be suitable foraging habitat. Beedy [9] also suggested investigation of foraging habitat availability near colonies, and habitat selection. Investi-

Table 12. Summary of the differences between colonies in different substrates.

Substrate	Occupancy	Colony longevity	RS	RSS	Frequency of colony failure	Frequency of substrate type	Colony size 2000–2011	Predicted long-term average site productivity
Himalayan blackberry	0	0	+	0	-	0	0	+
Marsh	0	0	0	0	0	+	0	-
Nettles	+	+	+	+	-	-	0	+
Grain fields	-	-	-	0	+	-	+	0
Thistle	0	0	0	0?	0?	0/-	0	0
Willows	0/+?	+?	0?	0?	0?	-	-	-

Colony longevity was inferred from a mixture of survival analyses and extinction analyses. + indicates above average, 0 indicates average, and - indicates below average. A question mark indicates that sample sizes were especially small.
doi:10.1371/journal.pone.0096980.t012

gating habitat selection mechanisms and relative use of different substrates is particularly difficult but it may be that year-to-year variation in the availability of different habitats would provide the best evidence of (correlative) shifts in habitat use, perhaps in conjunction with potential driving variables like rainfall (e.g., [17]).

The suggested conservation strategies for Tricolored Blackbirds of providing alternative habitats and luring birds from grain fields [9] are consistent with our findings of the use and reproduction of different habitats. However, stinging nettle sites seem like the most widely used native habitat type that is productive and may represent the best opportunity for native habitat creation, conservation and restoration. The management of cattail marshes, as the most frequently used marsh type, needs more research linking marsh state to nest success and predation, and may represent a realizable habitat management strategy because protected lands often contain wetland areas. In the short term the voluntary payment of farmers to encourage them to delay harvest of grain crops (triticale) for silage needs to be continued and other strategies of alleviating pressures such as water restrictions on dairy farms that regularly support Tricolored Blackbird merit investigation by management agencies.

The lack of balance between cessation of use (''extinction'') and colonization of breeding sites 66% sites/year vs. 21% sites/year reflects that Meese's fieldwork took place during 2005–2011 and that 2007 onwards was a period when reproductive success was chronically low [5]. Population sampling has been more thorough than ever and so these data are unlikely to represent changes in sampling effort. Statewide surveys suggested populations declined by 35% between 2008 and 2011 [44,45], and declines in average colony size are apparent over a longer period in Figure 4B. Both colony sizes and declines in occupancy during 2005–2011 are consistent with a metapopulation that is in steep decline. However, the timespan is short and it remains to be determined whether the 2014 survey (and beyond) will show sustained declines. Neither total abundances nor colony sizes were correlated with rate of (re)colonization of sites or probability of cessation of use of sites for breeding (or reproductive success, RS). In this way the system does have the feedbacks expected of a typical metapopulation [4], which might reflect the species being in decline during 2005–2011: our analyses looked at these factors in conjunction with nesting substrate types so heterogeneity in substrates is unlikely to mask such a pattern.

Future studies should attempt to (1) estimate rates of predation from site to site and between substrate types, which is made complicated by the large number of sites needed; (2) understand whether nesting substrate type is linked to landscape composition and food availability, or whether these are independent drivers of reproductive success; (3) evaluate whether marsh management for Tricolored Blackbirds results in predictable increases in RS, abundance and occupancy; and (4) investigate the potential for habitat creation and restoration involving stinging nettles. There is an urgent need to also ascertain whether the species is continuing in sharp decline across all habitat types and to discover the causes of this decline beyond those identified here. Climate, agricultural changes, and land-use changes all merit investigation as potential causes.

Author Contributions

Conceived and designed the experiments: MH RJM EEG. Performed the experiments: MH RJM EEG. Analyzed the data: MH RJM EEG. Contributed reagents/materials/analysis tools: MH RJM EEG. Wrote the paper: MH RJM EEG.

References

1. Armstrong DP (2005) Integrating the metapopulation and habitat paradigms for understanding broad-scale declines of species. Conserv Biol 19: 1402–1410.
2. Guisan A, Thuiller W (2005) Predicting species distribution: offering more than simple habitat models. Ecol Lett 8: 993–1009.
3. Levins R (1969) Some demographic and genetic consequences of environmental heterogeneity for biological control. Bulletin of the Entomological Society of America 15: 237–240.
4. Hanski IA, Gilpin ME (1997) Metapopulation biology: ecology, genetics and evolution. San Diego, California, Academic Press.
5. Meese RJ (2013) Chronic low breeding success in the tricolored blackbird from 2006–2011. Western Birds 44: 98–113.
6. Beedy EC, Sanders SD, Bloom D (1991) Breeding status, distribution, and habitat associations of the Tricolored Blackbird (*Agelaius tricolor*) 1850–1989. Sacramento, CA, Jones & Stokes Associates, Inc. pp 88–197. Report to US Fish and Wildlife Service.
7. Graves EE, Holyoak M, Kelsey TR, Meese RJ (2013) Understanding the contribution of habitats and regional variation to long-term population trends in tricolored blackbirds. Ecol Evol Available: doi:10.1002/ece3.681. Accessed 17 April 2014.
8. United States Fish and Wildlife Service (USFWS) (2008) Birds of conservation concern 2008. Washington, DC. U.S. Fish and Wildlife Service.
9. Beedy EC (2008) California bird species of special concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California In: Shuford WD, Gardali T, editors. Studies of Western birds 1. Camarillo, California, Allen Press. pp. 437–443.
10. Bureau of Land Management (2006) Updated animal sensitive species list, Updated September 2006. Sacramento, California, Bureau of Land Management.
11. IUCN (2013) The IUCN red list of threatened species. Available: http://www.iucnredlist.org. Accessed 27 August 2013.
12. Bent AC (1958) Life histories of North American blackbirds, orioles, tanagers, and their allies. US Natl Mus Bull 211.
13. Neff JA (1937) Nesting distribution of the tri-colored red-wing. Condor 39: 61–81.
14. Beedy EC, Hamilton WJ, III (1999) Tricolored blackbird (Agelaius tricolor), no. 423. In: Poole A, editor. The birds of North America, Ithaca, NY, Cornell Lab of Ornithology.
15. Cook LF, Toft CA (2005) Dynamics of extinction: population decline in the colonially nesting tricolored blackbird Agelaius tricolor. Bird Conserv Int 15: 73–88.
16. Tricolored Blackbird Working Group (2007) Conservation plan for the tricolored blackbird (Agelaius tricolor). Kester, S, editor. San Francisco, CA, Sustainable Conservation.
17. Weintraub K (2013) Nest survival of tricolored blackbirds in California's San Joaquin Valley. MSc in Wildlife. Humboldt State University.
18. Stearns SC (1992) The evolution of life histories. Oxford, U.K., Oxford University Press.
19. Ims RA, Yoccoz NG (1997) Studying transfer processes in metapopulations: emigration, migration and colonization. Editors: Hanski I, Gilpin, ME. Metapopulation dynamics: Ecology, genetics and evolution. New York: Academic Press. pp. 247–265.
20. Prugh LR, Hodges KE, Sinclair ARE, Brashares JS (2008) Effect of habitat area and isolation on fragmented animal populations. Proc Natl Acad Sci U S A 105: 20770–20775.
21. Pulliam HR (1988) Sources, sinks, and population regulation. Am Nat 132: 652–661.
22. Peery MZ, Becker BH, Beissinger SR (2006) Combining demographic and count-based approaches to identify source-sink dynamics of a threatened seabird. Ecol Appl 16: 1516–1528.
23. Brawn JD, Robinson SK (1996) Source-sink population dynamics may complicate the interpretation of long-term census data. Ecology 77: 3–12.
24. McCoy TD, Ryan MR, Kurzejeski EW, Burger LW Jr. (1999) Conservation reserve program: Source or sink habitat for grassland birds in Missouri? J Wildl Manage 63: 530–538.
25. Battin J (2004) When good animals love bad habitats: ecological traps and the conservation of animal populations. Conserv Biol 18: 1482–1491.
26. Robertson GA, Hutto RL (2006) A framework for understanding ecological traps and an evaluation of existing evidence. Ecology 87: 1075–1085.
27. Hamilton WJ, III, Holyoak M, Graves EE (2013) Historical Tricolored Blackbird reproductive success measurements from Bill Hamilton. knb.322.1. Available http://knb.ecoinformatics.org/knb/metacat/knb.322.1/knb. Last accessed 27 July 2013.
28. Hamilton WJ III (2004) Management implications of the 2004 Central Valley tricolored blackbird survey. Bulletin of the Central Valley Bird Club 7: 32–46.
29. Graves EE, Holyoak M, Kelsey TR, Meese RJ (2013) Data from: Understanding the contribution of habitats and regional variation to long-term population

trends in tricolored blackbirds. Dryad Digital Repository. Available: doi:10.5061/dryad.8vc80 Accessed 17 April 2014.
30. Hamilton WJ III (1998) Tricolored blackbird itinerant breeding in California. Condor 100: 218–226.
31. Bates D, Maechler M, Bolker B (2013) Package LME4: linear mixed-effects models using S4 classes. https://github.com/lme4/lme4/. Accessed 17 August 2013
32. Baayen RH (2011) languageR: data sets and functions with "analyzing linguistic data: A practical introduction to statistics". R package version 1.4. http://CRAN.R-project.org/package = languageR. Accessed 17 August 2013
33. Therneau T (2013) A Package for Survival Analysis in S. R package version 2.37-4. Available: http://CRAN.R-project.org/package = survival. Last accessed 27 July 2013.
34. California Invasive Plant Council (2013) California invasive plant inventory database. Available at http://www.cal-ipc.org/paf/. Accessed 17 August 2013.
35. DiTomaso JM, Brooks ML, Allen EB, Minnich R, Rice PM, et al. (2006) Control of Invasive Weeds with Prescribed Burning. Weed Technol 20: 535–548.
36. Hamilton WJ III, Cook L, Grey R (1995) Tricolored blackbird project 1994. Portland, OR, US Fish and Wildlife Service.
37. Meese RJ (2012) Cattle egret predation causing reproductive failures of nesting tricolored blackbirds. Calif Fish Game 98: 47–50.
38. Meese RJ (2006) Settlement and breeding colony characteristics of tricolored blackbirds in 2006 in the Central Valley of California. Sacramento, CA: US Fish and Wildlife Service. pp. 40. Available: http://tricolor.ice.ucdavis.edu/files/trbl/2006%20Final%20report.pdf. Accessed 7 Oct. 2013.
39. Meese RJ (2011) Reproductive success of tricolored blackbird colonies in 2011 in the Central Valley of California. Sacramento, CA, California Department of Fish and Game. Available: http://tricolor.ice.ucdavis.edu/content/reproductive-success-tricolored-blackbird-colonies-2011-central-valley-california. Accessed 19 August 2013.
40. Kelly JP, Etienne K, Strong C, McCaustland M, Parkes ML (2007) Status, trends, and implications for the conservation of heron and egret nesting colonies in the San Francisco Bay area. Waterbirds 30: 455–478.
41. Orians GH (1961) The ecology of blackbird (*Agelaius*) social systems. Ecol Monogr 31: 285–312.
42. Crase FT, DeHaven RW (1978) Food selection by five sympatric California blackbird species. Calif Fish Game 64: 255–267.
43. Hamilton WJ III, Meese RJ (2006) Habitat and population characteristics of tricolored blackbird colonies in California. Sacramento, CA, California Department of Fish and Game.
44. Kelsey R (2008) Results of the 2008 tricolored blackbird census: population status and an analysis of statewide trends. Portland, OR, US Fish and Wildlife Service. Available: http://tricolor.ice.ucdavis.edu/files/trbl/Tricolored%20Blackbird%202008%20Status%20Report%20Final.pdf. Accessed 19 August 2013.
45. Kyle K, Kelsey R (2011) Results of the 2011 tricolored blackbird statewide survey. Sacramento, CA, Audubon California. Available: http://tricolor.ice.ucdavis.edu/content/results-2011-statewide-survey. Accessed 27 July 2013.

efforts. To that end, we are more broadly marketing this issue to a wider audience with interest in conserving this species.

We hope you enjoy this issue, but more importantly, we hope it spurs you to action on behalf of the Tricolored Blackbird. Your support of the Central Valley Bird Club has helped prepare this issue of the Bulletin. There are many other meaningful contributions that you can make: assisting with ongoing species surveys, financially supporting ongoing conservation efforts, advocating on behalf of the species, publicizing the plight of the species and gaining public support, joining action groups that are identifying and implementing conservation projects... the list goes on. Find a way to help.

Chris Conard (CVBC President) and Daniel A. Airola (CVBC Editor)

Flock of Tricolored Blackbirds. *Photo © Andrew Engilis, Jr.*

Note from Editor:

This issue was made possible through the dedication and hard work by many people. I particularly thank species experts Drs. Robert (Bob) Meese and Edward C. (Ted) Beedy who authored many papers and reviewed others. I also offer thanks to Lowell Young for his encouragement in preparing this volume and his dedication to Tricolored Blackbird conservation. Finally a huge thanks to Layout Editor, Frances Oliver; Photo Editor, Dan Brown; and proof-reader Dan Kopp for their substantial and critical efforts in bring this issue to press.

Daniel A. Airola

Efforts to Assess the Status of the Tricolored Blackbird from 1931 to 2014

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The Tricolored Blackbird (*Agelaius tricolor;* hereafter, also "tricolor"), is unique to California. Among its many salient traits, the tricolor is colonial, and often nests in large groups that place heavy demands upon the local biota. Globally, colonial species are believed to be highly vulnerable (Terborgh 1974), and many have become conservation priorities. The tricolor is among these, as it has over the past century suffered a steep population decline due to reductions in its native breeding and foraging habitats and several other factors (Beedy and Hamilton 1997). More recently, elevated rates of mortality of eggs and chicks have resulted from the destruction of breeding colonies during the harvest of their grain field nesting substrates (Meese 2009), and an unknown number of adults is shot in autumn when in mixed flocks foraging in ripening rice with red-winged and other blackbird species (USDA 2013, Meese unpub. data).

In December 2014 the tricolor was given emergency protection under the California Endangered Species Act as a result of its steep and accelerating population decline (Meese 2014). A petition for listing under the federal Endangered Species Act also has been submitted recently.

It is inherently difficult to assemble enough information on rare species to enable robust evidence-based recovery efforts. In some ways, tricolors pose particular problems in that they breed in a rather small number of large, somewhat ephemeral colonies that, over time, blink on and off across the landscape (Holyoak et al. 2014). As a result, classic random sampling is likely to miss even larger colonies, or to produce population estimates of unknown reliability. On the other hand, the future of the species may rest on the success or failure of a fairly small number of large and conspicuous colonies which are intensively monitored. Thus, the species' unusual biology makes it a unique study subject, but at the same time provides special opportunities to demonstrate that science can greatly improve conservation outcomes.

In order to address these biology-induced sampling problems and to monitor the status of the species, since the 1990's the primary means to estimate the number of tricolors in California has been the triennial Tricolored Blackbird Statewide Survey (Hamilton 2000; Holyoak et al. 2014). The purpose of this report is to review and evaluate efforts to document the status of the species, to contrast prior efforts to those of the past three Tricolored

Blackbird Statewide Surveys, and to examine the most recent trends in abundance and distribution. It excludes consideration of synthetic works (e.g., Graves et al. 2013, Holyoak et al. 2014).

METHODS

I reviewed the scientific literature and other published and unpublished reports beginning with Neff (1937) until mid-2014 to summarize and characterize efforts to determine the status and estimate the size of the Tricolored Blackbird population in California. I used the comprehensive reports of the 2008, 2011, and 2014 Tricolored Blackbird Statewide Surveys, along with the standardized methods and data management support provided by the Tricolored Blackbird Portal (http://tricolor.ice.ucdavis.edu), to compare the results of these three Statewide Surveys and to contrast these with prior efforts to assess the conservation status of the species.

I also present results by "bioregions"—large parts of the state that are relatively ecologically homogeneous and distinct, to assess regional differences (Figure 1). Previous reports (Kelsey 2008, Kyle and Kelsey 2011) have also recognized bioregions, but their boundaries were somewhat different than those recognized here. I divided the state into five bioregions that include the majority of the breeding distribution of the Tricolored Blackbird:

1. Southern California: the entire region south of the Transverse Range; includes southern Kern County, and all of Ventura, Los Angeles, San Bernardino, Orange, Riverside, San Diego, and Imperial counties.
2. San Joaquin Valley: the portions of northern Kern, Tulare, Fresno, Madera, and Stanislaus counties below 100 m elevation and all of Kings, Merced, and San Joaquin counties.
3. Central Coast: Alameda, Santa Clara, Santa Cruz, San Benito, Monterey, San Luis Obispo, and Santa Barbara counties.
4. Central Sierra Foothills: portions of Placer, El Dorado, Amador, Calaveras, and Stanislaus counties between 100-500 m elevation.
5. Sacramento Valley: Sacramento, Yolo, Sutter, Yuba, Colusa, Glenn, and portions of Butte and Tehama counties below 100 m elevation.

The Sacramento Valley is included in the analysis of bioregions although tricolors are itinerant breeders and most birds arrive to breed in this portion of their range only after having first bred in the San Joaquin Valley (Hamilton 1998, Meese unpub. data). Thus, the Statewide Survey, which occurs in the second half of April, provides an estimate of the number of tricolors in the Sacramento Valley at this time but does not provide an estimate of the total number of birds that breed there. Similarly, the Modoc Plateau is not included in this analysis because birds breed in this part of California after April, so are not recorded during the Statewide Survey, the results of which form the data sets upon which this analysis is based.

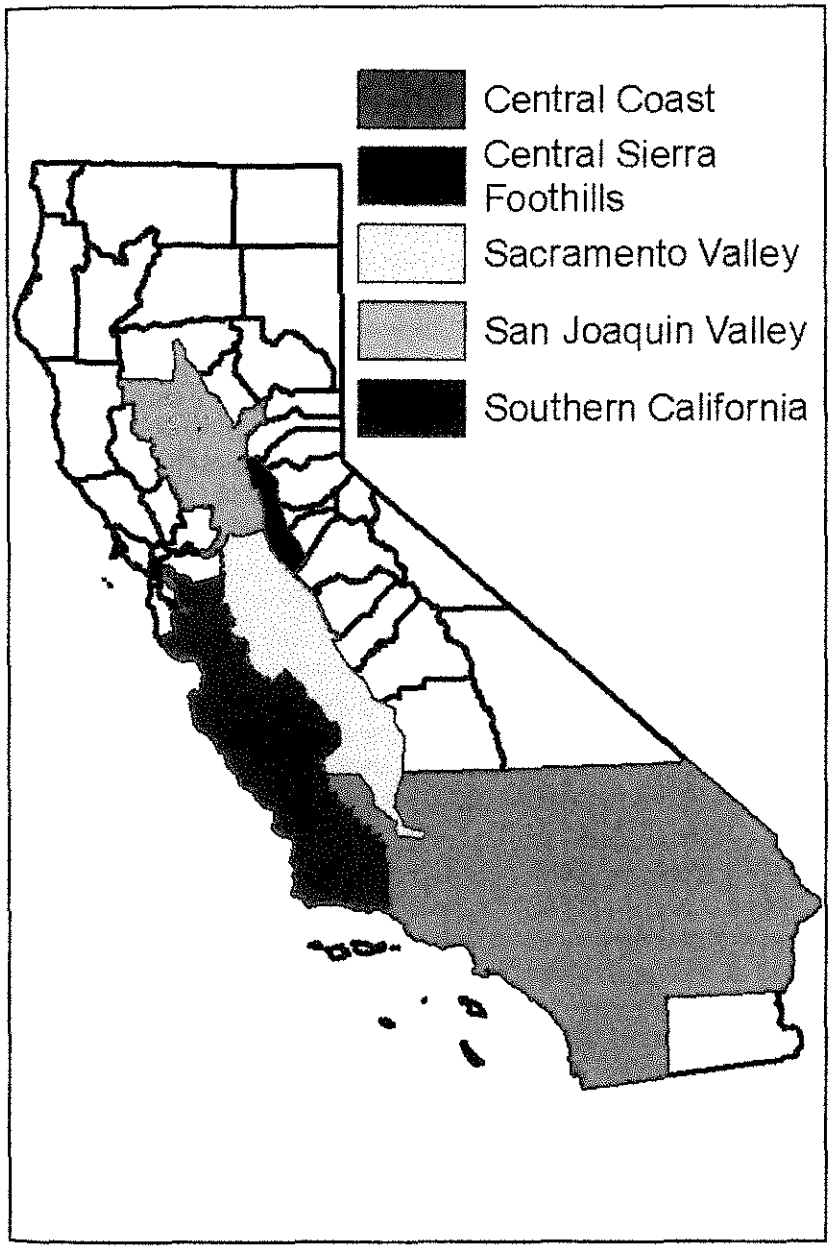

Figure 1. Bioregions used in this paper to discuss Tricolored Blackbird Status in California

RESULTS

Neff (1937) was the first to attempt to assess the status of the Tricolored Blackbird in California. Neff's work was stimulated by anecdotal observations of absences of tricolors from locations where they had previously been common and focused on nest counts in primarily very large colonies during the breeding season and on visual counts of roosting birds at a few locations in the non-breeding season. Neff's (1937) work, conducted from 1931 until 1936, did not attempt to provide a comprehensive survey of the entire range of the species because "such a survey was humanly impossible", and he did not attempt to estimate the number of birds in a brief interval of time. He concluded that the species had likely undergone a serious population decline in response to widespread habitat losses associated with the drainage and filling-in of marshes in the early 20th century. This, he believed, was followed by a population increase due to the development of irrigated agriculture and he found that the species was still quite common in many areas. Although Neff (1937) did not attempt to estimate the total number of birds in California, he provided what he described as a conservative estimate of 491,000 nests within 46 colonies in only eight counties in 1934, which would be about 736,500 birds (assuming that each male breeds, on average, with two females; Beedy and Hamilton 1999).

DeHaven et al. (1975) were the next to attempt to survey a large portion of the tricolor's breeding range. They surveyed much the same region as did Neff and his collaborators over three decades earlier. Their work, conducted from 1969 to 1972, emphasized the Central Valley, although in 1971 they attempted to survey the entire breeding range. Although they, too, studied colonies throughout the breeding season, they concluded that the number of tricolors had declined by at least 50% in the 35 years since Neff's work.

The concept of a Statewide Survey, an effort to estimate the total number of breeding birds in the entire state, was developed by Edward C. (Ted) Beedy and William J. Hamilton III in 1993 (Beedy, pers. comm., Beedy and Hamilton 1997) in response to previous, more limited surveys that suggested an on-going decline in abundance. The Statewide Survey was proposed as a voluntary effort with numerous participants that was centrally coordinated, and conducted within a 3-day interval every three years beginning in 1994. Statewide Surveys were conducted in 1994, 1997, 2000, and 2005, but due to differences in methodology, duration, level of effort, geographic completeness, inadequate data management, and incomplete documentation, the results of these surveys are not directly comparable (Hamilton 2000).

Table 1. Comparison of the first four statewide surveys. Sources: Beedy and Hamilton 1997, Hamilton 2000, EDAW 2005
Sources: Beedy and Hamilton 1997, Hamilton 2000, EDAW 2005

Year	Duration	Participants	Counties Surveyed	Sites Surveyed	Occupied Sites Identified	Birds Observed	Comments
1994	Not reported (3 days?)	68	32	Not reported	28	369,359	follow-up survey results included
1997	Not reported (3 days?)	55	34	Not reported	71	237,928	follow-up survey results included
2000	4 days	81	33	Not reported	71	162,000	pre-survey workshop held
2005	3 days	65	24	Not reported	121	257,802	No report submitted

The Statewide Survey methodology was revised in 2008 by: 1) adding county coordinators to transfer the coordination of the participants from the statewide to the county level, 2) providing training sessions for survey participants, and 3) developing and deploying a web-based Tricolored Blackbird Portal. A level of survey coordination at the county level was added to improve colony detection and geographic completeness by taking greater advantage of local knowledge (Hamilton 2000), and to share the burden of the coordination of a statewide effort among several individuals. In many cases, county coordinators were environmental consultants with extensive local experience with the species and a large pool of qualified persons from which to draw to serve as survey participants.

The Tricolored Blackbird Portal was developed to:

- enhance the management of existing data on colony locations and observations of birds at breeding colonies and in non-breeding aggregations,
- improve communication by providing controlled vocabularies that enabled Portal users to standardize on colony location and nesting substrate names,
- enhance citizen participation by providing online data entry capabilities for records of colony locations and observations of birds (including support for the Statewide Surveys),
- provide reliable natural history information,
- provide access to numerous reports and publications, and
- provide news and links to news reports.

The Portal was developed as a secure, public resource and is password-protected: a user account is required to enter records so as to reduce spam and unwanted spurious records. A small staff of content managers with extensive Tricolored Blackbird and data management experience edits records and assures quality control.

All of the Statewide Surveys since 2008 (i.e. 2008, 2011, and 2014) have used the three levels of coordination (statewide coordinator, county coordinator, participant), are more thoroughly standardized by data entry via the Portal, and are more completely documented by comprehensive reports, so the results of these three surveys are more directly comparable than are those from previous surveys. Table 2 provides a comparison of the results of the three most recent Statewide Surveys.

The results of the three most recent Statewide Surveys showed a rapid decline in abundance, from just under 395,000 birds to 145,000 birds in 6 years, a decline of 63% (Meese 2014). The rate of decline appears to be increasing: from 2008 to 2011 the number of tricolors dropped by 35%, from 395,000 to 258,000 birds (Kyle and Kelsey 2011), but from 2011 to 2014 the number of birds dropped by 44%, from 258,000 to 145,000 birds (Figure 2).

Table 2. Comparison of 2008, 2011, and 2014 Statewide Surveys. Sources: Kelsey 2008, Kyle and Kelsey 2011, Meese 2014

Year	Duration (days)	Participants	Counties Surveyed	Sites Surveyed	Occupied Sites Identified	Statewide Population Estimate
2008	3	155	38	361	155	394,858
2011	3	100	29	608	138	258,000
2014	3	143	41	802	143	145,000

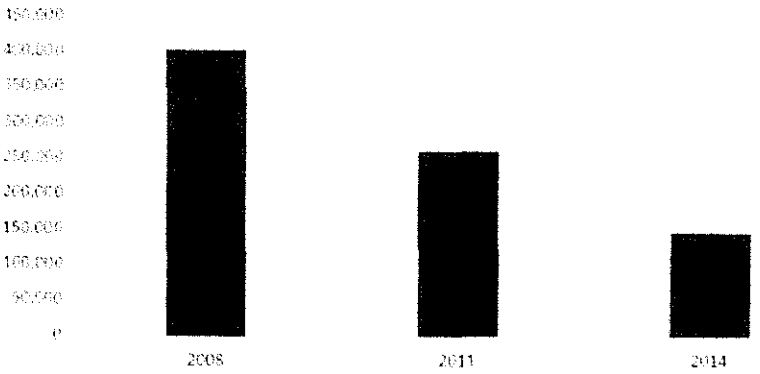

Figure 2. Estimates of the number of Tricolored Blackbirds in California in 2008, 2011, and 2014.

The decline in the statewide estimate of the number of birds occurred despite a rapid increase in knowledge of where the birds breed, as data entry via the Tricolored Blackbird Portal has allowed 77 different Portal users to enter 249 new colony location records since 2008 (Figure 3).

The 2014 Statewide Survey was the most comprehensive: 802 known locations were surveyed versus only 361 locations surveyed in 2008 (Table 2). Hence, the recorded decline cannot be attributed to a decline in the thoroughness of the surveys.

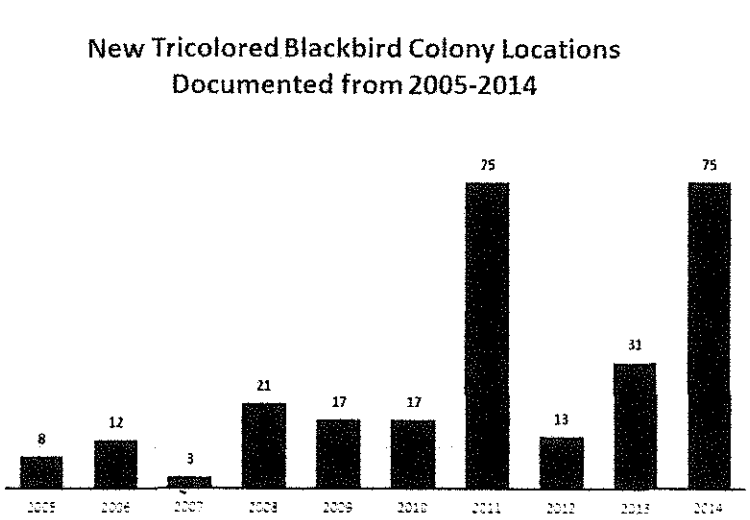

Figure 3. Number of previously unreported Tricolored Blackbird colony locations reported each year from 2005-2014.

Associated with the decline in the number of birds was a dramatic decline in the sizes of the largest colonies (Figure 4).

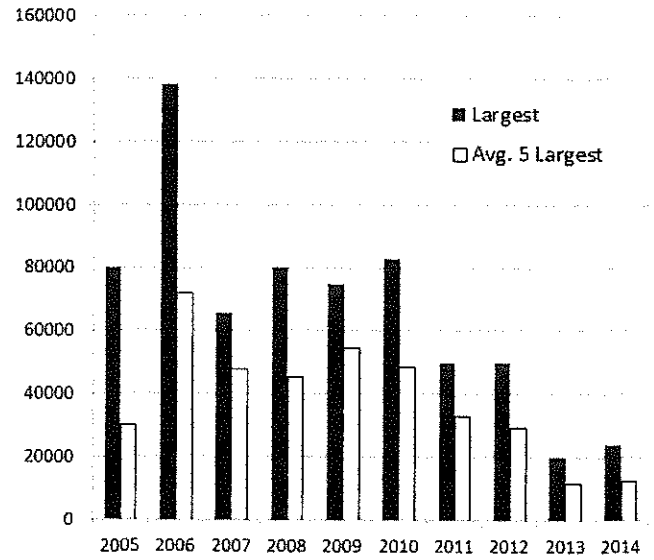

Figure 4. Ten year trend in the sizes of the largest Tricolored Blackbird colonies and averages of the five largest colonies.

The rate and intensity of the decline between 2008 and 2014 varied among bioregions. The Central Coast had the greatest proportionate decline, dropping 91%, from 7,014 birds in 2008 to 652 birds in 2014. The San Joaquin Valley had the second highest proportionate decline, dropping 78% from 340,703 birds in 2008 to 73,482 birds in 2014. The number of birds in southern California increased by 126%, from 5,487 birds in 2008 to 12,386 birds in 2014, due primarily to a single large colony of 5,000 breeding birds in Los Angeles County (Meese 2014). The number of birds in the Central Sierra Foothills also increased, from 22,586 birds in 2008 to 28,281 birds in 2014. Figure 5 summarizes the results for the three most recent Statewide Surveys by bioregion.

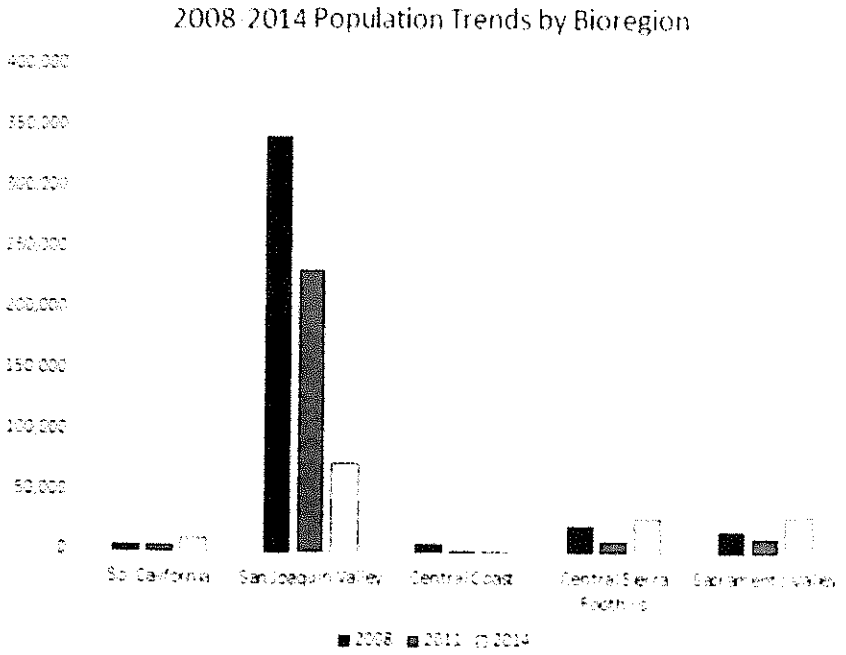

Figure 5. Results of 2008, 2011, and 2014 Statewide Surveys by Bioregion.

DISCUSSION

Early efforts to determine the status of the Tricolored Blackbird depended upon the work of a small number of individuals who tried to survey an immense geographic area and, due to logistical and time constraints, had to focus on locations concentrated in the Sacramento Valley (Neff 1937,

DeHaven et al. 1975). Neither Neff (1937) nor DeHaven et al. (1975) attempted to estimate the statewide population of the species but rather attempted to survey breeding birds during the entire breeding season. DeHaven et al. (1975) surveyed the region studied by Neff (1937) to try to determine whether the species had changed in abundance in this portion of its range. They found far fewer colonies and far fewer birds at the largest colonies than did Neff (1937) and concluded that the number of tricolors in the Sacramento Valley had declined by more than 50% in about 35 years.

Efforts to estimate the statewide population of tricolors began in 1994 with work coordinated by Beedy and Hamilton (1997) and continue to this day. Unlike previous efforts to assess the status of the species, Statewide Surveys were conducted in 3-day intervals, from Friday to Sunday, in late April. Non-breeding birds tend to be highly mobile and difficult to find and thus to count, so the Statewide Survey was designed to be conducted in the second half of April, when the maximum number of birds are breeding (Beedy and Hamilton 1999), and are thus more reliably found and easier to count. Conducting a Statewide Survey during a 3-day interval minimizes the risk of double-counting birds that have moved following first breeding attempts (Hamilton 1998). Increasing the number of persons surveying allows a much larger geographical area to be covered and enables a statewide estimate of the number of birds.

Although the 1994 Statewide Survey included only 32 counties and found only 28 occupied sites, the estimate of the number of birds seen exceed 369,000 (Hamilton et al. 1995). The 2014 Statewide Survey covered 41 counties and found birds at 143 locations yet the estimate of the number of birds in California dropped to 145,000 (Meese 2014). Thus, despite substantial increases in geographical coverage and in knowledge of where the birds nest, the estimate of the number of birds seen dropped by 61%. In the 2008-2014 interval, when the Statewide Surveys were far more directly comparable due to more standardized methodology, the estimate of the number of tricolors dropped by 63%, from 395,000 to 145,000. Unfortunately, given the differences in methods, level of effort, data management, and data documentation, it is not possible to directly compare the results of the Statewide Surveys from 1994 to those of 2014, but the small number of colonies identified and the relatively large number of birds observed in 1994 compared to 2014 suggests a serious statewide reduction in abundance during this 20 year interval, and that the extent of the decline would be greater than that estimated if the 1994 survey had been as complete as was that of 2014.

The number of birds seen during the three most recent Statewide Surveys differed greatly by bioregion, with the largest number of birds seen in all three surveys concentrated in the San Joaquin Valley (Figure 5), where the majority of breeding birds have been seen since the 1980s (Hamilton et al. 1995). A comparable survey of breeding birds in the Sacramento Valley would best occur in early June, when most of the birds have finished breeding in the San Joaquin Valley and moved north to breed again (Hamilton 1998, Beedy and Hamilton 1999, Meese unpub. data). As the tricolors that breed in the Sacramento Valley are in most cases the same birds that bred earlier in the San Joaquin Valley (Hamilton 1998, Meese unpub. data), any reduction in abundance documented in April in the San Joaquin Valley would be expected to be mirrored by a reduction in abundance of breeding birds in the Sacramento Valley the following June.

Because the vast majority of breeding birds occur in the San Joaquin Valley, the sharp drop in abundance documented there is of particular concern, as efforts to restore the species will depend disproportionately upon the results of breeding efforts at the largest colonies. Recent research has shown that reproductive success is positively correlated with both colony size and insect abundance (Meese 2013), and the results of the three most recent Statewide Surveys showed a sharp drop in total abundance and size of the largest colonies. This period coincided with a period of chronically low reproductive success (Meese 2013). A lack of insects along with the destruction of breeding colonies adjacent to dairies by the harvest of their nesting substrates (Meese 2009) are believed to be the two most important causes for the recent population decline.

There are several reasons why insect abundances may be insufficient to support breeding by the colonial and insectivorous Tricolored Blackbird. The widespread and on-going conversion of native habitats to dairies, orchards, vineyards, rice, and other forms of agriculture (Beedy and Hamilton 1997) and the use of effective and persistent insecticides (Hallmann et al. 2014) may have created unsuitable breeding conditions in much of the core area of the species' range. The relatively small number of birds that have recently bred outside of the San Joaquin Valley is insufficient to sustain a population of 700,000 birds, the suggested population target for the recovery of the species (Meese et.al. 2015a). The apparent unsuitability of much of the San Joaquin Valley to support breeding by the species suggests that future conservation actions will have to occur in strategically chosen areas of the Central Valley that have previously or may be managed to support breeding by relatively large numbers of birds. The conservation effort will require both secure, permanent nesting habitats surrounded by secure, productive, foraging habitats that may provide the insect abundance that is associated with relatively high reproductive success (Meese 2013, Meese et al. 2015a). The rapid decline in the sizes of the largest colonies (Figure 4) complicates conservation planning and reduces the options available to stem the decline because even effective conservation actions will be expected to benefit a smaller number of breeding birds.

The conservation of breeding colonies in grain fields adjacent to dairies may be ensured by the recent listing of the Tricolored Blackbird as endangered under the California Endangered Species Act (CESA). Any loss of Tricolored Blackbird eggs or nestlings would be considered "take" and is prohibited under CESA, except with explicit permit approval. Recent voluntary efforts to conserve Tricolored Blackbird breeding colonies adjacent to dairies, by compensating farmers for their costs associated with delaying the harvest of their occupied grain fields, have been only partially successful (e.g., Meese 2009, Meese 2014). Effectively conserving the efforts of all breeding birds, and especially the largest colonies, which are usually situated in grain fields (Beedy and Hamilton 1999, Kelsey 2008), will be essential if the species is to recover. A far more robust education and outreach component must be developed and implemented with industry participation (see Arthur 2015), and intensive surveys and monitoring of "silage colonies" must occur annually. These silage colony conservation measures, however, are temporary emergency reactions to an on-going conflict, and a permanent solution will require the provision of alternative nesting substrates in the San Joaquin Valley and southern California that create safe, secure breeding conditions.

The triennial Tricolored Blackbird Statewide Survey has for 20 years played a prominent role in efforts to monitor the health of tricolors in California. Recent improvements in methodology and the addition of the Tricolored Blackbird Portal have rapidly increased our knowledge of where the birds breed by providing a mechanism for concerned citizens to become actively engaged in research and monitoring efforts. The resulting increase in the number of persons looking for and reporting breeding colony locations and observations of (occupied and unoccupied) breeding colony locations has aided efforts to monitor the health of the species.

The Tricolored Blackbird is increasingly conservation-dependent, and future monitoring efforts should expand beyond a triennial statewide population estimate to include the: 1) annual monitoring of the results of breeding efforts in a variety of habitats and bioregions, 2) effects of relative insect abundance on reproductive success, and 3) results of specific conservation actions. A useful addition to the triennial Statewide Survey would be an annual effort to estimate the population size through a statistically valid sample (see Meese et al. 2015b). This monitoring tool would provide an annual population estimate with a much smaller number of volunteers and require surveys of only a sample of the total number of colony locations each year. An annual sample survey would provide an additional means to monitor the health of the population and supplement more intensive efforts to monitor the results of tricolor breeding, thereby helping to more thoroughly document the status of California's blackbird.

LITERATURE CITED

Arthur, S. 2015. Protecting, restoring, and enhancing Tricolored Blackbird habitat on agricultural lands through the Regional Conservation Partnership Program. Central Valley Bird Club Bulletin 17:122-125.

Beedy, E.C. and W.J. Hamilton III. 1997. Tricolored Blackbird Status Update and Management Guidelines. Report prepared for the U.S. Fish and Wildlife Service, Sacramento CA and California Department of Fish and Game, Sacramento, CA. Available from the Tricolored Blackbird Portal at: http://tricolor.ice.ucdavis.edu/reports.

Beedy, E.C. and W.J. Hamilton III. 1999. Tricolored Blackbird (*Agelaius tricolor*). A. Poole and F. Gill (eds.), *In:* The Birds of North America, No. 423. Philadelphia, PA: Academy of Natural Sciences and Washington, DC: American Ornithologists Union.

DeHaven, R.W., F.T. Crase, and P.D. Woronecki. 1975. Breeding status of the Tricolored Blackbird, 1969-1972. Calif. Dept. Fish and Game 61:166-180.

EDAW. 2005. 2005 TRBL data. Unpublished Excel spreadsheet. Available from the author.

Graves E.E., M. Holyoak, T.R. Kelsey, and R.J. Meese. 2013. Understanding the contribution of habitats and regional variation to long-term population trends in Tricolored Blackbirds. Ecology and Evolution. doi:10.1002/ece3.681

Hallmann, C.A., R.P.B. Foppen, C.A.M. van Turnhout, H. de Kroon, and E. Jongejans. 2014. Declines in insectivorous birds are associated with high neonicotinoid concentrations. Nature doi:10.1038/nature13531.

Hamilton, W.J. III. 1998. Tricolored Blackbird itinerant breeding in California. Condor 100:218-226.

Hamilton, W.J. III. 2000. Tricolored Blackbird 2000 Breeding Season Census and Survey-Observations and Recommendations. Unpublished report available from the Tricolored Blackbird Portal at: http://tricolor.ice.ucdavis.edu/reports.

Hamilton, W.J. III, L. Cook, and R. Grey. 1995. Tricolored Blackbird Project 1994. Unpublished report available from the Tricolored Blackbird Portal at: http://tricolor.ice.ucdavis.edu/reports.

Holyoak, M., R.J. Meese, and E.E. Graves. 2014. Combining site occupancy, breeding population sizes and reproductive success to calculate time-averaged reproductive output of different habitat types: an application to Tricolored Blackbirds. PLos ONE 9(5):e96980.doi:10.1371/journal.pone.0096980.

Kelsey, R. 2008. Results of the Tricolored Blackbird 2008 Census. Report available from the Tricolored Blackbird Portal at: http://tricolor.ice.ucdavis.edu/reports.

Kyle, K. and R. Kelsey. 2011. Results of the 2011 Tricolored Blackbird Statewide Survey. Report available at the Tricolored Blackbird Portal at: http://tricolor.ice.ucdavis.edu/ reports.

Meese, R.J. 2009. Contribution of the Conservation of Silage Colonies to Tricolored Blackbird Conservation from 2005-2009. Report submitted to the U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, CA. Report available at the Tricolored Blackbird Portal at: http://tricolor.ice.ucdavis.edu/reports.

Meese, R.J. 2013. Chronic low reproductive success of the colonial Tricolored Blackbird from 2006 to 2011. Western Birds 44: 98-113.

Meese, R.J. 2014. Results of the 2014 Tricolored Blackbird Statewide Survey. Report available from the Tricolored Blackbird Portal at: http://tricolor.ice.ucdavis.edu/reports.

Meese, R.J., E.C. Beedy, D.A. Airola, and R. Cook. 2015a. Recovering the Tricolored Blackbird in California. Central Valley Bird Club Bulletin 17:97-109.

Meese, R.J., J.L. Yee, and M. Holyoak. 2015b. Sampling to estimate population size and detect trends in Tricolored Blackbirds. Central Valley Bird Club Bulletin 17:51-56.

Neff, J.A. 1937. Nesting distribution of the Tricolored Red-wing. Condor 39:61-81.

Terborgh, J. 1974. Preservation of natural diversity: The problem of extinction prone species. BioScience 24: 715-722.

Tricolored Blackbird Working Group. 2007. Conservation Plan for the Tricolored Blackbird. (*Agelaius tricolor*). Susan Kester (Ed.). Sustainable Conservation. San Francisco, CA. Document available from the Tricolored Blackbird Portal at: http://tricolor.ice.ucdavis.edu/ reports.

U.S. Department of Agriculture. 2013. California Wildlife Services Annual Report Required by 50 CFR 21.43: Depredation Order for Blackbirds, Cowbirds, Grackles, Crows, and Magpies.

Sampling to Estimate Population Size and Detect Trends in Tricolored Blackbirds

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The Tricolored Blackbird (*Agelaius tricolor*) is a medium-sized passerine that nests in the largest colonies of any North American landbird since the extinction of the passenger pigeon (*Ectopistes migratorius*) over 100 years ago (Beedy and Hamilton 1999). The species has a restricted range that occurs almost exclusively within California, with only a few hundred birds scattered in small groups in Oregon, Washington, Nevada, and northwestern Baja California, Mexico (Beedy and Hamilton 1999). Tricolored Blackbirds are itinerant breeders (i.e., breed more than once per year in different locations) and use a wide variety of nesting substrates (Hamilton 1998), many of which are ephemeral. They are also insect dependent during the breeding season, and reproductive success is strongly correlated with relative insect abundance (Meese 2013). Researchers have noted for decades that Tricolored Blackbird's insect prey are highly variable in space and time; Payne (1969), for example, described the species as a grasshopper follower because they are preferred food items, and high grasshopper abundance is often associated with high reproductive success (Payne 1969, Meese 2013). Thus, the species' basic reproductive strategy is tied to rather infrequent periods of relatively high insect abundance in some locations followed by much longer periods of range-wide relatively low insect abundance and poor reproductive success. Of course, anthropogenic factors such as habitat loss and insecticide use may be at least partly responsible for these patterns (Hallman et al. 2014, Airola et al. 2014).

The Tricolored Blackbird was formerly considered to be one of the most abundant land birds in California (Beedy and Hamilton 1999), and it is likely that 2-3 million birds remained into the 1930s (estimated by extrapolation of Neff 1937, see Meese 2015). The alarming decline in abundance, especially in the past decade, to only 145,000 birds in 2014 (Meese 2014) led to an emergency listing of the species as endangered under the California Endangered Species Act (CESA) in December 2014 (State of California 2014).

State of California
Department of Fish and Wildlife

Memorandum

Date: October 2, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Petition from the Center for Biological Diversity to list the Tricolored Blackbird as Endangered under the California Endangered Species Act**

The Department of Fish and Wildlife (Department) prepared the attached petition evaluation report in response to a petition, dated August 19, 2015, received by the Fish and Game Commission (Commission) on August 19, 2015 (Petition) from the Center for Biological Diversity to list the Tricolored blackbird (*Agelaius tricolor*) as an endangered species under the California Endangered Species Act (CESA). (See generally Fish and Game code §2073.5, subd. (a); Cal Code Regs., title 14, §670.1, subd. (d)(1).)

In accordance with CESA, the attached petition evaluation report delineates the categories of information required in a petition, evaluates the sufficiency of the information in the Petition, and incorporates additional relevant information that the Department possessed or received during the review period. Based upon the information contained in the Petition, the Department has determined that there is sufficient information to indicate that the petitioned action may be warranted. The Department recommends that the Petition be accepted.

If you have any questions or need additional information, please contact Dan Yparraguirre, Deputy Director of Wildlife and Fisheries Division at (916) 653-4673 or Eric Loft, Chief of Wildlife Branch at (916) 445-3555.

Attachment

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State of California
Natural Resources Agency
Department of Fish and Wildlife

REPORT TO THE FISH AND GAME COMMISSION

EVALUATION OF THE PETITION FROM THE CENTER FOR BIOLOGICAL DIVERSITY TO LIST TRICOLORED BLACKBIRD (*Agelaius tricolor*) AS ENDANGERED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT

Prepared by
California Department of Fish and Wildlife

March 2015, Updated October 2015

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EVALUATION OF PETITION FROM CENTER FOR BIOLOGICAL DIVERSITY TO LIST THE TRICOLORED BLACKBIRD (*Agelaius tricolor*) AS ENDANGERED

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

EXECUTIVE SUMMARY

On October 8, 2014, the Center for Biological Diversity (Petitioner) submitted a petition (2014 Petition) seeking action by the California Fish and Game Commission (Commission) to list the tricolored blackbird (*Agelaius tricolor*) as endangered pursuant to the California Endangered Species Act (CESA) (Cal. Reg. Notice Register 2014, No. 44-Z, p. 1861; see also Cal. Code Regs., tit. 14, § 670.1, subd. (a); Fish & G. Code, § 2072.3). The Commission received the 2014 Petition on October 8, 2014 and referred it to the California Department of Fish and Wildlife (Department) for an initial evaluation on October 15, 2014. At its December 3, 2014 meeting in Van Nuys, California, the Commission voted to take emergency action to add tricolored blackbird to the list of endangered species pursuant to Fish and Game Code section 2076.5, with the related regulation as approved by the Office of Administrative Law taking effect for an initial term of six months beginning on December 29, 2014 (Cal. Reg. Notice Register 2015, No. 2-Z, p. 91).

At its meeting in Mammoth Lakes on June 11, 2015, the Commission voted to reject Petitioner's October 2014 petition. On June 30, 2015 the emergency regulation adopted in December 2014 expired by operation of law. On August 5, 2015, at its meeting in Fortuna, the Commission heard a request from Petitioner to reconsider its June action. On August 19, 2015, Petitioner submitted a new petition (Petition) seeking action by the Commission to list the tricolored blackbird as an endangered species pursuant to CESA (Cal. Reg. Notice Register 2015, No. 36-Z, p. 1514). The Commission received the Petition on August 19, 2015 and referred it to the Department for an initial evaluation on August 20, 2015.

This report presents the Department's initial scientific evaluation of the Petition as required by Fish and Game Code section 2073.5, with evaluation of the new information presented in the August 2015 Petition included as an addendum. (See also Cal. Code Regs., tit. 14, § 670.1, subd. (d).) Consistent with that authority, this report evaluates the scientific sufficiency of the Petition on its face and in relation to other relevant information the Department possesses or that it received during its review. To support the review, the Department gathered and reviewed the information referenced in the submitted Petition to the best of its ability. Not all references were available to the Department. In addition to the face value, and the material referenced in the Petition, the Department also considered other relevant information in its possession related to the tricolored blackbird populations. All sources of information considered by the Department in preparing this report, including those referenced in the Petition, are identified in the References Section. The Department's recommendation as to whether to make tricolored blackbird a candidate for listing under CESA is based on an assessment of whether the scientific information in the Petition is sufficient under the criteria prescribed by CESA to consider listing tricolored blackbird as endangered.

In completing its Petition Evaluation, the Department has determined there is sufficient scientific information to indicate that the petitioned action may be warranted. Therefore, the Department recommends that the Commission accept the Petition for further consideration under CESA. Such action by the Commission would convey candidacy protections to the tricolored blackbird pursuant to Fish and Game Code section 2074.2(a)(2), making adoption of an emergency regulation unnecessary.

Summary of Department's Evaluation of the Petition

A petition to list or delist a species under CESA must include information pursuant to Fish and Game Code section 2072.3 as follows:

- population trend;
- range;
- distribution;
- abundance;
- life history of a species;
- factors affecting the ability of the population to survive and reproduce;
- degree and immediacy of the threat;
- impact of existing management efforts, suggestions for future management;
- availability of and sources of information;
- habitat necessary for a species survival;
- detailed distribution map.

The Department finds that the Petition provides adequate information in the categories required by CESA and that the petitioned action may be warranted.

This report summarizes the Department's evaluation of the Petition and other available information. It follows the outline and summarizes relevant portions of the Department's 2004 evaluation of the petition to list the tricolored blackbird, which is incorporated by reference (Gustafson and Steele 2004).

The Department believes that the petitioned action may be warranted based on the degree and immediacy of the threats faced by the species which are addressed by the Petition, as follows:

> 1) Historical and continuing loss of nesting substrate, including wetlands, Himalayan blackberry (*Rubus discolor*) patches, upland weedy vegetation, and marsh vegetation in reservoirs and ponds.
>
> 2) Historical and continuing loss of uplands used for foraging.
>
> 3) Declines in tricolored blackbird populations in the past 80 years, including ongoing declines documented since 2008.
>
> 4) Significant, large-scale reproductive failures in tricolored blackbird colonies nesting in agricultural areas of the San Joaquin and Sacramento valleys.

5) Limited, inconsistent, and sometimes ineffective protection of colonies nesting in agricultural settings.

6) Ineffectiveness of existing regulatory mechanisms to protect tricolored blackbird breeding habitat and nesting colonies on privately-owned land.

7) Predation by the black-crowned night heron (*Nycticorax nycticorax*), cattle egret (*Bubulcus ibis*), common raven (*Corvus corax*), coyote (*Canis latrans*), and other predators, especially in areas in which predator populations may be artificially high due to concentrated food sources.

INTRODUCTION

Candidacy Evaluation

CESA sets forth a two-step process for listing a species as endangered. First, the Commission determines whether a species is a candidate for listing by determining whether "the petition provides sufficient information to indicate that the petitioned action may be warranted." (Fish & Game Code, § 2074.2, subd. (a)(2).) Within 10 days of receipt of a petition, the Commission must refer the petition to the Department for evaluation (Fish & Game Code, § 2073.) The Commission must also publish notice of receipt of the petition in the California Regulatory Notice Register. (Fish & Game Code, § 2073.3.) Within 90 days of receipt of the petition, the Department must evaluate the petition on its face and in relation to other relevant scientific information and submit to the Commission a written evaluation report with one of the following recommendations:

- Based upon the information contained in the petition, there is not sufficient information to indicate that the petitioned action may be warranted, and the petition should be rejected; or
- Based upon the information contained in the petition, there is sufficient information to indicate that the petitioned action may be warranted, and the petition should be accepted and considered.

(Fish & Game Code, § 2073.5, subd. (a)(1).)

If the petition is accepted for consideration, the second step requires the Commission to determine, after a year-long "scientific-based review of the subject species," whether listing as endangered is or is not actually warranted. (Fish & Game Code, § 2075.5.)

In *Center for Biological Diversity v. California Fish and Game Commission* (2008) 166 Cal.App.4th 597, the California Court of Appeals addressed the parameters of the Commission's discretion in its application of the threshold candidacy test. The court began its discussion by describing the candidacy test previously set forth in *Natural Resources Defense Council v. California Fish and Game Commission* (1994) 28 Cal.App.4th 1104, 1114:

> As we explained in *Natural Resources Defense Council* [citation], "the term 'sufficient information' in section 2074.2 means that amount of information, when considered with the Department's written report and the comments received, that would lead a reasonable person to conclude the petitioned action may be warranted." The phrase

> "may be warranted" "is appropriately characterized as a 'substantial possibility that listing could occur.'" [citation] "Substantial possibility," in turn, means something more than the one-sided "reasonable possibility" test for an environmental impact report but does not require that listing be more likely than not.

(*Center for Biological Diversity*, at pp. 609-10.) The court acknowledged that "the Commission is the finder of fact in the first instance in evaluating the information in the record." (*Id.* at p. 611.) However, the court clarified:

> [T]he standard, at this threshold in the listing process, requires only that a substantial possibility of listing could be found by an objective, reasonable person. The Commission is not free to choose between conflicting inferences on subordinate issues and thereafter rely upon those choices in assessing how a reasonable person would view the listing decision. Its decision turns not on rationally based doubt about listing, but on the absence of any substantial possibility that the species could be listed after the requisite review of the status of the species by the Department[.]

(*Ibid*.)

Petition History

State Petitions Prior to 2014

In 1991, based on information indicating that the tricolored blackbird's breeding population had fallen to about 35,000 adults in the late 1980s, the Yolo chapter of the National Audubon Society submitted a petition to the Commission, to list the species as Endangered. After reviewing the document and other available information, the Department determined that the petitioned action might be warranted and recommended to the Commission that it accept and consider the petition. In March 1992, the Commission voted to accept the petition and designated the tricolored blackbird as a candidate for State listing. Researchers working during the 1992 breeding season discovered that the population might exceed 300,000 adults. The Yolo Audubon Society withdrew the petition based on the new population data. The Commission allowed the petition to be withdrawn, but urged the Department to work with interested persons and groups to develop conservation measures for the tricolored blackbird. The species was again petitioned to be listed under CESA in 2004. The petition evaluation report by the Department (Gustafson and Steele 2004) stated there was sufficient information to indicate the petitioned action may be warranted; the Commission voted to reject the petition (Fish and Game Commission meeting, Feb. 3, 2005).

Federal Petitions

In the late 1970s, the USFWS identified the tricolored blackbird as a candidate for federal listing. However, in the early 1990s, the USFWS eliminated its list of candidate species. In 1988, the USFWS contracted for a compilation of all historical information on distribution and abundance of the tricolored blackbird, resulting in the work of Beedy *et al.* (1991). In 1989, the USFWS modified two long-standing depredation orders, to prohibit killing the tricolored blackbird without a federal permit. The USFWS has

also provided funds for tricolored blackbird survey efforts in several years beginning in 1993. In 2006, the USFWS in response to a listing petition issued a 90-day finding that listing the tricolored blackbird was not warranted. In 2008, the USFWS updated its Birds of Conservation Concern 2008 report, identifying "species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973" (USFWS 2008). The tricolored blackbird was included on two Bird Conservation Region lists (9, 32), the USFWS Region 8 list (California and Nevada) and the National list. On February 3, 2015, the Center for Biological Diversity submitted a petition to the USFWS to list the tricolored blackbird as an endangered species under the federal endangered species act and to designate critical habitat concurrent with listing.

INFORMATION PROVIDED IN THE PETITION AND ADDITIONAL INFORMATION GATHERED BY THE DEPARTMENT OF FISH AND WILDLIFE

Population Trend (termed "Population Status and Trend" in the Petition, beginning on page 6)

The Petition states that based on extensive historical and recent statewide surveys, the tricolored blackbird "has experienced and is continuing to experience a precipitous population decline." The Petition includes data from the various statewide surveys through the 2014 survey. Several major studies as well as smaller studies and summaries, beginning in the 1930s, have documented numbers and breeding colonies of the tricolored blackbird (Neff 1937, DeHaven *et al.* 1975a, Hosea 1986, Beedy *et al.* 1991, Hamilton *et al*. 1992, Hamilton 1993, Hamilton *et al*. 1995, Beedy and Hamilton 1997, Hamilton *et al.* 1999, Hamilton 2000, DeHaven 2000a, Humple and Churchwell 2002, Hamilton 2004, Green and Edson 2004, Cook and Toft 2005, Kelsey 2008, Meese 2009a, Meese 2010, Kyle and Kelsey 2011, Meese 2011, and Meese 2014). As noted in the Petition, survey effort, methods, coverage, and participants have varied over the years. Thus, it is difficult to compare total number of birds observed or population estimates across many of the survey years.

The Petition describes a decline in numbers of the tricolored blackbird since the 1930s, particularly for the Central Valley of California. Early research on the tricolored blackbird was carried out by Neff and colleagues in the 1930s (Neff 1937). Over a period of six years (1931-1936), Neff surveyed tricolored blackbird colonies across California and suggested that the species numbered in the millions. Neff located several breeding colonies of more than 100,000 nests in the Sacramento Valley, with the largest composed of greater than 200,000 nests (corresponding to approximately 300,000 adult tricolored blackbirds). Breeding colonies were located throughout the Central Valley and in a few additional locations in California and southern Oregon; however, Neff's surveys focused on the Sacramento Valley in most years. An effort to cover the entire known range of the species was attempted by Neff in only one year (1932), with most areas outside the Sacramento Valley covered incidentally as "cooperators drove up or down the State in the performance of routine duties". The highest concentration of colonies and breeding birds were located in the Sacramento Valley; the degree to which this was the result of increased effort there is not known. Based on his somewhat geographically limited efforts, Neff (1937)

reported nesting birds in 26 California counties in the period of 1931-36. Working alone in 1934, Neff (1937) observed an estimated 491,250 nests, almost all of which were in the Sacramento Valley. As reported in the Petition, Beedy and Hamilton (1997) interpreted this to represent about 736,500 breeding adults. The presence of birds in the San Joaquin Valley and southern California was noted in the same year, but no effort was made to estimate numbers. Neff's work in the 1930s, as interpreted by Hamilton *et al.* (1995), yielded an estimated maximum annual abundance of over 1,100,000 adult tricolored blackbirds in the Central Valley.

The Petition states that a history of market hunting and massive loss of native marshland habitat had drastically reduced the population of tricolored blackbirds by the mid-twentieth century. However, Neff (1937) concluded: "Destruction of the birds by man, of nesting sites through drainage or reclamation, of nests by predators or by the elements, and other factors, have played their part. All combined, however, they have made only fractional inroads on this species during the period covered by this report [1931-1936]". Neff (1937) was not convinced that the population size in the 1930s was less than that during "pioneer times". Being that the next comprehensive effort to survey tricolored blackbirds did not occur until the 1970s (DeHaven *et al*. 1975a), it is not known to what degree the population had been reduced by the mid-twentieth century. However, the estimate by Hamilton *et al.* (1995) of 1,100,000 tricolored blackbirds in the 1930s is subject to high uncertainty and the Department acknowledges that because of the relatively limited effort during the surveys of the 1930s, the number of birds present at that time could have been much higher. Also, there is evidence that the species had experienced declines in a large portion of its range in southern California, even by the 1930s (see discussion of distribution and abundance below).

From 1969-1972, DeHaven *et al.* (1975a) attempted to survey the entire range of the tricolored blackbird to document the distribution of the species and to compare estimates of abundance to those provided by Neff (1937). The surveys were carried out by a few individuals surveying vast areas by road, and were limited to one or two drives through each county where tricolored blackbirds were known to occur in California and southern Oregon. Still, the search effort was at least as extensive as that carried out by Neff in the 1930s, and included the benefit of improved transportation and an increased number of roads. In many counties the survey consisted of driving county roads with little knowledge of historical colony sites, but this was an improvement over much of the effort of the 1930s, when counties were considered covered if visited incidentally to other activities. Despite a greater search effort, all measures of abundance indicated a decline: number of colonies detected declined from 256 to 164; non-breeding birds encountered declined from >50,000 in a single year to <15,000 over four years; maximum colony size declined from hundreds of thousands to tens of thousands; number of birds observed per year within the study period declined from about 375,000 per year to about 133,000 per year (DeHaven *et al.* 1975a). Although no population estimate could be obtained from these surveys, the authors suggested that the population may have declined by more than 50% in 35 years. The distribution of colonies was similar to that in Neff (1937). The Petition states that DeHaven *et al.* (1975a) concluded that the downward trajectory of the population was continuing in the 1970s, however Dehaven *et al.* (1975a) expressed uncertainty about this, and recommended further research to determine whether the decline they observed was ongoing.

Since 1994, ten tricolored blackbird surveys have been conducted. However, as mentioned above, the survey effort, methods, coverage, and participants have varied (Kelsey 2008, Meese 2014) making it difficult to compare total population estimates across many of the survey years. Because of this, in evaluating the 2004 petition the Department used the largest detected colony size in any given year as an indicator of population status. This was based on the assumption that the largest colonies are most likely to be detected and largest colony size is correlated with total population size (Gustafson and Steele 2004). The Department also evaluated Christmas Bird Count data to evaluate trends in the non-breeding season. Based on these sources of data, the Department found an apparent downward trend in the tricolored blackbird's breeding population from the 1930s to the 1970s, and again from the 1970s until 2004. At that time, the Department concluded that the extent of the decline between 1994 and 2004 was not clear.

Of the ten annual surveys conducted since 1994, two groups of survey years have been reported to be most comparable across years (years 1994, 1997, 2000; and years 2008, 2011, 2014) (Beedy and Hamilton 1997, Hamilton et al. 2000, Kyle and Kelsey 2011, Meese 2014). The degree to which these two groups of survey years are comparable to each other is not clear, although differences in methodology and effort between the groups suggest caution is warranted in making comparisons. Hamilton (2000) reported that statewide survey efforts in 1994, 1997, and 2000 followed similar methods in order to locate and survey as many colonies as possible. At the time, these three surveys had used the most consistent methods to date and focused the survey on a short time period in order to avoid double counting of birds. Compared to the surveys of the 1930s and 1970s, these surveys employed many more volunteer surveyors in order to cover as much of the state and known colonies as possible. Hamilton (2000) reported that "Serious amateur and professional birders located most of all birds recorded". Most large (>10,000 birds) and many smaller colonies reported during these survey years were revisited by tricolored blackbird experts. That said, inconsistencies in effort still occurred with the 1997 survey using fewer observers to visit fewer sites in fewer counties than the 1994 survey, and the 2000 survey using more observers to visit more sites than the other two survey years, but searching in fewer counties. These inconsistencies led the Department to conclude that the extent of decline during the period was unclear. Hamilton (2000) however, concluded:

> "The central conclusion of the Census and survey is that tricolors [tricolored blackbirds] are continuing to decline precipitously in numbers, from millions in the 1930s (Neff 1937) to an estimated…162,000 in this account for 2000. The conclusion that tricolor numbers are plummeting is based not only upon these data, but also on the collective experience of local experts throughout California who have observed tricolors over long intervals."
>
> "…the method of the Census and the survey, to reinvestigate all known breeding places and to search for new ones, has become an increasingly complete assessment of Tricolored Blackbird distribution and abundance. The 2000 Census probably located a greater proportion of the entire population than did censuses in previous years."

Based on their analysis of annual results from statewide surveys, Cook and Toft (2005) reported that the tricolored blackbird population had declined by approximately 56% between 1994 and 2000. They also

determined that colony sizes were smaller on average in 2000 than in 1994, which they attributed to a declining overall population for the species.

It is possible that the size of the largest colony does not have a strong correlation with population size, especially over long periods of time when the population has shifted breeding distribution and choice of primary nesting substrate for large colonies (e.g. use of agricultural crops, particularly triticale (*Triticale hexaploide*) fields beginning sometime after the 1970s). The average of the largest several colonies (three, five, and ten have been reported in the literature) might be a better correlate to population size, but it is important to compare colony size only for sites that are estimated during the same time period each year. Colony size can vary across the breeding season and therefore using different dates would likely obscure the relationship. In reports available to the Department, it is often unclear which data have been used to develop estimates of average colony sizes; this warrants additional work to evaluate trends presented by Hamilton (2000), Cook and Toft (2005), and those included in the Petition for the period of 1994-2000.

Following the 2000 survey, triennial statewide surveys were reestablished in 2005. However, a rigorous and consistent methodology has been used only since 2008 (see Kelsey 2008, Kyle and Kelsey 2011, Meese 2014). These recent surveys employ hundreds of volunteers over a three day period in an attempt to visit and estimate numbers of tricolored blackbirds at all known historical and current colony sites. The effort in each county was coordinated by a county coordinator in 2008 and 2014, with a statewide coordinator overseeing the entire effort in all years. In each of the three most recent survey years (2008, 2011, and 2014), volunteers have been provided with training in tricolored blackbird identification, estimation of colony size, use of maps on online tools, and a standard survey protocol. Many of the participants, especially those coordinating county efforts, have been knowledgeable observers with experience participating in multiple survey years. The Department acknowledges that the lack of error estimation in the census method makes it difficult to assess the accuracy of results for any given year, however the increase in knowledge in recent years on historical and current colony sites, along with consistent methodology and increased participation and effort has likely resulted in an increased ability to detect a downward trend over the past six year period. The statewide survey protocol is available at http://tricolor.ice.ucdavis.edu/content/2014-statewide-survey.

In the most recent years, the number of birds observed on statewide surveys declined 63% from 395,000 birds in 2008 to about 145,000 birds in 2014. In this same time period, maximum colony size has declined from 80,000 to less than 30,000 birds (Kelsey 2008, Kyle and Kelsey 2011, Meese 2014). Although not a statistical estimate of population size, the census provides an index of population size by attempting to visit all known sites, including new sites that are established by colony movement. This effort to visit all known sites, along with a continual increase in knowledge about historical and current colony sites has resulted in an increase in survey effort with each statewide survey. For example, more counties were surveyed in 2014 than on any previous survey and the number of observers participating on the 2014 survey (143) was exceeded on only one previous survey (155 observers in 2008). Perhaps most importantly, the number of colony sites visited in 2014 far exceeded any other survey, with a large increase in sites visited each survey year since 2008 (Figure 1); this reflects not only a sharp increase in

knowledge of colony sites, but also an enormous effort to visit as many as possible during the count period. The number of birds observed has declined despite the increase in effort.

Small breeding colonies are likely missed during each survey, especially in areas where small colonies might occur distant from any known colony site, and therefore are not located within the focused search area. Because tricolored blackbird colonies are extremely conspicuous leading up to and throughout most of the nesting cycle, most large colonies that would contribute substantially to the overall statewide estimate are likely to be observed during the three day search window. Given the concentration of birds in relatively few large colonies and within a few well known and well surveyed portions of their range (especially the San Joaquin Valley), Kelsey (2008) concluded that "it is unlikely that large numbers of Tricolored Blackbirds go undetected during the statewide surveys". Additionally, in areas of the state where most of the population breeds early in the nesting season (San Joaquin Valley), extensive pre-survey scouting occurs in an attempt to locate colonies, both for survey purposes and to initiate colony protection efforts where colonies occur on agricultural fields. Even if a colony site is not visible from a road, large colonies can be detected and identified by the species' diagnostic feeding flights as they move between the colony location and foraging habitat. The density of roads may limit observation of some portion of the landscape; this is a limitation common to all survey years.

The Department finds the Petitioner submitted sufficient information to demonstrate or create a reasonable inference that tricolored blackbirds have experienced historic declines and may continue to do so.

Range and Distribution (beginning on page 17)

The Petition provides a description of the tricolored blackbird's range. The Petition also provides information on the species' distribution throughout portions of its range and states that historical distribution and population abundance of tricolored blackbirds prior to widespread loss of their native wetland and grassland habitats are unknown..

The Petition provides the following information regarding the tricolored blackbird range. The Petition characterizes the geographic range of the tricolored blackbird as "largely restricted to southernmost Oregon and the Modoc Plateau of northeastern California south through the lowlands of California west of the Sierra Nevada to northwestern Baja California" with rare reports of tricolored blackbird from Nevada and Washington. Overall, the range of the tricolored blackbird has not appreciably changed since the mid-1930s (Meese *et al.* 2014). The Petition states that the tricolored blackbird has been found from sea level up to 4,200 feet (1280 meters) at Klamath Lake. Grinnell and Miller (1944) included a record of 4,400 feet on the "South Fork of the Pit River" in Modoc County.

Grinnell and Miller (1944) wrote that the tricolored blackbird is "resident within [California], but partly migratory within Sacramento-San Joaquin drainage system; all populations are in some degree nomadic and in fall and winter normally leave the immediate vicinity of the nesting colonies". DeHaven *et al.* (1975a) reported that 78% of colonies located between 1968 and 1972 were in the Central Valley. Counties where most colonies were found in a single season during this time period were Sacramento, Merced, Stanislaus, Glenn, and Colusa. According to Beedy (2008), since 1980, active breeding colonies

have been observed in 46 California counties. Colonies are typically largest in the Central Valley and are patchily distributed throughout but particularly in the Coast Ranges and on the coastal slope.

In all statewide surveys conducted since 1994, the majority (≥90% in all years but 1997) of the population has occurred in the Central Valley counties during the April breeding season, with much of the population and the largest colonies in agricultural fields (see below).

During the winter, the tricolored blackbird withdraws from those portions of its summer range in California outside of the Central Valley, from Santa Barbara County, and from eastern San Diego County (Meese *et al.* 2014). Although the tricolored blackbird is a year-round resident of the remainder of its summer range in California, "it largely withdraws in winter from [the southern] San Joaquin Valley and [northern] Sacramento Valley ([becoming] rare in Sacramento Valley north of Sacramento Co.), concentrating in and around Sacramento-San Joaquin River Delta and coastal areas, including Monterey and Marin Cos. [*sic*]. Small flocks may appear at other coastal locations from Sonoma Co. south to San Diego County and sporadically north to Del Norte Co." (Unitt 2004, Meese *et al.* 2014). This is consistent with the winter distribution reported by Grinnell and Miller (1944): "Many individuals move northwestward in San Joaquin Valley and south in Sacramento Valley to form concentrations in the delta [of the Sacramento and San Joaquin rivers] regions and in vicinities of Suisun, San Pablo, and San Francisco bays". Wintering flocks numbering 12,000-14,000 assemble near dairies on Point Reyes Peninsula, Marin Co., by mid-October. Some individuals also winter in central and [southern] San Joaquin Valley (Meese *et al*. 2014).

The Petition presents evidence that tricolored blackbirds have declined or disappeared from portions of their range including portions of the Central Valley where the species was once abundant. The species no longer occurs at many historical sites in coastal southern California, including Los Angeles and San Diego where the tricolored blackbird was once described as the most abundant species. Additional assessment of distributional changes and shifts in centers of abundance is warranted.

While the Department finds minor inconsistencies in the Petition's assessment of Range and Distribution, the Department nonetheless concludes that Petitioners have submitted sufficient information to demonstrate or create a reasonable inference that the tricolored blackbird has experienced a reduction in distribution in a portion of its range in California and may continue to do so.

Abundance (termed "Population Status and Trends" in the Petition, beginning on page 6 and "Abundance" in the Petition, beginning on page 23)

Grinnell and Miller (1944) described the status of the tricolored blackbird as "common to abundant locally" but noted a general decrease in southern California. Dawson (1923) reported the species as "locally abundant…in the San Diegan district…" The species was considered "not rare" in Santa Barbara County, abundant near Los Angeles, and the most abundant species near San Diego (Cooper 1870, Baird 1870 and Baird *et al.* 1874 *in* Beedy 2008). Neff (1937), in the first major work on the tricolored blackbird, did not estimate the overall breeding population in the Central Valley. However, in just eight counties in 1934, he estimated the abundance of tricolored blackbirds in California at 252 colonies, many of which were quite large, and that there were more than 700,000 adults per year. Orians (1961a)

reported that, in 1959 and 1960, there were four tricolored blackbird colonies larger than 100,000 adults. All were in the rice-growing area in Colusa and Yolo counties. By the late 1970s, the tricolored blackbird was characterized as a local resident in the southern California coastal district and the Antelope Valley, generally common where they occurred (Garrett and Dunn 1981). Meese (2014) documented 12,386 birds for the southern California region as compared to fewer than 6,000 in 2011 as reported by Kyle and Kelsey (2011).

The largest reported colony in the 1970s was one in Colusa County comprising an estimated 30,000 adults (Beedy and Hayworth 1992). DeHaven *et al.* (1975a) located 168 breeding colonies, about 78% of which were in the Central Valley. In the 1980s, the largest reported colony was one at Kesterson Reservoir in 1986, with an estimated 47,000 adults (Beedy and Hayworth 1992). Beedy *et al.* (1991) stated that the "average [tricolored blackbird] colony size has declined dramatically since the 1930s". In 1994, Hamilton *et al.* (1995) found that the largest colony, at San Luis National Wildlife Refuge (NWR), numbered about 105,000 adult tricolored blackbirds. In 1997, Beedy and Hamilton (1997) reported the largest colony to contain about 80,000 adults. By 2000, surveyors found that the largest colony comprised about 30,000 birds (Hamilton 2000). Since 2008, the population estimate declined 63% from 395,000 birds in 2008 to about 145,000 birds in 2014 (Kelsey 2008, Kyle and Kelsey 2011).

The Petitioner has described many relevant sources of information on historical and recent abundance to adequately describe much of the historical and recent work on population abundance. As discussed in the population trends section, issues of comparability across survey years and the degree to which surveys produce accurate rangewide population estimates warrant further evaluation.

Life History (in the Petition, beginning on page 25)

The Department found the Petition provided sufficient information to demonstrate or create a reasonable inference that some tricolored blackbird life history traits render them particularly vulnerable to natural and anthropogenic threats. Additional information is provided by the Department under the select subheadings, as follows.

Taxonomy and Genetics

The tricolored blackbird is a species in the avian family Icteridae (blackbirds, cowbirds, grackles, meadowlarks, and orioles). No subspecies are recognized (AOU 1957).

Although Berg *et al.* (2010) found no significant population structuring between southern and northern California populations of tricolored blackbirds, they found higher allelic diversity in the southern population. This suggests the southern population is an important genetic reservoir for the species.

Habitat Requirements

According to Grinnell and Miller (1944), tricolored blackbird habitat in the nesting season was found in the "vicinity of fresh water, especially marshy areas. The most favored sites for colonies are heavy growths of cattails and tules, but even when these are available, other vegetation may be resorted to for

nesting: sedges, nettles, willows, thistles, mustard, blackberry, wild rose, foxtail grass, barley, etc." Meese *et al.* 2014 summarized tricolored blackbird breeding habitat requirements as a nesting substrate that is relatively impenetrable or is flooded, is adjacent to water, and is within a few kilometers of foraging areas such as rangeland, alfalfa or cut hay, or irrigated pasture, with adequate insect prey. Tricolored blackbird nesting in cereal crops and dairy silage was not known until after the 1970s.

In winter, tricolored blackbirds often congregate with other species of icterids and European starlings (*Sturnus vulgaris*) that forage in grasslands, agricultural fields with low-growing vegetation, and at dairies and feedlots (Beedy 2008, Meese *et al.* 2014). Meese *et al.* (2014) wrote that the tricolored blackbird's preferred winter roosting sites included "cattail and bulrush marshes near suitable foraging areas in pasturelands, recently cultivated croplands, and livestock feedstores".

Colonial Breeding

The tricolored blackbird is the most highly colonial of North American passerine birds (Neff 1937, Lack and Emlen 1939, Meese *et al*. 2014). Bent (1958) found that the tricolored blackbird "nests in enormous, most densely populated colonies, the nests being placed more closely together than in any other colonies of marsh-nesting blackbirds". Grinnell and Miller (1944) stated that "one essential would seem to be provision at the site of the colony for a large number of individuals. Nests apparently must be close together and pairs usually [must be] in excess of 50 in order to meet the instinctive requirements of the species". Meese *et al.* (2014) wrote that the status of the tricolored blackbird is of concern, "because its population has declined and its colonial nesting behavior makes it vulnerable to nesting failures affecting thousands of nests at a single colony".

Breeding and Post-Breeding Behavior

The tricolored blackbird is highly nomadic (Neff 1937, 1942; DeHaven and Neff 1973). A flock of tricolored blackbirds can appear in an area in which it has been absent for months and begin to form a nesting colony (Orians 1961b). Orians (1961a) interpreted fluctuations in numbers of tricolored blackbirds during the breeding season to be responses to local abundance of insects. Hamilton (1998) suggested that these fluctuations are due to "itinerant breeding", describing the possibility that "variable local abundance between years is the result of itinerant breeding movements during the breeding season after predators, agricultural operations, and adverse weather destroyed colonies". Itinerant breeding applies to those individuals "nesting at more than one geographic location in the same year" (Hamilton 1993). A noted pattern is for individuals to move northward after their first nesting efforts in the San Joaquin Valley and in Sacramento County into the Sacramento Valley, northeastern California, and southern Oregon (Beedy and Hamilton 1997). In the spring, the tricolored blackbird vacates its wintering areas and arrives at nesting locations in Sacramento County and the San Joaquin Valley in the period from early March to early April (DeHaven *et al.* 1975b). In the Sacramento Valley, the largest colonies are formed during May and early June (Meese *et al.* 2014). In southern California, the tricolored blackbird may nest anytime throughout April and June (Unitt 2004). Orians (1960) reported successful autumnal breeding in the tricolored blackbird in colonies in the Sacramento Valley. Payne (1969) believed that autumnal nesting was related to rainfall and abundance of insect food

and/or abundance of rice. Hamilton *et al.* (1995) reported tricolored blackbirds breeding in August 1993 "along the Marin coast". DeHaven *et al.* (1975b) found that the tricolored blackbird exhibits a major postbreeding-season movement into the Sacramento Valley. In winter, tricolored blackbird numbers decline in the Sacramento Valley and increase in the delta of the Sacramento and San Joaquin rivers (Neff 1937, Orians 1961b, DeHaven *et al.* 1975b). Nonbreeding flocks can consist of only tricolored blackbirds in either mixed-sex or single-sex groups, or they can be tricolored blackbirds mixed with the red-winged blackbird (*Agelaius phoeniceus)*, Brewer's blackbird (*Euphagus cyanocephalus*), and European starling, and other species (Meese *et al.* 2014).

Factors Affecting Ability of Population to Survive and Reproduce (in the Petition, beginning on page 36)

The Petition addresses the loss of nesting and foraging habitat throughout the breeding distribution of the species including the destruction of native wetland and suitable upland breeding habitats, and nesting colony destruction by agricultural activities during the breeding season that results in direct mortality of nestlings. The Petition also describes early market-hunting and poisoning of tricolored blackbirds and provides information on predation and on mortality due to contaminants. The Petition also lists causes of mortality such as exposure to inclement weather, predation (under Life History section in the Petition, page 30), starvation of young, and possible removal of live young from nests by female tricolored blackbirds. The Petition also asserts that "the Tricolored Blackbird is not protected by existing regulatory mechanisms".

Habitat Loss

Neff (1937), observing that "the destruction of [tricolored blackbird] nesting habitats by man is of most importance", cited "reclamation and drainage" as key factors in the loss of many favorable sites, along with "dredging or cleaning of reservoirs, marshes, and canals in order to destroy the growths of cattails and tules". Subsequent workers have documented or commented upon habitat loss continuing through the present (Beedy *et al.* 1991, Hamilton 1993, Hamilton *et al.* 1999, Meese *et al.* 2014, DeHaven 2000a, Humple and Churchwell 2002, Beedy 2008). In the year 2000, DeHaven (2000a) observed widespread habitat loss due to urban expansion and agricultural conversions relative to the 1970s when he and others conducted tricolored blackbird research. Survey participants in recent years continue to document changes in the landscape at or around tricolored blackbird colony sites, with both nesting and foraging habitat being removed or converted to other uses. Meese *et al.* (2014) stated that the "greatest effects of human activity [affecting the tricolored blackbird] are related to habitat loss and alteration". The Department believes breeding and foraging habitat loss represents a threat to tricolored blackbird populations.

Agricultural Activities

The Petition describes the use of grain silage fields for nesting by tricolored blackbirds and the fact that normal harvesting activities typically coincide with the breeding season. Harvesting of fields that contain nesting colonies results in nest destruction and direct tricolored blackbird mortality. Table 4 and Figure 4

in the Petition summarize at least some of the losses of colonies due to harvesting thought to have occurred between 1993 and 2013. Entire tricolored blackbird colonies (up to thousands of nests) in cereal crops and silage have been destroyed by harvesting and plowing of agricultural lands (Meese *et al.* 2014). The Department believes that harvesting of fields containing tricolored blackbird colonies continues to occur and is a threat to tricolored blackbird populations.

Low Reproductive Success

Meese (2013) found widespread reproductive failures at tricolored blackbird colonies in the Central Valley from 2006 to 2011. Relatively high reproductive success was observed only when nearby foraging areas supported high insect abundance, suggesting that many tricolored blackbird colonies may be food limited. Cook and Toft (2005) noted that between 1992 and 2003, "Reproductive success was significantly higher in upland non-native vegetation (primarily Himalayan blackberry *Rubus discolor*) than in native emergent cattail *Typha* spp. and bulrush *Scirpus* spp. marshes", and concluded that low reproductive success had contributed to recent declines.

Predation

Various workers provided evidence for predation on tricolored blackbirds, their eggs or nestlings by gopher snake (*Pituophis catenifer*), king snake (*Lampropeltis* sp.), black-crowned night-heron, Cooper's hawk (*Accipiter cooperii*), Swainson's hawk (*Buteo swainsoni*), merlin (*Falco columbarius*), burrowing owl (*Athene cunicularia*), northern harrier (*Circus cyaneus*), barn owl (*Tyto alba*), short-eared owl (*Asio flammeus*), yellow-billed magpie (*Pica nuttalli*), American crow (*Corvus brachyrhynchos*), coyote, wolf (*Canis lupus*), gray fox (*Urocyon cinereoargenteus*), and possibly mink (*Mustela vison*) and raccoon (*Procyon lotor*), and feral domestic cat (*Felis catus*), showing that predation on breeding tricolored blackbirds by a diverse set of predators has occurred throughout the historical record (Mailliard 1900, Neff 1937, Payne 1969, Beedy and Hamilton 1997, Meese *et al.* 2014). Beedy and Hamilton (1997) reported that more recently, black-crowned night-herons have eliminated all or most nests at several freshwater marsh breeding colonies. Meese (2012) described the increasing pressure on tricolored blackbird colonies by cattle egrets. The Department believes that predation poses a threat to the success of some tricolored blackbird nesting colonies and that the type of nesting substrate can influence vulnerability to predation. Predation is a natural occurrence, but there has been a steady increase in population sizes of several major avian predators in California (black-crowned night heron, cattle egret, American crow, and common raven) over the last 40 years (Sauer *et al*. 2008 as cited in Kelsey 2008). The Department recognizes that small areas of native vegetation are especially vulnerable to predation, especially if they are near sites at which predator populations are at artificially-high levels due to the availability of augmented food sources from human activities. The drastic reduction in extent of spring and summer wetlands in California may have also concentrated predator populations in the remaining wetlands more than was true historically (Cook and Toft 2005).

Agricultural Contaminants

The Petition provides a summary of pesticide use in Sacramento, San Joaquin, Merced, Fresno, and Tulare counties under the heading Poisons and Contaminants (beginning page 45); information provided in the Petition is from year 2002 California Department of Pesticide Regulation data. Much of the discussion previously appeared in the 2004 petition to the State to list the tricolored blackbird (CBD 2004). The Department's earlier evaluation of the information (Gustafson and Steele 2004) is relevant and excerpted below:

> "The loss of Tricolor [tricolored blackbird] breeding effort due to application of herbicides at colony sites has been documented (Hosea 1986, Hamilton *et al.* 1995, Beedy and Hamilton 1999). Hosea (1986) reported that two colonies in Colusa and Sacramento counties near rice fields were oversprayed during aerial application of herbicides resulting in the poisoning of almost all the nestlings. However, Hamilton *et al.* (1995) stated, "Despite the limited evidence that Tricolored Blackbirds are suffering some mortality as a result of patterns of chemical use in agricultural areas, poisons do not appear to be inducing a serious population problem for Tricolored Blackbirds".
>
> The petition does not analyze the data available in the pesticide-use reporting database of the California Department of Pesticide Regulation. The database contains types and quantities of pesticides applied to crops utilized by the Tricolor. The petition does not evaluate pesticide-use patterns in relation to historical locations of Tricolor nesting colonies. Instead, the petition's focus is on individual pesticides that have high use rates or that are toxic to birds. The assessment is not representative of the risk posed by pesticides to the Tricolor. The majority of the pesticides cited in Table 5 of the petition are not expected to have a significant impact on the species. The use of the following chemicals listed in the petition, if they are applied as required, may not pose a significant risk to the Tricolor: methyl bromide, metam-sodium, aluminum phosphide, oryzalin copper sulfate, chlorophacinone, diphacinone, strychnine, zinc phosphide, and petroleum oil.
>
> The petition, citing Beedy and Hayworth (1992), describes the effects of possible selenium toxicosis on a Tricolor colony. Hamilton (2000) knew of "no evidence that toxic contaminants have adversely affected" the Tricolor since the work of Beedy and Hayworth (1992). Beedy and Hayworth (1992), working in the Central Valley in 1987, compared the reproductive success of the Tricolor colony at Kesterson Reservoir in Merced County, which had a history of selenium contamination, with the success at four other colonies. Although Beedy and Hayworth (1992) noted nesting failure at colonies in addition to the one at Kesterson, they concluded that "further research is needed to determine whether the nesting failures observed were isolated phenomena or indicative of a more widespread general decline of this species". The deformities observed in Tricolor chicks in the nesting colonies at Kesterson, which have been attributed to selenium, occurred in the 1980s prior to the cleanup of the area and prior to cessation of the use of selenium-laden agricultural drain water to maintain the wetlands at Kesterson. Since that

time, no impact of contaminants such as selenium on Tricolor nesting success has been documented.

The petition reports that a biologist observed a colony sprayed by mosquito abatement operators in Kern County and that all sprayed eggs failed to hatch. The Department does not know whether any eggs from this colony were tested to determine a cause for the failure to hatch. We also are unaware of whether the spraying equipment disturbed the colony to the extent that adult birds abandoned their nests. In any case, we do not know whether application of mosquito larvicides or adulticides poses a direct threat to the Tricolor. The potential impact of these chemicals on other invertebrates that make up much of the food sources of Tricolors is apparently not known. In addition, the physical disturbance resulting from applications of mosquito-control pesticides in the immediate vicinity of a nesting colony may result in the abandonment of the colony. The Tricolor is quite sensitive to disturbance during certain phases of the breeding cycle and will readily abandon an established colony, even with young in the nests. Additional impacts to the Tricolor could result from increased spraying and physical disturbance activities undertaken to control the spread of the West Nile virus.

Among the pesticides discussed in the petition is phosmet, a chemical said by the petition to be "highly toxic" in red-winged blackbirds. Phosmet is one of the organophosphate insecticides, which are moderately to highly toxic to birds. In California, the primary application of phosmet is in orchards and vineyards. The flocking behavior, choice of nesting habitat, and typical choice of feeding areas appears to minimize the risk of exposure to the Tricolor of agricultural applications of these insecticides during the nesting season. Because the Tricolor forages in mixed-species flocks with the European starling and other species of blackbirds in the non-breeding season, and because these flocks forage at dairies and/or feed lots, the Tricolor may be exposed to avicides intended to control nuisance and depredating flocks of blackbirds.

Due to the lack of specific information on the effect of agricultural contaminants, the Department cannot judge whether these chemicals pose a local or population-level threat to the Tricolor. This is an area requiring more attention."

Weather Events

The Petition includes a section entitled Storms and Droughts (beginning page 44). Hamilton *et al.* (1995) stated that high mortality of tricolored blackbird nestlings can result from severe or prolonged storms and that some observed reproductive failure may be the result of chilling of adult and nestling tricolors. Also, "some adult female mortality at nests appears to have been induced by cold and rainy weather" (Hamilton *et al.* 1995). A recent exercise by Department staff to evaluate drought risk for 358 special status taxa (species or subspecies that are listed under the federal Endangered Species Act or CESA, proposed or candidates for listing, fully protected species, or species of special concern) found the tricolored blackbird to be among those at most risk due to the ongoing drought.

Disease

The Petition includes a section on "Disease or Predation" (page 42). The Petition does not discuss any known or potential disease issues for the species. Meese *et al*. (2014) stated that no diseases have been reported for the tricolored blackbird but that in some years many nestlings have mites. Avian pox is prevalent in tricolored blackbirds in the Sacramento Valley, much less so in the San Joaquin Valley (Meese *et al*. 2014). Nationwide, blackbirds, orioles and grackles including the tricolored blackbird have been confirmed as being susceptible to West Nile Virus (WNV; www.cdc.gov/westnile/resources/pdfs/Bird%20Species%201999-2012.pdf). Adult tricolored blackbirds tested positive for WNV antibodies in 2009 but did not show symptoms of the disease (Meese *et al.* 2014). The impact of disease and parasites on breeding or wintering tricolored blackbirds is unknown. The Department recognizes the potential for these factors to significantly affect local populations of this highly-social species.

Competition from Other Species

The Department is aware that the great-tailed grackle (*Quiscalus mexicanus*) has experienced a population expansion in California, a phenomenon which ultimately could negatively influence success of tricolored blackbird. Meese *et al*. (2014) reported that grackles may be aggressive towards nesting tricolored blackbirds but did not consider the impacts severe. White-faced ibis (*Plegadis chihi*) may destroy tricolored blackbird nests when in the process of constructing their own nests. Additionally, they are known to prey on eggs of the tricolored blackbird (Meese *et al*. 2014). Marsh wren (*Cistothorus palustris*) may destroy eggs in tricolored blackbird nests if the nest is in proximity to its own nest (Meese *et al*. 2014).

Brood Parasitism

The Petition does not include information about impacts of brood parasitism on the tricolored blackbird. The brown-headed cowbird (*Molothrus ater*) is known to rarely parasitize nests of tricolored blackbirds (Meese *et al.* 2014). The Department does not consider brood parasitism to be a major threat to the tricolored blackbird.

Killing of Blackbirds to Protect Crops

Meese (2009, 2014) discussed shooting of blackbirds to protect agricultural crops as a potential threat to the tricolored blackbird. The Petition discusses the historical lethal control of blackbirds to protect crops and considers historical poisoning and shooting of tricolored blackbirds to have contributed to the long-term decline of the species. The Petition states that continued killing of blackbirds to protect ripening rice in the Sacramento Valley is a known but unquantified source of mortality. The Department agrees that an unknown number of tricolored blackbirds are likely killed each year due to activities that are implemented to protect agricultural crops. Meese (2009) reported on the shooting of two tricolored blackbirds by a rice farmer in Butte County. A depredation order under the federal Migratory Bird Treaty Act allows for the control of several species of blackbirds and corvids in agricultural situations without a permit from the U.S. Fish and Wildlife Service (USFWS) (when birds are causing serious injuries to

agricultural or horticultural crops or to livestock feed;50 CFR 21.43). Although tricolored blackbird is not covered by the depredation order, it is possible that misidentification of tricolored blackbirds when they occur in mixed flocks in the fall and winter leads to unintentional mortality of the species. The number of tricolored blackbirds killed annually is unknown. Landowners are required to report on activities and on the number of birds captured or killed under the depredation order, and a recent revision to the depredation order requires expanded reporting on non-target species (50 CFR 21.43, Nov 5, 2014). This may lead to an increase in knowledge upon which an assessment of impacts to non-target species, including tricolored blackbird, can be based.

While the Department disagrees with portions of the Petitioner's assessment of the factors affecting the tricolored blackbird's ability to survive and reproduce, the Department nonetheless concludes that the Petitioner has submitted sufficient information to demonstrate or create a reasonable inference that tricolored blackbirds are subject to numerous threats that may have the potential to adversely affect their ability to maintain self-sustaining populations within California.

Degree and Immediacy of Threat (termed "Degree and Immediacy of Threat and Request for Emergency Action" in the Petition, beginning on page 49; also covered, in part, under the heading "Factors Affecting the Ability to Survive and Reproduce", in the Petition, beginning on page 36)

The Petition provides adequate information regarding degree and immediacy of threat under two headings as indicated above. The Department finds the following key factors pose serious threats to the tricolored blackbird:

Breeding Habitat Loss and Fragmentation: The Department believes that habitat loss and fragmentation have resulted in a decline in the population of the tricolored blackbird since the 1930s, and continues to affect the species. DeHaven (2000a) stated that, "as measured by their breeding abundance, Tricolored Blackbirds have experienced a long-term population decline which continues today. Much of this decline stems from losses of breeding habitat to urban expansion and changes in agricultural land uses. Conversions of pasturelands, both irrigated and non-irrigated, and hay crops (alfalfa and others) to vineyards and orchards has been, and will likely continue to be, one of the most damaging forms of land-use change [to the tricolored blackbird]. Because of the severe losses of habitat, which are likely irreversible, there is little likelihood that any historic population level - or indeed, even a more recent level can ever be restored and maintained". Nesting substrate at known breeding colony sites continues to be lost on a regular basis; statewide survey participants regularly report on loss of nesting substrate when visiting historical breeding locations.

Loss of Upland Foraging Habitat: Because of their colonial breeding nature, foraging habitats that support highly productive insect populations are required for successful reproduction. For much of the year, adult tricolored blackbirds feed mainly on grains and other plant seeds (Crase and DeHaven 1978). However, females require large amounts of insect prey for egg production and both sexes provision young with insects during at least the first nine days of development (Crase and DeHaven 1977). Colonies consisting of many thousands of birds require an immense amount of insect prey during short

windows of time, putting a large burden on the landscape surrounding the colony. Habitats that can support high insect production include grasslands, pasture, and certain agricultural crops. These land cover types are regularly converted to incompatible land cover types such as orchards, vineyards, and urban development as agricultural practices evolve and cities continue to expand in the Central Valley. With regular loss of breeding substrate and foraging habitat, the co-occurrence of these essential habitat requirements across the landscape becomes less and less common, resulting in limited places where tricolored blackbirds can successfully breed.

The Department was not able to thoroughly examine information on conversion of suitable breeding and foraging habitat to unsuitable land cover types. The degree to which urbanization and conversion of compatible agricultural land to incompatible crop types continues to impact the species has not been assessed. This area requires additional review and analysis.

Loss of Reproduction to Triticale Harvest: The Department believes that the use by the tricolored blackbird of agricultural fields, where reproduction often fails due to human activities and to increased predation, may be contributing to the population decline. When other habitat is unavailable, agricultural fields may provide attractive alternative habitats for breeding and/or foraging. DeHaven (2000b) wrote, "Today, a new phenomenon – [tricolored blackbird] nesting in grain silage fields of dairies – has emerged. Unfortunately, such fields are often subject to harvest (done in relation to moisture content of the forage) while nesting tricolored blackbirds are still present. This may cause both nest destruction and direct mortality". The tricolored blackbird experiences "losses [of reproductive effort] to crop-harvesting activities and insufficient insect food and suffer habitat losses to land conversions from rangeland to vineyards, orchards, other agricultural crops and urban development" (Meese *et al*. 2014). In the 2000 survey, Hamilton (2000) found that over 90% of all tricolored blackbird observed foraging activity was on private property. Hamilton (2003) wrote that his "measurements of reproductive success (mean number of fledglings per successful nest, per colony) reveal huge population sinks that may be depleting tricolor numbers. Massive reproductive failures in the agricultural fields of the San Joaquin Valley in particular suggest that the reproductive potential of this species may be swamped by losses to agricultural harvesting practices. This relationship is exacerbated by the attractiveness of productive agricultural habitats to breeding tricolors despite repeated reproductive failures". Cook and Toft (2005) found that reproductive success varied among nesting substrates and that significantly more offspring were fledged per nest in non-native Himalayan blackberry and that many occupied sites have been lost in recent years. They concluded that silage colonies, when not destroyed by harvest, fledge more young per nest than do native marsh habitat and that this recruitment could be considerable and play a large role in stabilizing the population.

Of the nesting substrates used by tricolored blackbirds, triticale is unique in that it is available in abundance each year in the San Joaquin Valley, and in recent years, many of the largest colonies have occurred on triticale fields. The increase in dairies in the San Joaquin Valley and the associated expansion of triticale fields may have contributed to a shift in the center of population abundance from the Sacramento Valley to the San Joaquin Valley over the last few decades. The breeding season corresponds to the period of harvest for the triticale crop, and many colonies are disturbed each year due to the harvest of the nesting substrate before the nesting cycle is completed. Harvesting destroys

the nests and any eggs or young present in the nests, often resulting in zero productivity for the nesting effort. Fifty percent of the breeding tricolored blackbirds detected in California in 2008 were observed nesting in triticale fields during the 2008 statewide survey (Kelsey 2008).

Low Reproductive Success: Recent research has shown that most of the larger tricolored blackbird colonies in the Central Valley exhibited chronically low reproductive success from 2006 to 2011 (Meese 2013), even at sites not harvested during the breeding period. Incidental observations in 2012 and 2013 suggest that this trend has continued. Meese (2013) linked reproductive success at Central Valley colonies to relative abundance of insect prey at foraging sites. Insect prey availability may be suppressed by drought, changes in surrounding vegetation, or by application of pesticides. Regardless of cause, low insect abundance near colonies in the Central Valley appears to have resulted in very little reproductive output from the largest colonies in the state, at least in recent years. The limited reproduction at the largest colonies over a seven year period has likely resulted in an age structure skewed toward older adults. The maximum life span observed in tricolored blackbirds is 12 years (Meese *et al.* 2014), and much of the current population may be approaching or exceeding the average life span.

Predation: The Department believes that predation is a threat to the success of some tricolored blackbird nesting colonies. Small areas of native vegetation are recognized to be especially vulnerable to predation, especially if they are near sites at which predator populations are at artificially-high levels due to the availability of augmented food sources from human activities.

While the Department disagrees with portions of the Petitioner's assessment of the relative degree and immediacy of threats to the tricolored blackbird, the Department nonetheless concludes that the Petitioner has submitted sufficient information to demonstrate or create a reasonable inference that the threats tricolored blackbirds are subject to have the potential to adversely affect their ability to maintain self-sustaining populations within California.

Impact of Existing Management Efforts (in the Petition, beginning on page 50)

The Petition presents information on existing efforts as well as past attempts to manage or conserve the tricolored blackbird.

Silage Buy-outs and harvest delays

The Petition states that the existing but intermittent practice by the USFWS and the Department, to purchase agricultural crops in which the tricolored blackbird is nesting, is not adequate to prevent the loss of tricolored blackbird colonies. The USFWS has contributed funding for crop payment in several years. The first such purchases were in 1993 and 1994, preserving several large colonies in Fresno, Kings, and Tulare counties. Earlier, in 1992, interested persons intervened to prevent destruction of tricolored blackbird colonies by agricultural operators. Hamilton *et al.* (1995) calculated that interventions in 1992, 1993, and 1994 may have been responsible "for the presence of over 75,000 adult Tricolored Blackbirds in 1995 [which had been nestlings in the three previous years], about 25% of the known population". One or both of the wildlife agencies and/or the Natural Resources Conservation Service (through the

Delayed Silage Harvest EQIP program in 2012-2014) have contributed to crop purchases/harvest delay in each year from 1999 through 2014. In 2004, silage purchases by the Department and USFWS protected three colonies totaling over 100,000 adult tricolored blackbirds. From 2005-2009, silage buy-out and/or harvest delay contributed to the productivity of the species, varying annually. During this time period, 11 breeding colonies consisting of 546,000 birds subsequently produced 396,025 young through this process (Meese 2009b).

DeHaven (2000a) questioned the biological value (to the tricolored blackbird) of having State and federal agencies pay dairies to delay or forgo silage harvesting in fields in which the tricolored blackbird is nesting. DeHaven (2000b) commented that providing monetary payments to dairies "sets an undesirable precedent". He recommended that tricolored blackbirds be lured away from nesting in grain and silage fields through "making key San Joaquin Valley dairy silage fields less attractive to breeding tricolored blackbirds; and providing alternative, low-risk nesting substrates in these areas" (DeHaven 2000b).

Tricolored Blackbird Working Group

Following the 1991 petition to list the tricolored blackbird under CESA, the Department committed to participation on a multi-stakeholder working group to plan for and implement conservation actions. This resulted in the first of many statewide surveys, the first silage buyout to protect a breeding colony, and ongoing research. However, the working group made limited progress in developing comprehensive conservation measures for the tricolored blackbird and eventually dissolved in the mid-1990s. In 1997, a status update and management guidelines for the tricolored blackbird was completed as per Department and USFWS guidance (see Beedy and Hamilton 1997). The species was again petitioned to be listed under CESA in 2004. The petition evaluation report by the Department stated there was sufficient information to indicate the petitioned action may be warranted; the Commission voted to reject the petition (Fish and Game Commission meeting, Feb. 3, 2005). A new multi-stakeholder Tricolored Blackbird Working Group was formed in 2005 and the group released a conservation plan in 2007 detailing the conservation and management, research and monitoring, data management, and education and outreach goals for the species (TBWG 2007). Working group members, including the Department, signed a Memorandum of Understanding (agreeing to implement the actions in the conservation plan. Most of the goals and objectives in the plan are still relevant today. Progress toward meeting objectives by Department, USFWS, and partners on the working group have focused on expanding knowledge through research and protecting large breeding colonies that are threatened by harvest of triticale fields. New information gathered during many years of research can inform the modification of specific tasks, but the broader goals in the conservation plan remain relevant. The tricolored blackbird has been a high priority California Species of Special Concern since the list was revised in 2008 and the Department has continued to pursue conservation actions for the species.

Among the conservation and management goals in the 2007 Conservation Plan for the Tricolored Blackbird, the goal to "*Protect silage-nesting tricolors until sufficient, permanent breeding habitat is available to maintain viable self-sustaining populations*" is considered to be a near-term need until adequate natural habitats can be protected or restored and tricolored blackbirds are no longer

dependent on silage crops. With the declining population and the continued use of triticale by large colonies, this goal remains a high priority. The state and federal governments have provided funding to implement voluntary efforts to compensate willing farmers for delaying harvest until after the breeding season. These efforts have resulted in the protection of several large colonies, but colonies continue to be lost to harvest. Although protection of breeding colonies does not represent a permanent solution to the loss of colonies to harvest, it has resulted in the protection of hundreds of thousands of nests. Without these protective measures, the population likely would have experienced even more dramatic declines in recent years.

The long-term goal to "*Protect, create, restore, and manage habitats needed to support viable, self-sustaining populations of tricolors*" is considered to be of highest priority for species conservation (N. Clipperton, pers. comm., based on priority setting exercise at May, 2014 Tricolored Blackbird Working Group meeting). Some progress has been made on implementing this goal, including an assessment of opportunities for enhancing habitat on Department-owned lands, incorporating the needs of multiple species, including tricolored blackbirds, into habitat incentive programs for private lands, and management of wetland habitat on Department and National Wildlife Refuge lands to benefit nesting tricolored blackbirds. Until more extensive habitat restoration and protection of both nesting substrate and high quality foraging habitat can be achieved, the population will likely remain small and ongoing efforts to protect colonies on agricultural fields will likely need to be continued.

Species of Special Concern

The Department issued the first Bird Species of Special Concern in California report in 1978 (Remsen 1978). Although the tricolored blackbird was not included on the special concern list, it was recommended for further study to determine whether the decline of the tricolored blackbird noted by DeHaven *et al.* (1975a) was continuing. After further decline of population numbers in the 1980s, the Department added the tricolored blackbird to its list of Bird Species of Special Concern in 1990. The most recent revision of the list found the tricolored blackbird merited inclusion in the highest conservation category (Shuford and Gardali 2008).

While the Department questions portions of the Petitioner's assessment of the impacts of existing management efforts, the Department nonetheless concludes that the Petitioner has submitted sufficient information to demonstrate or create a reasonable inference that those management efforts may not be adequate to maintain self-sustaining populations in California.

Suggestions for Future Management (in the Petition termed "Recommended Management and Recovery Actions", beginning on page 54)

The Petition contains specific suggestions for the future management of the tricolored blackbird (Beedy 2014, Meese 2014). The Department believes these recommendations and others (e.g., Beedy and Hamilton 1997, Hamilton *et al.* 1999, DeHaven 2000a, DeHaven 2000b, Hamilton 2003, TBWG 2007, Beedy 2008) should be carefully considered, evaluated for efficacy and prioritized for implementation.

The Tricolored Blackbird Conservation Plan (TBWG 2007) included many of the following management and research recommendations:

1. Incorporate population and habitat conservation actions for the Tricolored Blackbird in habitat conservation plans, natural community conservation plans, and other multispecies conservation plans and in ongoing private land agricultural and conservation easement programs.
2. Restore habitat by promoting the growth of secure nesting substrates (e.g., nettles, thistles, and other naturally armored native plants) near productive foraging habitats to increase the potential carrying capacity for this species. Restored nesting habitats should be situated on protected public and private lands, especially in agricultural areas of the Central Valley and surrounding foothills.
3. On refuges and other public lands that support Tricolored Blackbird colonies in irrigated pastures, manage irrigation to permit a sequential flooding regime in adjacent land parcels at the time they are breeding to enhance insect productivity. Incorporate carefully managed grazing of these parcels to maintain an average vegetation height of 15 cm to provide optimal Tricolored Blackbird foraging habitat.
4. Lure nesting Tricolored Blackbirds, when possible, away from dairies and other agricultural operations to secure habitats where they are more likely to succeed; where colonies establish, defer harvest of grain and silage crops, if feasible, until after the breeding season.
5. Investigate predator-prey relationships, especially the ongoing effects of black-crowned night-herons and coyotes and the responses of individuals and colonies to predators.
6. Perform demographic research to determine whether reproductive success of freshwater marsh colonies varies with respect to wetland size and spatial relationships with other wetlands.
7. Analyze depletion of food resources by blackbirds near breeding colonies and quantify the extent and character of foraging habitats near colonies.
8. Evaluate habitat selection mechanisms and the relative value of alternative foraging habitats to breeding birds.
9. Use banding and radiotelemetry to measure adult and juvenile dispersal from several colonies.
10. Evaluate the distribution, resource utilization, and survival of wintering birds.

Finally, spatial analyses to estimate losses in nesting substrate or foraging habitat have not been conducted. Data have not been systematically collected, but incidental observations during species surveys are available and could inform an analysis of recent changes in extent and distribution of nesting substrate. Agriculture land use data for the Central Valley could be used to estimate changes in foraging habitat over time (e.g. DWR land use data; http://www.water.ca.gov/landwateruse/lusrvymain.cfm).

Habitat Necessary for Survival ("Kind of Habitat Necessary for Survival" in the Petition, beginning on page 30)

The Petition describes the existing situation in which the tricolored blackbird nests in native vegetation, introduced vegetation, and crops. For successful breeding, tricolored blackbirds require nesting substrate, a water source, and an extremely abundant insect food source in proximity to the breeding colony. Historically, tricolored blackbirds nested in natural wetlands of the Central Valley and in a few

native upland plant species; early declines in the population most likely resulted from declines in this natural habitat. As extensive wetlands and other native substrates were lost, tricolored blackbirds expanded use to alternative nest substrates, including nonnative upland plants such as Himalayan blackberry, milk thistle (*Silybum marianum*), and the agricultural crop triticale, which is grown as a food source for dairy cattle. Historically, most colonies were in freshwater marshes. Meese *et al.* (2014) wrote that, historically, "almost 93% of 252 breeding colonies observed in the Sacramento Valley, from 1931 to 1936, were in freshwater marshes dominated by cattails (*Typha* spp.) or bulrushes (*Schoenoplectus* spp.); remaining colonies were in willows (*Salix* spp.), blackberries (*Rubus* spp.), thistles (*Cirsium* and *Centaurea* spp.), and nettles (*Urtica* sp). By the 1970s, DeHaven *et al.* (1975a) found that only 53% of colonies in the Sacramento and San Joaquin valleys were in cattails and bulrushes. Since at least the 1970s, the breeding habitat of the tricolored blackbird has included upland and agricultural areas (DeHaven *et al.* 1975a, Beedy *et al.* 1991). Hamilton (2003), citing Kreissman (1991 - not examined), wrote that "most Central Valley grasslands are now gone, lost to cattle rangeland, irrigated crops (pasture, row crops, orchards, rice , grapes) and development. Modern tricolor habitats are agricultural land, especially rice and nearby duck club cattail and bulrush marshes, dairies and their associated hay fields and cattle rangeland wherever there is suitable nesting habitat and water". Hamilton (2003) stated that "Tricolored blackbird colony sites require nesting substrates offering protection from predation. These include emergent marsh vegetation (cattails, *Typha latifolia*, less frequently *T. angstifolia*), bulrushes (*Schoenoplectus californicus, S. acutus*) and Himalayan blackberries (*Rubus discolor*) thickets, thistle, and nettles. Tricolored blackbirds do not settle in grain, hay, silage, or cut-feed fields before grain forms seed awns or spiny or prickly weeds develop in them. We assume that grain fields are identified as spiny vegetation by tricolors".

The Department concludes that the Petitioner has submitted sufficient information to describe the habitat needs for tricolored blackbird.

Distribution Map

The distribution map included in the Petition on page 61 contains a sufficient illustration of the California breeding and winter ranges of the tricolored blackbird. The Department further recommends assessment and incorporation of other existing data sets (e.g., eBird, California Natural Diversity Database, Christmas Bird Count, Breeding Bird Survey) which may have additional tricolored blackbird records into the distribution map.

Availability and Sources of Information (in the Petition, beginning on page 57)

The Petition includes most of the major references on the tricolored blackbird.

CONCLUSIONS

The tricolored blackbird is the most colonial land bird in North America and nearly is endemic to California, with more than 99% of the total breeding population in the State. As a colonial breeder, the tricolored blackbird nests in a small number of larger colonies comprising a significant proportion of the population. The concentration of a high proportion of the total population at a few sites increases the

risk of a catastrophic effect on the species as a whole, due to nesting failure in, or destruction of, a single large colony.

At least three major factors have operated, and continue to operate, to reduce the population of the tricolored blackbird. These major threats to the tricolored blackbird are as follows:

Loss and Fragmentation of Habitat: This factor appears to be the most serious one threatening the tricolored blackbird. The availability of suitable nesting and foraging habitat, including food resources, appears to limit the population. Local declines across the range of this species over time apparently have cumulatively resulted in the decline in tricolored blackbird numbers since the 1930s. The loss of habitat continues, both in the Central Valley and in southern California. As the amount of habitat is reduced through human activities, the tricolored blackbird population likely will continue to decline.

Agricultural Operations: The shift in breeding habitat use by the tricolored blackbird from native habitats to silage and grain fields makes these colonies vulnerable to destruction during crop harvest. Nest abandonment also can result from the disturbance of nearby human activities.

Predation: Predators attack colonies of any size but are especially effective in reducing or eliminating the reproductive effort of small colonies in remnant native vegetation such as cattails. Predation can have a significant effect on the reproductive success of tricolored blackbird breeding colonies.

Having reviewed and evaluated relevant information, including the material referenced in the Petition and other information in the Department's possession, the Department believes there is sufficient scientific information available at this time to indicate that the petitioned action may be warranted. (See Fish & G. Code, § 2073.5, subd. (a)(2); Cal. Code Regs. tit. 14, § 670.1, subd. (d).)

Preparers

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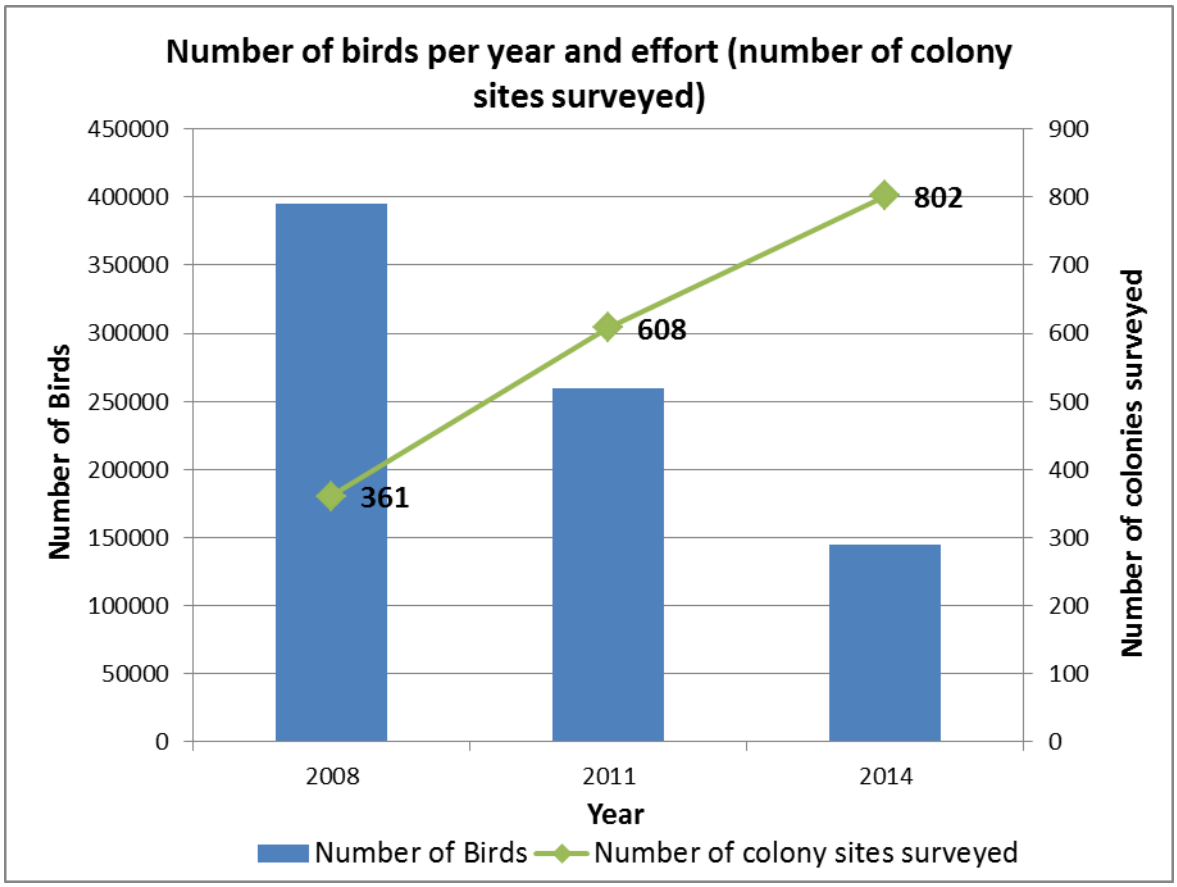

Figure 1. Number of birds detected per year during statewide surveys, and number of colony sites surveyed during each survey.

LITERATURE CITED

AOU (American Ornithologists' Union). 1957. Check-list of North American birds, 5th ed. American Ornithologists' Union, Baltimore.

Baird, S.F., ed. 1870. Ornithology of California. Land birds. Vol. 1. From the manuscript and notes of J. G. Cooper. U.S. Geologic Survey of California. Welch Bigelow and Co. Cambridge, MA.

Baird. S.F., T. M. Brewer, and R. Ridgway. 1874. A history of North American birds. Land birds. Vol. 2. Little, Brown and Co., Boston.

Beedy, E. C. and W. J. Hamilton III. 1997. Tricolored blackbird status update and management guidelines. Jones & Stokes Assoc. Inc., Sacramento CA, Rep. 97-099. Prepared for U. S. Fish and Wildl. Service, Sacramento CA, and Calif. Dep. of Fish and Game, Sacramento CA.

Beedy, E. C. and W. J. Hamilton III. 1999. Tricolored Blackbird (*Agelaius tricolor*). Account no. 423, 24 pp, *in* A. Poole and F. Gill (eds.), The Birds of North America, Philadelphia PA.

Beedy, E. C. and A. Hayworth. 1992. Tricolored blackbird (*Agelaius tricolor*) nesting failures in the Central Valley of California: general trends or isolated phenomena? Pp. 33-46 *in* D. F. Williams, S. Byrne, and T. A. Rado (eds.), Endangered and sensitive species of the San Joaquin Valley, California: their biology, management, and conservation. Rep. based on 1987 conf., The Wildl. Soc. - Western Section, Bakersfield CA. Calif. Energy Commission, Sacramento CA.

Beedy, E. C., S. D. Sanders, and D. Bloom. 1991. Breeding status, distribution, and habitat associations of the tricolored blackbird (*Agelaius tricolor*), 1850-1989. Jones & Stokes Assoc. Inc., Sacramento CA, Rep. 88-187, ii + 42 pp. + tables, figures, append. Prepared for U. S. Fish and Wildl. Service, Sacramento CA.

Beedy, E.C. Tricolored Blackbird species account *in* Shuford, W. D. and T. Gardali. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, CA and California Department of Fish and Game, Sacramento.

Beedy, E. C. 2014. Comments in Support of the Emergency Listing of the Tricolored Blackbird. August 2, 2014 letter to the California Fish and Game Commission.

Bent, A. C. 1958. Life histories of North American blackbirds, orioles, tanagers, and allies. Bull. of U. S. Natl. Mus. 211:179-190, 1958. [The commonly-available Dover edition is an unaltered republication of the original museum bulletin; Dover Publications Inc., New York NY, x + 549 pp + plates.]

Berg, E.C., J.P. Pollinger, and T.B. Smith. 2010. Population structure of the Tricolored Blackbird (*Agelaius tricolor*) in California: are northern and southern populations genetically distinct? Calif. Dept. Fish and Game, Nongame Wildlife Program Rpt. 2010-05 and Audubon California, Sacramento, CA. 25 pp.

CBD (Center for Biological Diversity). 2004. Petition to list Tricolored Blackbird under the State and Federal Endangered Species Acts and request for emergency action to protect the species. Center for Biological Diversity, Idyllwild, CA.

Cook, L.F. and C.A. Toft. 2005. Dynamics of extinction: population decline in the colonially nesting tricolored blackbird *Agelaius tricolor*. Bird Conservation International 15:73-88.

Cooper, J. G. 1870. Geological survey of California. Ornithology. S. F. Baird (ed.). University Press, Cambridge, MA.

Crase, F. T. and R. W. DeHaven. 1977. Food of nestling tricolored blackbirds. Condor 79(2):265-269.

Crase, F. T. and R. W. DeHaven. 1978. Food selection by five sympatric California blackbird species. Calif. Fish and Game 64(4):255-267.

Dawson, W. L. 1923. The birds of California. 4 Vols. South Moulton Co., San Francisco CA.

DeHaven, R. W. 1975. Plumages of the tricolored blackbird. West. Bird Bander 50:59-61.

DeHaven, R. W. 2000a. Breeding tricolored blackbirds in the Central Valley, California: a quarter-century perspective. Unpubl. rep., 22 pp. U. S. Fish and Wildl. Service, Sacramento CA.

DeHaven, R. W. 2000b. Strategy for exit from the dilemma of tricolored blackbirds nesting in dairy silage fields in the San Joaquin Valley, California. "White paper and briefing statement" (unpubl. rep.), 2 pp. U. S. Fish and Wildl. Service, Sacramento CA.

DeHaven, R. W. and J. A. Neff. 1973. Recoveries and returns of tricolored blackbirds, 1941-1964. West. Bird Bander 50:59-61.

DeHaven, R. W., F. T. Crase, and P. D. Woronecki. 1975a. Breeding status of the tricolored blackbird, 1969-1972. Calif. Fish and Game 61(4):166-180.

DeHaven, R. W., F. T. Crase, and P. D. Woronecki. 1975b. Movements of tricolored blackbirds banded in the Central Valley of California. Bird-Banding 46:220-229.

Garrett, K. and J. Dunn. 1981. Birds of southern California. Los Angeles Audubon Soc., Los Angeles CA.

Grinnell, J. and A. H. Miller. 1944. The distribution of the birds of California. Pac. Coast Avifauna 27.

Green, M. and L. Edson. 2004. The 2004 Tricolored Blackbird April survey. Central Valley Bird Club Bull. 7:23-31.

Gustafson, J. R. and D. T. Steele. 2004. Evaluation of petition from Center for Biological Diversity to list Tricolored Blackbird (*Agelaius tricolor*) as endangered. Calif. Dep. of Fish and Game, Habitat Conservation Planning Branch, Sacramento, 42 pp. + append.

Hamilton, W. J., III. 1993. Tricolored Blackbird. Rep. prepared for U. S. Fish and Wildl. Service, Portland OR, and Calif. Dep. of Fish and Game, Sacramento CA.

Hamilton, W. J., III. 1998. Tricolored blackbird itinerant breeding in California. Condor 100(2): 218-226.

Hamilton, W. J., III. 2000. Tricolored blackbird 2000 breeding season census and survey - observations and recommendations. Rep. prepared for U. S. Fish and Wildl. Service, Portland OR, 61 pp.

Hamilton, W. J., III. 2003. Current policies and programs affecting tricolored blackbird (*Agelaius tricolor*) restoration. Pp. 201-207 *in* P. M. Faber (ed.), California riparian systems: processes and floodplain management, ecology, and restoration. Proceedings of 2001 Riparian Habitat and Floodplains Conf., Riparian Habitat Joint Venture, Sacramento CA. Pickleweed Press, Mill Valley CA.

Hamilton, W. J., III. 2004. Tricolored Blackbird (*Agelaius tricolor*). Online account *in* The Riparian Bird Conservation Plan: a strategy of reversing the decline of riparian associated birds in California. Calif. Partners in Flight, available at http://www.prbo.org/ calpif/ htmldocs/species/riparian/tricolored_blackbird.htm.

Hamilton, W. J., III, R. Bowen, and L. Cook. 1992. Nesting activities of tricolored blackbirds, *Agelaius tricolor*, in the Central Valley, California, 1992. Rep. prepared for U. S. Fish and Wildl. Service, 27 pp.

Hamilton, W. J., III, L. Cook, and R. Grey. 1995. Tricolored blackbird project 1994. Rep. prepared for U. S. Fish and Wildl. Service, 69 pp + append.

Hamilton, B. [W. J., III], L. Cook, and K. Hunting. 1999. Tricolored blackbirds 1999 status report. Rep. prepared for Calif. Dep. of Fish and Game, Sacramento CA, and U. S. Fish and Wildl. Service, Portland OR. [This document is the expanded version of the following published report.]

Hosea, R. C. 1986. A population census of the tricolored blackbird, *Agelaius tricolor* (Audubon), in four counties in the northern Central Valley of California. M. A. thesis, Calif. State Univ., Sacramento CA.

Humble, D. and R. Churchwell. 2002. Tricolored blackbird survey report 2001. Point Reyes Bird Observatory draft rep., 61 pp. Prepared for U. S. Fish and Wildl. Service.

Kelsey, R. 2008. Results of the tricolored blackbird 2008 census. Report submitted to the U.S. Fish & Wildlife Service, Portland, OR.

Kyle, K. and R. Kelsey. 2011. Results of the 2011 Tricolored Blackbird Statewide Survey. Audubon California, Sacramento, CA.

Kressman, B. 1991. California: An environmental atlas and guide. Bear Klaw, Davis CA, 255 pp.

Lack, D. and J. T. Emlen Jr. 1939. Observations on breeding behavior in tricolored red-wings. Condor 41(6):225-230.

Mailliard, J. 1900. Breeding of Agelaius tricolor in Madera Co., Cal. Condor 2(6):122-124.

Meese, R. J. 2009a. Detection, Monitoring, and Fates of Tricolored Blackbird Colonies in 2009 in the Central Valley of California. Final Report to California Department of Fish and Game and U.S. Fish and Wildlife Service.

Meese, R. J. 2009b. Contribution of the Conservation of Silage Colonies to Tricolored Blackbird Conservation from 2005-2009. Final Report to U.S. Fish and Wildlife Service.

Meese, R. J. 2010. Detection, Monitoring, and Fates of Tricolored Blackbird Colonies in 2010 in the Central Valley of California. Final Report to California Department of Fish and Game and U.S. Fish and Wildlife Service.

Meese, R. J. 2011. Reproductive Success of Tricolored Blackbird Colonies in 2011 in the Central Valley of California. Final Report to California Department of Fish and Game.

Meese, R. J. 2012. Cattle egret predation causing reproductive failures of nesting tricolored blackbirds. Calif. Fish and Game 98(1): 47-50.

Meese, R.J. 2013. Chronic low reproductive success of the colonial tricolored blackbird from 2006 to 2011. Western Birds 44(2):98-113.

Meese, R. J. 2014. Results of the 2014 Tricolored Blackbird Statewide Survey. U.C. Davis.

Meese, R. J., E. C. Beedy and W. J. Hamilton, III. 2014. Tricolored Blackbird (*Agelaius tricolor*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/423 doi:10.2173/bna.423

Neff, J. 1937. Nesting distribution of the tricolor-colored redwing. Condor 39(2):61-81.

Neff, J. A. 1942. Migration of the tricolored red-wing in central California. Condor 44(2):45-53.

Orians, G. H. 1960. Autumnal breeding in the tricolored blackbird. Auk 77:379-398.

Orians, G. H. 1961a. The ecology of blackbird (*Agelaius*) social systems. Ecol. Monogr. 31(3):285-312.

Orians, G. H. 1961b. Social stimulation within blackbird colonies. Condor 63(4):330-337.

Payne, R. B. 1969. Breeding seasons and reproductive physiology of tricolored blackbirds and redwinged [*sic*] blackbirds. Univ. of Calif. Publ. in Zoology 90.

Remsen, J. V., Jr. 1978. Bird species of special concern in California: an annotated list of declining or vulnerable bird species. Wildl. Management Branch Administrative Rep. 78-1, ii + 54 pp. Proj. W-54-R-9. Calif. Dep. of Fish and Game, Sacramento CA.

Sauer, J. R., J.E. Hines, and J. Fallon. 2008. The North American Breeding Bird Survey, results and analysis 1966–2007, version 5.15.2008. USGS Patuxent Wildlife Research Center, Laurel, MD. Available at www.mbrpwrc.usgs.gov/bbs/bbs.html.

Shuford, W. D. and T. Gardali. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, CA and California Department of Fish and Game, Sacramento.

Tricolored Blackbird Working Group. 2007. Conservation Plan for the Tricolored Blackbird (*Agelaius tricolor*). Susan Kester (ed.). Sustainable Conservation. San Francisco, CA. http://tricolor.ice.ucdavis.edu/files/trbl/Conservation_Plan_MOA_2009_2.0_update.pdf

Unitt, P. 2004. San Diego County bird atlas. Proc. San Diego Soc. Nat. Hist. 39.

USFWS (U.S. Fish and Wildlife Service). 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. [Online version available at <http://www.fws.gov/migratorybirds/>].

Addendum to the California Department of Fish and Wildlife March 2015 evaluation of the petition from the Center for Biological Diversity to list the Tricolored Blackbird (*Agelaius tricolor*) as endangered under the California Endangered Species Act

October 2, 2015

A petition from the Center for Biological Diversity (CBD) to list the Tricolored Blackbird as endangered under the California Endangered Species Act was submitted to the California Fish and Game Commission (Commission) on August 19, 2015. The petition is largely the same as the petition submitted to the Commission by CBD on October 8, 2014, with the addition of an addendum composed of two new relevant studies on the Tricolored Blackbird. Of these studies, the addendum made the following statement, "Holyoak et al. (2014) analyzed declines in breeding success of the Tricolored Blackbird and Meese (2015) reviews and evaluates efforts to document the status of the Tricolored Blackbird since 1931".

This addendum to the California Department of Fish and Wildlife's (Department) evaluation of the petition discusses these references, along with additional references and information that the Department has received since the previous petition evaluation of March 2015. This new information is presented as addenda to selected sections of the petition evaluation, with a short summary on each section. The review of the new information does not change the Department's previous recommendation. The Department has determined there is sufficient information to indicate that the petitioned action may be warranted, and the petition should be accepted and considered.

Population Trend

Graves et al. (2013) performed the first statistical evaluation of trends in the average size of Tricolored Blackbird colonies using data that was compiled from a variety of sources from 1907-2009. Average colony size, rather than total abundance, was used as the metric to evaluate trends in order to account for the effects of sampling effort on total abundance counts. Graves et al. (2013) found a significant decline in the average colony size from 1935-1975, with the average colony size declining by more than 60% during this time period. Despite large amounts of data on colony sizes from the 1980s onward, no significant decline was detected in average colony size from 1980-2009. The finding of a decline from 1935-1975 supports the conclusion in the petition that a large population decline occurred between the 1930s and 1970s. The second finding is counter to reports of declines in the literature which are cited in the petition for portions of the 1980-2009 time period (e.g. Beedy et al. 1991, Hamilton 2000, Meese 2014). However, the statistical evaluation conducted by Graves et al. (2013) used data only through 2009, and so does not include much of the time period during which a recent population decline has been asserted (2008-2014).

The trends in average colony size are interpreted by Graves et al. (2013) to reflect changes in the total population size, which requires important assumptions. First, the various levels of sampling effort over the years 1907-2009 have been sufficient to produce estimates of average colony size that are reflective of all colonies across the range of the species in a given year. Second, the average colony size is related

to the total population size of the Tricolored Blackbird. The first assumption is difficult to evaluate for data collected using a variety of approaches over a very long time period with unknown levels of precision, although Graves et al. (2013) provided some support for the assumption in that average colony size was not strongly related to the total number of sites sampled. The second assumption is often made in reports of Tricolored Blackbird population trends, but the Department is not aware of a thorough evaluation of the assumption. There is reason to question the second assumption, at least over a long time period during which the species has possibly shifted its center of abundance during the breeding season from the Sacramento to the San Joaquin Valley, and began making use of a novel and abundant nesting substrate (triticale and other grain crops) which have supported extremely large colonies (40 times larger than colonies in other habitats during the last 20 years; Graves et al. 2013). Therefore, it is not surprising that a decline in average colony size would not be detected during the 1980-2009 time period, regardless of any trend in the total population size.

Holyoak et al. (2014) found a rapid decline in breeding site occupancy using data collected from 2005-2011. This is a period during which statewide surveys indicated a decline in total population abundance. Occupancy rates are a balance between rates of site colonization (establishment of new colony sites or recolonization of existing but recently unoccupied sites) and the rate at which colony sites cease being used. Holyoak et al. (2014) found that use ceased at 66% of existing sites each year, compared with 21% of sites being colonized. This is consistent with a declining population, but Holyoak et al. (2014) acknowledged that a reduction in occupancy could also result from an under-recording of site colonizations.

Meese (2015) discusses many of the same studies on population status that were included in the petition and discussed in the Department's petition evaluation. Meese (2015) emphasized the same two groups of statewide surveys that were considered in the Department's petition evaluation (1994, 1997, and 2000; 2008, 2011, and 2014), although Meese also discussed the 2005 statewide survey with the earlier group of survey years. The Department's petition evaluation did not discuss the 2005 survey effort because no report was produced describing the survey and its results; there does not appear to be any record of the amount of effort or scope of the 2005 survey (e.g. number of participants, number of sites visited, type of training provided) because the only record is a spreadsheet of occupied sites with estimates of colony size. The petition states that "surveys conducted in 1994, 1997, and 2000 were similar enough in scope and effort to enable the detection of a significant downward trend", which is supported by statements by the researcher who helped lead these surveys (Hamilton 2000). In contrast, Meese (2015) states that the results of these surveys are not directly comparable because of differences in methodology, level of effort, geographic completeness, and differences in data management and documentation. Meese (2015) contrasts these inconsistencies with the more consistent methods used during surveys of 2008, 2011, and 2014. As stated in the Department's petition evaluation, a fuller assessment of the available data from all survey years would be conducted during a status review to determine the degree to which each survey can inform the status of the Tricolored Blackbird.

Meese (2015) also presented regional trends in populations for recent years. The San Joaquin Valley experienced the second largest estimated proportional decline, declining 78% from 2008-2014. The San Joaquin Valley also had by far the largest decline in total number of Tricolored Blackbirds observed,

dropping by more than 260,000 birds over this time period. Numbers of birds observed in other regions varied, with modest net increases observed in three regions during the 2008-2014 time period. The total net increase observed in these three regions was less than 19,000 birds.

Summary: These additional studies have demonstrated that average colony size has declined since the 1930s, that breeding site occupancy has declined from 2005-2011, that large declines have recently occurred in the center of breeding abundance in the San Joaquin Valley, and have provided additional support for a statewide population decline since 2008. These studies collectively support the Department's previous conclusion that the Tricolored Blackbird population has experienced a long-term decline and that declines may have continued in recent years.

Response to selected public comments on population trend data received by the Commission

The Department is aware of disagreement expressed to the Commission through public comment regarding interpretation of existing survey data. Selected comments on this topic are summarized below, followed by responses.

Comment: While declines in numbers have been recorded in some areas of the state, increases have been recorded in other areas.
Although it is true that trends in abundance do not indicate recent declines in all regions of the state, as discussed above, a large decline was observed in the center of abundance for the species in the San Joaquin Valley, with an estimated decline of more than 260,000 Tricolored Blackbirds in this region from 2008-2014. A net decline of more than 6,000 birds was observed in one additional region. Modest net increases in three regions of the state do not offset these declines, with a total increase in those regions of less than 19,000 birds.

Comment: The Department failed to report that throughout the survey area the number of sites occupied by the Tricolored Blackbird in 2008, 2011, and 2014 were similar.
It is true that the number of occupied sites during the last three statewide surveys has been relatively stable, and the Department did not report this information in the March 2015 petition evaluation. However, this was observed despite the fact that there was a substantial increase in the number of sites visited during each successive survey in order to locate as many occupied sites as possible. While the number of sites surveyed increased, this did not result in an increase in the number of occupied sites observed as would be expected. A historical relationship between number of occupied sites and number of sites surveyed is supported by the number of occupied sites observed (≤ 71) during statewide surveys conducted in 1994, 1997, and 2000 when the total number of sites visited did not exceed 206, compared to a larger number of occupied sites observed (138-155) during recent surveys as the number of sites surveyed increased from 361 to 802 (Meese 2015). While the number of occupied sites remained relatively stable during the most recent three statewide surveys, the average size of colonies declined dramatically over this period, reflecting a decrease in the total number of birds observed in all known occupied sites. Reporting the number of occupied sites alone, without considering the number of birds at each site, does not provide an assessment of population trend.

Comment: The Department dismissed pre-2008 abundance data and focused on a purported decline in census numbers from 2008-2014.

The Department's petition evaluation discussed the major efforts to assess the status of the Tricolored Blackbird in the 1930s and the 1970s. The Department also stated that ten Tricolored Blackbird surveys had been conducted since 1994, while also pointing out that methodology, including survey effort, geographic coverage, and number of participants, had varied across surveys making it difficult to directly compare results from many of the survey years. The Department pointed out that two groups of survey years are generally described as being most consistent and therefore more comparable among years (1994, 1997, and 2000; 2008, 2011, and 2014), while also acknowledging some inconsistencies between the earlier group of survey years. The Department did not dismiss data from surveys conducted pre-2008, but rather evaluated the data to determine whether the available data suggest that a decline had occurred, and whether a decline may be ongoing. The Department concludes that there is enough information to indicate that a population decline has occurred and may be ongoing, and to warrant a fuller assessment of the available data from all survey years during a status review.

Comment: Statewide surveys have covered only a portion of the range of the species and exclude large areas known to be occupied. Siskiyou and Imperial counties were provided as examples of areas of the species breeding range that was overlooked.

While true that attempts at a complete census of the Tricolored Blackbird population in California during statewide surveys has not and cannot be fully achieved, the 2008-2014 surveys included coverage of most of the range and thorough coverage of those areas that have always supported the majority of the Tricolored Blackbird breeding population. Although the results of the statewide surveys can therefore not be interpreted as the total number of Tricolored Blackbirds in the state, the consistent effort and thorough coverage allows for a reasonable index of abundance with which to track trends in the population. In statewide surveys in which Siskiyou County was included, it has held only 0-0.2% of the total estimate of birds observed. The Department is not aware of any confirmed breeding records for Imperial County. The Department found that the recent statewide surveys have sampled a large portion of the range, and found no evidence suggesting that large areas of the range supporting a large portion of the population have been excluded from recent statewide surveys.

Comment: Fifty years of survey data indicate that overall Tricolored Blackbird numbers have been relatively stable.

This conclusion was reached through an invalid comparison of data collected over long time periods using dramatically different approaches and covering highly variable portions of the Tricolored Blackbird breeding range. Data from surveys conducted in many years from 1969-2014 were plotted on a single graph and used to suggest a conclusion that the Tricolored Blackbird population has been relatively stable over the past 50 years. This presentation of data and conclusion fails to acknowledge the variability in survey approaches and areas covered. Examples of data discussed in public comment and displayed graphically to support the conclusion of long-term population stability include:

- Surveys conducted by DeHaven et al. (1975) from 1969-1972 which were conducted by a small number of individuals and included limited coverage of the range of the species.

- Surveys conducted in the 1980s that consisted of intensive observation at only seven colonies, and irregular trips to only seven counties to search for breeding colonies.
- A survey conducted in 1999 which was stated to be incomplete by the researcher who helped organize the survey.
- A survey conducted in 2001 which followed a completely different method than other statewide surveys (e.g. only 48 sites were surveyed and sites were visited throughout the breeding season instead of being restricted to narrow time period).
- A survey conducted in 2004 in which only colony sites were visited that had historically supported more than 2,000 birds, only sites in the Central Valley were visited, and for which no training was provided.

Due to the high variability in the methods and scope of these surveys, the resulting number of Tricolored Blackbirds observed in each year cannot be expected to collectively represent an accurate trend in the population size over the last 50 years. Therefore, the conclusion reached by the commenter is not supported by these data. As stated above, a fuller assessment of the available data from all survey years is warranted, and the Department would carry out this assessment during a status review.

Comment: Estimation of the number of Tricolored Blackbirds at breeding colonies is subject to large margins of error.

It is true that the estimates of colony sizes collected during statewide surveys are subject to some amount of error, and that the census approach used for statewide surveys has not provided an estimate of that error. The potential for error in colony size estimation has been acknowledged by those that developed survey protocols, and the protocols have incorporated measures that attempt to limit the error in estimation. These measures include training provided to survey participants, use of the same survey participants from year to year when possible, and estimation at large colonies by species experts with experience estimating the size of large colonies. This said, the error at each colony site and the overall error in each census number are unknown, and ongoing efforts to develop a statistical sampling scheme for monitoring the Tricolored Blackbird population will incorporate methods to produce error estimates (Meese et al. 2015). Nevertheless, the results of statewide surveys conducted between 2008 and 2014 provide the best available information with which to evaluate population trend in recent years.

Comment: The Department's statement that a rigorous and consistent methodology has been used since 2008 is false. This comment states that the survey protocol was altered between 2011 and 2014, that precise locations were not recorded at all sites surveyed, and that the requirement to survey each site for at least 15 minutes was not met.

Modifications to the survey protocol prior to the 2014 statewide survey were intended to provide additional background information and to clarify survey requirements. No substantial changes to the methods were made. The request that each site be visited for at least 15 minutes was one of the changes made prior to the 2014 survey. This change was added considering that novice observers might not be aware that breeding colonies can sometimes be less conspicuous (i.e. during incubation) and to ensure sufficient observation time to determine whether a site is occupied. In practice, this requirement

was often unnecessary because colony sites are often very near public roads or nesting habitat may no longer be present, allowing for a quick assessment of site occupancy. Regardless, survey times of less than 15 minutes at a site are not inconsistent with pre-2014 survey years. The criticism that site locations were not recorded at all sites is incorrect. All colony sites included in the statewide survey occur at known locations and coordinates for the locations are included in the Tricolored Blackbird data portal. Minor modifications to the survey protocol document were made between 2011 and 2014 and these modifications were not reported in the Department's March 2015 petition evaluation; however, these modifications did not result in an inconsistent survey approach.

Comment: The Department's statement that the number of colony sites visited in 2014 far exceeds any other survey is inaccurate because of invalid colony sites.
The commenter suggests that many of the sites surveyed have never been occupied by Tricolored Blackbird breeding colonies. This is not accurate; all colony sites in the Tricolored Blackbird portal have supported colonies. The suggestion that all sites added to a survey must be occupied during that survey year in order to qualify as a valid breeding site indicates a misunderstanding of the statewide survey and of the Tricolored Blackbird's dynamic breeding behavior.

The commenter points out a number of instances where historical Tricolored Blackbird colony sites are reported to no longer support suitable nesting habitat and uses these observations to suggest that the increase in number of sites visited from 2008-2014 (361-802 sites) does not represent a true increase in survey effort. In every statewide survey, a number of colony sites have been discovered that do not support suitable habitat, reflecting the ongoing conversion of breeding habitat. In many cases, a site might be unsuitable in a given year but may become suitable again in subsequent years (e.g. through regrowth of marsh vegetation or reestablishment of blackberry copses or weedy fields). The protocol for the statewide survey has continued to ensure as complete a census as possible by attempting to visit all sites that historically supported Tricolored Blackbird colonies. There are many sites that have been permanently converted through urban development or more intensive agricultural practices, and future database and survey protocol updates will need to determine how to deal with cases of permanent habitat loss. Regardless, the increase in number of sites visited does represent a more thorough search of the Tricolored Blackbird range in surveys conducted from 2008-2014. A closer evaluation of sites included in statewide surveys would be conducted by the Department during a status review.

Life History

Habitat Requirements

Holyoak et al. (2014) modeled occupancy rates in the most common nesting habitat types in recent years (2006-2011) and considered data on abundance, reproductive success, and frequency of use for each nesting habitat type to determine the net contribution of different nesting habitats to the Tricolored Blackbird population over time. Holyoak et al. (2014) found differences in occupancy rates across nesting habitat types, as well as in each of the factors that may influence average reproductive output (total predicted production of young for an average size colony in each habitat type) resulting in variation in the importance of habitats to Tricolored Blackbird reproduction. Four nesting habitat types

had sufficient sample size to make strong conclusions about average reproductive output, including Himalayan blackberry, nettles, marsh, and grain fields. Himalayan blackberry and nettle colonies exhibited higher than average reproductive output. High overall reproductive output for nettle colonies is a little unexpected given that there are very few colonies, which are of average size, in this nesting substrate. However, high rates of occupancy and reproductive success result in high overall reproductive output for nettle colonies. Himalayan Blackberry colonies exhibit average occupancy rates and size, but high reproductive success and the large number of colonies in this nesting substrate (second most frequent colony type after marshes) lead to high overall reproductive output. Grain field colonies exhibit average overall reproductive output, despite having low occupancy rates, low reproductive success, and a small number of colonies on grain fields each year; the very large size of grain field colonies increases the overall reproductive output. Of the four nesting habitat types assessed, marshes remain the most common nesting habitat used by breeding Tricolored Blackbird colonies in recent years. Despite this, average levels of occupancy, reproductive success, and size of marsh colonies have led to the lowest overall contribution to reproductive output among the four nesting habitat types.

Summary: The modeling work by Holyoak et al. (2014) provides valuable new information on the relative contribution of different breeding habitats to reproductive output, but does not consider the potential contribution of foraging habitat to reproductive success or occupancy. It is possible that nesting substrates reflect differences in foraging landscapes and insect abundance, which has been shown to influence reproductive success of Tricolored Blackbird colonies (Meese 2013). For example, Himalayan blackberry or nettle colonies may occur predominantly in areas that support high quality foraging habitat such as grasslands or pastures, which may contribute to the observed high reproductive output for these nesting habitat types. These possible relationships have not been fully explored.

Factors Affecting Ability of Population to Survive and Reproduce

Habitat Loss

The petition presents information on a long-term decline in California's native grasslands and several sources of anecdotal observations on foraging habitat loss. Citing Beedy and Hamilton (1997), the petition states that "native perennial grasslands—prime tricolor foraging habitat—have been reduced by more than 99% in the Central Valley and surrounding foothills". The degree to which this historical conversion of native grasslands to an agricultural landscape and non-native grasslands has impacted Tricolored Blackbirds is unclear. Richard DeHaven, the lead researcher on Tricolored Blackbird research conducted in the 1970s, participated in the statewide survey of 2000 and after surveying areas that he had surveyed 30 years prior stated that "[e]vidence of habitat loss, from urban expansion and agricultural conversions from such high-value (for Tricolors) uses as livestock forage production, to low- or no-value uses such as vineyards and orchards, was widespread" (DeHaven 2000). The petition states that conversions of pastures and grasslands to vineyards in the Central Valley has resulted in the recent loss of several large colonies and the elimination of extensive areas of suitable foraging habitat, but no quantification of this loss was provided. In addition to losses of foraging habitat, displacement of

colonies due to losses of breeding habitat at formerly occupied colony sites are reported regularly and several of these reports were included in the petition.

Two recent papers provide quantitative assessments of change in potential foraging habitat for Tricolored Blackbird during recent decades. Soulard and Wilson (2015) used Landsat satellite data to analyze land-use and land-cover change in the Central Valley from 2000-2010. This analysis was used to extend existing land-based monitoring to produce land change estimates from 1973-2010. Four dominant land classes included in the analysis were agriculture, grassland/shrubland, developed, and wetland. The largest trends in recent years from 2000-2010 were in the grassland/shrubland (decreasing trend) and developed (increasing trend) land cover classes. During this 10 year period, an estimated ~69,200 acres of grassland/shrubland were lost and ~90,500 acres of developed land were gained in the Central Valley. Most of this change occurred before 2007 when the global economic downturn slowed the rate of development. The agriculture land class experienced both increases (with inverse influence on grassland/shrubland) and decreases (loss to development) while experiencing a smaller net decline.

Over the larger time period from 1973-2010, Soulard and Wilson (2015) reported a grassland/shrubland decline of 22% (~476,900 acres), due mainly to increases in agriculture and development. However, losses of agriculture to development resulted in relatively little net change in area of agriculture in the Central Valley from 1973-2010.

Cameron et al. (2014) analyzed time series land cover data from the California Farmlands Mapping and Monitoring Program collected between 1984 and 2008 to evaluate rangeland habitat (grassland, shrubland, and woodland) conversion throughout California. About 483,000 acres of rangelands were converted during this time period, with urban and rural development and conversion to more intensive agricultural uses accounting for most (~89%) of the rangeland loss. The San Joaquin Valley region, which in recent decades has been the center of abundance for breeding Tricolored Blackbirds, experienced the largest amount of rangeland conversion.

Summary: These more recent quantitative assessments of loss since the 1970s and 1980s show an overall decline in habitat for Tricolored Blackbirds in recent decades, with declines continuing into recent years. Additional information on the type of agricultural crops that have replaced grasslands and rangelands, types and extent of conversions between agricultural crops in the Central Valley landscape over time, and a more focused assessment of change adjacent to known Tricolored Blackbird breeding colony sites, would provide a more complete idea of the effect on Tricolored Blackbird foraging habitat.

LITERATURE CITED

Beedy, E.C. and W.J. Hamilton III. 1997. Tricolored blackbird status update and management guidelines. Jones & Stokes Assoc. Inc., Sacramento CA, Rep. 97-099. Prepared for U. S. Fish and Wildlife Service, Sacramento CA, and Calif. Dept. of Fish and Game, Sacramento CA.

Beedy, E.C., S.D. Sanders, and D. Bloom. 1991. Breeding status, distribution, and habitat associations of the tricolored blackbird (*Agelaius tricolor*), 1850-1989. Jones & Stokes Assoc. Inc., Sacramento

CA, Rep. 88-187, ii + 42 pp. + tables, figures, append. Prepared for U. S. Fish and Wildlife Service, Sacramento CA.

Cameron, D.R., J. Marty, and R.F. Holland. 2014. Whither the rangeland?: Protection and conversion in California's rangeland ecosystems. PLoS ONE 9(8): e103468. doi:10.1371/journal.pone.0103468

DeHaven, R.W. 2000. Breeding tricolored blackbirds in the Central Valley, California: a quarter-century perspective. Unpubl. report, 22 pp. U.S. Fish and Wildlife Service, Sacramento CA.

DeHaven, R. W., F. T. Crase, and P. D. Woronecki. 1975. Breeding status of the tricolored blackbird, 1969-1972. Calif. Fish and Game 61(4):166-180.

Graves, E.E., M. Holyoak, T. Rodd Kelsey, and R.J. Meese. 2013. Understanding the contribution of habitats and regional variation to long-term population trends in tricolored blackbirds. Ecology and Evolution 3:2845-2858.

Hamilton, W.J., III. 2000. Tricolored blackbird 2000 breeding season census and survey - observations and recommendations. Rep. prepared for U. S. Fish and Wildlife Service, Portland OR, 61 pp.

Holyoak M., R.J. Meese, and E.E. Graves. 2014. Combining site occupancy, breeding population sizes and reproductive success to calculate time-averaged reproductive output of different habitat types: An application to Tricolored Blackbirds. PLoS ONE 9(5): e96980. doi:10.1371/journal.pone.0096980

Meese, R.J. 2013. Chronic low reproductive success of the colonial tricolored blackbird from 2006 to 2011. Western Birds 44(2):98-113.

Meese, R.J. 2014. Results of the 2014 Tricolored Blackbird Statewide Survey. U.C. Davis.

Meese, R.J. 2015. Efforts to assess the status of the Tricolored Blackbird from 1931 to 2014. Central Valley Bird Club Bulletin. Special Issue on the Status, Ecology, and Conservation of the Tricolored Blackbird. 17(2-4):37-50.

Meese, R.J., J.L. Yee, and M. Holyoak. 2015. Sampling to estimate population size and detect trends in Tricolored Blackbirds. Central Valley Bird Club Bulletin. Special Issue on the Status, Ecology, and Conservation of the Tricolored Blackbird. 17(2-4):51-56.

Soulard, C.E. and T.S. Wilson. 2015. Recent land-use/land-cover change in the Central California Valley. Journal of Land Use Science 10(1): 59-80.

Conaway
PRESERVATION GROUP

MLS

November 12, 2015

Mr. Sonke Mastrup
Executive Director
California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Mr. Mastrup:

It has come to our attention that as of October 8, 2015, the California Fish and Game Commission formally accepted the Center for Biological Diversity's petition to list the Tricolored Blackbird, as well as the California Department of Fish and Wildlife's petition evaluation. It is further understood that the Commission will vote on whether or not to advance the species to candidacy status at the December 9-10th Commission meeting.

Conaway Ranch Preservation Group (CPG) questions the conservation benefits associated with the potential listing of the Tricolored Blackbird under the Endangered Species Act. Specifically- CPG is concerned by the absence of functional, long-term solutions for the rice community in Northern California. Currently, the proposed conservation solutions do not provide regulatory assurances for private landowners who are actively contributing momentous conservation benefits to the species.

Additionally, CPG is equally concerned about the potential for costly regulatory requirements associated with the listing, and their direct impact on private landowners.

CPG has distinguished itself as a conscientious and energetic pioneer in Tricolored Blackbird conservation leadership. Throughout the past 20 years, current and former ownership entities have implemented programs to attract and maintain wildlife resources while also balancing an effective farming operation.

Cooperative partnerships between CPG, the Wildlife Conservation Board, and the California Department of Fish and Wildlife resulted in the creation of an innovative conservation solution in the form of a 224.22-acre Tricolored Blackbird Agricultural Conservation Easement.

45332 County Road 25, Woodland, CA 95776 • *phone* (530) 662-6200 • *fax* (530) 662-0562

Conaway Ranch has an extensive history of working with scientist such as Dr. Robert Meese, State and Federal Agencies, non-profit organizations, and farmers to create practical, on-the-ground Tricolored Blackbird conservation practices that have provided significant biological benefits to the species. In fact, as many as 57,000 breeding adult Tricolored Blackbirds have been observed nesting on the Easement area.

Listing the Tricolored Blackbird within the state/federal process has the potential to create limitations for agricultural management opportunities, as well as increase production costs. Most importantly- listing the species without adequate regulatory assurances provides negative incentives for private landowners to actively manage lands for Tricolored Blackbird conservation.

Thank you for your attention to this matter.

Robert Thomas
Operations Manager
Conaway Ranch Preservation Group, L.L.C.

cc: Charlton H. Bonham, Director, California Department of Fish and Wildlife
Jack Baylis, President, California Fish and Game Commission

SANTA LUCIA CONSERVANCY
26700 Rancho San Carlos Road
Carmel, CA 93923
Phone: 831.626.8595
Fax: 831.626.8522
www.slconservancy.org

VIA EMAIL to fgc@fgc.ca.gov

October 15, 2015

Jack Baylis, President
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Re: Petition to List Tricolored Blackbird

Dear President Baylis:

The Santa Lucia Conservancy of Carmel, California supports listing the tricolored blackbirds (*Agelaius tricolor*) as a California endangered species and urges the Commission to trust the published science and vote to protect the species this year.

I am the Senior Wildlife Ecologist for the Santa Lucia Conservancy, a non-profit land trust responsible for the conservation and management of the 20,000 acre Santa Lucia Preserve in Carmel Valley, Ca. Historically a cattle ranch, the Preserve has several stock ponds used by nesting tricolored blackbirds each spring, and 5,000 acres of grasslands and oak savannas used by the birds throughout the year. In 2012 we began a long term research project banding our local nesting tricolored blackbirds. In addition to monitoring and banding we also began habitat improvement projects at both the nesting sites and across our grasslands. Despite these landscape level habitat restoration efforts we continue to see concerning declines in the number of birds returning to nest each year (Figure 1).

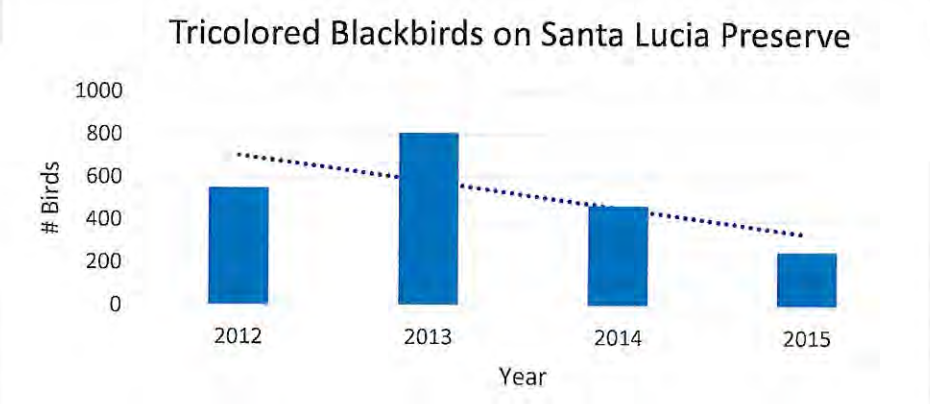

Figure 1. Count results from annual monitoring of colonial nesting on the Santa Lucia Preserve with negative population trend indicated.

The observed decline in our study population is consistent with the 91% decline reported across the Central Coast of California over the last 6 years [1]. Unfortunately, limited research has been conducted on the ecology and year round habitat requirements of the tricolored blackbird in this region. Even in the Central Valley, where most of the tricolored blackbird research has been conducted, little is known about the bird's habitat and resource requirements outside of the nesting season. Lacking this basic ecological understanding of the year-round needs of this species, the conservation community is poorly prepared to address the precipitous state-wide decline [1] without strong support, both legally and financially, by the State of California.

Across the known range of tricolored blackbirds, habitat loss by conversion to cultivated agriculture and development continues to threaten the species [2]. Within this calendar year we witnessed prime rangelands in northern Monterey County go from leased grazing lands to cultivated strawberry fields with wildlife hazing practices reported by neighbors (Figure 2).

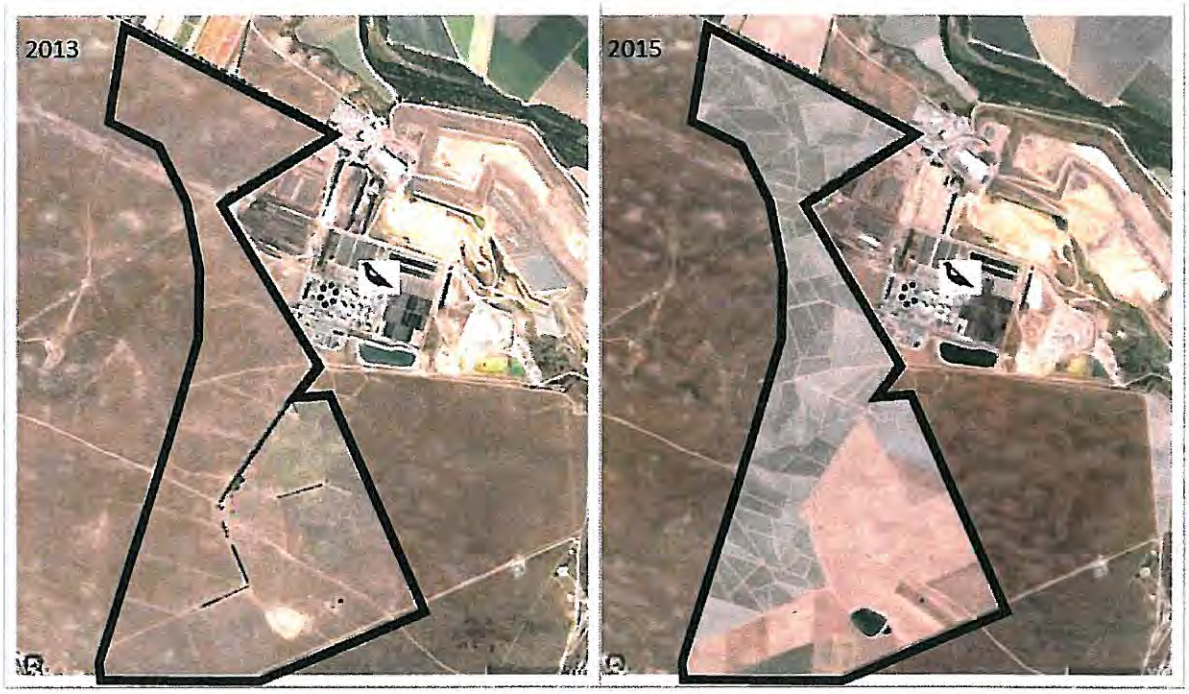

Figure 2. Habitat conversion. Google Earth image of rangelands recently converted (outlined area) to cultivated strawberry fields in Monterey County. Images are from 2013 (left) and 2015 (right), strawberry fields planted spring of 2015.

The site above was habitat regularly used by tricolored blackbirds in the non-breeding months, with the adjacent Monterey Regional Water Pollution Control Agency's treatment plant and the Monterey County waste disposal site providing additional resources for foraging. Since the conversion of the above acreage this past spring few tricolored blackbirds have been seen in the area. In the fall and early winter of 2014 tricolors were documented in mixed blackbird flocks of hundreds of birds at this site. Their occurrence was so regular that we had intended to begin fall/winter trapping at the water treatment plant this year, 2015. On recent site visits, the overall flocking blackbird population using this area is dramatically decreased, suggesting that the habitat conversion and wildlife hazing efforts

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by strawberry cultivators may have discouraged the birds from using the area. The maximum count on any visit this year has been 20 tricolors, and the most recent visits have had no tricolored blackbird observations.

In addition to pressure from habitat loss, tricolored blackbirds are also negatively affected by the draconian landscape management techniques associated with a decade of aggressive food safety production requirements [3]. Since the 2006 spinach-associated *E. coli* O157 outbreak, growers have been under pressure to remove any habitat features that may attract wildlife, including ponds, edge habitat and riparian buffers. Additionally, toxicants, acoustic hazing and depredation permits are used to disperse and/or eliminate flocking birds and terrestrial mammals [4]. The habitat destruction, hazing, and lethal removal techniques are indiscriminant, likely resulting in unintentional take of protected species such as tricolored blackbirds. Recent studies have shown that this aggressive effort has not only been ineffective at improving food safety, but may also be making the issue of pathogens in the environment worse [5]. This issue plays out across the state and is largely unrecognized in the conservation discussion for tricolored blackbirds.

While the above information is based on observations and a small sample size, they are supported by the larger body of literature on tricolored blackbirds. As a species, tricolors are a challenge to comprehensively study and observe due to the multi-habitat requirements they demonstrate (nesting and foraging habitats differ as well as non-nesting season habitat requirements) and the migratory nature of their nesting behaviors (as reviewed by Graves et al. [6]). Additionally, in the non-nesting season they are routinely found in mixed flocks making estimates of the species difficult.

The Dairy Cares letter [7] submitted to you May 28th, 2015, tries to make a case that there is uncertainty about the long term trends of this species. However, uncertainty implies there is conflicting data suggesting either population declines or increases. On the contrary, there is no data suggesting overall population increases within the past 10 years. In the absence of data capable of supporting the population growth across the state, it is irresponsible to ignore the existing data, consistently indicating the population is in a very serious decline.

Legal protection through State listing will not only increase resources available to both the conservation and research communities to identify these essential habitats, but a protected species status will also help land owners, like the Conservancy, who may be willing to conserve valuable landscapes such as nesting habitat and wintering rangelands for species conservation. Despite being protected by the Migratory Bird Act and considered a non-game species of management concern by the state, the existing data clearly indicates the tricolored blackbird is on a trajectory to extinction. The Commission's prompt action to begin the listing process for this species is essential to its continued survival.

Sincerely,

Christy Wyckoff, PhD
Senior Wildlife Ecologist
Santa Lucia Conservancy

26700 Rancho San Carlos Road • Carmel, California 93923-7998
831-626-8595 • 831-626-8522 fax
www.slconservancy.org

Literature Cited

1. Meese RJ. Results of the 2014 Tricolored Blackbird Statewide Survey. 2014;

2. Beedy EC, Hamilton WJ. Tricolored Blackbird (Agelaius tricolor). Birds North Am Online. 1999; No. 423. doi:10.2173/bna.423

3. Beretti M, Stuart D. Food safety and environmental quality impose conflicting demands on Central Coast growers. Calif Agric. 2008;62: 68–73. doi:10.3733/ca.v062n02p68

4. Branch W, Program NW, Fish US, Service W, Fish S, Office W, et al. Detection , Monitoring , and Fates of Tricolored Blackbird Colonies in 2009 in the Central Valley of California Final Report. 2009;

5. Karp DS, Gennet S, Kilonzo C, Partyka M, Chaumont N, Atwill ER, et al. Comanaging fresh produce for nature conservation and food safety. Proc Natl Acad Sci. 2015; 201508435. doi:10.1073/pnas.1508435112

6. Graves EE, Holyoak M, Rodd Kelsey T, Meese RJ. Understanding the contribution of habitats and regional variation to long-term population trends in tricolored blackbirds. Ecol Evol. 2013;3: 2845–2858. doi:10.1002/ece3.681

7. Cares D. Dairy Cares Letter to CFWC. 2006;

Napa Solano Audubon Society
P.O. Box 10006
Napa, CA 94581
napa-solano-birds@outlook.com
925 - 963 - 4871

BIRDING — EDUCATION — CITIZEN SCIENCE — HABITAT CONSERVATION

November 12, 2015

California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Dear California Fish and Game Commission:

Napa-Solano Audubon Society strongly supports the listing of the Tricolored Blackbird (Agelaius tricolor) under the federal Endangered Species Act (ESA). A few small colonies are struggling to survive in our counties, and our members are actively doing what they can to assist these populations by restoring habitat and monitoring the health of the population, but without support, our efforts will be for naught.

Due to habitat loss, we only have 5% of the original population left, and each year we are losing more and more. I fear that unless additional action is taken now, this bird will quickly become extinct. Please find the attached signed letters from our membership showing our Chapter's support for listing the Tri-colored Blackbird onto the California Endangered and Threatened Species list.

Sincerely,

Wendy Schackwitz, President
Napa-Solano Audubon Society

November 10. 2015

Dear California Fish and Game Commission,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

A survey conducted last year by UC Davis with the support of Audubon California and the California Department of Fish & Wildlife counted 145,000 Tricolored Blackbirds remaining in California, down from 260,000 in 2011. This 44 percent drop in population led to the emergency listing in December 2014. While recent partnerships between Audubon California, agricultural groups, and government agencies like the Natural Resources Conservation Service are working to save Tricolored Blackbird colonies, it is clear that further help is needed to save the species from extinction. We must maintain full protections for this species and consider it a candidate for listing under regular California Endangered Species Act procedures.

Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature:

Name: Wendy Schackwitz

Address: ,

City, State ZIP:

November 10. 2015

Dear California Fish and Game Commission,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature:

Name: [redacted]

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Karen A. Martin

Signature:

Karen A. Martin

Name:

[redacted]

Address:

[redacted]

City, State ZIP:

November 10. 2015

Dear California Fish and Game Commission,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

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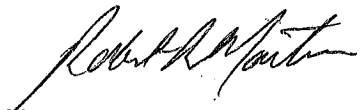
Sincerely,



Signature:

Robert Martin

Name:

[redacted]

Address:

[redacted]

City, State ZIP:

November 10. 2015

Dear California Fish and Game Commission,

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: Joan Watanabe

Name: Joan Watanabe

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

A survey conducted last year by UC Davis with the support of Audubon California and the California Department of Fish & Wildlife counted 145,000 Tricolored Blackbirds remaining in California, down from 260,000 in 2011. This 44 percent drop in population led to the emergency listing in December 2014. While recent partnerships between Audubon California, agricultural groups, and government agencies like the Natural Resources Conservation Service are working to save Tricolored Blackbird colonies, it is clear that further help is needed to save the species from extinction. We must maintain full protections for this species and consider it a candidate for listing under regular California Endangered Species Act procedures.

Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: Betty a. Mosher

Name: Betty A. Mosher

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: Diane Ley

Name: Diane Ley

Address: [redacted]

City, State ZIP: [redacted]

November 10, 2015

Dear California Fish and Game Commission,

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: 

Name: KATY STRAWTHER

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: Michael Moshier MD

Name: MICHAEL MOSHIER M.D

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: Jeff Bonnewell

Name: JEFF BONNEWELL

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: Bruce Thomsen

Name: Bruce Thomsen

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely, Tina Larson

Signature: Tina Larson

Name: Tina Larson

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: Carol Boykin

Name: Carol Boykin

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: Kenneth Skolnik

Name: Kenneth Skolnik

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: Katherine F Scarlett

Name: Katherine F. Scarlett

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: ROBIN L. C. LEONG

Name: ROBIN L. C. LEONG

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: Tim W. Jenkins

Name: TIM W. JENKINS

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

A survey conducted last year by UC Davis with the support of Audubon California and the California Department of Fish & Wildlife counted 145,000 Tricolored Blackbirds remaining in California, down from 260,000 in 2011. This 44 percent drop in population led to the emergency listing in December 2014. While recent partnerships between Audubon California, agricultural groups, and government agencies like the Natural Resources Conservation Service are working to save Tricolored Blackbird colonies, it is clear that further help is needed to save the species from extinction. We must maintain full protections for this species and consider it a candidate for listing under regular California Endangered Species Act procedures.

Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely, Mary Tichenor

Signature:

Name: MARY TICHENOR

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature: 

Name: Lionel S. Reynolds

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely, Mary Jo Jensen

Signature: Mary Jo Jensen

Name:

Address: [redacted]

City, State ZIP: [redacted]

November 10. 2015

Dear California Fish and Game Commission,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

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Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature:

Michael Schackwitz

Name: [redacted]

Address:

City, State ZIP:

November 10. 2015

Dear California Fish and Game Commission,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

A survey conducted last year by UC Davis with the support of Audubon California and the California Department of Fish & Wildlife counted 145,000 Tricolored Blackbirds remaining in California, down from 260,000 in 2011. This 44 percent drop in population led to the emergency listing in December 2014. While recent partnerships between Audubon California, agricultural groups, and government agencies like the Natural Resources Conservation Service are working to save Tricolored Blackbird colonies, it is clear that further help is needed to save the species from extinction. We must maintain full protections for this species and consider it a candidate for listing under regular California Endangered Species Act procedures.

Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Signature:

Name: Ken Vail

Address: [redacted]

City, State ZIP: [redacted]

400 Capitol Mall, Suite 1535
Sacramento, California 95814
www.ca.audubon.org

November 23, 2015

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
fgc@fgc.ca.gov

RE: Tricolored Blackbird Candidacy. December 10, 2015 Agenda Item 31.

Dear Commissioners:

Audubon California writes on behalf of its members to urge the California Fish & Game Commission to provide full protections for the Tricolored Blackbird by making the species a candidate for listing under the California Endangered Species Act and initiating a scientific review by the California Department of Fish and Wildlife. This letter is offered in addition to Audubon's previously-submitted letters and public testimony in support of increased conservation of the Tricolored Blackbird.

Accepting the petition would initiate a year-long scientific-based review of the species by the Department. At the end of that year, the Commission would then consider the available scientific evidence, the Department's recommendation, and the input of stakeholders to make a final determination as to whether or not the species ought to be listed. The threshold to accept a petition and advance a species to candidacy is low.

Audubon California understands that listing a species demands a further commitment from the Department and can impose significant responsibilities on some private landowners. We do not advocate for this listing lightly and only do so after decades of other efforts that have not stemmed the species' decline. The listing does not represent an end to collaborative efforts, including partnerships with the agricultural industry and members of the Tricolored Blackbird Working Group, which are more necessary than ever if the species is to remain viable.

For this reason and those listed below, the Commission should follow the Department's recommendation and advance the species to candidacy. Such action would be consistent with previous Commission rulings, would allow the Department to complete a year-long scientific review, and would provide the Commission with an opportunity to review all evidence so that the Commission can make an informed, final determination regarding this species. It would be a decision that demonstrates the Commission's commitment to relying on clear, transparent processes and the best available science.

Tricolored Blackbird Population Decline

Nearly ninety percent of Tricolored Blackbirds are located in California with smaller breeding colonies occurring in Nevada, Oregon, Washington, and Baja California (Beedy and Hamilton 1999). Tricolored Blackbirds are the last North American landbird that breeds in large colonies. The Passenger Pigeon and the Carolina Parakeet are two colonial North American bird species that, notably, were lost to extinction due to human activities. Tricolored Blackbirds nest predominantly in California's Central Valley, historically in native wetlands, but more recently in agricultural fields due to lack of available natural habitat. This combination of narrow geographic range and highly colonial breeding make Tricolored Blackbirds particularly susceptible to disturbance and habitat loss. In the 2014 statewide survey 64 percent of the population was contained in just ten large colonies, making the loss of even one colony's reproductive output cause for concern. Over 95 percent of the species' historic habitat, wetlands in the Central Valley, have been replaced with agriculture or urbanization (Central Valley Joint Venture 2006). As a result of this large-scale habitat loss and ongoing mortality, Tricolored Blackbirds have declined significantly in the last 80 years.

Once numbering in the millions (Hamilton et al. 1995; Neff 1937), the Tricolored Blackbird population has declined to approximately 145,000 birds according to the 2014 statewide survey (Meese 2014). The triennial survey was developed and employed to track the Tricolored Blackbird population abundance and distribution. The most extensive and replicable surveys – conducted in 2008, 2011, and 2014 – show a steep decline in Tricolored Blackbird abundance. The Tricolored Blackbird population declined by 64 percent between 2008 and 2014, despite an increase in the number of sites surveyed (Meese 2014). Additionally, Graves et al. (2013) identified a 63 percent decline in mean breeding colony size from 1935 to 1975.

The Commission has been made aware of disparate interpretations of the data and criticism of survey methods. However, by any measure, the species has suffered very significant declines from its historic numbers and recent losses are a source of immense concern for the species' continued viability.

Both the Commission's Emergency Listing Findings and the Department's Petition Evaluation Support Making Tricolored Blackbird a Candidate for Endangered Species Listing

At its December 3, 2014 meeting in Van Nuys, California, the Commission voted to take emergency action to list the Tricolored Blackbird as an endangered species pursuant to Fish and Game Code section 2076.5. The Commission determined a biological emergency existed that justified their immediate action to list the Tricolored Blackbird as endangered under CESA based on the following findings of fact:

1. Rapid population decline despite increased survey effort.
2. Diminishing colony size.
3. Habitat destruction particularly in the San Joaquin Valley.

4. Voluntary programs were ineffective to eliminate mortality because not all farmers with tricolored blackbird colonies on their lands elected to participate.
5. Other potential threats exist from insecticide use that diminishes Tricolored Blackbird's insect food source and mortality from shooting of blackbirds on rice fields in early fall.
6. Listing provides needed protections and will direct agency focus towards Tricolored Blackbird recovery.

(Commission Statement of Proposed Emergency Regulatory Action, at 1-2)

After more than five months of reviewing all available information, the Department determined that listing "may be warranted" and recommended that the Commission advance the Tricolored Blackbird as a candidate species and initiate the one-year scientific review period. The Department came to this recommendation after preparing a petition evaluation in response to the petition submitted to the Commission by the Center for Biological Diversity on October 8, 2014 and again on August 19, 2015. Their evaluation, in accordance with CESA, "delineat[ed] the categories of information required in the petition, evaluat[ed] the sufficiency of information in the petition, and incorporate[ed] additional relevant information that the Department possessed or received during the review period" (Memorandum from Charlton H. Bonham, May 13, 2015). The Department is to be commended for taking a deliberative approach that followed established procedures and law.

The Department determined that the petitioned action may be warranted based on the degree and immediacy of the threats faced by the species, including:

1. Historical and continuing loss of nesting substrate, including wetlands, Himalayan blackberry (*Rubus discolor*) patches, upland weedy vegetation, and marsh vegetation in reservoirs and ponds.
2. Historical and continuing loss of uplands used for foraging.
3. Declines in tricolored blackbird populations in the past 80 years, including ongoing declines documented since 2008.
4. Significant, large-scale reproductive failures in tricolored blackbird colonies nesting in agricultural areas of the San Joaquin and Sacramento valleys.
5. Limited, inconsistent, and sometimes ineffective protection of colonies nesting in agricultural settings.
6. Ineffectiveness of existing regulatory mechanisms to protect tricolored blackbird breeding habitat and nesting colonies on privately-owned land.
7. Predation by the black-crowned night heron (*Nycticorax nycticorax*), cattle egret (*Bubulcus ibis*), common raven (*Corvus corax*), coyote (*Canis latrans*), and other predators, especially in areas in which predator populations may be artificially high due to concentrated food sources.

(CDFW Evaluation of the Petition, at 2)

The Department provided an objective scientific analysis and recommendation in its petition evaluation consistent with the consensus of researchers. When the Commission voted not to

move the Tricolored Blackbird to candidacy at its June 2015 meeting it did not make any findings that contravened the Department's evaluation.

Uninterrupted Protections for Tricolored Blackbirds Are Needed

As discussed above, the Commission contravened its own prior findings and the recommendation of the Department when it failed to find that listing may be warranted at its June meeting. Moreover, the Commission appeared to undervalue the protections provided by CESA, which this year alone prevented the unnecessary destruction of two sizeable colonies. If the Commission's mission is truly to safeguard California's fish and wildlife for future generations, then it must act to follow the best available science that the species warrants a one-year review and then consideration for full listing.

The goal of Audubon California, along with the researchers, agencies, conservation organizations and industry groups in the Tricolored Blackbird Working Group, is population recovery. Listing is a tool to protect vulnerable breeding colonies and direct agency efforts towards providing safe, long-term habitat. Audubon and our partners remain committed to collaboration to achieve recovery. Please give the Department an opportunity to fully review the scientific information on this species to recommend whether or not full listing is needed. This would also give the Commission the opportunity to consider full information on the species and input from a wide range of stakeholders.

Thank you for consideration of our comments. If you would like to discuss this matter further, please do not hesitate to contact me at (916) 737-5707 or via email at mlynes@audubon.org.

Respectfully submitted,

Michael Lynes
Director of Public Policy
Audubon California

Literature Cited

Beedy, E. C. and W. J. Hamilton III. 1999. Tricolored Blackbird (*Agelaius tricolor*). Account no. 423, 24 pp, *in* A. Poole and F. Gill (eds.), The Birds of North America, Philadelphia PA.

California Department of Fish and Wildlife. March 2015. Evaluation of the Petition from the Center for Biological Diversity to List Tricolored Blackbird (*Agelaius tricolor*) as Endangered under the California Endangered Species Act. Report to the Fish and Game Commission.

California Fish and Game Commission. December 2014. Statement of Proposed Emergency Regulatory Action: Emergency Action to Amend Section 670.5, Title 14, California Code of Regulations, Re: Animals of California Declared to be Endangered or Threatened.

Central Valley Joint Venture. 2006. Central Valley Joint Venture Implementation Plan – Conserving Bird Habitat. U.S. Fish and Wildlife Service, Sacramento, CA.

Graves, E.E., M. Holyoak, R.T. Kelsey, and R.J. Meese. 2013. Understanding the contribution of habitats and regional variation to long-term population trends in tricolored blackbirds. Ecology and Evolution 2013; 3(9): 2845-2858.

Hamilton, W. J., III, L. Cook, and R. Grey. 1995. Tricolored blackbird project 1994. Report prepared for U. S. Fish and Wildlife Service, 69 pp + append.

Neff, J. 1937. Nesting distribution of the tricolor-colored redwing. Condor 39(2):61-81.

Meese, R. J. 2014. Results of the 2014 Tricolored Blackbird Statewide Survey. U.C. Davis.

Memorandum from Charlton H. Bonham to California Fish and Game Commission. March 13, 2015. Petition from the Center for Biological Diversity to list the Tricolored Blackbird as Endangered under the California Endangered Species Act.

From:	Audubon California on behalf of Mayu Toner
To:	FGC
Subject:	Support a state listing for the Tricolored Blackbird
Date:	Saturday, November 21, 2015 11:52:53 AM

Nov 21, 2015

Mr. Sonke Mastrup
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Dear Mr. Mastrup,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

A survey conducted last year by UC Davis with the support of Audubon California and the California Department of Fish & Wildlife counted 145,000 Tricolored Blackbirds remaining in California, down from 260,000 in 2011. This 44 percent drop in population led to the emergency listing in December 2014. While recent partnerships between Audubon California, agricultural groups, and government agencies like the Natural Resources Conservation Service are working to save Tricolored Blackbird colonies, it is clear that further help is needed to save the species from extinction. We must maintain full protections for this species and consider it a candidate for listing under regular California Endangered Species Act procedures.

Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Dr. Mayu Toner

Pasadena, CA

NOSSAMAN LLP

ATTORNEYS AT LAW

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Refer To File #: 501650-0001

VIA EMAIL

November 24, 2015

President Baylis
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814
E-mail: fgc@fgc.ca.gov

Re: Agenda Item 31, Fish and Game Commission December 2015 Meeting

Dear President Baylis:

This letter is prepared and submitted on behalf of Dairy Cares, a coalition of California's dairy producer and processor organizations, including the state's largest producer trade associations (Western United Dairymen, California Dairy Campaign, Milk Producers Council, and California Farm Bureau Federation) and the largest milk processing companies and cooperatives (including California Dairies, Inc., Dairy Farmers of America-Western Area Council, Hilmar Cheese Company, and Land O'Lakes, Inc.) and other affiliates, such as California Cattlemen's Association. Formed in 2001, Dairy Cares is dedicated to promoting the long-term sustainability of California dairies. The coalition represents California's more than 1,500 dairy farms. We are writing to provide supplemental information to the Commission in response to the Department of Fish and Wildlife's October 2, 2015 addendum to its March 2015 petition evaluation regarding the petition submitted by the Center for Biological Diversity to list the tricolored blackbird (*Agelaius tricolor*) as an endangered species.

Dairy Cares appreciates the willingness of the Department to prepare an addendum to its evaluation, which we commented on previously (Dairy Cares 2015b). The prior evaluation was deficient in a number of respects, most importantly, because of the Department's uncritical acceptance of unsubstantiated statements made by the petitioner. While we appreciate that at the 90-day evaluation stage the Department does not (and cannot realistically) conduct the same level of probing analysis that occurs during the 12-month status review of a candidate, we contend the Department is obliged to conduct at least passing review of the available data and analyses in order to determine whether the petitioned action may be warranted. The gate-keeping function played by the Department and Commission at the candidate stage should not be taken lightly, as a decision to make a species a candidate for listing automatically triggers substantial regulatory restrictions that have real costs.

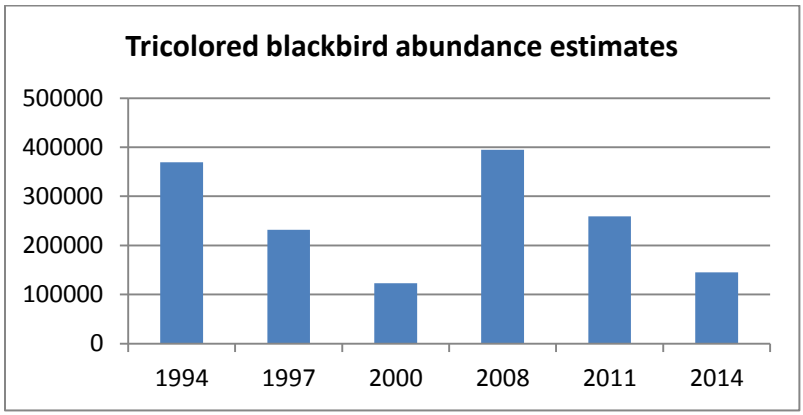
Because the Department focused on eight issues in its response to public comments, which constitutes the core of the Department's addendum, we address the eight Department responses below:

(1) We appreciate that the Department acknowledges that "trends in abundance do not indicate recent declines in all regions of the state." Unfortunately, the Department does not include any supporting citations for the assertions made in its first response. As a consequence, it is difficult to confirm those assertions. We consulted Meese (2014), which reports the 2008, 2011, and 2014 data in summary form. The Department asserts that the total estimate of tricolored blackbirds for three regions of the state that showed increases was "less than 19,000 birds." But Table 5 in Meese (2014, page 10) indicates that the (total) estimate of tricolored blackbird numbers in the Sacramento and Sierra Nevada foothill counties (a single region) increased from 22,586 in 2008 to 54,151 in 2014, for a total increase of 31,565 birds. Therefore, as the Department acknowledges, increases in the tricolored blackbird survey returns in certain parts of the State have occurred during the same period as substantial decreases in tricolored blackbird survey returns in other parts of the State. And, in at least the case of the Sierra foothill counties, the increase reported includes newly discovered colony sites and is larger than the total increase for three regions reported by the Department.

(2) We appreciate the acknowledgement by the Department that it did not report the number of occupied sites during the last three surveys, but we are concerned that the Department did not expressly acknowledge that this information is pertinent as an indicator of a population's status and trend. In addition, we agree with the Department that it is appropriate to report the number of occupied sites identified together with the number of sites visited that can be occupied – that is, sites that have the constituent elements of habitat that are necessary to support tricolored blackbird nesting and reproduction. But the petitioner and Department improperly reported the total number of sites visited rather than the total number of sites visited that actually can support the tricolored blackbird. They included many dozens of sites that lack essential habitat attributes and cannot be occupied by blackbirds. We also agree with the Department that it is appropriate to report the number of occupied sites identified together with estimated number of target organisms at each site. But, again, the petitioner and the Department did not report the number of occupied sites identified at all, much less report that information together with the estimated number of target organisms at each site. In the event the Department in the future does report data in this manner, it is important to note that the estimated number of target organisms at each site, the "size of colonies" as referred to by the Department, must be reported with margins of error consistent with standard practice in population biology.

Two essential factors that contribute to demographic stability or change in tricolored blackbirds, hence are of immediate concern to conservation planners, are the number of birds and the distribution of those birds across available habitat. That the number of sites that were occupied by tricolored blackbirds was relatively stable in the three triennial survey years is important in the evaluation of the bird's status. If the number of tricolored blackbirds declined at occupied sites across those three years, it is important to establish whether those birds are lost from the population or have moved outside of the sample frame. The petitioner and the Department have assumed that the whole decline represents birds lost from the population.

(3) The Department included a single graphic in its entire 34-page petition evaluation. That graphic presented only three data points: a single population size estimate for each of years 2008, 2011, and 2014. Even if it presented only the six data points described by the Department as being "most consistent and therefore more comparable among years," the implications of the graphic would be dramatically different: rather than a precipitous, monotonic decline, it shows that the tricolored blackbird has (in the recent past) witnessed a measured abundance in 2000 that was lower than that in 2014, and recovered to its greatest census estimate in the past five decades eight years later. The table below is based on data from Meese (2014) and Kyle and Kelsey (2011).



The exclusion of all pre-2008 demographic information from the Department graphic can be expected to result in a skewed interpretation of the data, because 2008 represents the highest abundance estimate of tricolored blackbirds on record since the late 1960s. In fact, the abundance estimate for 2008 is in the same range as average abundance estimates for the 1930s that were generated by DeHaven and his colleagues (1975, see page 178) and by Beedy and his colleagues (1991, see page 13), both using Neff's data. In light of Neff's (1937, see page 65) insightful observation that "[e]stimates of the population are notoriously inaccurate, and are subject to wide variation," the average annual 1930s data and the 2008 estimate can only be viewed as functionally equivalent.

(4) The Department acknowledges that the 2008, 2011, and 2014 "statewide surveys" do not represent attempts to conduct a complete census for the tricolored blackbird. That said and although the Department suggests that the 2008, 2011, and 2014 surveys reflect "consistent effort and thorough coverage," the Department itself argues in the evaluation and addendum that there has not been consistent effort and thorough coverage. For example, the Department (2015a, page 8) stated in its evaluation: "the number of colony sites visited in 2014 far exceeded any other survey, with a large increase in sites visited each survey year since 2008." While there can be no doubt that the number of colony sites visited in 2014 is inflated, the Department's contention regarding consistent effort and thorough coverage runs counter to its own position that much greater effort was undertaken in 2014 than in 2008 and 2011.

The more recent tricolored blackbird surveys purposefully focus on Central Valley counties that historically supported numerous larger colonies. Coastal, sub-coastal, foothill, and southern colonies, including numerous colonies that utilize Himalayan blackberry as nesting

substrates, are apparently under-sampled. With respect to Siskiyou and Imperial Counties, the Department can have no confidence in its position regarding the presence of the species because no surveys whatsoever were conducted. We have not conducted an exhaustive search for data, but identified readily a portal that records sightings and that has reports of tricolored blackbird sightings in Imperial County (see http://www.inaturalist.org/observations?page=1&taxon_id=9743). Our point in referencing those counties was simply that past surveys have not included the full range of the bird. We made the point (Dairy Cares 2015a, page 15) in response to the bald assertion in the petition that "the entire global population" of tricolored blackbirds is less than half the size of a single colony that was reported in 1934.

(5) The great majority of long-term data sets regarding species trends (across all species) suffer from the shortcomings the Department has described in its response. Nonetheless, regulators and conservation planners rely on those longitudinal data sets to inform their understanding of relative abundance over time. Furthermore, it is important to note that researchers who carried out several of the pre-2008 surveys have explained that greater effort was made in certain years in order to obtain results that could more closely estimate the range-wide abundance of the blackbird. For example, DeHaven et al. (1975) attempted to sample the entire range of the species in 1971. They describe attempting to sample "the entire breeding range (excluding Baja California) by driving more than 8,000 miles and visiting most of the reported breeding areas (Table 1) from San Diego through southern Oregon." Likewise, Beedy and Hamilton (1997, page 13) describe a 1997 survey by the Department of Fish and Game as an "intensive survey effort throughout California." These intensive, statewide survey efforts yielded abundance estimates of 108,000 and 233,000, respectively (rounded to the nearest thousand), as compared to the 2014 estimate of 145,000 birds. Dairy Cares (2015a, pp.4-7) documented the differences in survey efforts pre-2008 in detail.

The Department contests the conclusion that "the Tricolored Blackbird population has been relatively stable over the past 50 years." Dairy Cares (2015a, page 3) agrees with the Department that data on trend are unreliable, and even went so far as to state that "reported survey results – even those that were gathered over the past 20 years – are insufficient to allow one to draw inferences about population trends." **But the petitioner and the Department simultaneously (i) invoke the historical trend data to draw the conclusion that there have been historical declines in abundance and (ii) dismiss invocation of the same trend data by Dairy Cares to suggest that the population appears to be relatively stable.** Compare the Department of Fish and Wildlife (2015a, page 9) – "the Petitioner submitted sufficient information to demonstrate or create a reasonable inference that tricolored blackbirds have experienced historic declines and may continue to do so" – with Department of Fish and Wildlife (2015b, page 5) – the "number of Tricolored Blackbirds observed in each year cannot be expected to collectively represent an accurate trend in the population size over the last 50 years." This disparate treatment is concerning.

(6) We appreciate that the Department acknowledges that data are reported – including the data from the 2008, 2011, and 2014 surveys – without any estimate of the error associated with the data, and that "the error at each colony site and the overall error in each census number are unknown." Together with the examples provided of very large margins of error reported by the surveyors themselves (for example, Dairy Cares 2015a, pages 7-8,

documenting that a site where the surveyor estimated the size of the colony to be between 5,000 and 12,000 and then stated that the actual number of birds "could easily be three times higher"), these statements strongly support the position of Dairy Cares that the survey results are subject to large margins of error. The Department has provided no countervailing information.

Furthermore, the Department does not contest Dairy Cares' assertion that neither the petitioner nor the Department even attempted to catalog the types of error associated with the data reported in the surveys. A statistically valid census reports sampling error. Absent any effort whatsoever to assess sampling error, the Department's statement that the 2008, 2011, and 2014 surveys provide the best available scientific information lacks reliable empirical support.

(7) We appreciate that the Department acknowledges that the survey protocol was not consistent across the years 2008, 2011, and 2014. Having done so, the Department argues that the changes were not substantial. We disagree. For example, we contend that the change with respect to the duration of surveys is, in fact, substantial. The 2011 protocol includes multiple statements that collectively indicate that as a matter of protocol minimal time may be spent at sites, particularly when the species is not readily apparent. For example, the 2011 protocol (pages 2-3) states "the time spent at one colony site is at the expense of visiting more areas and documenting additional colonies," and "[d]o not spend too much time at small colonies where you can estimate the number of birds quickly," and sites where the species was not seen in the past decade "most likely will only need to be driven by to confirm if habitat exists of not." In contrast, the 2014 protocol (page 3) states "[i]t is recommended you spend at least 15 minutes at each location," cautioning that locations that appear unoccupied may indeed be occupied. Furthermore, each of the quoted statements above from the 2011 protocol does not appear in the 2014 protocol.

There are other changes to the protocol as well. For example, the 2014 protocol states (page 2) that "colonies can be surveyed from 50-100 meters outside the boundaries of the vegetation in which the birds are nesting." The 2011 protocol includes more vague guidance, stating (page 2) instead "colonies can be surveyed from just outside the boundaries of the vegetation in which the birds are nesting." The level of specificity in survey protocols is purposeful. It assures that prevailing professional practices are followed and that the level of survey effort is consistent across sites spatially and temporally.

The purpose of a survey protocol is to "ensure that the collection and analysis of data are consistent, reliable, repeatable, and appropriate to address the intended objective" (U.S. Fish and Wildlife Service 2013). The protocol changed across the most recent three surveys, just as it changed across earlier surveys described in prior submissions by Dairy Cares. The change in protocols is not fatal to efforts to compare data gathered across survey years, but it does provide a basis for exercising caution when making such comparisons. As troubling as the unacknowledged change in protocols is the fact that data gathered inconsistent with one or more protocols were included in the survey results. For example, 350 of the 802 survey entries in 2014 reported survey durations under the minimum recommended time of 15 minutes, including over 140 survey entries one minute or less in duration. Likewise, though the 2014 protocol states that the survey period occurred "from April 18th to 20th and only observations

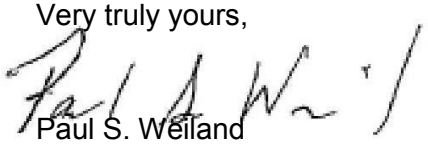
made during this interval will be reported as part of the 2014 survey," 50 survey entries in 2014 reported results of surveys done outside that time period.

(8) We appreciate that if the tricolored blackbird were designated a candidate for listing, the Department would conduct a more probing review of the data presented in the petition. As we have explained more fully elsewhere, we believe that even a cursory review suggests problems with both the tricolored blackbird data and the interpretation of those data. Even assuming the Department were to conduct a more detailed review, we are concerned that the Department's response might continue to reflect a misunderstanding of the concept of habitat. Specifically, the Department suggests that habitat is a static concept, both temporally and spatially. In fact, it is dynamic. The extent and quality of habitat for any given species changes as a consequence of forces that affect its environment. The fact that a specific geographic location has at one time supported the species does not mean that it is appropriate to classify it as a "colony site" and habitat for the species in perpetuity.

The claim that survey effort is increasing based on addition of survey sites in the more recent triennial surveys can only be properly made if the sites being added actually constitute viable habitat for the tricolored blackbird. The fact that sites at some point in the past may have supported habitat does not mean that including them in a summed accounting of contemporary colony sites is appropriate. Many sites included in 2014 should not be included in a reported measure of survey effort as habitat. For example, at one site, included in 2014 but not 2011 or 2008, no blackbirds were present. The last recorded presence of blackbirds at the location was in 1935. *See* http://tricolor.ice.ucdavis.edu/content/urncatalogicetrbladd-1353 (describing site as "not suitable habitat" and "riparian forest"). Similarly, at one site, included in 2014 and 2011 but not 2008, no blackbirds were present. The last recorded presence of blackbirds at the location was in 1988. *See* http://tricolor.ice.ucdavis.edu/content/urncatalogicetrbladd-1649 (describing site as: "Historical location. Nesting habitat eliminated in 1990s. Unsuitable for nesting by tricolors."). It appears that the survey effort is inflated due to the inclusion of many sites improperly included. *E.g.*, http://tricolor.ice.ucdavis.edu/content/urncatalogicetrbladd-1165 (site included in 2014 but not 2011 or 2008 at which the surveyor noted "little or no nesting habitat present" and which was last known to be occupied in 1994). To our knowledge, the extent of this unsubstantiated reporting has not been disclosed to, or evaluated by, the Department.

In conclusion, we contend that the petition both misrepresents and misinterprets the standing scientific information regarding the status and trend of the tricolored blackbird. We also believe that the Department's evaluation and addendum arrive at a "may be warranted" recommendation without having conducted a sufficiently careful review of the petition. That said, we appreciate the Department's willingness to consider and respond to our input, and we intend continue to work with the Department to address the needs of the tricolored blackbird.

Very truly yours,



Paul S. Weiland
of Nossaman LLP

PSW:art
cc: Sonke Mastrup, Executive Director (sonke.mastrup@fgc.ca.gov)

Attachment A – List of references

Beedy, E.C., S.D. Sanders, and D. Bloom. 1991. Breeding status, distribution, and habitat associations of the tricolored blackbird (*Agelaius tricolor*). 1850-1989. Report to the U.S. Fish and Wildlife Service.

Beedy, E.C. and W.J. Hamilton. 1997. Tricolored blackbird status update and management guidelines. Report to the U.S. Fish and Wildlife Service and California Department of Fish and Game.

Dairy Cares. 2015a. Letter to Sally Jewell and Dan Ashe from J.P. Cativiela.

Dairy Cares. 2015b. Letter to Jack Bayliss from J.P. Cativiela.

DeHaven, R.W., F.T. Crase, and P.P. Woronecki. 1975a. Breeding status of the tricolored blackbird, 1962-1972. California Fish and Game 61:166-180.

Kyle, K. and R. Kelsey. 2011. Results of the 2011 tricolored blackbird statewide survey.

Meese, R.J. 2014. Results of the 2014 tricolored blackbird statewide survey.

Neff, J.A. 1937. Nesting distribution of the tri-colored red-wing. The Condor 39:61-81.

U.S. Fish and Wildlife Service. 2013. How to develop survey protocols, a handbook (Version 1.0). Fort Collins, Colorado: US Department of Interior, Fish and Wildlife Service, National Wildlife Refuge System, Natural Resource Program Center.

Petition Evaluation
Tricolored Blackbird

Fish and Game Commission Meeting

December 10, 2015

Wildlife Branch

Department petition evaluation of March 2015

- Recommended that the petitioned action may be warranted

Department presentation at June 2015 Commission meeting

- Tricolored Blackbird listing history
- Life history
- Range and distribution
- Population abundance
- Threats

Addendum to Department petition evaluation

- Address new studies and additional information
- Three topics: Population Trend, Life History, and Habitat Loss

Population Trend

Additional studies considered in the addendum demonstrate:

- Average breeding colony size has declined since the 1930s (Graves et al. 2013)
- Breeding site occupancy rate declined from 2005-2011 (Holyoak et al. 2014)
- Large population declines have occurred in the center of breeding abundance in the San Joaquin Valley (Meese 2015)
    - 78% decline in abundance from 2008-2014
    - Regional decline of >260,000 birds

Life History

Reproductive output varies by nesting habitat type

- Himalayan blackberry and nettle colonies have high reproductive output
- Grain field colonies exhibit average reproductive output
    - despite containing the largest colonies
- Wetland colonies exhibit the lowest overall contribution to reproductive output
    - despite remaining the most common nesting habitat used

Loss of Foraging Habitat

Two recent studies provide quantitative assessments of potential foraging habitat loss:

- Grassland/shrubland in the Central Valley portion of the Tricolored Blackbird range declined by 22% (~476,900 acres) from 1973-2010 (Soulard and Wilson 2015)

- 483,000 acres of rangelands in California were converted from 1984-2008 (Cameron et al. 2014)
    - The San Joaquin Valley experienced the largest amount of conversion

Department Recommendation

The Department finds that the petitioned action may be warranted and recommends that the Commission accept the Petition for further consideration

6

2015 Proposed Freshwater Sport Fishing Regulations Changes

Fish and Game Commission Meeting
December 10, 2015
Stafford Lehr
Fisheries Branch

Overview

- Revise snagging definition
- Add new landlocked salmon definition
- Change contest drawing dates for black bass
- Allow fishing at Red Bluff Diversion Dam
- Impose sturgeon fishing closure at yolo bypass
- General clean-up

Questions / Thank You

STATE OF CALIFORNIA

NATURAL RESOURCES AGENCY

DEPARTMENT OF FISH AND WILDLIFE

NEGATIVE DECLARATION

FOR

PROPOSED AMENDMENTS TO FRESHWATER SPORT FISHING REGULATIONS TITLE 14, CALIFORNIA CODE OF REGULATIONS

Prepared by:

California Department of Fish and Wildlife
Fisheries Branch

This Report Has Been Prepared Pursuant to the
California Environmental Quality Act of 1970
State of California
Natural Resources Agency
Department of Fish and Wildlife

INITIAL STUDY AND NEGATIVE DECLARATION
FOR
PROPOSED AMENDMENTS
TO
FRESHWATER SPORT FISHING REGULATIONS
TITLE 14, CALIFORNIA CODE OF REGULATIONS

The Project

The Department of Fish and Wildlife proposes to amend a variety of freshwater sport fishing regulations as set forth in Title 14 of the California Code of Regulations. As compared to existing regulations, the proposed project would amend regulations for snagging, landlocked salmon, San Francisco and San Pablo Bays, and Solano Lake. The proposed regulatory changes are needed for clarification purposes to reduce public confusion and improve regulatory enforcement. Additionally, the proposed project will add a new fishing restriction to protect sturgeon and increase fishing opportunities on the Sacramento River.

The Findings

The project will have a less than significant impact on biological resources, greenhouse gas emissions, recreation, and transportation/traffic. The project will have no impact to aesthetics, agriculture and forest resources, air quality, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, and utilities and service systems.

Basis of the Findings

Based on the initial study, the Department finds that implementing the proposed project will have a less than significant to no impact on the environment. Therefore, a negative declaration is filed pursuant to the California Environmental Quality Act, Public Resource Code Section 21080 (c2).

This proposed negative declaration consists of the following:

- Introduction – Project Description and Background Information on the Proposed Amendments to Freshwater Sport Fishing Regulations
- Initial Study Environmental Checklist Form
- Explanation of the Response to the Initial Study Environmental Checklist Form

PROJECT DESCRIPTION AND BACKGROUND INFORMATION FOR PROPOSED AMENDMENTS TO FRESHWATER SPORT FISHING REGULATIONS TITLE 14, CALIFORNIA CODE OF REGULATIONS

Introduction

Annually, the Department of Fish and Wildlife (Department) recommends sport fishing regulations to the Fish and Game Commission (Commission). Both the Department and the Commission have the authority to regulate fisheries (Fish and Game Code, Section 1700) in addition to the Department's public trust responsibility to protect and conserve California's natural resources.

Project goals and objectives

The goal of this project is to amend selected freshwater sport fishing regulations in furtherance of the Department's mission to manage California's diverse fisheries resources for their ecological value, their use and for the public's enjoyment.

Fish and Game Code, Section 1700 declares the state's policy is to encourage the conservation, maintenance and utilization of California's aquatic resources. This section includes the following objectives:

1. Maintain sufficient populations of all aquatic species to ensure their continued existence.
2. Maintain sufficient resources to support a reasonable sport use.
3. Manage using best available science and public input.

Background

Annually, the Department considers amendments to sport fishing regulations. Recommendations for changes come from Department staff, the public, the Commission, Fish and Game Advisory Commissions, and local governments. Recommendations are evaluated within the appropriate Department Region and by the statewide Fisheries Management Committee. If the proposed regulation change passes evaluation, the Department prepares a regulation change recommendation for the Commission to consider. Through a series of Commission meetings, the public has the opportunity to comment on the proposed regulation change. At the end of this public process, the Commission may add, amend, or repeal regulations related to the proposed regulation change. The Commission most recently adopted amendments to the sport fishing regulations in December 2014.

Project Location

Sport fishing addressed by this environmental document occurs in the inland waters of California. The inland waters of California are divided into seven sport fishing districts,

the North Coast, North Central, South Central, Southern, Valley, Sierra, and Colorado River districts. These districts are shown in the map below.

CALIFORNIA SPORT FISHING DISTRICTS

Schedule

If adopted by the Commission and approved by the Office of Administrative Law, the proposed regulatory amendments described below will go into effect March 1, 2016.

Project Description

The proposed project includes both Department and public recommendations for amendments to freshwater sport fishing regulations set forth in Title 14 of the California Code of Regulations (CCR). The proposed amendments would modify existing sport fishing regulations as follows:

Snagging Definition

Subsection 2.00(b) would be amended to further define snagging. The current snagging definition states that it is illegal to impale a fish in any part of its body **other than the mouth**. This makes it legal for anyone to keep a fish that has been hooked on the outside of the mouth, such as a hook that enters from the lower jaw into the mouth or nose into the mouth. The proposal is to reword the definition to say **other than inside the mouth**. Subsections 2.00(b) and (c), and Section 1.05 will need to be amended for consistency.

Proposal: Amend Section 1.05, Angling, and subsections 2.00(b) and (c), Fishing Methods - General

Amend the regulations to clarify that it is illegal to take a fish not hooked on the inside of the mouth.

Landlocked Salmon Definition

Current regulations are inconsistent in their treatment of landlocked salmon. Kokanee salmon (*Oncorhynchus nerka*) are included in the definition of "Trout," while stocked, landlocked Chinook salmon are included in the definition of "Salmon," which also includes anadromous forms of salmon. Scientific evidence, including life history variation and behavioral differences, suggests the need for differing management strategies for these species. They should be separately defined and addressed in the freshwater sport fishing regulations. In addition, these new species definitions need to have associated bag and possession limits.

Proposal: Amend Section 1.86, Trout, and Section 7.00, District General Regulations; Add sections 1.57 and 5.41, Landlocked Salmon

This proposal creates a new definition for landlocked salmon which will include kokanee and landlocked Chinook salmon. The daily bag limit will be 5 fish and the possession limit will be 10 fish in a new Section 5.41 and not contained in Section 7.00.

Amend the District General Regulations to revise the references to "trout and salmon" to just "trout." Amend the daily bag and possession limits to reference the total number of trout or landlocked salmon in combination. This change is proposed to reduce public confusion with landlocked salmon versus anadromous salmon that are allowed only in the Section 7.50 Special Regulations since the General District Regulations has the take of anadromous salmon closed statewide.

Reptile Regulation Correction
A numbering error has been identified in Section 5.60, specifically subsections (b)(10) through (b)(14). The regulation incorrectly reads, "Species No. 9-13 have a limit of twenty-five (25) in the aggregate." It should read, "Species in subsections (10) through (14) have a limit of twenty-five (25) in the aggregate." Correcting the numbering mistake will alleviate confusion amongst sport fisherman and wildlife officers.

Proposal: Amend subsection (b) of Section 5.60, Reptiles
Correct the numbering errors in this section to reduce public confusion and enforcement issues.

Sturgeon Fishing Closure and Snagging Revision
Green sturgeon and white sturgeon (subadults and adults) are often stranded for long periods in the Yolo Bypass as well as the Toe Drain and Tule Canal upstream of Lisbon Weir. Some of those fish escape when environmental conditions change but others are rescued or succumb. Through catch-and-release, legal harvest, and poaching, anglers could take both species when stranded. The legal fishery on stranded fish is not sporting, reduces the benefit of rescue efforts, and reduces population spawning potential. Because green sturgeon is a threatened species and white sturgeon is a substantial management concern, addressing this issue is relatively urgent. Therefore, the Department is proposing to prohibit the take and possession of sturgeon in the Yolo Bypass as well as the Toe Drain and Tule Canal upstream of Lisbon Weir at any time.

Current regulations in subsection (d) of Section 5.80 state that a sturgeon must voluntarily take the bait or lure *in* its mouth. This language is proposed to be revised to read *inside* its mouth, to be consistent with proposed revisions to the snagging definition in Section 2.00.

Proposal: Add subsection (j) to Section 5.80, White Sturgeon and amend subsection (d) Methods of take.
Prohibit fishing for sturgeon in the Yolo Bypass Flood Control System to protect green and white sturgeon; Amend the regulations to clarify that it is illegal to take a fish not hooked on the inside of the mouth for alignment with the proposed snagging definition changes to Section 2.00.

Green Sturgeon Revision for Brevity
Take and possession of green sturgeon is prohibited by law. Section 5.81, Green Sturgeon, subsection (d) designates a special fishing closure for sturgeon in the Sierra and Valley District. This special fishing closure is also provided under Section 5.80, White Sturgeon. Because fishing for green sturgeon is prohibited statewide, this regulation is not needed in the regulations for Green Sturgeon.

Proposal: Amend Section 5.81, Green Sturgeon, to remove subsection (d).
Improves clarity and eliminates unnecessary regulatory language regarding the special sturgeon closure for sturgeon in the Sierra and Valley District.

Red Bluff Diversion Dam
Current regulations restrict fishing from 500 feet upstream to 150 feet below Red Bluff Diversion Dam (RBDD). RBDD is no longer operated as an irrigation diversion so the current restrictions about fishing near a dam are no longer needed. Boaters, recreationists, and fish are free to pass up and downstream of the area at will. The angling public is very interested in fishing in the immediate vicinity of the RBDD now that it is no longer in operation and the Sacramento River is not impounded by its gates. The proposal is to allow shore and boat angling above and below RBDD on the Sacramento River.

Proposal: Amend Special Fishing Regulations subsection 7.50(b)(156.5), Sacramento River
Remove the current fishing restriction above and below RBDD on the Sacramento River to increase angling opportunities in Tehama County.

Solano Lake
The proposal is to add Solano Lake to Section 7.50, Alphabetical List of Waters with Special Fishing Regulations. The original intent was for Solano Lake to be included in the Putah Creek special fishing regulations. That regulation applies to the stream reach from Solano Lake to Monticello Dam and does not include Solano Lake. Therefore, a new subsection needs to be added to Section 7.50.

Proposal: Add subsection (b)(180.6), Solano Lake, to Section 7.50 Special Fishing Regulations
Add a new regulation for Solano Lake to the Special Fishing Regulations. The daily bag and possession limit will be 0 (zero).

San Francisco and San Pablo Bays Clarification
Currently there are three sections dealing with the Ocean and San Francisco Bay District which describe regulations in different manners causing confusion for anglers and making enforcement of the regulations more difficult:

- Section 27.00 defines the Ocean and San Francisco Bay District as waters of the open coast and includes San Francisco and San Pablo Bays *"plus all their tidal bays, tidal portions of their rivers and streams, sloughs and estuaries"* between the Golden Gate Bridge and the Carquinez Bridge.

- Section 1.53 defines inland waters as all fresh, brackish and inland saline waters of the state, including lagoons and tidewaters upstream from the mouths of coastal rivers and streams. Inland waters exclude the waters of San Francisco and San Pablo Bays downstream from the Carquinez Bridge, the tidal portions of rivers and streams flowing into San Francisco *and San Pablo Bays*, and the waters of Elkhorn Slough, west of Elkhorn Road between Castroville and Watsonville.

- Subsection 28.65(a) (which describes gear restrictions for fin fish) defines the area as San Francisco and San Pablo Bays between the Golden Gate Bridge and the west Carquinez Bridge, where only one line with not more than three hooks may be used.

The different definitions of the same geographic area cause confusion as to applicable method of take as well as which set of regulations apply to the waters being fished.

An angler is allowed to use any number of hooks and lines in ocean waters (Section 28.65). In Inland waters only one closely attended line with no more than three hooks may be used (Section 2.00). Under the current regulations, a person could argue that tidal portions of the Napa River were not Inland Waters and since subsection 28.65(a) did not include the tidal portions of river flowing into San Francisco and San Pablo Bays. Under this interpretation, they could use any number of lines and hooks to fish in the Napa River. This would restrict waters of San Francisco and San Pablo Bays to one line, then allow unlimited lines in the Napa River waters which were tidally influenced even though all inland waters are restricted to one line.

In addition, fishing regulations for Ocean Waters defined in Section 27.00 are different from Inland Waters as defined in Section 1.53. Since tidal influence cannot easily be determined, it is almost impossible to know which set of regulations apply in the tidally influenced waters. For instance is an undersized sturgeon caught in the Napa River a violation of Section 5.80 or Section 27.90?

To simplify the regulations and make these sections consistent, all three sections must use the same reference.

The proposal is to amend sections 27.00 and 1.53 to align with subsection 28.65(a) and remove the reference to tidal bays and tidal portions of rivers and streams from these two sections. As a result, inland waters will now include the tidal portions of rivers and streams flowing into San Francisco and San Pablo Bays which will be subject to the gear restrictions for inland waters where only one closely attended rod and line with no more than three hooks may be used.

<u>Proposal: Amend Section 1.53, Inland Waters, and Section 27.00, Ocean and San Francisco Bay Definition</u>
Amend the two regulations that define the San Francisco and San Pablo Bays to be consistent, reducing public confusion and enforcement issues. Remove capitalized text before the note which is a printing error.

Fishing Contest Draw Dates
The current wording of subsection 230(b)(1)(A) designates specific dates for a drawing that is conducted annually by Department personnel to allocate Type A fishing contest permits in a fair manner. Dates are the second Friday of July for bodies of water north of the Tehachapi Mountains and the third Friday of July for waters south of the Tehachapi Mountains.

Specific designation of these dates can conflict with major fishing-related events that contest sponsors often need to attend (e.g., International Convention of Allied Sport fishing Trade – ICAST). Sponsors who must attend the ICAST show—an international conference of fishing gear manufacturers, media, and many others—cannot simultaneously attend the contest drawing, hindering the conflict resolution process for which the drawing is held.

The Department is proposing to amend the regulations to state that the contest drawings will be conducted in July and the dates will be determined by Department staff.

Proposal: Amend subsection (b)(1)(A) of Section 230, Issuance of Permits for Contests Offering Prizes for the Taking of Game Fish
Amend the regulations to change the current contest drawing dates to unspecified dates in July which will be determined by Department staff.

Minor Editorial Corrections for Clarity
Additional minor corrections are proposed to correct typographical errors and to improve regulation clarity.

ENVIRONMENTAL CHECKLIST FORM

1. Project Title:
   Proposed Amendments to Freshwater Sport Fishing Regulations, Title 14, California Code of Regulations

2. Lead Agency Name and Address:
   California Department of Fish and Wildlife
   Fisheries Branch
   830 S Street
   Sacramento, CA 95811

3. Contact Person and Phone Number:
   Karen Mitchell, (916) 445-0826

4. Project Location:
   Inland waters of the State of California

5. Project Sponsor's Name and Address:
   California Department of Fish and Wildlife
   Fisheries Branch
   830 S Street
   Sacramento, CA 95811

6. General Plan designation:
   N/A (statewide)

7. Zoning:
   N/A (statewide)

8. Description of Project:
   Amend selected freshwater sport fishing regulations to maintain consistency with the Department's mission to manage California's diverse fisheries resources for their ecological value, their use and for the public's enjoyment.

9. Surrounding land uses and setting:
   N/A

10. Other Public Agencies Whose Approval Is Required:
    None

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Geology/Soils
☐	Greenhouse Gas Emissions	☐	Hazards and Hazardous Materials	☐	Hydrology/Water Quality
☐	Land Use/Planning	☐	Mineral Resources	☐	Noise
☐	Population/Housing	☐	Public Services	☐	Recreation
☐	Transportation/Traffic	☐	Utilities/Service Systems	☐	Mandatory Findings of Significance

This project will not have a "Potential Significant Impact" on any of the environmental factors listed above; therefore, no boxes are checked.

DETERMINATION:

On the basis of this initial evaluation:

☒	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☐	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation

	measures that are imposed upon the proposed project, nothing further is required.

Stafford Lehr, Chief, Fisheries Branch

10/26/15

Date

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒
II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☒
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
VII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒
IX. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
result of the failure of a levee or dam?				
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b)Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
XIII. POPULATION AND HOUSING:				
Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
XIV. PUBLIC SERVICES:				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

EXPLANATION OF RESPONSES TO INITIAL STUDY ENVIRONMENTAL CHECKLIST

I. AESTHETICS

a) The project will not have an adverse effect on a scenic vista. Such an impact will not occur because the project will not involve any construction, land alternation, or modification of any buildings or structures.

b) The project will not damage scenic resources such as trees, rock outcroppings, and historic buildings. Such an impact will not occur because the project will not involve any construction, land alteration, or modification of any buildings or structures.

c) The project will not substantially degrade the existing visual character or quality of the work sites and their surroundings. Such an impact will not occur because the project will not involve any construction, land alternation, or modification of any buildings or structures.

d) The project will not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. Anglers will drive vehicles to and from the Sacramento River near the Red Bluff Diversion Dam during the year-round angling season. Some of this traffic may occasionally occur before sunrise or after sunset. However, this transient traffic is in a sparsely populated area and will not constitute a new source of substantial light or glare that will affect day or nighttime views in the area.

II. AGRICULTURE RESOURCES

a) The project will not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP) of the California Resources Agency, to non-agricultural use. Such an impact will not occur because the project will not involve any construction, land alternation, or land use changes.

b) The project will not conflict with existing zoning for agricultural use or a Williamson Act contract. Such an impact will not occur because the project will not involve any construction, land alternation, or land use changes.

c) The project will not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timber zoned Timberland Production. Such an impact will not occur because the project will not involve any construction, land alternation, or land use changes.

d) There will be no loss of forest land and the project will not result in the conversion of forest land to non-forest use. Such an impact will not occur because the project will not involve any construction, land alternation, or land use changes.

e) The project will not involve other changes in the existing environment, which due to their location or nature, could result in conversion of Farmland to non-agricultural use. Such an impact will not occur because the project will not involve any construction, land alternation, or land use changes.

III. AIR QUALITY

a) The project will not conflict with or obstruct implementation of the applicable air quality plan. Such an impact will not occur because the project will not involve any construction, land alternation, or land use changes.

b) The project will not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Such an impact will not occur because the project will not involve any construction, land alternation, or land use changes.

c) The project will not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). Such an impact will not occur because the project involves no ongoing sources of air pollution.

d) The project will not expose sensitive receptors to substantial pollutant concentrations. Such an impact will not occur because the project will not increase pollutant concentrations.

e) The project will not create objectionable odors affecting a substantial number of people.

IV. BIOLOGICAL RESOURCES

a) The project will not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by the CDFW, National Marine Fisheries Service (NMFS) or U. S. Fish and Wildlife Service (USFWS).

The proposal to open the section of the Sacramento River above and below the Red Bluff Diversion Dam to shore and boat angling will not directly or indirectly affect candidate, sensitive, or special-status species. The project would open up approximately 650 feet, less than one-eighth of a mile, of the Sacramento River to shore and boat angling year-round. Although state and federally-listed Central Valley steelhead and winter-run Chinook salmon use this section of river during their adult spawning migration and during juvenile emigration to the ocean, existing sport fishing regulations prohibit take of these species.

b) The project will not have an adverse effect on any riparian habitat or other sensitive natural communities identified in local or regional plans, policies and regulations, or by the CDFW or the USFWS. Such an impact will not occur because the project will not involve any construction, land alternation, or land use changes.

c) The project will not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Such an impact will not occur because the project will not involve any construction, land alteration, or land use changes.

d) The project will not substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. Such an impact will not occur because the project will not involve any construction, land alteration, or land use changes.

e) The project will not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Such an impact will not occur because the project will not result in any construction, land alteration, or land use changes.

f) The project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan. Such an impact will not occur because the project will not involve any construction, land alteration, or land use changes.

V. CULTURAL RESOURCES

a) The project will not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5. There is no ground disturbing work and thus no potential to affect historical resources.

b) The project will not cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5. There is not ground disturbing work and thus no potential to affect archaeological resources.

c) The project will not directly or indirectly destroy any unique paleontological resources or sites, or unique geologic features. There is no ground disturbing work and thus no potential to affect paleontological resources.

c) The project will not disturb any human remains, including those interred outside of formal cemeteries. There is no ground disturbing work and thus no potential to affect human remains.

VI. GEOLOGY AND SOILS

a i) The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area, or based on other substantial evidence of a known fault. Such an impact will not occur because the project will not involve ground disturbing work.

a ii) The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Such an impact will not occur because the project will not involve ground disturbing work.

a iii) The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. Such an impact will not occur because the project will not involve ground disturbing work.

a iv) The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. Such an impact will not occur because the project will not involve ground disturbing work.

b) The project will not result in substantial soil erosion or the loss of topsoil. Such an impact will not occur because the project will not involve ground disturbing work.

c) The project will not be located on a geologic unit or soil that unstable, or that would become unstable and potentially result in on- or off- site landslides, lateral spreading, subsidence, liquefaction, or collapse. Such an impact will not occur because the project will not involve ground disturbing work.

d) The project will not be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property. Such an impact will not occur because the project will not involve ground disturbing work.

e) The project will not create any sources of waste water requiring a septic system

VII. GREENHOUSE GAS EMISSIONS

a. The project will not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. The project will not involve any construction, land alternation, or land use changes. Vehicles that use fuel will be used to access the Sacramento River near the Red Bluff Diversion Dam during the year-round angling season, and their internal combustion engines will produce some emissions. However, only approximately 650 feet of river would be open to shore and boat angling and only the east side of the river is accessible by the public.

As a result, the number of additional angler trips will most likely be low. Thus, the impact of greenhouse gas (GHG) emissions produced by the use of vehicles will be negligible.

b. The project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG. The impacts of GHG produced by the use of vehicles to and from the Sacramento River during the angling season will be negligible.

VIII. HAZARDS AND HAZARDOUS MATERIALS

a) The project will not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. The project will not involve the transport, use, or disposal of hazardous materials.

b) The project will not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The project will not involve the transport, use, or disposal of hazardous materials.

c) The project will not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. The project will not involve the transport, use, or disposal of hazardous materials.

d) The project will not be located on any site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

e) The project will not be located within an airport land use plan area.

f) The project will not be located within the vicinity of a private airstrip.

g) The project will not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. The project will not involve any construction, land alteration, or land use changes.

h) The project will not expose people or structures to a significant risk of loss, injury, or death involving wild land fires. The project will not involve any construction, land alteration, or land use changes.

IX. HYDROLOGY AND WATER QUALITY

a) The project will not violate any water quality standards or waste discharge requirements. The project will not involve any construction, land alteration, water use, or water discharge.

b) The project will not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. The project will not involve any construction, land alteration, or groundwater use.

c) The project will not substantially alter the existing drainage pattern of the work sites in a manner that would result in substantial erosion or siltation on- or off-site because the project will not involve any construction or land alteration.

d) The project will not substantially alter the existing drainage pattern of the work sites, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site because the project will not involve any construction or land alteration.

e) The project will not create or contribute runoff water that would exceed the capacity of existing or planned storm-water drainage systems, or provide substantial additional sources of polluted runoff because the project will not involve any construction or land alteration.

f) The project will not substantially degrade water quality. The project will not involve any construction or land alteration, and thus will not have any adverse impacts on water quality.

g) The project will not place housing within a 100-year flood hazard area as mapped on any flood hazard delineation map. No housing will be created as part of this project.

h) The project will not place within a 100-year flood hazard area structures which would significantly impede or redirect flood flows. No new structures will be associated with this project.

i) The project will not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam. The project will not involve any construction, land alteration, or land use changes.

j) The project will not expose people or structures to a significant risk of inundation by seiche, tsunami, or mudflow. The project will not involve any construction, land alteration, or land use changes.

X. LAND USE AND PLANNING

a) The project will not physically divide an established community. The project will not involve any construction, land alteration, or land use changes.

b) The project does not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. The project will not involve any construction, land alteration, or land use changes.

c) The project will not conflict with any Habitat Conservation or Natural Community Conservation plan. The project will not involve any construction, land alteration, or land use changes.

XI. MINERAL RESOURCES

a) The project will not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Such an impact will not occur because the project will not involve any construction, land alteration, or land use changes.

b) The project will not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Such an impact will not occur because the project will not involve any construction, land alteration, or land use changes.

XII. NOISE

a) The project will not result in exposure of persons to, or generation of noise levels in excess of, standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The project will not involve construction or physical alteration of land, and its implementation will not generate noise levels in excess of agency standards.

b) The project will not result in exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels. The project will not involve construction or physical alteration of land.

c) The project will not result in a substantial permanent increase in ambient noise levels in the project vicinity. The project will not involve construction or physical alteration of land, or the creation of any permanent noise sources.

d) The project will not result in a substantial temporary, or periodic, increase in ambient noise levels in the project vicinity above levels existing without the project. The project will not involve construction or physical alteration of land.

e) The project will not be located within an airport use plan or within two miles of a public airport or public use airport.

f) The project will not be located within the vicinity of a private airstrip.

XIII. POPULATION AND HOUSING

a) The project will not induce substantial population growth in an area, either directly or indirectly. Such an impact will not occur because the project will not construct any new homes, businesses, roads, or other human infrastructure.

b) The project will not displace any existing housing and will not necessitate the construction of replacement housing elsewhere.

c) The project will not displace any people and will not necessitate the construction of replacement housing elsewhere.

XIV. PUBLIC SERVICES

a) The project will not have any significant environmental impacts associated with new or physically altered governmental facilities. The project will not involve any construction, land alteration, or land use changes.

XV. RECREATION

a) The increase of the use of existing neighborhood and regional parks, or other recreational facilities will be less than significant due to project implementation. The project will open approximately 650 feet of the Sacramento River to shore and boat angling during the year-round angling season. The Forest Service owns a boat ramp and campground up and downstream of Red Bluff Diver Dam on the east side which is currently open to the public. Also, the public already is allowed to walk, swim, walk dogs, etc. in these areas, just not fish in them legally. The number of additional anglers that may take advantage of the new recreational angling opportunity on the Sacramento River is unknown. However, because only 650 feet, less than one-eighth of a mile, of additional shoreline and river would be accessible, an increase in use of existing recreational facilities would be minimal. Thus, the project will not produce a significant amount of recreation.

b) The project will not involve any construction, land alternation, or land use changes. There will be no construction or expansion of recreational facilities.

XVI. TRANSPORTATION/TRAFFIC

a) The project may increase transportation to the Sacramento River near the Red Bluff Diversion Dam due to the addition of 650 feet of river and shoreline (on the east bank of the river only) available to anglers during the year-round angling season; however, the project will have a less than significant impact on any applicable plans, ordinances or policies that establish measures of effectiveness for the performance of the circulation systems. The number of anglers that may take advantage of the new recreational angling opportunity on the Sacramento River during the year-round angling season is unknown, but because only 650 feet of additional river and

shoreline would be accessible, angling pressure would most likely be minimal and sporadic. Thus, the project will not produce a significant amount of traffic.

b) The project will not conflict, either individually or cumulatively, with any applicable congestion program established by the county congestion management agency for designated roads or highways. Such an impact will not occur because the section of the Sacramento River proposed to open to angling will not result in a significant amount of traffic in the project area.

c) The project will not result in any change in air traffic patterns.

d) The project will not alter terrestrial features or is incompatible with uses of equipment.

e) The project will not result in inadequate emergency access. The project does not involve construction.

f) The project will not significantly affect parking capacity or demand for parking.

XVII. UTILITIES AND SERVICE SYSTEMS

a) The project will not produce wastewater.

b) The project will not require, or result in the construction of, new water or wastewater treatment facilities or expansion of existing facilities. Such an impact will not occur because the project will not produce wastewater.

c) The project will not require or result in the construction of new storm water drainage facilities or expansion of existing facilities.

d) The project will have sufficient water supplies available to serve the project from existing entitlements and resources.

e) The project will not produce wastewater.

f) The project will not generate solid waste requiring disposal in a landfill.

g) The project will not create solid waste. Thus, the project will be in compliance with federal, state, and local statutes related to solid waste.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

a) The project does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered

plant or animal, or eliminate important examples of the major periods of California history or prehistory. The project is consistent with the Department's mission to manage California's diverse fisheries resources for their ecological value, their use and for the public's enjoyment.

b) The project does not have adverse impacts that are individually limited, but cumulatively considerable. Cumulative adverse impacts will not occur because there are no potential adverse impacts due to project implementation.

c) The project does not have environmental effects that will cause substantial adverse effects on humans, either directly or indirectly. The project will not involve any construction, land alteration, or the creation of new infrastructure.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Sections 1.05, 1.53, 1.86, 7.00, 27.00, Subsections 2.00(b) and 2.00(c), 5.60(b), 7.50(b)(156.5) and 230(b)(1)(A); Add Sections 1.57 and 5.41, Subsections 5.80(j), and 7.50(b)(180.6); and Remove Subsection 5.81(d),
Title 14, California Code of Regulations
Re: Freshwater Sport Fishing Regulations

I. Date of Initial Statement of Reasons: May 20, 2015

II. Dates and Locations of Scheduled Hearings:

(a)	Notice Hearing:	Date:	August 5, 2015
		Location:	Fortuna
(b)	Discussion Hearing:	Date:	October 8, 2015
		Location:	Los Angeles
(c)	Adoption Hearing:	Date:	December 10, 2015
		Location:	San Diego

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

This Department proposal combines Department and public requests for changes to Title 14, California Code of Regulations (CCR), for the 2015 Sport Fishing Regulations Review Cycle. This proposal will clarify regulations for snagging, landlocked salmon, San Francisco and San Pablo Bays, Solano Lake, and reptiles. The proposed regulatory changes are needed to reduce public confusion and improve regulatory enforcement. Additionally, this proposal will add a new fishing restriction to protect sturgeon, and increase fishing opportunities on the Sacramento River.

The Department is proposing the following changes to current regulations:

Snagging Definition
Subsection 2.00(b) would be amended to further define snagging. The current snagging definition states that it is illegal to impale a fish in any part of its body **other than the mouth**. This makes it legal for anyone to keep a fish that has been hooked on the outside of the mouth, such as a hook that enters from the

lower jaw into the mouth or nose into the mouth. The proposal is to reword the definition to say **other than inside the mouth**. Subsections 2.00(b) and (c), and Section 1.05 will need to be amended for consistency.

Proposal: Amend Section 1.05, Angling, and subsections 2.00(b) and (c), Fishing Methods - General

Amend the regulations to clarify that it is illegal to take a fish not hooked on the inside of the mouth.

Landlocked Salmon Definition

Current regulations are inconsistent in their treatment of landlocked salmon. Kokanee salmon (*Oncorhynchus nerka*) are included in the definition of "Trout," while stocked, landlocked Chinook salmon are included in the definition of "Salmon," which also includes anadromous forms of salmon. Scientific evidence, including life history variation and behavioral differences, suggests the need for differing management strategies for these species. They should be separately defined and addressed in the freshwater sport fishing regulations. In addition, these new species definitions need to have associated bag and possession limits.

Proposal: Amend Section 1.86, Trout, and Section 7.00, District General Regulations; Add sections 1.57 and 5.41, Landlocked Salmon

This proposal creates a new definition for landlocked salmon which will include kokanee and landlocked Chinook salmon. The daily bag limit will be 5 fish and the possession limit will be 10 fish in a new Section 5.41 and not contained in Section 7.00.

Amend the District General Regulations to revise the references to "trout and salmon" to just "trout." Amend the daily bag and possession limits to reference the total number of trout or landlocked salmon in combination. This change is proposed to reduce public confusion with landlocked salmon versus anadromous salmon that are allowed only in the Section 7.50 Special Regulations since the General District Regulations has the take of anadromous salmon closed statewide.

Reptile Regulation Correction

A numbering error has been identified in Section 5.60, specifically subsections (b)(10) through (b)(14). The regulation incorrectly reads, "Species No. 9-13 have a limit of twenty-five (25) in the aggregate." It should read, "Species in subsections (10) through (14) have a limit of twenty-five (25) in the aggregate." Correcting the numbering mistake will alleviate confusion amongst sport fisherman and wildlife officers.

Proposal: Amend subsection (b) of Section 5.60, Reptiles

Correct the numbering errors in this section to reduce public confusion and enforcement issues.

Sturgeon Fishing Closure and Snagging Revision

Green sturgeon and white sturgeon (subadults and adults) are often stranded for long periods in the Yolo Bypass as well as the Toe Drain and Tule Canal upstream of Lisbon Weir. Some of those fish escape when environmental conditions change but others are rescued or succumb. Through catch-and-release, legal harvest, and poaching, anglers could take both species when stranded. The legal fishery on stranded fish is not sporting, reduces the benefit of rescue efforts, and reduces population spawning potential. Because green sturgeon is a threatened species and white sturgeon is a substantial management concern, addressing this issue is relatively urgent. Therefore, the Department is proposing to prohibit the take and possession of sturgeon in the Yolo Bypass as well as the Toe Drain and Tule Canal upstream of Lisbon Weir at any time.

Current regulations in subsection (d) of Section 5.80 state that a sturgeon must voluntarily take the bait or lure *in* its mouth. This language is proposed to be revised to read *inside* its mouth, to be consistent with proposed revisions to the snagging definition in Section 2.00.

Proposal: Add subsection (j) to Section 5.80, White Sturgeon and amend subsection (d) Methods of take.

Prohibit fishing for sturgeon in the Yolo Bypass Flood Control System to protect green and white sturgeon; Amend the regulations to clarify that it is illegal to take a fish not hooked on the inside of the mouth for alignment with the proposed snagging definition changes to Section 2.00.

Green Sturgeon Revision for Brevity

Take and possession of green sturgeon is prohibited by law. Section 5.81, Green Sturgeon, subsection (d) designates a special fishing closure for sturgeon in the Sierra and Valley District. This special fishing closure is also provided under Section 5.80, White Sturgeon. Because fishing for green sturgeon is prohibited statewide, this regulation is not needed in the regulations for Green Sturgeon.

Proposal: Amend Section 5.81, Green Sturgeon, to remove subsection (d).

Improves clarity and eliminates unnecessary regulatory language regarding the special sturgeon closure for sturgeon in the Sierra and Valley District.

Red Bluff Diversion Dam
Current regulations restrict fishing from 500 feet upstream to 150 feet below Red Bluff Diversion Dam (RBDD). RBDD is no longer operated as an irrigation diversion so the current restrictions about fishing near a dam are no longer needed. Boaters, recreationists, and fish are free to pass up and downstream of the area at will. The angling public is very interested in fishing in the immediate vicinity of the RBDD now that it is no longer in operation and the Sacramento River is not impounded by its gates. The proposal is to allow shore and boat angling above and below RBDD on the Sacramento River.

Proposal: Amend Special Fishing Regulations subsection 7.50(b)(156.5), Sacramento River

Remove the current fishing restriction above and below RBDD on the Sacramento River to increase angling opportunities in Tehama County.

Solano Lake
The proposal is to add Solano Lake to Section 7.50, *Alphabetical List of Waters with Special Fishing Regulations*. The original intent was for Solano Lake to be included in the Putah Creek special fishing regulations. That regulation applies to the stream reach from Solano Lake to Monticello Dam and does not include Solano Lake. Therefore, a new subsection needs to be added to Section 7.50.

Proposal: Add subsection (b)(180.6), Solano Lake, to Section 7.50 Special Fishing Regulations

Add a new regulation for Solano Lake to the Special Fishing Regulations. The daily bag and possession limit will be 0 (zero).

San Francisco and San Pablo Bays Clarification
Currently there are three sections dealing with the Ocean and San Francisco Bay District which describe regulations in different manners causing confusion for anglers and making enforcement of the regulations more difficult:

- Section 27.00 defines the Ocean and San Francisco Bay District as waters of the open coast and includes San Francisco and San Pablo Bays *"plus all their tidal bays, tidal portions of their rivers and streams, sloughs and estuaries"* between the Golden Gate Bridge and the Carquinez Bridge.

- Section 1.53 defines inland waters as all fresh, brackish and inland saline waters of the state, including lagoons and tidewaters upstream from the mouths of coastal rivers and streams. *Inland waters exclude the waters of San Francisco and San Pablo Bays downstream from the Carquinez*

Bridge, the tidal portions of rivers and streams flowing into San Francisco and San Pablo Bays, and the waters of Elkhorn Slough, west of Elkhorn Road between Castroville and Watsonville.

- Subsection 28.65(a) (which describes gear restrictions for fin fish) defines the area as San Francisco and San Pablo Bays between the Golden Gate Bridge and the west Carquinez Bridge, where only one line with not more than three hooks may be used.

The different definitions of the same geographic area cause confusion as to applicable method of take as well as which set of regulations apply to the waters being fished.

An angler is allowed to use any number of hooks and lines in ocean waters (Section 28.65). In Inland waters only one closely attended line with no more than three hooks may be used (Section 2.00). Under the current regulations, a person could argue that tidal portions of the Napa River were not Inland Waters and since subsection 28.65(a) did not include the tidal portions of river flowing into San Francisco and San Pablo Bays. Under this interpretation, they could use any number of lines and hooks to fish in the Napa River. This would restrict waters of San Francisco and San Pablo Bays to one line, then allow unlimited lines in the Napa River waters which were tidally influenced even though all inland waters are restricted to one line.

In addition, fishing regulations for Ocean Waters defined in Section 27.00 are different from Inland Waters as defined in Section 1.53. Since tidal influence cannot easily be determined, it is almost impossible to know which set of regulations apply in the tidally influenced waters. For instance is an undersized sturgeon caught in the Napa River a violation of Section 5.80 or Section 27.90?

To simplify the regulations and make these sections consistent, all three sections must use the same reference.

The proposal is to amend sections 27.00 and 1.53 to align with subsection 28.65(a) and remove the reference to tidal bays and tidal portions of rivers and streams from these two sections. As a result, inland waters will now include the tidal portions of rivers and streams flowing into San Francisco and San Pablo Bays which will be subject to the gear restrictions for inland waters where only one closely attended rod and line with no more than three hooks may be used.

<u>Proposal: Amend Section 1.53, Inland Waters, and Section 27.00, Ocean and San Francisco Bay Definition</u>

Amend the two regulations that define the San Francisco and San Pablo Bays to be consistent, reducing public confusion and enforcement issues. Remove

capitalized text before the note which is a printing error.

Fishing Contest Draw Dates
The current wording of subsection 230(b)(1)(A) designates specific dates for a drawing that is conducted annually by Department personnel to allocate Type A fishing contest permits in a fair manner. Dates are the second Friday of July for bodies of water north of the Tehachapi Mountains and the third Friday of July for waters south of the Tehachapi Mountains.

Specific designation of these dates can conflict with major fishing-related events that contest sponsors often need to attend (e.g., International Convention of Allied Sport fishing Trade – ICAST). Sponsors who must attend the ICAST show—an international conference of fishing gear manufacturers, media, and many others—cannot simultaneously attend the contest drawing, hindering the conflict resolution process for which the drawing is held.

The Department is proposing to amend the regulations to state that the contest drawings will be conducted in July and the dates will be determined by Department staff.

Proposal: Amend subsection (b)(1)(A) of Section 230, Issuance of Permits for Contests Offering Prizes for the Taking of Game Fish

Amend the regulations to change the current contest drawing dates to unspecified dates in July which will be determined by Department staff.

Minor Editorial Corrections for Clarity
In addition to the above proposals, minor editorial corrections are proposed to correct typographical errors and to improve regulation clarity.

Benefits of the Proposed Regulations
It is the policy of this state to encourage the conservation, maintenance, and utilization of the living resources of the ocean and inland waters under the jurisdiction and influence of the state for the benefit of all the citizens of the State. In addition, it is the policy of this state to promote the development of local California fisheries in harmony with federal law respecting fishing and the conservation of the living resources of the ocean and inland waters under the jurisdiction and influence of the State. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use. Adoption of scientifically-based trout and salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of trout and salmon to ensure their continued existence.

The benefits of the proposed regulations are concurrence with Federal law, sustainable management of California's trout and salmon resources, and promotion of businesses that rely on recreational sport fishing in California.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 205, 215, 220, 240, 315, 316.5, and 2003, Fish and Game Code.

Reference: Sections 200, 205, 206, 215, 220 and 316.5, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None.

(d) Identification of Reports or Documents Supporting Regulation Change:

None.

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

No public meetings are scheduled prior to the notice publication. The 45-day public notice comment period provides adequate time for review of the proposed changes.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified.

(b) No Change Alternative:

The no change alternative would leave existing regulations in place.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action is not anticipated to have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states because the expected impact of the proposed regulations on the amount of fishing activity is anticipated to be minimal relative to recreational angling effort statewide.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The expected impact of the proposed regulations on the amount of fishing activity is anticipated to be minimal relative to recreational angling effort statewide. Therefore the Commission does not anticipate any impacts on the creation or elimination of jobs, the creation of new business, the elimination of existing business or the expansion of businesses in California.

The Commission anticipates benefits to the health and welfare of California residents. Providing opportunities for a salmon and trout sport fishery encourages consumption of a nutritious food.

The Commission does not anticipate any non-monetary benefits to worker safety.

The Commission anticipates benefits to the environment by the sustainable management of California's sport fishing resources.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VII. Economic Impact Assessment:

The proposed regulations will revise and update inland sport fishing regulations starting in 2016. Currently, the seasons, size limits, and bag and possession limits for sport fishing are periodically reviewed by the Department of Fish and Wildlife and the Commission. This set of amendments will clarify regulations for snagging, landlocked salmon, San Francisco and San Pablo Bay, Solano Lake, and reptiles, to reduce public confusion and improve regulatory enforcement. Additionally, this proposal will add a new fishing restriction to protect sturgeon, and increase fishing opportunities on the Sacramento River.

Inland sport fishing regulation's affected parties include recreational anglers, commercial passenger fishing vessels and a variety of businesses that support anglers. The economic impact of regulatory changes for sport fisheries are estimated by tracking resulting changes in fishing effort, angler trips and length of stay in the fishery areas. Distance traveled affects gas and other travel

expenditures. Day trips and overnight trips involve different levels of spending for gas, food and accommodations at area businesses as well as different levels of sales tax impacts. Direct expenditures ripple through the economy, as receiving businesses buy intermediate goods from suppliers that then spend that revenue again. Business spending on wages is received by workers who then spend that income, some of which goes to local businesses. Recreational fisheries spending, thus multiplies throughout the economy with the indirect and induced effects of the initial direct expenditure.

The adoption of scientifically-based regulations provides for the maintenance of sufficient populations of inland sport fish to ensure their continued existence and future sport fishing opportunities that in turn support businesses related to the fishery economy.

The most recent 2011 U.S. Fish and Wildlife national survey of fishing, hunting, and wildlife associated recreation for California reports about 1.35 million resident and nonresident inland sport fish anglers contributed about $1.2 billion in trip and equipment expenditures to the State's economy. Adding the indirect and induced effects of this $1.2 billion direct revenue contribution the total economic benefit to California's economy is estimated to be about $2.03 billion. This corresponds with about $960 million in total wages to Californians and about 16,000 jobs in the State annually.

This regulatory action may impact businesses that provide services to sport fishermen but these effects are anticipated to range from none to small positive impacts, depending on the regulations ultimately adopted by the Commission. Sport fishing business owners, boat owners, tackle store owners, boat manufacturers, vendors of food, bait, fuel and lodging, and others that provide goods or services to those that sport fish in California may be positively affected to some degree from increases to business that may result under the range of proposed regulations. These anticipated impacts may vary by geographic location. Additionally, economic impacts to these same businesses may result from a number of factors unrelated to the proposed changes to inland sport fishing regulations, including weather, fuel prices, and success rates in other recreational fisheries that compete for angler trips.

(a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State:

The cumulative effects of the changes statewide are estimated to be neutral to job elimination and potentially positive to job creation in California. No significant changes in fishing effort and sport fishing expenditures to businesses are expected as a direct result of the proposed regulation changes.

(b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State:

The cumulative effects of the changes statewide are expected to be neutral to business elimination and have potentially positive impacts to the creation of businesses in California. No significant changes in fishing effort and sport fishing expenditures to businesses are expected as a direct result of the proposed regulation changes.

(c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State:

The cumulative effects of the changes statewide are expected to be neutral to positive to the expansion of businesses currently doing business in California. No significant changes in fishing effort and inland sport fishing expenditures to businesses are expected as a direct result of the proposed regulation changes.

(d) Benefits of the Regulation to the Health and Welfare of California Residents:

The Commission anticipates benefits to the health and welfare of California residents. Trout and salmon are a nutritious food source and increasing inland sport fishery opportunities encourages consumption of this nutritious food. Sport fishing also contributes to increased mental health of its practitioners as fishing is a hobby and form of relaxation for many. Sport fishing also provides opportunities for multi-generational family activities and promotes respect for California's environment by younger generations, the future stewards of California's natural resources.

(e) Benefits of the Regulation to Worker Safety:

The proposed regulations are not anticipated to impact worker safety conditions.

(f) Benefits of the Regulation to the State's Environment:

It is the policy of the state to encourage the conservation, maintenance, and utilization of the living resources of the inland waters under the jurisdiction and influence of the state for the benefit of all its citizens and to promote the development of local California fisheries. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use, taking into consideration the necessity of regulating

individual sport fishery bag limits in the quantity that is sufficient to provide a satisfying sport. Adoption of scientifically-based inland trout and salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of trout and salmon to ensure their continued existence.

Informative Digest/Policy Statement Overview

This Department proposal combines Department and public requests for changes to Title 14, California Code of Regulations (CCR), for the 2015 Freshwater Sport Fishing Regulations Review Cycle. This proposal will clarify regulations for snagging, landlocked salmon, San Francisco and San Pablo Bays, Solano Lake, and reptiles, to reduce public confusion and improve regulatory enforcement. Additionally, this proposal will add a new fishing restriction to protect sturgeon, and increase fishing opportunities on the Sacramento River.

The Department is proposing the following changes to current regulations:

Snagging Definition
Subsection 2.00(b) would be amended to further define snagging. Currently, the snagging definition states that it is illegal to impale a fish in any part of its body **other than the mouth**. This makes it legal for anyone to keep a fish that has been hooked on the outside of the mouth, such as a hook that enters from the lower jaw into the mouth or nose into the mouth. The proposal is to reword the definition to say **other than inside the mouth**. Subsections 2.00(b) and (c), and Section 1.05 will need to be amended for consistency.

Proposal: Amend Section 1.05, Angling, and subsections (b) and (c) of Section 2.00, Fishing Methods - General

Amend the regulations to clarify that it is illegal to take a fish not hooked on the inside of the mouth.

Landlocked Salmon Definition
Current regulations incorporate kokanee (*Oncorhynchus nerka*) into the definition of "Trout," and stocked, landlocked Chinook salmon into the definition of "Salmon," which includes anadromous forms of salmon. Scientific evidence, including life history variation and behavioral differences, suggests the need for differing management strategies for these species. They should be separately defined and addressed in the freshwater sport fishing regulations. In addition, these new species definitions need to have associated bag and possession limits.

Proposal: Amend Section 1.86, Trout; Section 7.00, District General Regulations; add, sections 1.57 and 5.41, Landlocked Salmon

Create a new definition for landlocked salmon which will include kokanee and landlocked Chinook salmon. New daily bag and possession limits for landlocked salmon are proposed in a new Section 5.41. The new bag limit will be 5 fish and the possession limit will be 10 fish.

Amend the District General Regulations in Section 7.00 to revise the references to trout and salmon to just trout except for daily bag and possession limits which means the total number of trout or landlocked salmon in combination. This change is proposed to reduce public confusion with landlocked salmon versus anadromous salmon that are allowed only in the Section 7.50 Special Regulations since the General District Regulations has the take of anadromous salmon closed statewide.

Reptile Regulation Correction
A numbering error has been identified in Section 5.60, specifically subsections (b)10 through (b)14. The regulation incorrectly reads, "Species No. 9-13 have a limit of twenty-five (25) in the aggregate." It should read, "Species No. 10-14 have a limit of twenty-five (25) in the aggregate." Correcting the numbering mistake will alleviate confusion amongst sport fisherman and wildlife officers.

Proposal: Amend subsection (b) of Section 5.60, Reptiles

Correct the numbering errors in this section to reduce public confusion and enforcement issues.

Sturgeon Fishing Closure
Green sturgeon and white sturgeon (subadults and adults) are often stranded for long periods in the Yolo Bypass as well as the Toe Drain and Tule Canal upstream of Lisbon Weir. Some of those fish escape when environmental conditions change but others are rescued or succumb. Through catch-and-release, legal harvest, and poaching, anglers could take both species when stranded. The legal fishery on stranded fish is not sporting, reduces the benefit of rescue efforts, and reduces population spawning potential. Because green sturgeon is a threatened species and white sturgeon is a substantial management concern, addressing this issue is relatively urgent. Therefore, the Department is proposing to prohibit the take and possession of sturgeon in the Yolo Bypass as well as the Toe Drain and Tule Canal upstream of Lisbon Weir at any time.

Current regulations in subsection (d) of Section 5.80 state that a sturgeon must voluntarily take the bait or lure *in* its mouth. This language is proposed to be revised to read *inside* its mouth, to be consistent with proposed revisions to the snagging definition in Section 2.00.

Proposal: Add subsection (j) to Section 5.80 and amend subsection (d), White Sturgeon, Methods of take.

Prohibit fishing for sturgeon in the Yolo Bypass Flood Control System to protect green and white sturgeon.

Amend the regulations to clarify that it is illegal to take a fish not hooked on the inside of the mouth for alignment with the proposed snagging definition changes to Section 2.00.

Green Sturgeon Revision for Brevity
Take and possession of green sturgeon is prohibited by law. Section 5.81, Green Sturgeon, subsection (d) designates a special fishing closure for sturgeon in the Sierra and Valley District. This special fishing closure is also provided under Section 5.80, White Sturgeon. Because fishing for green sturgeon is prohibited, this regulation is not needed in the regulations for Green Sturgeon.

Proposal: Remove subsection (d) from Section 5.81, Green Sturgeon.

Fishing for green sturgeon is prohibited. Therefore, the special fishing closure regulation for sturgeon is not need in Section 5.81.

Red Bluff Diversion Dam
Current regulations restrict fishing from 500 feet upstream to 150 feet below Red Bluff Diversion Dam (RBDD). RBDD is no longer operated as an irrigation diversion so the current restrictions about fishing near a dam are no longer needed. Boaters, and recreationists, and fish are free to pass up and downstream of the area at will. The angling public is very interested in angling in the immediate vicinity of the RBDD now that it is no longer in operation and the Sacramento River is not impounded by its gates. The proposal is to allow shore and boat angling above and below RBDD on the Sacramento River.

Proposal: Amend Special Fishing Regulations subsection (b)(156.5), Sacramento River

Remove the current fishing restriction above and below RBDD on the Sacramento River to increase angling opportunities in Tehama County.

Solano Lake
The proposal is to add Solano Lake to Section 7.50, *Alphabetical List of Waters with Special Fishing Regulations*. The original intent was for Solano Lake to be included in the Putah Creek special fishing regulations. That regulation applies to the stream reach from Solano Lake to Monticello Dam and does not include Solano Lake. Therefore, a new subsection needs to be added to Section 7.50.

Proposal: Add subsection (b)(180.6), Solano Lake, to the Special Fishing Regulations

Add a new regulation for Solano Lake to the Special Fishing Regulations. The daily bag and possession limit will be 0 (zero).

San Francisco and San Pablo Bays Clarification
Currently there are three sections dealing with the Ocean and San Francisco Bay District which describe regulations in different manners causing confusion for anglers and making enforcement of the regulations more difficult:

- Section 27.00 defines the Ocean and San Francisco Bay District as waters of the

open coast and includes San Francisco and San Pablo Bays *"plus all their tidal bays, tidal portions of their rivers and streams, sloughs and estuaries"* between the Golden Gate Bridge and the Carquinez Bridge.

- Section 1.53 defines inland waters as all fresh, brackish and inland saline waters of the state, including lagoons and tidewaters upstream from the mouths of coastal rivers and streams. Inland waters exclude the waters of San Francisco and San Pablo Bays downstream from the Carquinez Bridge, the tidal portions of rivers and streams flowing into San Francisco and San Pablo Bays, and the waters of Elkhorn Slough, west of Elkhorn Road between Castroville and Watsonville.

- Section 28.65(a) (which describes gear restrictions for fin fish). Defines the area as San Francisco and San Pablo Bays between the Golden Gate Bridge and the west Carquinez Bridge, where only one line with not more than three hooks may be used.

The different definitions of the same geographic area cause confusion as to applicable method of take as well as which set of regulations apply to the waters being fished.

An angler is allowed to use any number of hooks and lines in the ocean waters (Section 28.65). In Inland waters only one closely attended line with no more than three hooks may be used (Section 2.00). Under current regulations, a person could argue that tidal portions of the Napa River were not Inland Waters and since Section 28.65(a) did not include the tidal portions of river flowing into San Francisco and San Pablo Bays. Under this interpretation, they could use any number of lines and hooks to fish in the Napa River. This would restrict waters of San Francisco and San Pablo Bay to one line, then allow unlimited lines in the Napa River waters which were tidally influenced even though all inland waters are restricted to one line.

In addition, fishing regulations for Ocean Waters defined in Section 27.00 are different from Inland Waters as defined in Section 1.53. Since tidal influence cannot easily be determined, it is almost impossible to know which set of regulations apply in the tidally influenced waters. For instance is an undersized sturgeon caught in the Napa River a violation of section 5.80 or Section 27.90?

To simplify the regulations and make all of the regulations consistent, all three sections must use the same reference.

The proposal is to amend sections 27.00 and 1.53 to align with Section 28.65(a) and remove the reference to tidal bays and tidal portions of rivers and streams from these two sections. As a result, inland waters will now include the tidal portions of rivers and streams flowing into San Francisco and San Pablo Bays which will be subject to the

gear restrictions for inland waters where only one closely attended rod and line with no more than three hooks may be used.

Proposal: Amend Section 1.53, Inland Waters, and Section 27.00, Ocean and San Francisco Bay Definition

Amend the two regulations that define the San Francisco and San Pablo Bays to be consistent, reducing public confusion and enforcement issues. Remove capitalized text before the note which is a printing error.

Fishing Contest Draw Dates
The current wording of subsection 230(b)(1)(A) designates specific dates for a drawing that is conducted annually by Department personnel to allocate Type A fishing contest permits in a fair manner. Dates are the second Friday of July for bodies of water north of the Tehachapi Mountains and the third Friday of July for waters south of the Tehachapi Mountains.

Specific designation of these dates can conflict with major fishing-related events that contest sponsors often need to attend (e.g., International Convention of Allied Sport fishing Trade – ICAST). Sponsors who must attend the ICAST show—an international conference of fishing gear manufacturers, media, and many others—cannot simultaneously attend the contest drawing, hindering the conflict resolution process for which the drawing is held.

The Department is proposing to amend the regulations to state that the contest drawings will be conducted in July and the dates will be determined by Department staff.

Proposal: Amend subsection (b)(1)(A) of Section 230, Issuance of Permits for Contests Offering Prizes for the Taking of Game Fish

Amend the regulations to change the current contest drawing dates to unspecified dates in July which will be determined by Department staff.

Minor Editorial Corrections for Clarity
Additional editorial corrections are proposed to correct typographical errors and to improve regulation clarity.

Benefits of the Proposed Regulations
It is the policy of this state to encourage the conservation, maintenance, and utilization of the living resources of the ocean and inland waters under the jurisdiction and influence of the state for the benefit of all the citizens of the State. In addition, it is the policy of this state to promote the development of local California fisheries in harmony with federal law respecting fishing and the conservation of the living resources of the ocean and inland waters under the jurisdiction and influence of the State. The

objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use. Adoption of scientifically-based trout and salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of trout and salmon to ensure their continued existence.

The benefits of the proposed regulations are concurrence with Federal law, sustainable management of California's trout and salmon resources, and promotion of businesses that rely on recreational sport fishing in California.

Regulatory Language

Section 1.05, Title 14, CCR, is amended as follows:

§ 1.05. Angling.
~~To~~ Angling means take of fish by hook and line with the line held in the hand, or with the line attached to a pole or rod held in the hand or closely attended in such manner that the fish voluntarily takes the bait or lure ~~in~~inside its mouth.

Note: Authority cited: Sections 200, 202, 205, 210, 219 and 220, Fish and Game Code. Reference: Sections 2, 15, ~~200-202, 203.1, 205-210 and 215-222~~200, 202, 205, 206, 215 and 220, Fish and Game Code

Section 1.53, Title 14, CCR, is amended as follows:

§ 1.53. Inland Waters.
Inland waters are all the fresh, brackish and inland saline waters of the state, including lagoons and tidewaters upstream from the mouths of coastal rivers and streams. Inland waters exclude the waters of San Francisco and San Pablo bays downstream from the west Carquinez Bridge, ~~the tidal portions of rivers and streams flowing into San Francisco and San Pablo Bays,~~ and the waters of Elkhorn Slough, west of Elkhorn Road between Castroville and Watsonville. Also see Section 27.00.

Note: Authority cited: Sections 200, 202, 205, 215 and 220, Fish and Game Code. Reference: Sections 200, 202, 205, 206, 215 and 220, Fish and Game Code.

Section 1.57, Title 14, CCR, is added as follows:

§ 1.57. Landlocked Salmon.
Landlocked salmon includes kokanee and landlocked Chinook salmon.

Note: Authority cited: Sections 200, 202, 205, 210, 219 and 220, Fish and Game Code. Reference: Sections 200, 202, 205, 210, 215, and 220, Fish and Game Code.

Section 1.86, Title 14, CCR, is amended as follows:

§ 1.86. Trout.
~~Includes~~Trout includes all trouts, chars, steelhead, ~~kokanee salmon~~ and grayling.

Note: Authority cited: Sections 200, 202, 205, 210, 219 and 220, Fish and Game Code. Reference: Sections ~~200-202, 203.1, 205-210, 215-222 and 1725-1728~~200, 202, 205, 210, 215,220, 1725, 1726, 1726.4, 1727, and 1728, Fish and Game Code.

Section 2.00, Title 14, CCR, is amended as follows:

§ 2.00. Fishing Methods - General.
(a) Except as otherwise authorized, all fish may be taken only by angling with one closely attended rod and line or one hand line with not more than three hooks nor more than three artificial lures (each lure may have three hooks attached) attached thereto. Anglers in possession of a valid two-rod stamp and anglers under 16 years of age may use up to two rods in inland waters which regulations provide for the taking of fish by angling, except those waters in which only artificial lures or barbless hooks may be used. See District Trout, Salmon and Special regulations for exceptions.
(b) Snagging is prohibited. Snagging is defined as impaling or attempting to impale a fish in any part of its body other than inside the mouth by use of a hook, hooks, gaff, or other mechanical implement. This definition does not include activities otherwise authorized under these regulations for the lawful use of a gaff, bow and arrow, or spear.
(c) It is unlawful to kill, or retain in possession any fish which has not voluntarily taken the bait or artificial lure ~~in~~inside its mouth. Any fish not taken pursuant to these regulations, shall be released immediately back into the water.

Note: Authority cited: Sections 200, 202, 205, 219, 220 and 7194.4, Fish and Game Code. Reference: Sections 200, 202, 206, 220 and 7149.4, Fish and Game Code.

Section 5.41, Title 14, CCR, is added as follows:

§ 5.41. Landlocked Salmon.
(a) Open season: All year.
(b) Daily bag limit: Five.
(c) Possession limit: Ten.
(d) Size limit: None.

Note: Authority cited: Sections 200, 202, 205, 210, 219 and 220, Fish and Game Code. Reference: Sections 200, 202, 205, 210, 215, and 220, Fish and Game Code.

Section 5.60, Title 14, CCR, is amended as follows:

§ 5.60. Reptiles.
(a) Only the following reptiles may be taken under the authority of a sportfishing license, subject to the restrictions in this section. No sportfishing license is required for the sport take of any rattlesnake, but bag and possession limits do apply. No reptiles shall be taken from ecological reserves designated by the commission in Section 630 or from state parks, or national parks or monuments.
(b) Limit: The limit for each of the species listed below is two, unless otherwise provided. Limit, as used in this section, means daily bag and possession limit.
(1) Painted turtle (*Chrysemys picta*): Limit: No limit.
(2) Slider Turtle (*Pseudemys (Trachemys) scripta*): Limit: No limit.
(3) Spiny softshell turtle (*Trionyx (Apalone) spiniferus (spinifera)*): Limit: No limit.

(4) Western banded gecko (*Coleonyx variegatus*), except San Diego banded gecko (*Coleonyx variegatus abbotti*): See Special Closure (f)(1)
(5) Desert iguana (*Dipsosaurus dorsalis*)
(6) Chuckwalla (*Sauromalus obesus (ater)*)
(7) Zebra-tailed lizard (*Callisaurus draconoides*)
(8) Desert spiny lizard (*Sceloporus magister*)
(9) Granite spiny lizard (*Sceloporus orcutti*)
(10) Western fence lizard (*Sceloporus occidentalis*): Limit: Species No. ~~9-13~~10-14 have a limit of twenty-five (25) in the aggregate
(11) Sagebrush lizard (*Sceloporus graciosus*): Limit: Species No. ~~9-13~~10-14 have a limit of twenty-five (25) in the aggregate
(12) Side-blotched lizard (*Uta stansburiana*): Limit: Species No. ~~9-13~~10-14 have a limit of twenty-five (25) in the aggregate
(13) Western skink (*Eumeces skiltonianus*): Limit: Species No. ~~9-13~~10-14 have a limit of twenty-five (25) in the aggregate
(14) Desert night lizard (*Xantusia vigilis*), except *Xantusia vigilis sierrae*: See Special Closure (f)(2): Limit: Species ~~No.~~ ~~9-13~~in subsections (10) through (14) have a limit of twenty-five (25) in the aggregate
(15) Long-tailed brush lizard (*Urosaurus graciosus*)
(16) Tree lizard (*Urosaurus ornatus*)
(17) Small-scaled lizard (*Urosaurus microscutatus*)
(18) Desert horned lizard (*Phrynosoma platyrhinos*)
(19) Short-horned lizard (*Phrynosoma douglassii*)
(20) Great basin collared lizard (*Crotaphytus bicintores*)
(21) Banded rock lizard (*Petrosaurus mearnsi*)
(22) Baja California collared lizard (*Crotaphytus vestigum*)
(23) Long-nosed leopard lizard (*Gambelia wislizenii*)
(24) Gilbert's skink (*Eumeces (Plestion) gilberti*)
(25) Western whiptail (*Cnemidophorus (Apidoscelis) tigris*)
(26) Southern alligator lizard (*Elgaria multicarinata*)
(27) Northern alligator lizard (*Elgaria coerulea*)
(28) Rubber boa (*Charina bottae*), **except** southern rubber boa (*Charina bottae umbratica*): See Special Closure (f)(3)
(29) Rosy boa (*Lichanura trivirgata*)
(30) Ringneck snake (*Diadophis punctatus*), except *Diadophis punctatus regalis*: See Special Closure (f)(4)
(31) Sharp-tailed snakes (*Contia* spp.)
(32) Spotted leaf-nosed snake (*Phyllorhynchus decurtatus*)
(33) Racer (*Coluber constrictor*)
(34) Coachwhip (*Masticophis (Coluber) flagellum*), **except** San Joaquin Coachwhip (*Masticophis flagellum ruddocki*): See Special Closure (f)(5)
(35) Striped whipsnake (*Masticophis (Coluber) taeniatus*)
(36) California whipsnake (striped racer) (*Masticophis (Coluber) lateralis*), *except* Alameda whipsnake (*Masticophis lateralis euryxanthus*): See Special Closure (f)(6)
(37) Western (Desert) patch-nosed snake (*Salvadora hexalepis*), except *Salvadora*

hexalepis virgultea: See Special Closure (f)(7)
(38) Glossy snake (*Arizona elegans*), except *Arizona elegans occidentalis*: See Special Closure (f)(8)
(39) Gopher snake (*Pituophis melanoleucus*): Limit: Four (4)
(40) Common kingsnake (*Lampropeltis getula*): Limit: Four (4)
(41) California mountain kingsnake (*Lampropeltis zonata*), **except** San Diego mountain kingsnake *(Lampropeltis zonata pulchra*) and San Bernardino mountain kingsnake (*Lampropeltis zonata parvirubra*): Limit: One (1). See Special Closure: (f)(9)
(42) Long-nosed snake (*Rhinocheilus lecontei*)
(43) Common garter snake (*Thamnophis sirtalis*), **except** San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) and South Coast garter snake (*Thamnophis sirtalis* sp.): See Special Closure (f)(10)
(44) Terrestrial garter snake (*Thamnophis elegans*)
(45) Western aquatic (Sierra) garter snake (*Thamnophis couchii*)
(46) Pacific coast aquatic garter snake (*Thamnophis atratus*)
(47) Northwestern garter snake (*Thamnophis ordinoides*)
(48) Checkered garter snake (*Thamnophis marcianus*)
(49) Variable ground snake (*Sonora semiannulata*)
(50) Western shovel-nosed snake (*Chionactis occipitalis*)
(51) California (Western) black-headed snake (*Tantilla planiceps*)
(52) Southwestern (Smith's) black-headed snake (*Tantilla hobartsmithi*)
(53) Lyre snakes (*Trimorphodon biscutatus*)
(54) Night snakes (*Hypsiglena* spp.)
(55) Western blind snake (Southwestern threadsnake) (*Leptotyphlops (Rena) humilis*)
(56) Western diamondback rattlesnake (*Crotalus atrox*)
(57) Mojave rattlesnake (*Crotalus scutulatus*)
(58) Western rattlesnakes (*Crotalus viridus (oreganus)* spp.)
(59) Speckled rattlesnake (*Crotalus mitchelli*)
(60) Sidewinders (*Crotalus cerastes* spp.)
(61) Panamint rattlesnake (*Crotalus stephensi*)
(62) Red diamond rattlesnake (*Crotalus ruber*): Limit: Zero (0)
(c) Open season: All year.
(d) Hours: Reptiles may be taken at any time of day or night.
(e) Methods of take:
(1) Reptiles may be taken only by hand, except as provided in subsections (e)(2) and (3) below, or by the following hand-operated devices:
(A) Lizard nooses.
(B) Snake tongs.
(C) Snake hooks.
(2) Rattlesnakes may be taken by any method.
(3) Turtles may be taken by hook and line. Fishing methods described in Section 2.00 apply to the take of spiny softshell turtles, slider turtles and painted turtles.
(4) It is unlawful to use any method or means of collecting that involves breaking apart of rocks, granite flakes, logs or other shelters in or under which reptiles may be found.
(f) Special Closures:

(1) No geckos (*Coleonyx variegatus*) may be taken in San Diego County south and west of Highway 79 to its junction with County Road S-2, and south and west of County Road S-2 to the eastern San Diego County border.
(2) No rubber boas (*Charina bottae* or *Charina umbratica*) may be taken in Kern, Los Angeles, Riverside and San Bernardino counties.
(3) No night lizards (*Xantusia vigilis*) may be taken in Kern County.
(4) No ringneck snakes (*Diadophis punctatus*) may be taken in San Bernardino or Inyo counties.
(5) No coachwhips (*Masticophis (Coluber) flagellum*) may be taken in the following counties: Alameda, Contra Costa, Fresno, Kern, Kings, Merced, Monterey, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Stanislaus, Tulare.
(6) No California whipsnakes (striped racer) (*Masticophis (Coluber) lateralis*) may be taken in Alameda and Contra Costa counties.
(7) No Western (desert) patch-nosed snakes (*Salvadora hexalepis*) may be taken in the following counties: Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara and Ventura.
(8) No glossy snakes (*Arizona elegans*) may be taken in the following counties: Alameda, Fresno, Imperial (west of Hwy 111), Kern, Los Angeles, Riverside (southwest of Hwy 111 and I-10), San Benito, San Bernardino (West of I-215 and Hwy 138), San Diego, San Joaquin, San Luis Obispo, Santa Barbara, Santa Clara and Tulare.
(9) No California mountain kingsnakes (*Lampropeltis zonata*) may be taken in Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties.
(10) No common garter snakes (*Thamnophis sirtalis*) may be taken in Los Angeles. Orange, Riverside, San Diego, and Ventura counties.

Note: Authority cited: Sections 200, 202, 205, 210, 219 and 220, Fish and Game Code. Reference: Sections 200, 201, 202, 203.1, 205 and 220, Fish and Game Code.

Section 5.80, Title 14, CCR, is amended as follows:

§ 5.80. White Sturgeon.
(a) Open season: All year, except for closures listed under special regulations.
(b) Daily and annual bag limit: One fish per day. Three fish per year statewide.
(c) Size limit: No fish less than 40 inches fork length or greater than 60 inches fork length may be taken or possessed.
(d) Methods of take: Only one single point, single shank, barbless hook may be used on a line when taking sturgeon. The sturgeon must voluntarily take the bait or lure ~~in~~inside its mouth. No sturgeon may be taken by trolling, snagging or by the use of firearms. Sturgeon may not be gaffed, nor shall any person use any type of firearm or snare to take any sturgeon.
For the purposes of this section, a snare is a flexible loop made from any material that can be tightened like a noose around any part of the fish.
(e) Removal from water. Any sturgeon greater than 68 inches fork length may not be removed from the water and shall be released immediately.
(f) Report card required: Any person fishing for or taking sturgeon shall have in their

possession a nontransferable Sturgeon Fishing Report Card issued by the department and shall adhere to all reporting and tagging requirements for sturgeon defined in Sections 1.74 and 5.79, Title 14, CCR.
(g) Special North Coast District Sturgeon Closure (Humboldt, Del Norte, Trinity and Siskiyou cos.). It is unlawful to take any sturgeon in the North Coast District at any time.
(h) For regulations on take and possession of sturgeon in ocean waters as defined in Section 27.00, see Sections 27.90, 27.91, and 27.95.
(i) Special Sierra and Valley District Sturgeon Closure from January 1 to December 31 (Shasta, Tehama, Butte and Glenn cos.).
(1) Sacramento River from Keswick Dam to the Highway 162 Bridge.
(A) It is unlawful to take any sturgeon.
(B) It is unlawful to use wire leaders.
(C) It is unlawful to use lamprey or any type of shrimp as bait.
(j) Special Yolo Bypass Flood Control System Sturgeon Closure. It is unlawful to take any sturgeon in the Yolo Bypass, Toe Drain Canal, and Tule Canal upstream of Lisbon Weir at any time.

Note: Authority cited: Sections 200, 202, 205 and 220, Fish and Game Code. Reference: Sections 200, 205 and 206, Fish and Game Code.

Section 5.81, Title 14, CCR, is amended as follows:

§ 5.81. Green Sturgeon.
(a) Green sturgeon may not be taken or possessed.
(b) Green sturgeon may not be removed from the water and shall be released immediately.
(c) Green sturgeon taken and released incidentally to white sturgeon fishing shall be reported on a Sturgeon Fishing Report Card issued by the department, in accordance with procedures defined in Sections 1.74 and 5.79, Title 14, CCR.
~~(d) Special Sierra and Valley District Sturgeon Closure from January 1 to December 31 (Shasta, Tehama and Glenn cos.).~~
~~(1) Sacramento River from Keswick Dam to the Highway 162 Bridge.~~
~~(A) It is unlawful to take any sturgeon.~~
~~(B) It is unlawful to use wire leaders.~~
~~(C) It is unlawful to use lamprey or any type of shrimp as bait.~~

Note: Authority cited: Sections 200, 202, 205 and 220, Fish and Game Code. Reference: Sections 200, 205 and 206, Fish and Game Code.

Section 7.00, Title 14, CCR, is amended as follows:

§ 7.00. District General Regulations.
Unless otherwise provided, waters shown as open to trout ~~and salmon~~ fishing in subsections (a) through (g) below, are open to fishing for other species. Gear restrictions listed in this section apply to the take of all species of fish unless otherwise

noted. Every body of water listed in subsections (a) through (g) of Section 7.00 (below) is closed to all fishing, except during the open season as shown. Unless otherwise provided, waters closed to trout ~~and salmon~~ fishing are closed to fishing for all other species, except that these closures do not apply to fishing for amphibians (see Section 5.05), freshwater clams (see Section 5.20), crayfish (see Section 5.35), and lamprey (see Section 5.40), using legal fishing methods other than hook-and-line fishing, and saltwater clams, crabs, ghost shrimp, and blue mud shrimp (see Ocean Regulations Booklet Sections 29.20 to 29.87). Crabs may only be taken using hoop nets or by hand, and Dungeness crab may only be taken within the North Coast District and Sonoma and Mendocino counties.

Daily bag and possession limits, unless otherwise provided, mean the total number of trout ~~and~~or landlocked salmon in combination. Unless otherwise provided, no more than one daily bag limit may be possessed. Coho (silver) salmon may not be taken in any of the waters of the State, except in Lake Oroville and Oroville-Thermalito Complex (Diversion Pool, Forebay, and Afterbay) and the Feather River from the Diversion Pool Dam to the Fish Barrier Dam. Incidentally hooked Coho (silver) salmon, except those in Lake Oroville and Oroville-Thermalito Complex (Diversion Pool, Forebay, and Afterbay) and the Feather River from the Diversion Pool Dam to the Fish Barrier Dam, must be immediately released unharmed to the waters where they are hooked. In waters where the bag limit for trout ~~or salmon~~ is zero, fish for which the bag limit is zero must be released unharmed, and should not be removed from the water.

These waters may also be subject to restrictions on fishing methods and gear (sections 2.00 through 2.45), fishing hours (section 3.00), and the use of bait (sections 4.00 through 4.30).

[Subsections (a) through (g) remain unchanged]

*Hatchery trout or steelhead have a healed adipose fin clip (adipose fin is absent). Unless otherwise provided, all other trout and steelhead must be immediately released. Wild trout or steelhead are those not showing a healed adipose fin clip (adipose fin present).

Note: Authority cited: Sections 200, 202, 205, 220 and 240, Fish and Game Code. Reference: Sections 200, 205 and 206, Fish and Game Code.

§7.50. Alphabetical List of Waters with Special Fishing Regulations.

Subsection (b)(156.5) of Section 7.50, Title 14, CCR, is amended as follows:

Body of Water	***Open Season and Special Regulations***	***Daily Bag and Possession Limit***

(156.5) **Sacramento River** and tributaries below Keswick Dam (Butte, Colusa, Contra Costa, Glenn, Sacramento, Solano, Sutter, Tehama and Yolo Cos.).	Also see Sierra District General Regulations (See Section 7.00(b)).	
(A) Sacramento River from Keswick Dam to 650 feet below Keswick Dam.	Closed to all fishing all year.	
(B) Sacramento River: 1. from 650 feet below Keswick Dam to the Highway 44 bridge.	Closed to all fishing from April 24 through July 31.	
	August 1 through December 31. Only barbless hooks may be used.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
2. from the Highway 44 bridge to the Deschutes Road bridge.	All year. Only barbless hooks may be used.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
(C) Sacramento River from the Deschutes Road bridge to ~~500 feet upstream from~~ the Red Bluff Diversion Dam.	Jan. 1 through July 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
	Aug. 1 through Dec. 16.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession 2 Chinook salmon 4 Chinook salmon in possession

	Dec. 17 through Dec. 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
~~(D) Sacramento River from 500 feet upstream from Red Bluff Diversion Dam to 150 feet below the Lower Red Bluff (Sycamore) Boat Ramp.~~	~~Closed to all fishing all year.~~	
(~~E~~D) Sacramento River from ~~150 feet below the Lower Red Bluff (Sycamore) Boat Ramp~~ the Red Bluff Diversion Dam to the Hwy 113 bridge near Knights Landing. Note: It is unlawful to take fish 0-250 feet downstream from the overflow side of the Moulton, Colusa and Tisdale Weirs.	Jan. 1 through July 15.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
	July 16 through Dec. 16.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession 2 Chinook salmon 4 Chinook salmon in possession
	Dec. 17 through Dec. 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession

(~~F~~E) Sacramento River from the Hwy 113 bridge near Knights Landing to the Carquinez Bridge (includes Suisun Bay, Grizzly Bay and all tributary sloughs west of Highway 160). Note: It is unlawful to take fish 0-250 feet downstream from the overflow side of the Fremont and Sacramento Weirs.	Jan. 1 through July 15.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
	July 16 through Dec. 16.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession 2 Chinook salmon 4 Chinook salmon in possession
	Dec. 17 through Dec. 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession

Subsection (b)(180.6) is added to Section 7.50, Title 14, CCR, as follows:

Body of Water	***Open Season and Special Regulations***	***Daily Bag and Possession Limit***
(180.6) Solano Lake (Solano County).	All year. Only artificial lures and barbless hooks may be used.	0

* Wild Chinook salmon are those not showing a healed adipose fin clip and not showing a healed left ventral fin clip.

**Hatchery trout or steelhead are those showing a healed adipose fin clip (adipose fin is absent). Unless otherwise provided, all other trout and steelhead must be immediately released. Wild trout or steelhead are those not showing a healed adipose fin clip (adipose fin is present).

Note: Authority cited: Sections 200, 202, 205, 215, 220, 240, 315 and 316.5, Fish and Game Code. Reference: Sections 200, 202, 205, 206, 215 and 316.5, Fish and Game Code.

Section 27.00, Title 14, CCR, is amended as follows:

§ 27.00. Definition.
The Ocean and San Francisco Bay District consists of the open seas adjacent to the coast and islands or in the waters of those open or enclosed bays contiguous to the ocean, and including San Francisco and San Pablo bays ~~plus all their tidal bays, tidal portions of their rivers and streams, sloughs and estuaries~~ between Golden Gate Bridge and the west Carquinez Bridge~~, and the waters of Elkhorn Slough, west of Elkhorn Road between Castroville and Watsonville~~. Also see Section 1.53.
~~FIN FISH -MINIMUM SIZE LIMITS, BAG AND POSSESSION LIMITS AND SEASONS~~
Note: Authority cited: Sections 200, 202, 205, 215 and 220, Fish and Game Code. Reference: Sections 200, 202, 205, 206, 215 and 220, Fish and Game Code.

Section 230, Title 14, CCR, is amended as follows:

§ 230. Issuance of Permits for Contests Offering Prizes for the Taking of Game Fish.

[No changes to subsection (a)]

(b) Issuance of Permits.
(1) Revocable permits to conduct fishing contests (including tournaments, derbies or tagged fish contests) may be issued by the department to any person (as defined by section 67, Fish and Game Code) authorizing the permittee to offer prizes or other inducements for the taking of game fish. The department shall issue such permits if it determines the proposed contest(s) would not be detrimental to the resource. For the purposes of this section, game fish are defined as the following: white sturgeon and green sturgeon; American shad; salmon and trout -all species; goldfish; common carp; hardhead; Sacramento squawfish; western sucker; catfish and bullheads -all species; striped bass; white bass; black bass and sunfish -all species; tilapia -all species; sargo; bairdiella; and orangemouth corvina. Procedures for issuing event permits for black bass fishing contests are specified in subsections (A) through (D), below:
(A) A random drawing will be conducted by department personnel to issue Type A permits for black bass fishing contests during July of the year preceding the contest date. ~~Drawings will be conducted the second Friday of July for bodies of water north of the Tehachapi Mountains and the third Friday of July for waters south of the Tehachapi Mountains.~~ Dates will be determined by departmental staff. Applications will not be accepted prior to July 1 of the year preceding the calendar year in which a contest is proposed.
(B) Applicants may submit a completed application(s) (including appropriate fees) to the appropriate department office (see Section 230(b)(2)) or attend the random drawings in person. Applications received prior to the random drawings must be prioritized by the applicant and if not, will be drawn in chronological order based on the contest date. Prior to the drawing, a random number will be assigned to each applicant in attendance and to each group of applications submitted by an individual not in attendance. A series

of random drawings of the assigned numbers will be conducted by department personnel and one application accepted for each number drawn. Only one application shall be accepted from each applicant during each consecutive round of the drawing process. Rounds of drawings will be conducted until all applications have been accepted, or there are no more available dates for a given body of water, whichever occurs first.
(C) Immediately following the drawing(s), the fees for all successful applications not already submitted must be paid to the department.
(D) Permits for applications received after the drawings will be issued in chronological order of receipt, subject to availability.
(2) Application shall be made on a standard form provided by the department (APPLICATION FOR PERMIT TO OFFER PRIZES FOR TAKING GAME FISH, FG 775 (Rev. 11/98)), which is incorporated by reference herein), and shall include the name of the sponsor, if any, and the name and address of the applicant, the telephone number where the applicant can be reached, and for each contest: the location and date of the event, total value of the prizes, and expected number of participants. The application must be signed by the applicant. Applications for Type B contests should be submitted to the regional office (see map and addresses of Regional offices attached to application form FG 775 (Rev. 11/98)) nearest to the applicant. Applications for Type A permits must be submitted to the department regional office for the region where the contest(s) is proposed.
(3) The application shall be submitted to the department at least 30 days prior to the proposed contest(s).
(4) Applications will not be accepted prior to July 1 of the year preceding the calendar year in which any contest is proposed.
(5) The department will consider requests for adjustments to approved Type A contest dates, if such requests are received by the issuing regional office not later than 30 days prior to the contest date to be changed.
(6) Permits are not transferable.
(7) Event and Annual Permits.
(A) An Event Permit will be issued for each Type A contest (see subsection 230(a)(1)).
(B) An Annual Permit will be issued on a calendar year basis to cover all Type B Contests (see subsection 230(a)(2)) proposed for that year.
(8) Cost of permit: See subsection 699(b) of these regulations for the fee for this permit.

[No changes to subsections (c) through (h)]

Note: Authority: Sections 1050 and 2003, Fish and Game Code.
Reference: Sections 711, 713, 1050 and 2003, Fish and Game Code.

From:	Barrow, Scott@Wildlife
To:	Sonke Mastrup
Cc:	Lehr, Stafford@Wildlife; Mitchell, Karen@Wildlife; Woodson, Caren@FGC; Snellstrom, Jon@FGC; Miller-Henson, Melissa@FGC; Tiemann, Sheri@FGC; Fonbuena, Sherrie@FGC; Alminas, Ona@Wildlife; Martz, Craig@Wildlife; Duncan, Margaret@Wildlife; Randall, Mike@Wildlife
Subject:	December Sportfish PreAdopt Assessement
Date:	Monday, November 23, 2015 11:02:51 AM

Hi Sonke:

There are no significant comments or any additional changes for the December adoption of the proposed amendments to Sections 1.05, 1.53, 1.57, 1.86, 2.00, 5.41, 5.60, 5.80, 5.81, 7.00, 7.50, 8.00, 27.00, and 230, Title 14, California Code of Regulations, Re: Freshwater Sport Fishing Regulations.

This e-mail is instead of a Preadopt statement or memo pursuant to RU procedures.

Scott

Scott Barrow
CDFW Regulations Unit
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(916) 653-1902 office

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STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Subsections (b)(5), (b)(68), and (b)(156.5) of Section 7.50,
Title 14, California Code of Regulations
Re: Alphabetical List of Waters with Special Fishing Regulations:
Central Valley Salmon Sport Fishing

I. Date of Initial Statement of Reasons: November 3, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing:	Date:	December 10, 2015
	Location:	San Diego
(b) Discussion Hearing:	Date:	February 11, 2016
	Location:	Sacramento
(c) Adoption Hearing:	Date:	April 18, 2016
	Location:	Teleconference

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

The current, 2015, sport fishing regulations, California Code of Regulations, Title 14, Section 7.50, allow for salmon fishing in the American, Feather and Sacramento rivers. Each year the Department of Fish and Wildlife (Department) recommends new Chinook salmon bag and possession limits for consideration by the Fish and Game Commission (Commission). The regulation change is necessary to align the 2016 fishing limits with up to date management goals as set forth below.

The Pacific Fishery Management Council (PFMC) is responsible for adopting recommendations for the management of recreational and commercial ocean salmon fisheries in the Exclusive Economic Zone (three to 200 miles offshore) off the coasts of Washington, Oregon, and California. When approved by the Secretary of Commerce, these recommendations are implemented as ocean salmon fishing regulations by the National Marine Fisheries Service (NMFS).

The PFMC will develop the annual Pacific coast ocean salmon fisheries regulatory options for public review at its March 2016 meeting and develop the final PFMC regulatory recommendations for adoption by NMFS at its April 2016 meeting. Based on the regulations adopted by NMFS, the Department will

recommend specific bag and possession limits to the Commission during a scheduled teleconference call on April 18, 2016.

The new regulations for the American, Feather, and Sacramento rivers may:

(1) allow for additional harvest of salmon if low instream flow conditions persist due to the existing drought to reduce impacts to spawning habitat; and

(2) increase or decrease the current salmon bag and possession limits based on the PFMC salmon abundance estimates and recommendations for ocean harvest for the coming season.

Proposed Regulations

Because the PFMC/NMFS recommendations are not known at this time, a range (shown in brackets in the text below) of bag and possession limits is indicated where it is desirable to continue salmon fishing in the American, Feather and Sacramento rivers. The open seasons and proposed range of bag and possession limits for Central Valley fall-run Chinook salmon stocks are as follows:

<u>American River, subsection 7.50(b)(5)</u>

(A) From Nimbus Dam to the Hazel Avenue bridge.

July 16 through December 31 with a bag limit of [0-4] Chinook salmon and a possession limit of [0-8] Chinook salmon.

(B) From Hazel Avenue bridge to the USGS gauging station cable crossing near Nimbus Hatchery.

July 16 through August 15 with a bag limit of [0-4] Chinook salmon and a possession limit of [0-8] Chinook salmon.

(C) From the USGS gauging station cable crossing near Nimbus Hatchery to the SMUD power line crossing the southwest boundary of Ancil Hoffman Park.

July 16 through December 31 with a bag limit of [0-4] Chinook salmon and a possession limit of [0-8] Chinook salmon.

(D) From the SMUD power line crossing at the southwest boundary of Ancil Hoffman Park to the Jibboom Street bridge.

July 16 through October 31 with a bag limit of [0-4] Chinook salmon and a possession limit of [0-8] Chinook salmon.

(E) From the Jibboom Street bridge to the mouth.

July 16 through December 16 with a bag limit of [0-4] Chinook salmon and a possession limit of [0-8] Chinook salmon.

Feather River, subsection 7.50(b)(68)

(D) From the unimproved boat ramp above the Thermalito Afterbay Outfall to the Live Oak boat ramp.

July 16 through October 15 with a bag limit of [0-4] Chinook salmon and a possession limit of [0-8] Chinook salmon.

(E) From the Live Oak boat ramp to the mouth.

July 16 through December 16 with a bag limit of [0-4] Chinook salmon and a possession limit of [0-8] Chinook salmon.

Sacramento River below Keswick Dam, subsection 7.50(b)(156.5)

(C) From Deschutes Road bridge to the Red Bluff Diversion Dam.

August 1 through December 16 with a bag limit of [0-4] Chinook salmon and a possession limit of [0-8] Chinook salmon.

(E) From the Red Bluff Diversion Dam to the Highway 113 bridge.

July 16 through December 16 with a bag limit of [0-4] Chinook salmon and a possession limit of [0-8] Chinook salmon.

(F) From the Highway 113 bridge to the Carquinez Bridge.

July 16 through December 16 with a bag limit of [0-4] Chinook salmon and a possession limit of [0-8] Chinook salmon.

As set forth in Fish and Game Code Section 1700, it is "the policy of the state to encourage the conservation, maintenance, and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the state for the benefit of all the citizens of the state and to promote the development of local fisheries and distant-water fisheries based in California in harmony with international law respecting fishing and the conservation of the living resources of the oceans and other waters under the jurisdiction and influence of the state. This policy shall include [as applicable to inland fisheries] all of the following objectives:

(a) The maintenance of sufficient populations of all species of aquatic organisms to insure their continued existence.

(c) The maintenance of a sufficient resource to support a reasonable sport use, where a species is the object of sport fishing, taking into consideration the necessity of regulating individual sport fishery bag limits to the quantity that is sufficient to provide a satisfying sport.

(e) The management, on a basis of adequate scientific information promptly promulgated for public scrutiny, of the fisheries under the state's jurisdiction,

and the participation in the management of other fisheries in which California fishermen are engaged, with the objective of maximizing the sustained harvest."

Adoption of scientifically-based Central Valley salmon bag and possession limits provides for the maintenance of sufficient populations of salmon to ensure their continued existence. The benefits of the proposed regulations are in concurrence with federal law, sustainable management of Central Valley salmon resources, and promotion of businesses that rely on Central Valley salmon sport fishing.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 205, 215, 220, 240, 315 and 316.5, Fish and Game Code.

Reference: Sections 200, 202, 205, 206, 215 and 316.5, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None.

(d) Identification of Reports or Documents Supporting Regulation Change: None.

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

No public meetings are being held prior to the notice publication. The 45-day comment period provides adequate time for review of the proposed amendments.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

Feather River Recommendations

The Department has received several recommendations from the public to allow fishing for fall-run Chinook salmon in the low-flow section of the lower Feather River (Fish Barrier Dam to the Afterbay Outfall), a section which is currently closed to all fishing all year. The Department has also received requests for the salmon season on the lower Feather River to begin on May 2 instead of July 16.

Department Response

Fishing was closed just above the Afterbay Outfall in 2009 during the Central Valley salmon stock collapse. Since then data have suggested that the low flow section (Fish Barrier Dam to the Afterbay Outfall) of the river is the primary holding habitat for listed spring-run Chinook salmon and for the spring-run broodstock at the Feather River Hatchery. Maintaining the closure in that section provides protection for these fish and is consistent with existing regulations on other river systems. The existing regulations provide for fishing opportunities from the Afterbay Outfall downstream starting in July. Data suggest early arriving

fall-run Chinook salmon tend to congregate in the Afterbay Outfall as there is a large input of water and it is a deep holding pool. Across most years the current open section of river and length of the season provide ample angling opportunities without taxing Feather River stocks. Although in some years the Department sees more fish returning to the hatchery than are required to meet production goals, highly variable smolt to adult survival and ocean harvest make this difficult to predict and adjust for in the fishing regulations. For these reasons, and to protect listed spring-run Chinook salmon, the Department rejects the recommendation to allow fishing for fall-run Chinook salmon in the low flow section of the lower Feather River, or to allow the salmon season to begin on May 2.

No Change Alternative:

The no change alternative would leave existing regulations in place.

(b) Consideration of Alternatives:

The Commission has rejected the no-change alternative because it is state policy to maintain consistency with federal and international law related to fisheries management, and the proposed regulations will allow the state to harmonize its bag and possession limits with NMFS' regulations.

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed changes are necessary

for the continued preservation of the resource and therefore the prevention of adverse economic impacts.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate any impacts on the creation or elimination of jobs, the creation of new business, the elimination of existing businesses or the expansion of businesses in California. The minor variations in the bag and possession limits as may be established in the regulations are, by themselves, unlikely to impact business.

The Commission anticipates benefits to the health and welfare of California residents. Providing opportunities for a salmon sport fishery encourages consumption of a nutritious food. The Commission anticipates benefits to the environment by the sustainable management of California's salmon resources.

The Commission does not anticipate any non-monetary benefits to worker safety.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

(e) Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School Districts: None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code: None.

(h) Effect on Housing Costs: None.

II. Economic Impact Assessment

(a) Creation or Elimination of Jobs, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California

The Commission does not anticipate any substantial impacts on the creation or elimination of jobs, the creation of new business, the elimination of existing

businesses, or the expansion of businesses in California, that provide services to inland sport fishermen from the proposed regulations. The proposed changes in subsections 7.50(b)(5), (b)(68), and (b)(156.5) affect the bag and possession limits for Chinook salmon in the American, Feather, and Sacramento rivers. These minor variations in the bag and possession limits as may be established in the regulations are, by themselves, unlikely to stimulate the creation of new businesses or cause the elimination of existing businesses. The number of fishing trips and the economic contributions from them are expected to remain more or less the same.

(b) Benefits of the Regulation

As set forth in Section 1700, Fish and Game Code, it is "the policy of the state to encourage the conservation, maintenance, and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the state for the benefit of all the citizens of the state and to promote the development of local fisheries and distant-water fisheries based in California in harmony with international law respecting fishing and the conservation of the living resources of the oceans and other waters under the jurisdiction and influence of the state."

In accordance with this policy, adoption of scientifically-based inland salmon seasons and bag and possession limits provides for the maintenance of sufficient populations of trout and salmon to ensure their continued existence.

(c) Health and Welfare of California Residents

The Commission anticipates benefits to the health and welfare of California residents. Salmon is a nutritious food source and providing inland sport fishery opportunities encourages consumption of this nutritious food. Sport fishing also contributes to increased mental health of its practitioners as fishing is a hobby and form of relaxation for many. Sport fishing also provides opportunities for multi-generational family activities and promotes respect for California's environment by younger generations, the future stewards of California's natural resources.

(d) Benefits to Worker Safety

The Commission does not anticipate any benefits to worker safety from the proposed regulations because inland sport fishing does not impact working conditions.

Informative Digest

Policy Statement Overview

The current, 2015, sport fishing regulations allow for salmon fishing in the American, Feather and Sacramento rivers. The Department of Fish and Wildlife (Department) is recommending new Chinook salmon bag and possession limits in the American, Feather, and Sacramento rivers for the 2016 season.

The Pacific Fishery Management Council (PFMC) is responsible for adopting recommendations for the management of recreational and commercial ocean salmon fisheries in the Exclusive Economic Zone (three to 200 miles offshore) off the coasts of Washington, Oregon, and California. When approved by the Secretary of Commerce, these recommendations are implemented as ocean salmon fishing regulations by the National Marine Fisheries Service (NMFS).

The PFMC will develop the annual Pacific coast ocean salmon fisheries regulatory options for public review at its March 2016 meeting and develop the final PFMC regulatory recommendations for adoption by NMFS at its April 2016 meeting.

Based on the action taken by NMFS and the recommendation of the Department, the Commission will adopt bag and possession limits for the American, Feather, and Sacramento rivers which will:

(1) allow for additional harvest of salmon if low instream flow conditions persist due to the existing drought to reduce impacts to spawning habitat; and

(2) increase or decrease the current salmon bag and possession limits based on the PFMC salmon abundance estimates and recommendations for ocean harvest for the coming season.

Benefits of the regulations

As set forth in Fish and Game Code Section 1700 it is “the policy of the state to encourage the conservation, maintenance, and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the state for the benefit of all the citizens of the state and to promote the development of local fisheries and distant-water fisheries based in California in harmony with international law respecting fishing and the conservation of the living resources of the oceans and other waters under the jurisdiction and influence of the state.

Adoption of scientifically-based Central Valley salmon bag and possession limits provides for the maintenance of sufficient populations of salmon to ensure their continued existence. The benefits of the proposed regulations are in concurrence with Federal law, sustainable management of the Central Valley salmon resources, and promotion of businesses that rely on Central Valley salmon sport fishing.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State and Federal Regulations

Section 20, Article IV, of the State Constitution specifies that the Legislature may delegate to the Fish and Game Commission such powers relating to the protection and propagation of fish and game as the Legislature sees fit. The Legislature has delegated to the Commission the power to regulate recreational fishing in waters of the state (Fish & Game Code, §§ 200, 202, 205). The Commission has reviewed its own regulations and finds that the proposed regulations are neither inconsistent nor incompatible with existing state regulations. The Commission has searched the California Code of Regulations and finds no other state agency regulations pertaining to recreational fishing seasons, bag and possession limits. Further, the Commission has determined that the proposed regulations are neither incompatible nor inconsistent with existing federal regulations.

Regulatory Language

Section 7.50, Title 14, CCR is amended to read as follows:

§ 7.50. Alphabetical List of Waters with Special Fishing Regulations.

. . . [No changes to subsections (a) through (b)(4)]

Body of Water	*Open Season and Special Regulations*	*Daily Bag and Possession Limit*
(5) American River (Sacramento Co.)		
(A) From Nimbus Dam to the Hazel Avenue bridge piers.	Jan. 1 through July 15.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
	July 16 through Dec. 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession ~~2~~[0-4] Chinook Salmon ~~4~~[0-8] Chinook salmon in possession

(B) From Hazel Avenue bridge piers to the U.S. Geological Survey gauging station cable crossing about 300 yards downstream from the Nimbus Hatchery fish rack site.	Jan. 1 through July 15. Only barbless hooks may be used.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
	July 16 through Aug. 15. Only barbless hooks may be used.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession ~~2~~[0-4] Chinook salmon ~~4~~[0-8] Chinook salmon in possession
(C) From the U.S. Geological Survey gauging station cable crossing about 300 yards down-stream from the Nimbus Hatchery fish rack site to the SMUD power line crossing at the southwest boundary of Ancil Hoffman Park.	Jan. 1 through July 15. Only barbless hooks may be used.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession

	July 16 through Oct. 31. Only barbless hooks may be used.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession ~~2~~[0-4] Chinook salmon ~~4~~[0-8] Chinook salmon in possession
(D) From the SMUD power line crossing at the southwest boundary of Ancil Hoffman Park downstream to the Jibboom Street bridge.	Jan. 1 through July 15.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
	July 16 through Dec. 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession ~~2~~[0-4] Chinook salmon 4[0-8] Chinook salmon in possession

(C) From the Jibboom Street bridge to the mouth.	Jan. 1 through July 15.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
	July 16 through Dec. 16.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession ~~2~~[0-4] Chinook salmon ~~4~~[0-8] Chinook salmon in possession
	Dec. 17 through Dec. 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession

. . . [No changes to subsections (b)(6) through (b)(67)]

Body of Water	*Open Season and Special Regulations*	*Daily Bag and Possession Limit*
(68) Feather River below Fish Barrier Dam (Butte, Sutter and Yuba cos.).		
(A) From Fish Barrier Dam to Table Mountain bicycle bridge in Oroville.	Closed to all fishing all year	
(B) From Table Mountain bicycle bridge to Highway 70 bridge.	Jan. 1 through July 15. Only barbless hooks may be used.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
(C) From Highway 70 bridge to the unimproved boat ramp above the Thermalito Afterbay Outfall.	All year.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession

(D) From the unimproved boat ramp above the Thermalito Afterbay Outfall to 200 yards above the Live Oak boat ramp.	Jan. 1 through July 15.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
	July 16 through Oct. 15.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession ~~2~~[0-4] Chinook salmon ~~4~~[0-8] Chinook salmon in possession
	Oct. 16 through Dec. 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
(E) From 200 yards above Live Oak boat ramp to the mouth. For purposes of this regulation, the lower boundary is defined as a straight line drawn from the peninsula point on the west bank to the Verona Marine boat ramp.	Jan. 1 through July 15.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession

	July 16 through Dec. 16.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession ~~2~~[0-4] Chinook salmon ~~4~~[0-8] Chinook salmon in possession
	Dec. 17 to Dec. 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession

. . . [No changes to subsections (b)(68.1) through (b)(156)]

Body of Water	*Open Season and Special Regulations*	*Daily Bag and Possession Limit*
(156.5) Sacramento River and tributaries below Keswick Dam (Butte, Colusa, Contra Costa, Glenn, Sacramento, Solano, Sutter, Tehama and Yolo cos.).	Also see Sierra District General Regulations (See Section 7.00(b)).	
(A) Sacramento River from Keswick Dam to 650 feet below Keswick Dam.	Closed to all fishing all year.	
(B) Sacramento River: 1. from 650 feet below Keswick Dam to the Highway 44 bridge.	Closed to all fishing from April 24 through July 31.	

	August 1 through December 31. Only barbless hooks may be used.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
2. from the Highway 44 bridge to the Deschutes Road bridge.	All year. Only barbless hooks may be used.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
(C) Sacramento River from the Deschutes Road bridge to 500 feet upstream from Red Bluff Diversion Dam.	Jan. 1 through July 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
	Aug. 1 through Dec. 16.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession ~~2~~[0-4] Chinook salmon ~~4~~[0-8] Chinook salmon in possession
	Dec. 17 through Dec. 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
(D) Sacramento River from 500 feet upstream from Red Bluff Diversion Dam to 150 feet below the Lower Red Bluff (Sycamore) Boat Ramp.	Closed to all fishing all year.	

(E) Sacramento River from 150 feet below the Lower Red Bluff (Sycamore) Boat Ramp to the Hwy 113 bridge near Knights Landing. Note: It is unlawful to take fish 0-250 feet downstream from the overflow side of the Moulton, Colusa and Tisdale Weirs.	Jan. 1 through July 15.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
	July 16 through Dec. 16.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession ~~2~~[0-4] Chinook salmon ~~4~~[0-8] Chinook salmon in possession
	Dec. 17 through Dec. 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
(F) Sacramento River from the Hwy 113 bridge near Knights Landing to the Carquinez Bridge (includes Suisun Bay, Grizzly Bay and all tributary sloughs west of Highway 160). Note: It is unlawful to take fish 0-250 feet downstream from the overflow side of the Fremont and Sacramento Weirs.	Jan. 1 through July 15.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession

	July 16 through Dec. 16.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession ~~2~~[0-4] Chinook salmon ~~4~~[0-8] Chinook salmon in possession
	Dec. 17 through Dec. 31.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession

. . . [No changes subsections 7.50(b)(157) through (b)(212)]

* Wild Chinook salmon are those not showing a healed adipose fin clip and not showing a healed left ventral fin clip.
**Hatchery trout or steelhead in anadromous waters are those showing a healed adipose fin clip (adipose fin is absent). Unless otherwise provided, all other trout and steelhead must be immediately released. Wild trout or steelhead are those not showing a healed adipose fin clip (adipose fin is present).

Note: Authority cited: Sections 200, 202, 205, 215, 220, 240, 315 and 316.5, Fish and Game Code. Reference: Sections 200, 202, 205, 215 and 316.5, Fish and Game Code.

2016 Central Valley Salmon Sport Fishing Regulatory Options

Fish and Game Commission Meeting
December 10, 2015
Stafford Lehr
Fisheries Branch

Overview

- Current fall-run Chinook salmon bag and possession limits
  - Lower American, Feather, and Sacramento rivers
- Proposed range of fall-run Chinook salmon bag and possession limits
  - Lower American, Feather, and Sacramento rivers
  - Justification for potential changes

2015 Central Valley Salmon Bag and Possession Limits

- Lower American River
  - –2/4 fish daily bag and possession limit
- Feather River
  - – 2/4 fish daily bag and possession limit
- Sacramento River
  - – 2/4 fish daily bag and possession limit

2016 Proposed Central Valley Salmon Bag and Possession Limits

- Lower American River
  - Daily bag limit: 0-4 fish; Possession limit: 0-8 fish
- Feather River
  - Daily bag limit: 0-4 fish; Possession limit: 0-8 fish
- Sacramento River
  - Daily bag limit: 0-4 fish; Possession limit: 0-8 fish

Justification

- Allow additional harvest of salmon to reduce impacts on spawning habitat if needed
- Increase or decrease allowable harvest of salmon based on PFMC abundance estimates

State of California
Department of Fish and Wildlife

Memorandum

Date: November 18, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for the December 9-10, 2015 Fish and Game Commission Meeting Re: Request for Notice Authorization to Amend Subsection (b)(91.1) of Section 7.50, Title 14, CCR, Klamath River Basin Sport Fishing Regulations**

Please find attached the ISOR package for the 2016 Klamath basin sport fishing regulations. As in the past, specific bag and possession limits for Klamath basin adult fall-run Chinook salmon will be adopted after federal (Pacific Fishery Management Council) review of west coast salmon stocks and fishery allocations have been proposed.

If you have any questions or need additional information, please contact Stafford Lehr, Chief, Fisheries Branch, by telephone at (916) 327-8840 or by e-mail at Stafford.Lehr@wildlife.ca.gov. The public notice should identify Senior Environmental Scientist, Wade Sinnen as the Department's point of contact for this rulemaking. Mr. Sinnen can be reached by telephone at (707) 822-5119 or by e-mail at Wade.Sinnen@wildlife.ca.gov.

Attachment

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STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Subsection (b)(91.1) of Section 7.50
Title 14, California Code of Regulations
Re: Klamath River Sport Fishing Regulations

I. Date of Initial Statement of Reasons: September 9, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 10, 2015
Location: San Diego

(b) Discussion Hearing: Date: February 11, 2016
Location: Sacramento

(c) Adoption Hearing: Date: April 18, 2016
Location: Teleconference

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

The Klamath River System, which consists of the Klamath River and Trinity River basins, is managed through a cooperative system of State, federal, and tribal management agencies. Salmonid regulations are designed to meet natural and hatchery escapement needs for salmonid stocks, while providing equitable harvest opportunities for ocean recreational, ocean commercial, river recreational and tribal fisheries.

The Pacific Fishery Management Council (PFMC) is responsible for adopting recommendations for the management of recreational and commercial ocean salmon fisheries in the Exclusive Economic Zone (three to 200 miles offshore) off the coasts of Washington, Oregon, and California. When approved by the Secretary of Commerce, these recommendations are implemented as ocean salmon fishing regulations by the National Marine Fisheries Service (NMFS).

The California Fish and Game Commission (Commission) adopts regulations for the ocean salmon recreational (inside three miles) and the Klamath River System recreational fisheries which are consistent with federal fishery management goals.

Two tribal entities within the Klamath River System, the Hoopa Valley Tribe and the Yurok Tribe, maintain fishing rights for ceremonial,

subsistence and commercial fisheries that are managed consistent with federal fishery management goals. Tribal fishing regulations are promulgated by the Hoopa and Yurok tribes.

For the purpose of PFMC mixed-stock fishery modeling and salmon stock assessment, salmon greater than 22 inches are defined as adult salmon (ages 3-5) and salmon less than or equal to 22 inches are defined as grilse salmon (age 2).

Klamath River Fall-Run Chinook

Klamath River fall-run Chinook salmon (KRFC) harvest allocations and natural spawning escapement goals are established by the PFMC. The KRFC harvest allocation between tribal and non-tribal fisheries is based on court decisions and allocation agreements between the various fishery representatives.

The 2016 KRFC in-river recreational fishery allocation recommended by the PFMC is currently unknown. All proposed closures for adult KRFC are designed to ensure sufficient spawning escapement in the Klamath River Basin and equitably distribute harvest while operating within annual allocations.

Klamath River Spring-Run Chinook

The Klamath River System also supports Klamath River spring-run Chinook salmon (KRSC). Naturally produced KRSC are both temporally and spatially separated from KRFC in most cases.

Presently, KRSC stocks are not managed or allocated by the PFMC. The in-river recreational fishery is managed by general basin seasons, daily bag limit, and possession limit regulations. KRSC harvest will be monitored on the Lower Klamath River in 2016 and ensuing years by creel survey.

KRFC Allocation Management

The PFMC 2015 allocation for the Klamath River System recreational harvest was 14,133 adult KRFC. Preseason stock projections of 2016 adult KRFC abundance will not be available from the PFMC until March 2016. The 2016 basin allocation will be recommended by the PFMC in April 2016 and presented to the Commission for adoption prior to its April 2016 meeting.

For public notice requirements, the Department of Fish and Wildlife (Department) recommends the Commission consider an allocation range of 0 – 67,600 adult KRFC in the Klamath River Basin for the river recreational fishery. This recommended range encompasses the historical range of the Klamath River Basin allocations and allows the PFMC and Commission to make adjustments during the 2016 regulatory cycle.

The Commission may modify the KRFC in-river recreational salmon harvest allocation which is normally 15 percent of the non-tribal PFMC harvest allocation. Commission modifications need to meet biological and fishery allocation goals specified in law or established in the PFMC Salmon Fishery Management Plan otherwise harvest opportunities may be reduced in the California ocean fisheries.

The annual KRFC in-river harvest allocation is split into 4 geographic areas with subquotas assigned to each. They are as follows:

1. for the main stem Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec -- 17 percent of the recreational fishery allocation;
2. for the main stem Klamath River from downstream of the Highway 96 bridge at Weitchpec to the mouth -- 50 percent of the recreational fishery allocation;
3. for the Trinity River downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat -- 16.5 percent of the recreational fishery allocation; and
4. for the Trinity River downstream from the Denny Road bridge at Hawkins Bar to the confluence with the Klamath River -- 16.5 percent of the recreational fishery allocation.

The spit area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth) closes to all fishing after 15 percent of the total Klamath River Basin quota has been taken downstream of the Highway 101 bridge.

These geographic areas are based upon the historical distribution of angler effort and ensure equitable harvest of adult KRFC in the upper Klamath River and Trinity River. The subquota system requires the Department to monitor angler harvest of adult KRFC in each geographic area. All areas will be monitored on a real time basis except for the following:

<u>Klamath River upstream of Weitchpec and the Trinity River:</u> Due to funding and personnel reductions, the Department will be unable to deploy adequate personnel to conduct harvest monitoring in the Klamath River upstream of Weitchpec and in the Trinity River for the 2016 season. The Department has reviewed salmon harvest and run-timing data for these areas. Based on this review, the Department has developed a Harvest Predictor Model (HPM) which incorporates historic creel survey data from the Klamath River downstream of Iron Gate Dam to the confluence with the Pacific Ocean and the Trinity River downstream of Lewiston Dam to the confluence with the Klamath River. The HPM is driven by the positive relationship between KRFC harvested in the Lower and Upper Klamath River and the Trinity River. The HPM will be used by the Department to

implement fishing closures to ensure that anglers do not exceed established subquota targets.

Current Recreational Fishery Management

The KRFC in-river recreational harvest allocation is divided into geographic areas and harvest is monitored under real time subquota management. KRSC in-river recreational harvest is managed by general season, daily bag limit, and possession limit regulations.

The Department presently differentiates the two stocks by the following dates:

Klamath River

1. January 1 through August 14 - General Season KRSC.
   For purposes of clarity, daily bag and possession limits apply to that section of the Klamath River downstream of the Highway 96 bridge at Weitchpec to the mouth.

2. August 15 to December 31 - KRFC quota management.

Trinity River

1. January 1 through August 31 – General Season KRSC.
   For purposes of clarity, daily bag and possession limits apply to that section of the Trinity River downstream of the Old Lewiston Bridge to the confluence with the South Fork Trinity River.

2. September 1 through December 31 – KRFC quota management.

The daily bag and possession limits apply to both stocks within the same sub-area and time period.

Proposed Changes

No changes are proposed for the general (KRSC) opening and closing season dates, and bag, possession and size limits.

The Department is not proposing any changes to the spit area or modification of the Blue Creek closure area until additional scientific information is gathered.

The following changes to current regulations are proposed:

<u>KRFC QUOTA MANAGEMENT: Seasons, Bag and Possession Limits</u>

For public notice requirements, a range of KRFC bag and possession limits are proposed until the 2016 Klamath River Basin quota is adopted. As in previous years, no retention of adult KRFC salmon is proposed for the following areas, once the subquota has been met.

The proposed open seasons and range of bag and possession limits for KRFC salmon stocks are as follows:

1. Klamath River - August 15 to December 31
2. Trinity River - September 1 to December 31
3. Bag Limit - [0-4] Chinook salmon – of which no more than [0-4] fish over 22 inches total length may be retained until the subquota is met, then 0 fish over 22 inches total length.
4. Possession limit - [0-12] Chinook salmon of which [0–12] fish over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.

Other changes are proposed for clarity and consistency.

Benefits of the Proposed Regulations

It is the policy of this State to encourage the conservation, maintenance, and utilization of the living resources of the ocean and inland waters under the jurisdiction and influence of the State for the benefit of all the citizens of the State. In addition, it is the policy of this State to promote the development of local California fisheries in harmony with federal law respecting fishing and the conservation of the living resources of the ocean and inland waters under the jurisdiction and influence of the State. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use. Adoption of scientifically-based Klamath River Basin salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of salmon to ensure their continued existence.

The benefits of the proposed regulations are conformance with federal law, sustainable management of Klamath River Basin salmon resources, and promotion of businesses that rely on recreational salmon fishing in the Klamath River Basin.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 205, 215, 220, 240, 315 and 316.5, Fish and Game Code.

Reference: Sections 200, 202, 205, 215 and 316.5, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None.

(d) Identification of Reports or Documents Supporting Regulation Change:

In-River Sport Fishing Economics Technical Report, National Oceanographic and Atmospheric Administration, National Marine Fisheries Service, September 2011.

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

No public meetings are being held prior to the notice publication. The 45-day comment period provides adequate time for review of the proposed amendments.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

i. The use of more liberal regulations for bag limits, possession limits and fishing methods. For KRFC salmon, more liberal regulations would be less desirable than those proposed because they could create risk of an intense fishery reaching or exceeding the quota in a very short time. Reaching the quota in a very short time could be damaging to the local economy. Exceeding the allowable harvest could be damaging to the KRFC salmon stocks.

ii. Reopen the main stem Klamath River near the confluence of Blue Creek to fishing. On April 17, 2015, the Commission adopted regulations to close the main stem Klamath River near the confluence of Blue Creek between June 15 and December 31 to reduce catch and release mortality in a thermal refuge area and protect late-fall-run Chinook salmon holding prior to entering Blue Creek. Several public requests to reopen this area to fishing have been received; however, at its June 11, 2015 meeting, the Commission directed the Department to work with the Yurok Tribe on a study to evaluate catch and release angling in the vicinity of Blue Creek. The Department will report back to the Commission once the study is completed.

(b) No Change Alternative:

The No Change Alternative would leave the current 2015 regulations in place and would not conform to the PFMC Klamath River Basin quota for 2016. The change is necessary to continue appropriate harvest rates and an equitable distribution of the harvestable surplus.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed regulations are projected to have minor impact on the net revenues to local businesses servicing sport fishermen. If the 2016 KRFC quota is reduced, visitor spending may correspondingly be reduced and in the absence of the emergence of alternative visitor activities, the drop in spending could induce business contraction. However, this will not likely affect the ability of California businesses to compete with businesses in other states. The preservation of Klamath River salmon stocks is necessary for the success of lower and upper Klamath River Basin businesses which provide goods and services related to fishing. The proposed changes are necessary for the continued preservation of the resource and therefore the prevention of adverse economic impacts.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The proposed regulations range from no fishing of KRFC salmon in 2015; to a normal Klamath River Basin salmon season. The Commission anticipates some impact on the creation or elimination of jobs in California. The potential employment impacts range from 0 to 23 jobs which are not expected to create, eliminate or expand businesses in California. The Commission anticipates impacts on the creation, elimination or expansion of businesses in California ranging from no impact to reduced revenues to approximately 30 businesses that serve sport fishing activities. However, the possibility of growth of businesses to serve substitute activities exists. Adverse impacts to jobs and/or businesses would be less if fishing of grilse KRFC salmon is permitted than under a complete closure to all fishing. The impacted businesses are generally small businesses

employing few individuals and, like all small businesses, are subject to failure for a variety of causes. Additionally, the long-term intent of the proposed action is to increase sustainability in fishable salmon stocks and, consequently promoting the long-term viability of these same small businesses.

The Commission anticipates benefits to the health and welfare of California residents. Providing opportunities for a salmon sport fishery encourages a healthy outdoor activity and the consumption of a nutritious food.

The Commission anticipates benefits to the environment by the sustainable management of California's salmon resources.

The Commission does not anticipate any benefits to worker safety because the proposed action does not affect working conditions.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VII. Economic Impact Assessment:

The regulatory amendments of subsections of Section 7.50 under consideration will set the 2016 Klamath River Basin salmon sport fishing regulations to conform to the PFMC fall-run Chinook allocation guidelines. The Klamath River Basin is anticipated to be open for sport salmon fishing at levels similar to the 2015 quotas; however the possibility of marine fishery area closures still exists. Ocean closures may in turn result in PFMC recommendations for Klamath River Basin sport salmon fishery closures for the take of adult salmon. Adverse or positive impacts to jobs and businesses will depend on the 2016 KRFC allocation ultimately adopted by the PFMC and the specific regulations promulgated by the Commission.

KRFC QUOTA MANAGEMENT
The proposed regulations present a range from 100 percent of last year's Klamath River Basin salmon season to 0 percent or no salmon fishing on adult Chinook salmon (greater than 22 inches) in 2016. Under all scenarios sport fishing will be allowed for grilse fall-run Chinook salmon (2 year-old salmon 22 inches or less) regardless of PFMC regulations, thus any adverse impacts to businesses would be less severe than under a complete closure of fishing.

Three projections are evaluated here are as follows: 100 percent of the 2015 Klamath River Basin catch limit; 50 percent of the 2015 basin catch limit; and 0 percent of the 2015 basin catch limit.

(a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State:

Projection 1. 100 percent of the 2015 catch limit: The Commission does not anticipate any adverse impacts on the creation or elimination of jobs, as the quotas would not decrease effort nor curtail the number of visitors and thus probable visitor expenditures in the fisheries areas.

Based on a 2011 NMFS report on In-River Sport Fishing Economics of the Klamath River, under a normal season non-resident Klamath River sport salmon anglers contribute about $2,037,424 (2013$) in total economic output to California businesses. This revenue supports about 35 jobs in the State.

An assumption of the NMFS report is that increases in expenditures by resident anglers associated with expanded fishing opportunities would be accommodated by reduced expenditures on other locally purchased goods and services – with no net change in local economic activity. For non-resident anglers, however, increases in local expenditures associated with increases in local fishing opportunities would be accomplished by diverting money that they would otherwise spend outside the local area. Thus the economic impact analysis focuses on non-resident angler expenditures, which represent 'new money' whose injection serves to stimulate the local economy.

The NMFS study excluded the Trinity River, the largest tributary to the Klamath. The Trinity River is allocated 33 percent of the Klamath River Basin fall-run Chinook salmon total allocation. Using the Trinity allocation as a measure of angler effort, and thus impacts on associated businesses that support anglers, the total non-resident angler contribution to the entire Klamath River Basin (including the Trinity River) is estimated to be $2,709,774 (2013$) in total economic output. This revenue, again using a 33 percent increase to account for the Trinity River, provides an estimated total of 47 jobs in the State (assuming that personnel costs also rise with inflation). This is a conservative estimate of total economic impact as it counts only non-resident angler expenditures. Non-resident average expenditures are estimated to be $106.43 (2013$) per angler day (for lodging, food, gasoline, fishing gear, boat fuel, and guide fees) based on a NMFS sponsored survey. Resident average expenditures per angler day are estimated to be 60 percent less (markedly reduced lodging, gasoline and food expenditures) which yields an estimate of $42.60 per angler day. Resident anglers comprise about 36 percent of Klamath River Basin anglers.

Projection 2. 50 percent of the 2015 catch limit: The Commission anticipates some impact on the creation or elimination of jobs. A 50 percent catch reduction will likely reduce visitor spending by slightly less than 50 percent, given price elasticities of demand for salmon fishing activity of less than one. As the “price” of fishing per unit catch increases the demand for fishing trips declines by a lesser extent, particularly in the short-run. While difficult to predict, job losses associated with a 50 percent reduction in the catch limit are expected to be less than half of the estimated total jobs supported by angler visits (i.e. fewer than 23 jobs).

Projection 3. 0 percent of the 2015 catch limit: In the event of fisheries closures in some or all Klamath River Basin areas, the Commission anticipates less than 50 percent reduction in fishery-related jobs. As mentioned earlier, sport fishing for grilse fall-run Chinook salmon (2–year-old salmon less than 22 inches) will still be allowed, thus lessening any job losses. A closure on the take of adult Chinook salmon was instituted in 2006 and only grilse salmon could be legally harvested that year. The effect of the 2006 closure, as measured by angler days on the Klamath River, resulted in an approximate 50 percent drop in angler days, compared to the 2000- 2005 average (12,000 angler days vs. 23,300 angler days). Job creation or elimination tends to lag in adjustment to changes in consumer demand. Thus, the potential impacts of a closure on the take of adult Chinook are estimated to result in the loss of fewer than 23 jobs.

(b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State:

Projection 1: 100 percent of the 2015 catch limit: The Commission does not anticipate any impacts on the creation of new business or the elimination of existing businesses, as the quotas would not decrease effort nor curtail the number of visitors and thus probable visitor expenditures in the fisheries areas.

Projection 2. 50 percent of the 2015 catch limit: The Commission anticipates a decline in visits to the fishery areas of less than 50 percent. This may result in some decline in business activity, but the Commission does not anticipate any impacts on the creation of new business or the elimination of existing businesses directly related to fishing activities. However, with less effort being expended on fishing, the possibility of substitute activities and the growth of businesses to serve those activities exists.

Projection 3. 0 percent of the 2015 catch limit: In the event of fisheries closures in some or all Klamath River Basin areas, the Commission anticipates a decline in regional spending and thus reduced revenues to the approximately 30 businesses that serve sport fishing activities with unknown impacts on the creation of new business or the elimination of existing businesses. However adverse impacts will be mitigated by the continued opportunity to harvest grilse salmon. Additionally, the long-term intent of the proposed action is to increase sustainability in fishable salmon stocks and, consequently, the long-term viability of these same small businesses.

(c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State:

Projection 1. 100 percent of the 2015 catch limit: The Commission does not anticipate any impacts on the expansion of businesses in California as the quotas would not increase effort nor increase the number of visitors and thus probable visitor expenditures in the fisheries areas.

Projection 2. 50 percent of the 2015 catch limit: The Commission does not anticipate any impacts on the expansion of businesses in California. Decreases in expenditures by resident anglers associated with reduced fishing opportunities may be offset by increased expenditures on other locally purchased goods and services – with no net change in local economic activity. For non-resident anglers, however, decreases in local expenditures associated with decreases in local fishing opportunities may result in increases in other expenditures outside the Klamath River Basin area.

Projection 3. 0 percent of the 2015 catch limit: In the event of fisheries closures in some or all Klamath River Basin areas, the Commission does not anticipate any expansion of businesses in California. Decreases in expenditures by anglers associated with reduced fishing opportunities may be partially offset by increased expenditures on other locally purchased

goods and services as visitors fish for grilse salmon or substitute salmon fishing with other recreational pursuits.

(d) Benefits of the Regulation to the State's Environment:

Under all projections, the Commission anticipates benefits to the environment in the sustainable management of Klamath River Basin salmon resources. It is the policy of this State to encourage the conservation, maintenance, and utilization of the living resources of the ocean and inland waters under the jurisdiction and influence of the State for the benefit of all the citizens of the State. In addition, it is the policy of this State to promote the development of local California fisheries in harmony with federal law respecting fishing and the conservation of the living resources of the ocean and inland waters under the jurisdiction and influence of the State. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use. Adoption of scientifically-based Klamath River Basin salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of salmon to ensure their continued existence.

(e) Benefits of the Regulation to the Health and Welfare of California Residents:

Under all projections, the Commission anticipates benefits to the health and welfare of California residents. Providing opportunities for a Klamath River Basin sport salmon fishery encourages a healthy outdoor activity and the consumption of a nutritious food. Salmon sport fishing also contributes to increased mental health of its practitioners as fishing is a hobby and form of relaxation for many. Salmon sport fishing also provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of California's natural resources.

(f) Benefits of the Regulation to Worker Safety:

Under all projections, the Commission does not anticipate benefits to worker safety because the proposed regulations will not impact working conditions.

(g) Other Benefits of the Regulation:

Concurrence with Federal Law: California's sport fishing regulations need to conform to the new Federal regulations to achieve optimum yield in California. The PFMC annually reviews the status of west coast salmon populations. As part of that process, it recommends west coast adult salmon fisheries regulations aimed at meeting biological and fishery allocation goals specified in law or established in the Salmon Fishery

Management Plan. These recommendations coordinate west coast management of sport and commercial ocean salmon fisheries off the coasts of Washington, Oregon, and California and California inland sport salmon fisheries. These recommendations are subsequently implemented as ocean fishing regulations by the NMFS and as sport salmon regulations for State marine and inland waters by the Commission.

Informative Digest/Policy Statement Overview

The Klamath River System, which consists of the Klamath River and Trinity River basins, is managed through a cooperative system of State, federal, and tribal management agencies. Salmonid regulations are designed to meet natural and hatchery escapement needs for salmonid stocks, while providing equitable harvest opportunities for ocean recreational, ocean commercial, river recreational and tribal fisheries.

The Pacific Fishery Management Council (PFMC) is responsible for adopting recommendations for the management of recreational and commercial ocean salmon fisheries in the Exclusive Economic Zone (three to 200 miles offshore) off the coasts of Washington, Oregon, and California. When approved by the Secretary of Commerce, these recommendations are implemented as ocean salmon fishing regulations by the National Marine Fisheries Service (NMFS).

The California Fish and Game Commission (Commission) adopts regulations for the ocean salmon recreational (inside three miles) and the Klamath River System recreational fisheries which are consistent with federal fishery management goals.

For the purpose of PFMC mixed-stock fishery modeling and salmon stock assessment, salmon greater than 22 inches are defined as adult salmon (ages 3-5) and salmon less than or equal to 22 inches are defined as grilse salmon (age 2).

Klamath River Fall-Run Chinook

Klamath River fall-run Chinook salmon (KRFC) harvest allocations and natural spawning escapement goals are established by the PFMC. The KRFC harvest allocation between tribal and non-tribal fisheries is based on court decisions and allocation agreements between the various fishery representatives.

The 2016 KRFC in-river recreational fishery allocation recommended by the PFMC is currently unknown. All proposed closures for adult KRFC are designed to ensure sufficient spawning escapement in the Klamath River Basin and equitably distribute harvest while operating within annual allocations.

Klamath River Spring-Run Chinook

The Klamath River System also supports Klamath River spring-run Chinook salmon (KRSC). Naturally produced KRSC are both temporally and spatially separated from KRFC in most cases.

Presently, KRSC stocks are not managed or allocated by the PFMC. The in-river recreational fishery is managed by general basin seasons, daily bag limit, and possession limit regulations.

KRFC Allocation Management

The PFMC 2015 allocation for the Klamath River System recreational harvest was 14,133 adult KRFC. Preseason stock projections of 2016 adult KRFC abundance will not be available from the PFMC until March 2016. The 2016 Klamath River Basin

allocation will be recommended by the PFMC in April 2016 and presented to the Commission for adoption prior to its April 2016 meeting.

For public notice requirements, the Department of Fish and Wildlife (Department) recommends the Commission consider an allocation range of 0 – 67,600 adult KRFC in the Klamath River Basin for the in-river recreational fishery.

Current Recreational Fishery Management

The KRFC in-river recreational harvest allocation is divided into geographic areas and harvest is monitored under real time subquota management. KRSC in-river recreational harvest is managed by general season, daily bag limit, and possession limit regulations.

The daily bag and possession limits apply to both stocks within the same sub-area and time period.

Proposed Changes

No changes are proposed for the general (KRSC) opening and closing season dates, and bag, possession and size limits.

The following changes to current regulations are proposed:

KRFC QUOTA MANAGEMENT: Seasons, Bag and Possession Limits

For public notice requirements, a range of KRFC bag and possession limits are proposed until the 2016 Klamath River Basin quota is adopted. As in previous years, no retention of adult KRFC salmon is proposed for the following areas, once the subquota has been met.

The proposed open seasons and range of bag and possession limits for KRFC salmon stocks are as follows:

1. Klamath River - August 15 to December 31
2. Trinity River - September 1 to December 31
3. Bag Limit - [0-4] Chinook salmon of which no more than [0-4] fish over 22 inches total length may be retained until the subquota is met, then 0 fish over 22 inches total length.
4. Possession limit - [0-12] Chinook salmon of which [0–12] fish over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.

Other changes are proposed for clarity and consistency.

Benefits of the Proposed Regulations

The benefits of the proposed regulations are in conformance with federal law, sustainable management of Klamath River Basin salmon resources, and promotion of businesses that rely on recreational salmon fishing in the Klamath River Basin.

The proposed regulations are neither inconsistent nor incompatible with existing State regulations. The Legislature has delegated authority to the Commission to promulgate sport fishing regulations (Sections 200, 202, 205, 315, and 316.5, Fish and Game

Code). Commission staff has searched the California Code of Regulations and has found no other State regulations related to the recreational take of Chinook salmon in the Lower Klamath River Basin.

Regulatory Language

Subsection (b)(91.1) of Section 7.50 is amended to read:

(91.1) Anadromous Waters of the Klamath River Downstream of Iron Gate Dam (Lower Klamath River Basin). The regulations in this subsection apply only to waters of the Klamath River system which are accessible to anadromous salmonids. They do not apply to waters of the Klamath River which are inaccessible to anadromous salmon and trout, for example, portions of the Klamath River system upstream of Iron Gate Dam, portions of the Trinity River system upstream of Lewiston Dam, and the Shasta River and tributaries upstream of Dwinnel Dam. Fishing in these waters is governed by the General Regulations for non-anadromous waters of the North Coast District (see Section 7.00(a)(4)).

(A) Hook and Weight Restrictions.

1. Only barbless hooks may be used. (For definitions regarding legal hook types, hook gaps and rigging see Chapter 2, Article 1, Section 2.10.)

2. During closures to the take of adult salmon, anglers ~~shall~~may not remove any adult Chinook salmon from the water by any means, such as by dragging the fish on shore or using a net.

(B) General Area Closures.

1. No fishing is allowed within 750 feet of any Department of Fish and Wildlife fish-counting weir.

2. No fishing is allowed from the Ishi Pishi Road bridge upstream to and including Ishi Pishi Falls from August 15 through December 31. EXCEPTION: members of the Karuk Indian Tribe listed on the current Karuk Tribal Roll may fish at Ishi Pishi Falls using hand-held dip nets.

3. No fishing is allowed from September 15 through December 31 in the Klamath River within 500 feet of the mouths of the Salmon, the Shasta and the Scott rivers and Blue Creek.

4. No fishing is allowed from June 15 through September 14 in the Klamath River from 500 feet above the mouth of Blue Creek to 1/2 mile downstream of the mouth of Blue Creek.

(C) Klamath River Basin Possession Limits.

1. Trout Possession Limits.

a. The brown trout possession limit is 10 brown trout.

b. The hatchery trout or hatchery steelhead possession limits are as follows:

(i) Klamath River - 4 hatchery trout or hatchery steelhead.

(ii) Trinity River - 4 hatchery trout or hatchery steelhead.

2. Chinook Salmon Possession Limits.

a. Klamath River downstream of the Highway 96 bridge at Weitchpec from January 1 to August 14 and the Trinity River downstream of the Old Lewiston Bridge to the confluence of the South Fork Trinity River from January 1 to August 31: 2 Chinook salmon.

b. Klamath River from August 15 to December 31 and Trinity River from September 1 to December 31: ~~9 Chinook salmon. No more than 6 Chinook salmon over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.~~ [0-12] Chinook salmon. No more than [0-12] Chinook salmon over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.

(D) Klamath River Basin Chinook Salmon Quotas.

The Klamath River fall Chinook salmon take is regulated using quotas. Accounting of the tribal and non-tribal harvest is closely monitored from August 15 through December 31 each year. These quota areas are noted in subsection (b)(91.1)(E) with "Fall Run Quota" in the *Open Season and Special Regulations* column.

1. Quota for Entire Basin.

The ~~2015~~2016 Klamath River Basin quota is ~~14,133~~[0-67,600] Klamath River fall Chinook salmon over 22 inches total length. The department shall inform the commission, and the public via the news media, prior to any implementation of restrictions triggered by the quotas. (NOTE: A department status report on progress toward the quotas for the various river sections is updated weekly, and available at 1-800-564-6479.)

2. Subquota Percentages.

a. The subquota for the Klamath River upstream of the Highway 96 bridge at Weitchpec and the Trinity River is 50% of the total Klamath River Basin quota.

(i) The subquota for the Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec is 17% of the total Klamath River Basin quota.

(ii) The subquota for the Trinity River main stem downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat is 16.5% of the total Klamath River Basin quota.

(iii) The subquota for the Trinity River main stem downstream of the Denny Road bridge at Hawkins Bar to the confluence with the Klamath River is 16.5% of the total Klamath River Basin quota.

b. The subquota for the Lower Klamath River downstream of the Highway 96 bridge at Weitchpec is 50% of the total Klamath River Basin quota.

(i) The Spit Area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth) will close when 15% of the total Klamath River Basin quota is taken downstream of the Highway 101 bridge.

(E) Klamath River Basin Open Seasons and Bag Limits.

All anadromous waters of the Klamath River Basin are closed to all fishing for all year except those areas listed in the following table. Bag limits are for trout and Chinook salmon in combination unless otherwise specified.

Body of Water	***Open Season and Special Regulations***	***Daily Bag Limit***
1. Bogus Creek and tributaries.	Fourth Saturday in May through August 31. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
2. Klamath River main stem from 3,500 feet downstream of Iron Gate Dam to the mouth.		

a. Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec.	January 1 to August 14.	0 Chinook salmon 2 hatchery trout or hatchery steelhead**
	Fall Run Quota ~~2,403~~[0-11,492] Chinook Salmon August 15 to December 31, ~~2015~~2016.	~~3~~[0-4] Chinook salmon - no more than ~~2~~[0-4] fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length. 2 hatchery trout or hatchery steelhead**
	Fall Run Quota Exception: Chinook salmon over 22 inches total length may be retained from 3,500 feet downstream of Iron Gate Dam to the Interstate 5 bridge when the department determines that the adult fall-run Chinook salmon spawning escapement at Iron Gate Hatchery exceeds 8,000 fish. Daily bag and possession limits specified for fall-run Chinook salmon apply during this exception.	
b. Klamath River downstream of the Highway 96 bridge at Weitchpec.	January 1 to August 14.	2 Chinook salmon 2 hatchery trout or hatchery steelhead**

	Fall Run Quota ~~7,067~~[0-33,800] Chinook Salmon August 15 to December 31, ~~2015~~2016.	~~3~~[0-4] Chinook salmon - no more than ~~2~~[0-4] fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length. 2 hatchery trout or hatchery steelhead**
	Fall Run Quota Exception: Spit Area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth). This area will be closed to all fishing after 15% of the Total Klamath River Basin Quota has been taken. ~~All legally caught Chinook salmon must be retained. Once the adult (greater than 22 inches) component of the total daily bag limit has been retained anglers must cease fishing in the spit area.~~ All legally caught Chinook salmon must be retained. Once the adult (greater than 22 inches) component of the total daily bag limit has been retained anglers must cease fishing in the spit area.	
3. Salmon River main stem, main stem of North Fork downstream of Sawyer's Bar bridge, and main stem of South Fork downstream of the confluence of the East Fork of the South Fork.	November 1 through February 28.	2 hatchery trout or hatchery steelhead**
4. Scott River main stem down-stream of the Fort Jones-Greenview bridge to the confluence with the Klamath River.	Fourth Saturday in May through February 28.	2 hatchery trout or hatchery steelhead**
5. Shasta River main stem downstream of the Interstate 5 bridge north of Yreka to the confluence with the Klamath River.	Fourth Saturday in May through August 31 and November 16 through February 28.	2 hatchery trout or hatchery steelhead**

6. Trinity River and tributaries.		
a. Trinity River main stem from 250 feet downstream of Lewiston Dam to the Old Lewiston Bridge.	April 1 through September 15. Only artificial flies with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
b. Trinity River main stem downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat.	January 1 to August 31.	2 Chinook salmon 5 brown trout 2 hatchery trout or hatchery steelhead**
	Fall Run Quota ~~2,332~~[0-11,154] Chinook Salmon September 1 through December 31, ~~2015~~2016.	~~3~~[0-4] Chinook salmon - no more than ~~2~~[0-4] fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length. 5 brown trout 2 hatchery trout or hatchery steelhead**
	Fall Run Quota Exception: Chinook salmon over 22 inches total length may be retained downstream of the Old Lewiston Bridge to the mouth of Indian Creek when the department determines that the adult fall-run Chinook salmon spawning escapement at Trinity River Hatchery exceeds 4,800 fish. Daily bag and possession limits specified for fall-run Chinook salmon apply during this exception.	
c. Trinity River main stem downstream of the Highway 299 West bridge at Cedar Flat to the Denny Road bridge at Hawkins Bar.	January 1 through August 31.	2 Chinook salmon 5 brown trout 2 hatchery trout or hatchery steelhead**
	September 1 through December 31.	Closed to all fishing.

d. New River main stem downstream of the confluence of the East Fork to the confluence with the Trinity River.	September 15 through November 15. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
e. Trinity River main stem downstream of the Denny Road bridge at Hawkins Bar to the mouth of the South Fork Trinity River.	January 1 to August 31.	2 Chinook salmon 5 brown trout 2 hatchery trout or hatchery steelhead**
	Fall Run Quota ~~2,331~~[0-11,154] Chinook Salmon September 1 through December 31, ~~2015~~2016. This is the cumulative quota for subsections 6.e. and 6.f. of this table.	~~3~~[0-4] Chinook salmon - no more than ~~2~~[0-4] fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length. 5 brown trout 2 hatchery trout or hatchery steelhead**
f. Trinity River main stem downstream of the mouth of the South Fork Trinity River to the confluence with the Klamath River.	January 1 to August 31.	0 Chinook salmon 5 brown trout 2 hatchery trout or hatchery steelhead**

	Fall Run Quota ~~2,331~~[0-11,154] Chinook Salmon September 1 through December 31, ~~2015~~2016. This is the cumulative quota for subsections 6.e. and 6.f. of this table.	~~3~~[0-4] Chinook salmon - no more than ~~2~~[0-4] fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length. 5 brown trout 2 hatchery trout or hatchery steelhead**
g. Hayfork Creek main stem downstream of the Highway 3 bridge in Hayfork to the confluence with the South Fork Trinity River.	November 1 through March 31. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
h. South Fork Trinity River downstream of the confluence with the East Fork of the South Fork Trinity River to the South Fork Trinity River bridge at Hyampom.	November 1 through March 31. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
i. South Fork Trinity River downstream of the South Fork Trinity River bridge at Hyampom to the confluence with the Trinity River.	November 1 through March 31.	0 Chinook salmon 2 hatchery trout or hatchery steelhead**

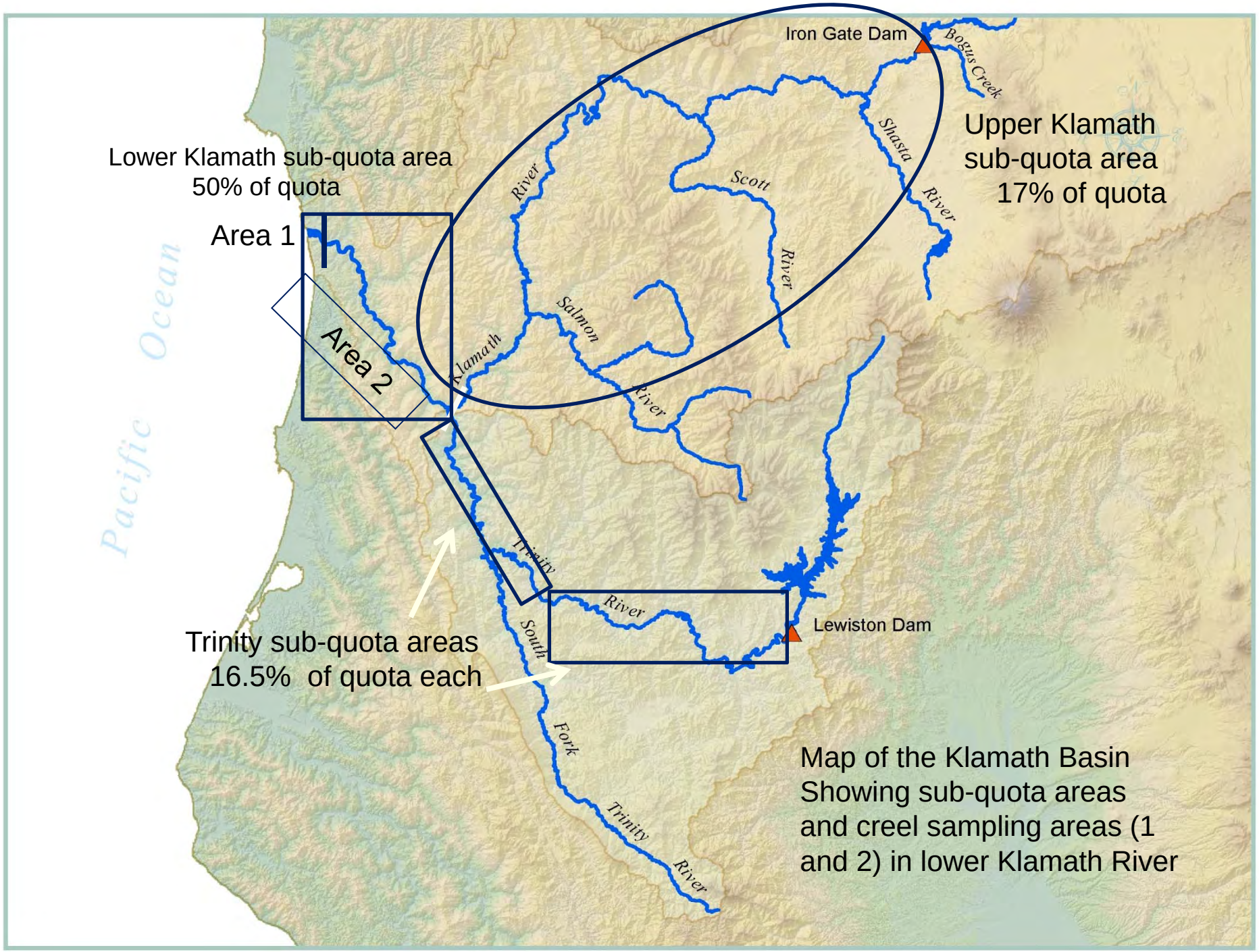
* Wild Chinook salmon are those not showing a healed adipose fin clip and not showing a healed left ventral fin clip. **Hatchery trout or steelhead in anadromous waters are those showing a healed adipose fin clip (adipose fin is absent). Unless otherwise provided, all other trout and steelhead must be immediately released. Wild trout or steelhead are those not showing a healed adipose fin clip (adipose fin is present).
Note: Authority cited: Sections 200, 202, 205, 215, 220, 240, 315 and 316.5, Fish and Game Code. Reference: Sections 200, 202, 205, 215 and 316.5, Fish and Game Code.

2016 Klamath Basin Sport Fishing Regulatory Options

Fish and Game Commission Meeting
December 10, 2015
Stafford Lehr
Fisheries Branch

Overview

- Map of Klamath Basin
- 2015 Klamath Basin Chinook salmon angling regulations
- New regulations for 2015
- 2016 Klamath Basin proposed regulatory options


Iron Gate Dam
Bogus Creek
Upper Klamath
sub-quota area
17% of quota
Lower Klamath sub-quota area
50% of quota
Area 1
Area 2
Shasta River
Scott River
Salmon River
Klamath River
Trinity River
South Fork Trinity River
Lewiston Dam
Pacific Ocean
Trinity sub-quota areas
16.5% of quota each
Map of the Klamath Basin
Showing sub-quota areas
and creel sampling areas (1
and 2) in lower Klamath River

2015 Klamath Basin Angling Regulations

- Season: Aug. 15 – Dec. 31 (Klamath River)
- Season: Sept. 1 – Dec. 31 (Trinity River)
- Bag limit: 3 fish, no more than 2 adults > 22 inches
- Possession limit: 9 fish, no more than 6 adults > 22 inches
- Basin Quota: 14,133 adult Chinook salmon
- Spit Area Sub-quota: 2,120 adult Chinook salmon

New Regulations for 2015

- Spit Area
  - All legally caught adult salmon must be retained
  - Anglers must leave spit area once adult daily bag is met
- Blue Creek
  - Closure of the main stem Klamath River near the confluence of Blue Creek between June 15 and December 31

2016 Klamath Basin Angling Regulatory Options

- Klamath Basin quota range: 0-67,000 fish > 22 inches
- Bag limit range: 0-4 fish > 22 inches
- Possession limit range: 0-12 fish > 22 inches
- Season: Aug. 15 – Dec. 31 (Klamath River)
- Season: Sept. 1 – Dec. 31 (Trinity River)

COUNTY OF DEL NORTE
Office of the County Counsel
981 "H" Street, Suite 220
Crescent City, CA 95531

Phone (707) 464-7208
Fax (707) 465-0324

ELIZABETH CABLE
INTERIM COUNTY COUNSEL

JOEL CAMPBELL-BLAIR
DEPUTY COUNTY COUNSEL

September 22, 2015

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95714

Re: Lower Klamath River Fishing Regulations – Blue Creek Closure

To Whom It May Concern,

Enclosed please find the Del Norte County Board of Supervisors' Petition to Repeal or in the Alternative Amend Title 14(b)(91.1)(B)(3) and (4) of Section 7.50 of the California Code of Regulations (Blue Creek Closure).

As all of our previous correspondence has gone unaccredited, we are sending this package via certified mail with the hope that it will be received and acknowledged.

Sincerely,

Elizabeth Cable
Interim County Counsel

cc: Jay Sarina, CAO; David Finigan, Chair, Del Norte County Board of Supervisors

County of Del Norte County
Board of Supervisors
981 "H" Street, Ste. 200
Crescent City, California 95531

Phone
(707) 464-7204

Fax
(707) 464-1165

Petition to Repeal or in the Alternative Amend Title 14 (b)(91.1)(B)(3) and (4) of Section 7.50 of the California Code of Regulations (Blue Creek Closure)

California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814
FGC@fgc.ca.gov

Requested by:

County of Del Norte
David Finigan, Chair of the Board of Supervisors
981 H Street, Suite 210
Crescent City, CA 95531
(707) 464-7204

This is a petition to repeal the regulation adopted by the California Fish and Game Commission (Commission) on April 17, 2015 and effective June 4, 2015 located at Title 14 Section 7.50(b)(91.1)(B)(3) of the California Code of Regulations (CCR). If for any reason this petition is not successful at repealing the aforementioned regulation it shall be interpreted as a petition to amend the stated regulation sections for the following fishing season (2016).

This Petition is based upon the following statutes, background information, and justifications.

Applicable Statutes:

Government Code 11340.6 states "Except where the right to petition for adoption of a regulation is restricted by statute to a designated group or where the form of procedure for such a petition is otherwise prescribed by statute, any interested person may petition a state agency requesting the adoption, amendment, or repeal of a regulation as provided in Article 5."

Fish and Game Code §220 states "(a) Any regulation of the commission added or amended pursuant to this article shall remain in effect for the period specified therein or until superseded by subsequent regulation of the commission or by statute. (b) Notwithstanding this article, the commission may add, amend, or repeal regulations at any regular or special meeting if facts are presented to the commission which were not presented at the time the original regulations were adopted and if the commission

determines that those regulations added, amended, or repealed are necessary to provide proper utilization, protection, or conservation of fish and wildlife species or subspecies.

Fish and Game Code §315 states "The commission may at any time close any stream, lake, or other inland waters, or portions thereof, to the taking of any species or subspecies of fish to protect and properly conserve the fish, except for the taking of fish otherwise permitted by this code under a commercial fishing license, for such time as the commission may designate, or until such time as new legislation thereon enacted by the Legislature may become effective."

Fish and Game Code §315.3 states "The commission may, at any time when facts are presented to the commission which were not presented to the commission at the time of its December meeting held pursuant to Section 209, open any stream, lake, or other inland waters, or portions thereof, to the taking of any species or subspecies of fish for the proper utilization of the fish, for such time as the commission may designate or until such time as new legislation thereon enacted by the Legislature may become effective."

Fish and Game Code §703.3 states "It is the policy of the state that the department and commission use ecosystem-based management informed by credible science in all resource management decisions to the extent feasible. It is further the policy of the state that scientific professionals at the department and commission, and all resource management decisions of the department and commission, be governed by a scientific quality assurance and integrity policy, and follow well-established standard protocols of the scientific profession, including, but not limited to, the use of peer review, publication, and science review panels where appropriate. Resource management decisions of the department and commission should also incorporate adaptive management to the extent possible."

Fish and Game Code §703.5 states "It is the policy of the state as follows: (a) That the department and the commission seek to create, foster, and actively participate in effective partnerships and collaborations with other agencies and stakeholders to achieve shared goals and to better integrate fish and wildlife resource conservation and management with the natural resource management responsibilities of other agencies. (b) That the department and commission participate in interagency coordination processes that facilitate consistency and efficiency in review of projects requiring multiple permits, including, but not necessarily limited to, joint state, federal, and local permit review teams that enable early consultation with project applicants, and provide improved sharing of data, information, tools, and science to achieve better alignment of planning, policies, and regulations across agencies."

Fish and Game Code §6920 states "(a) The department shall, with the advice of the Advisory Committee on Salmon and Steelhead Trout and the Commercial Salmon Trollers Advisory Committee, prepare and maintain a detailed and comprehensive program for the protection and increase of salmon, steelhead trout, and anadromous fisheries. (b) The department shall consult with every public agency whose policies or decisions may affect the goals of this program to determine if there are feasible means for those public agencies to help the department achieve the goals of this program."

Background Facts:

On April 17, 2015 the Commission voted to close the fishing area of the Klamath River within 500 feet of the mouth of Blue Creek from September 15 to December 31 and to close the area from 500 feet above the mouth of the Blue Creek to ½ mile downstream of the mouth of the Blue Creek June 15 through September 14.

The closure was pursuant to an amendment of Subsections (b)(91.1) and (b)(195) of Section 7.50 Title 14 of the CCR. The amendment was noticed as three Options in the Initial Statement of Reasons for Regulatory Action and in the Final Statement of Reasons for Regulatory Action. Option 1 was the Department proposal. Option 2 was the Yurok Tribe proposal and Option 3 was a "possible combination" of Option 1 and 2.[1] Precipitating the Options was a letter from the Yurok Tribe formally recommending modifications of the regulations. This letter was dated November 19, 2014. The Commission then had a Notice hearing on the proposed amendments on December 3, 2014. The Initial Statement of Reasons was filed on January 12, 2014. A discussion hearing was held on February 12, 2015. The Pre-Adoption Statement of Reasons was filed March 20, 2015. The adoption hearing was held April 17, 2015. The Final Statement of Reasons was filed May 4, 2015. The regulation was approved by the Office of Administrative Law and took effect on June 4, 2015.

The closure was outlined in Options 2 and 3 but was against the recommendation of the Department.[2] Department staff stated "The Department cannot support that as the preferred option."[3]

The closure was not based on scientific data regarding this specific location. The response to public comment by the Commission states that "The Commission adopted the proposed closure at the mouth of Blue Creek as a precautionary conservation measure" and "Scientific studies are needed to determine if, and under what criteria, alternate or additional closures may be necessary."[4] The lack of scientific data was discussed by the Commission on April 17, 2015 as well as the need for such scientific data including temperature monitoring.[5]

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[1] Option 1 - No catch and release fishing in Spit Area – Department Proposal: All legally caught Chinook salmon must be retained. Once the adult Chinook component of the daily bag has been retained, the angler must cease fishing in the spit area. Option 2- Conservation closure below the mouth of Blue Creek to reduce catch and release in a thermal refuge area and protect late-fall Chinook holding to prior to entering Blue Creek. Option 3- (1) All legally caught Chinook salmon must be retained. Once the adult Chinook component of the daily bag has been retained, the angler must cease fishing in the spit area. (2) Conservation closure below the mouth of Blue Creek to reduce catch and release mortality in a thermal refugia area and protect late-fall Chinook holding prior to entering Blue Creek.

[2] See Memorandum dated April 1, 2015 from Charlton Bonham, Director to Sonke Mastrup, Executive Director

[3] Teleconference April 17, 2015 available http://www.cal-span.org/media.php?folder[]=CFG comment found at 2:01:27: 2:35:50.

[4] http://www.fgc.ca.gov/regulations/2015/ktcommentsandresponses.pdf

[5] Teleconference April 17, 2015 available http://www.cal-span.org/media.php?folder[]=CFG comment found at 2:34:00 – 2:34:48

Even without the scientific data supporting a closure of the Blue Creek area, the Commission voted to close the area, as one Commissioner stated at the April 17, 2015, "Why not close it and see what happens?"[6]

Justification for Repeal or Amendment

The closure in question was arbitrary and capricious as it was not done with due regard for science, facts, and circumstances. The regulation was adopted in procedural disarray. It appears from the record several Commissioners wished to find out if, scientifically, there would be a need to close the area through temperature monitoring but could not adopt such a regulation because the noticing had not been done for such an alternative.[7] At the April 17, 2015 meeting, Executive Director Mastrup stated at one point during the motions "this is getting really screwed up quite honestly"[8] referring to the process of passing the motion on the closure of Blue Creek. The Commissioners lack of understanding of the motion they were passing, whether it was a recommendation of the Department or not, and the process needed to amend the regulation is clear from the record.

The Statement of Reasons promulgated by the Commission did not adequately estimate the impact upon County residents including impacts upon small businesses, in particular businesses consisting of sport fishing. Instead the Final Statement of Impacts states that "The impacted businesses are generally small businesses employing few individuals and, like all small businesses, are subject to failure for a variety of reasons." The Commission did not adequately consider the economic impact of such actions. Del Norte County had, according to census data, 21.8% of persons living below the poverty level as compared to 15.9% of people statewide.[9] The effect on small businesses is a significant impact on the County.

Under Title 14 CCR 777.8(c), "Any proposed regulations for which significant adverse environmental effects have been identified during the review process shall not be approved or adopted as proposed if there are feasible mitigation measures or feasible alternatives which would avoid or substantially lessen any significant adverse effect which the proposed regulations may have on the environment, in accordance with Public Resources Code section 21081." The method in which the Commission noticed, evaluated, and eventually adopted the regulations at issue was wholly inadequate because there were several options which were evaluated together as one proposal when, in reality, they had different consequences and different significance of effects. The Commission eventually adopted what appears to be a combination of the Options which encompassed the Blue Creek closure. "Option 1 "would have been an alternative which would have lessened the significant impact on the local economy and local businesses. Whether the Options were mutually exclusive is unclear from the documents noticing the hearings on the amended regulations, but it appears that on April 17, 2015 the Commission decided they were not mutually exclusive and appears to have adopted a combination of the Options. In a

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[6] Teleconference April 17, 2015 available http://www.cal-span.org/media.php?folder[]=CFG comment found at 2:03:26.
[7] Teleconference April 17, 2015 available http://www.cal-span.org/media.php?folder[]=CFG comment found at 2:31:00-2:49:22
[8] Teleconference April 17, 2015 available http://www.cal-span.org/media.php?folder[]=CFG comment found at 2:39:46
[9] http://quickfacts.census.gov/qfd/states/06/06015.html

response to the comments received by the public, the Department states "the final economic effect related to steelhead fishing will have to be assessed post season due to lack of adequate fishing effort data for this area."[10] Additionally the possibility of an adverse environmental impact due to fish crowding in the Blue Creek area was not fully vetted in accordance with §777.6 of the Title 14 of the CCR. Overall, the adoption of the combination of the Options does not comport with the procedural regulations for implementation of the California Environmental Quality Act of 1970 (CEQA).

The scientific data needs to be evaluated as to whether such a closure is a necessary conservation measure or is scientifically sound. Department staff representative Stafford Lehr stated "That's where the Department actually wanted to be with the Yurok. These points that have been raised are extremely valid and...they have expressed a concern, the Department has looked at it and said 'we really don't know what is the effort really, right at Blue Creek.'"[11] The Department staff representative went on to state the Department would like to build temperature criteria and address the issue in the coming year when there is scientific data available and explained that the proposal in front of the Commission would close the area regardless of what the temperature conditions were. Anecdotal data has indicated crowding conditions at the mouth of the Blue Creek partially due to fishing restrictions under the new regulations combined with low water levels are resulting in the deadly parasite ich which was responsible for the 2002 fish kill which caused severe damage to tribal trust resources and commercial and sport fisheries for years to come, undermining the regional economy.[12] Scientific data regarding this specific location as well as consequences to local resources and local economy needs to be considered rather than a "why not close it and see what happens" approach based upon political pressures. This is the exact reason why decision making by a California regulatory authority should not be arbitrary.

Through letters dated February 12, 2015 and May 29, 2015, the County via its Board of Supervisors urged the Fish and Game Commission not to adopt such regulation without supporting scientific data but to no avail. County Counsel wrote a letter on June 9, 2015 expressing the disappointment of the Board after the regulation was amended.

The County Board of Supervisors believe the Commission should collaborate with agencies and stakeholders in a meaningful manner according to its own polices and state law and should work toward solutions together rather than unilaterally denying repeated requests from the County that they reassess their decision making process as to this matter.

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[10] http://www.fgc.ca.gov/regulations/2015/ktcommentsandresponses.pdf

[11] Teleconference April 17, 2015 available http://www.cal-span.org/media.php?folder[]=CFG comment found at 2:33:55

[12] See press release from Jared Huffman https://huffman.house.gov/media-center/press-releases/rep-jared-huffman-insists-federal-agencies-act-to-prevent-klamath-river

The County now calls upon the Commission to repeal such regulation or, in the alternative, amend the regulation taking into consideration the impacts on the County and all of its residents. The Commission is required to act within 30 days under Government Code §11340.7. The County looks forward to an official response to this Petition.

Sincerely,

David Finigan,
Chairman of the Board
Del Norte County
Board of Supervisors

Attachments

1. Notice of Proposed Changes in Regulations- Jan. 13, 2015
2. Initial Statement of Reasons - January 12, 2015
3. Final Statement of Reasons – May 4, 2015
4. Summary and Response to Public Comments
5. Approved Regulatory Language (page 1)
6. Office of Administrative Law's decision: June 4, 2015
7. Letter from Yurok Tribe Chairman Thomas O'Rourke- November 19, 2014
8. Press Release "Rep. Jared Huffman insists federal agencies act to prevent Klamath River fish kill" – August 3, 2015
9. Blue Creek fishing closure: Parties air their grievances–July 16, 2015

Attachment 1

TITLE 14. Fish and Game Commission
Notice of Proposed Changes in Regulations

NOTICE IS HEREBY GIVEN that the Fish and Game Commission (Commission), pursuant to the authority vested by Sections 200, 202, 205, 215, 220, 240, 315, and 316.5, of the Fish and Game Code and to implement, interpret or make specific Sections 200, 202, 205, 215, and 316.5 of said Code, proposes to amend subsections (b)(91.1) and (b)(195) of Section 7.50, Title 14, California Code of Regulations, relating to Klamath River sport fishing.

Informative Digest/Policy Statement Overview

The Klamath River System, which consists of the Klamath River and Trinity River basins, is managed through a cooperative system of State, federal, and tribal management agencies. Salmonid regulations are designed to meet natural and hatchery escapement needs for salmonid stocks, while providing equitable harvest opportunities for ocean recreational, ocean commercial, river recreational and tribal fisheries.

The Pacific Fishery Management Council (PFMC) is responsible for adopting recommendations for the management of recreational and commercial ocean salmon fisheries in the Exclusive Economic Zone (three to 200 miles offshore) off the coasts of Washington, Oregon, and California. When approved by the Secretary of Commerce, these recommendations are implemented as ocean salmon fishing regulations by the National Marine Fisheries Service.

The California Fish and Game Commission (Commission) adopts regulations for the ocean salmon recreational (inside three miles) and the Klamath River System recreational fisheries which are consistent with federal fishery management goals.

For the purpose of PFMC mixed-stock fishery modeling and salmon stock assessment, salmon greater than 22 inches are defined as adult salmon (ages 3-5) and salmon less than or equal to 22 inches are defined as grilse salmon (age 2).

Klamath River Fall-Run Chinook
Klamath River fall-run Chinook salmon (KRFC) harvest allocations and natural spawning escapement goals are established by the PFMC. The KRFC harvest allocation between tribal and non-tribal fisheries is based on court decisions and allocation agreements between the various fishery representatives.

The 2015 KRFC in-river recreational fishery allocation recommended by the PFMC is currently unknown. All proposed closures for adult KRFC are designed to ensure sufficient spawning escapement in the Klamath River Basin and equitably distribute harvest while operating within annual allocations.

Klamath River Spring-Run Chinook
The Klamath River System also supports Klamath River spring-run Chinook salmon (KRSC). Naturally produced KRSC are both temporally and spatially separated from KRFC in most cases.

Presently, KRSC stocks are not managed or allocated by the PFMC. The in-river recreational fishery is managed by general basin seasons, daily bag limit, and possession limit regulations.

KRFC Allocation Management
The PFMC 2014 allocation for the Klamath River System recreational harvest was 4,128 adult KRFC. Preseason stock projections of 2015 adult KRFC abundance will not be available from the PFMC until March 2015. The 2015 Klamath River Basin allocation will be recommended by the PFMC in April 2015 and presented to the Commission for adoption prior to its April 2015 meeting.

For public notice requirements, the Department of Fish and Wildlife (Department) recommends the Commission consider an allocation range of 0 – 67,600 adult KRFC in the Klamath River Basin for the river recreational fishery.

Current Recreational Fishery Management
The KRFC in-river recreational harvest allocation is divided into geographic areas and harvest is monitored under real time subquota management. KRSC in-river recreational harvest is managed by general season, daily bag limit, and possession limit regulations.

The daily bag and possession limits apply to both stocks within the same sub-area and time period.

Proposed Changes
No changes are proposed for the general (KRSC) opening and closing season dates, and bag, possession and size limits.

The following changes to current regulations are proposed:

KRFC QUOTA MANAGEMENT: Seasons, Bag and Possession Limits
For public notice requirements, a range of KRFC bag and possession limits are proposed until the 2015 Klamath River Basin quota is adopted. As in previous years, no retention of adult KRFC salmon is proposed for the following areas, once the subquota has been met.

The proposed open seasons and range of bag and possession limits for KRFC salmon stocks are as follows:

1. Klamath River - August 15 to December 31
2. Trinity River - September 1 to December 31
3. Bag Limit - [0-4] Chinook salmon of which no more than [0-4] fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length.
4. Possession limit - [0-12] Chinook salmon of which [0–12] over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.

SPIT AREA MANAGEMENT
Current regulations specify that the spit area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth) closes to all fishing after 15 percent of the total adult KRFC quota has been taken downstream of the Highway 101 bridge.

In 2014 the Department also evaluated restrictive measures for the spit area which included a "no catch and release" regulation for Chinook salmon legally caught in the spit area to protect Chinook stocks from excessive catch and release mortality. The regulatory time frame did not allow for sufficient time to promulgate such a regulation change. The Department informed the Commission that it would consider this change for the 2015 regulatory cycle.

The following options are being provided for Commission consideration:

Option 1 - No catch and release fishing in Spit Area - Department Proposal
After internal discussion and Yurok Tribal coordination, the Department is proposing the following change to the 2015 fall Chinook spit area regulations:

> All legally caught Chinook salmon must be retained. Once the adult Chinook component of the daily bag has been retained, the angler must cease fishing in the spit area.

This regulatory proposal does not preclude anglers from leaving the spit area and fishing other areas once their adult daily bag has been taken. Anglers may fish other areas outside of the spit to fill the grilse (Chinook salmon <22 inches) component of their daily bag limit. This regulation also does do not preclude anglers from filling a daily bag composed entirely of grilse salmon while fishing the spit area.

Option 2 - All Chinook salmon must be kept in Spit Area with Blue Creek closure - Yurok Proposal
The Yurok tribe is proposing the following modifications to the Klamath River regulations in the spit area and on the main Klamath River below the confluence with Blue Creek:

1) No catch and release fishing allowed in the spit area to reduce pinniped predation on released fish, and
2) Conservation closure below the mouth of Blue Creek to reduce catch and release in a thermal refuge area and protect late-fall Chinook holding prior to entering Blue Creek.

The first modification is to the spit area at the mouth of the Klamath River to allow no release of Chinook salmon, regardless of whether they are legally caught or foul hooked. This option provides an exception from the general snagging prohibitions in Section 2.00. The second modification would add Blue Creek to the September 15 to December 31 stream mouth closures and add a new Klamath River main stem closure from June 15 to September 14 from 500 feet above to ½ mile downstream around the mouth of Blue Creek.

Option 3 – A possible combination of Options 1 and 2
The Commission may combine Option 1's prohibition on catch and release fishing in the spit area with Option 2's Blue Creek conservation closure.
1) All legally caught Chinook salmon must be retained. Once the adult Chinook component of the daily bag has been retained, the angler must cease fishing in the spit area.
2) Conservation closure below the mouth of Blue Creek to reduce catch and release in a thermal refuge area and protect late-fall Chinook holding prior to entering Blue Creek.

ADDITIONAL PROPOSED CHANGES
The name of the road listed in subsection (b)(91.1)(B)2. is proposed to be corrected from "Ishi Pishi Falls road" to "Ishi Pishi Road". Cross references are proposed to be corrected in subsection (b)(195) to reduce public confusion. Other changes are proposed for clarity and consistency.

Benefits of the Proposed Regulations
The benefits of the proposed regulations are in conformance with federal law, sustainable management of Klamath River Basin salmon resources, and promotion of businesses that rely on recreational salmon fishing in the Klamath River Basin.

The proposed regulations are neither inconsistent nor incompatible with existing State regulations. The Legislature has delegated authority to the Commission to promulgate sport fishing regulations (Sections 200, 202, 205, 315, and 316.5, Fish and Game Code). Commission staff has searched the California Code of Regulations and has found no other State regulations related to the recreational take of Chinook salmon in the Lower Klamath River Basin.

NOTICE IS GIVEN that any person interested may present statements, orally or in writing, relevant to this action at a hearing to be held in the Resources Building Auditorium, 1416 Ninth Street, Sacramento, California, on Thursday, February 12, 2015, at 8:00 a.m., or as soon thereafter as the matter may be heard.

NOTICE IS ALSO GIVEN that any person interested may present statements, orally or in writing, relevant to this action at a teleconference originating in the Fish and Game Commission conference room, 1416 Ninth Street, Suite 1320, Sacramento, California, on Friday, April 17, 2015, at 8:30 a.m., or as soon thereafter as the matter may be heard. Interested persons may also participate at the following locations: Department of Fish and Wildlife, Conference Room, 50 Ericson Court, Arcata, California; Department of Fish and Wildlife, Conference Room, 20 Lower Ragsdale Drive, Suite 100, Monterey, California; Department of Fish and Wildlife, Conference Room, 1933 Cliff Drive, Suite 9, Santa Barbara, California; and Department of Fish and Wildlife, Conference Room, 4665 Lampson Avenue, Los Alamitos, California. Written comments may be submitted at the address given below, or by fax at (916) 653-5040, or by e mail to FGC@fgc.ca.gov. Written comments mailed, faxed or e-mailed to the Commission office, must be received before 5:00 p.m. on April 16, 2015. All comments must be received no later than April 17, 2015, at one of the teleconference hearing locations listed above. If you would like copies of any modifications to this proposal, please include your name and mailing address.

The regulations as proposed in strikeout-underline format, as well as an initial statement of reasons, including environmental considerations and all information upon which the proposal is based (rulemaking file), are on file and available for public review from the agency representative, Sonke Mastrup, Executive Director, Fish and Game Commission, 1416 Ninth Street, Box 944209, Sacramento, California 94244-2090, phone (916) 653-4899. Please direct requests for the above mentioned documents and inquiries concerning the regulatory process to Sonke Mastrup or Sherrie Fonbuena at the preceding address or phone number. **Stafford Lehr, Chief of Fisheries Branch, Department of Fish and Wildlife, (916) 327-8840 or Stafford.Lehr@wildlife.ca.gov, has been designated to respond to questions on the substance of the proposed regulations.** Copies of the Initial Statement of Reasons, including the regulatory language, may be obtained from the address above. Notice of the proposed action shall be posted on the Fish and Game Commission website at http://www.fgc.ca.gov.

Availability of Modified Text

If the regulations adopted by the Commission differ from but are sufficiently related to the action proposed, they will be available to the public for at least 15 days prior to the date of adoption. Circumstances beyond the control of the Commission (e.g., timing of Federal regulation adoption, timing of resource data collection, timelines do not allow, etc.) or changes made to be responsive to public recommendation and comments during the regulatory process may preclude full compliance with the 15-day comment period, and the Commission will exercise its powers under Section 202 of the Fish and Game Code. Regulations adopted pursuant to this section are not subject to the time periods for adoption, amendment or repeal of regulations prescribed in Sections 11343.4, 11346.4 and 11346.8 of the Government Code. Any person

interested may obtain a copy of said regulations prior to the date of adoption by contacting the agency representative named herein.

If the regulatory proposal is adopted, the final statement of reasons may be obtained from the address above when it has been received from the agency program staff.

Impact of Regulatory Action/Results of the Economic Impact Analysis

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Business, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed regulations are projected to have some impact on the net revenues to local businesses servicing sport fishermen. Visitor spending may be reduced and in the absence of the emergence of alternative visitor activities, the drop in spending could induce business contraction. However, this will not likely affect the ability of California businesses to compete with businesses in other states. The preservation of Klamath River salmon stocks is necessary for the success of lower and upper Klamath River Basin businesses which provide goods and services related to fishing. The proposed changes are necessary for the continued preservation of the resource and therefore the prevention of adverse economic impacts.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The proposed regulations range from no fishing of KRFC salmon in 2015; to a normal Klamath River Basin salmon season. The Commission anticipates some impact on the creation or elimination of jobs in California. The potential employment impacts range from 0 to 23 jobs which are not expected to create, eliminate or expand businesses in California. The Commission anticipates impacts on the creation, elimination or expansion of businesses in California ranging from no impact to reduced revenues to approximately 30 businesses that serve sport fishing activities. However, the possibility of growth of businesses to serve substitute activities exists. Adverse impacts to jobs and/or businesses would be less if fishing of grilse KRFC salmon is permitted than under the complete closure to all fishing. The impacted businesses are generally small businesses employing few individuals and, like all small businesses, are subject to failure for a variety of causes. Additionally, the long-term intent of the proposed action is to increase sustainability in fishable salmon stocks and, subsequently, the promotion and long-term viability of these same small businesses.

The Commission anticipates benefits to the health and welfare of California residents. Providing opportunities for a salmon sport fishery encourages consumption of a nutritious food.

The Commission anticipates benefits to the environment by the sustainable management of California's salmon resources.

The Commission does not anticipate any benefits to worker safety.

(c) Cost Impacts on a Representative Private Person or Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

(e) Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School Districts: None.

(g) Costs Imposed on any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code: None.

(h) Effect on Housing Costs: None.

Effect on Small Business

It has been determined that the adoption of these regulations may affect small business. The Commission has drafted the regulations in Plain English pursuant to Government Code Sections 11342.580 and 11346.2(a)(1).

Consideration of Alternatives

The Commission must determine that no reasonable alternative considered by the Commission, or that has otherwise been identified and brought to the attention of the Commission, would be more effective in carrying out the purpose for which the action is proposed, would be as effective and less burdensome to affected private persons than the proposed action, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

FISH AND GAME COMMISSION

Sonke Mastrup
Executive Director

Dated: January 13, 2015

Attachment 2

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Subsections (b)(91.1) and (b)(195) of Section 7.50
Title 14, California Code of Regulations
Re: Klamath River Sport Fishing Regulations

I. Date of Initial Statement of Reasons: January 12, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 3, 2014
Location: Van Nuys

(b) Discussion Hearing: Date: February 12, 2015
Location: Sacramento

(c) Adoption Hearing: Date: April 17, 2015
Location: Teleconference

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

The Klamath River System, which consists of the Klamath River and Trinity River basins, is managed through a cooperative system of State, federal, and tribal management agencies. Salmonid regulations are designed to meet natural and hatchery escapement needs for salmonid stocks, while providing equitable harvest opportunities for ocean recreational, ocean commercial, river recreational and tribal fisheries.

The Pacific Fishery Management Council (PFMC) is responsible for adopting recommendations for the management of recreational and commercial ocean salmon fisheries in the Exclusive Economic Zone (three to 200 miles offshore) off the coasts of Washington, Oregon, and California. When approved by the Secretary of Commerce, these recommendations are implemented as ocean salmon fishing regulations by the National Marine Fisheries Service (NMFS).

The California Fish and Game Commission (Commission) adopts regulations for the ocean salmon recreational (inside three miles) and the Klamath River System recreational fisheries which are consistent with federal fishery management goals.

Two tribal entities within the Klamath River System, the Hoopa Valley Tribe and the Yurok Tribe, maintain fishing rights for ceremonial,

subsistence and commercial fisheries that are managed consistent with federal fishery management goals. Tribal fishing regulations are promulgated by the Hoopa and Yurok tribes.

For the purpose of PFMC mixed-stock fishery modeling and salmon stock assessment, salmon greater than 22 inches are defined as adult salmon (ages 3-5) and salmon less than or equal to 22 inches are defined as grilse salmon (age 2).

Klamath River Fall-Run Chinook

Klamath River fall-run Chinook salmon (KRFC) harvest allocations and natural spawning escapement goals are established by the PFMC. The KRFC harvest allocation between tribal and non-tribal fisheries is based on court decisions and allocation agreements between the various fishery representatives.

The 2015 KRFC in-river recreational fishery allocation recommended by the PFMC is currently unknown. All proposed closures for adult KRFC are designed to ensure sufficient spawning escapement in the Klamath River Basin and equitably distribute harvest while operating within annual allocations.

Klamath River Spring-Run Chinook

The Klamath River System also supports Klamath River spring-run Chinook salmon (KRSC). Naturally produced KRSC are both temporally and spatially separated from KRFC in most cases.

Presently, KRSC stocks are not managed or allocated by the PFMC. The in-river recreational fishery is managed by general basin seasons, daily bag limit, and possession limit regulations. KRSC harvest will be monitored on the Lower Klamath River in 2015 and ensuing years by creel survey.

KRFC Allocation Management

The PFMC 2014 allocation for the Klamath River System recreational harvest was 4,128 adult KRFC. Preseason stock projections of 2015 adult KRFC abundance will not be available from the PFMC until March 2015. The 2015 basin allocation will be recommended by the PFMC in April 2015 and presented to the Commission for adoption prior to its April 2015 meeting.

For public notice requirements, the Department of Fish and Wildlife (Department) recommends the Commission consider an allocation range of 0 – 67,600 adult KRFC in the Klamath River Basin for the river recreational fishery. This recommended range encompasses the historical range of the Klamath River Basin allocations and allows the PFMC and Commission to make adjustments during the 2015 regulatory cycle.

The Commission may modify the KRFC in-river recreational salmon harvest allocation which is normally 15 percent of the non-tribal PFMC harvest allocation. Commission modifications need to meet biological and fishery allocation goals specified in law or established in the PFMC Salmon Fishery Management Plan otherwise harvest opportunities may be reduced in the California ocean fisheries.

The annual KRFC in-river harvest allocation is split into 4 geographic areas with subquotas assigned to each. They are as follows:

1. for the main stem Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec -- 17 percent of the recreational fishery allocation;
2. for the main stem Klamath River from downstream of the Highway 96 bridge at Weitchpec to the mouth -- 50 percent of the recreational fishery allocation;
3. for the Trinity River downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat -- 16.5 percent of the recreational fishery allocation; and
4. for the Trinity River downstream from the Denny Road bridge at Hawkins Bar to the confluence with the Klamath River -- 16.5 percent of the recreational fishery allocation.

The spit area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth) closes to all fishing after 15 percent of the total Klamath River Basin quota has been taken downstream of the Highway 101 bridge.

These geographic areas are based upon the historical distribution of angler effort and ensure equitable harvest of adult KRFC in the upper Klamath River and Trinity River. The subquota system requires the Department to monitor angler harvest of adult KRFC in each geographic area. All areas will be monitored on a real time basis except for the following:

Klamath River upstream of Weitchpec and the Trinity River: Due to funding and personnel reductions, the Department will be unable to deploy adequate personnel to conduct harvest monitoring in the Klamath River upstream of Weitchpec and in the Trinity River for the 2015 season. The Department has reviewed salmon harvest and run-timing data for these areas. Based on this review, the Department has developed a Harvest Predictor Model (HPM) which incorporates historic creel survey data from the Klamath River downstream of Iron Gate Dam to the confluence with the Pacific Ocean and the Trinity River downstream of Lewiston Dam to the confluence with the Klamath River. The HPM is driven by the positive relationship between KRFC harvested in the Lower and Upper Klamath River. The HPM will be used by the Department to implement fishing

closures to ensure that anglers do not exceed established subquota targets.

Current Recreational Fishery Management
The KRFC in-river recreational harvest allocation is divided into geographic areas and harvest is monitored under real time subquota management. KRSC in-river recreational harvest is managed by general season, daily bag limit, and possession limit regulations.

The Department presently differentiates the two stocks by the following dates:

Klamath River
1. January 1 through August 14 - General Season KRSC.
   For purposes of clarity, daily bag and possession limits apply to that section of the Klamath River downstream the Highway 96 bridge at Weitchpec to the mouth.

2. August 15 to December 31 - KRFC quota management.

Trinity River
1. January 1 through August 31 – General Season KRSC.
   For purposes of clarity, daily bag and possession limits apply to that section of the Trinity River downstream of the Old Lewiston Bridge to the confluence with the South Fork Trinity River.

2. September 1 through December 31 – KRFC quota management.

The daily bag and possession limits apply to both stocks within the same sub-area and time period.

Proposed Changes
No changes are proposed for the general (KRSC) opening and closing season dates, and bag, possession and size limits.

The following changes to current regulations are proposed:

KRFC QUOTA MANAGEMENT: Seasons, Bag and Possession Limits
For public notice requirements, a range of KRFC bag and possession limits are proposed until the 2015 Klamath River Basin quota is adopted. As in previous years, no retention of adult KRFC salmon is proposed for the following areas, once the subquota has been met.

The proposed open seasons and range of bag and possession limits for KRFC salmon stocks are as follows:

1. Klamath River - August 15 to December 31
2. Trinity River - September 1 to December 31

3. Bag Limit - [0-4] Chinook salmon – of which no more than [0-4] fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length.
4. Possession limit - [0-12] Chinook salmon of which [0–12] over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.

SPIT AREA MANAGEMENT:
Regulations adopted in 2014 specify the spit area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth) will close to all fishing after 15 percent of the total Klamath River Basin quota has been taken downstream of the Highway 101 bridge. At the same time, the Commission removed language (special note in the regulations for the spit fishery) that allowed the Department to keep the spit fishery open if the Department projected the Klamath River Basin adult fall Chinook would not be met.

In 2014 the Department also evaluated restrictive measures for the spit area which included a "no catch and release" regulation for Chinook salmon legally caught in the spit area to protect Chinook stocks from excessive catch and release mortality. The regulatory time frame did not allow for sufficient time to promulgate such a regulation change. The Department informed the Commission that it would consider this change for the 2015 regulatory cycle.

At issue is the perception of mortality associated with Chinook salmon which are caught and released by anglers trying to fill their daily grilse bag limit. Typically the fall Chinook bag limit is composed of an adult portion and grilse portion. In 2014 the daily fall Chinook bag limit was three fish, no more than one adult. Thus, anglers fishing the spit area would often catch and keep their one adult and continue fishing for the grilse portion of their daily bag. Some anglers would catch multiple adult fall Chinook and have to release these fish since they already had retained their one adult. Some released Chinook were observed floating downstream, thus becoming easy prey for the marine mammals that congregate in this area.

The following options are being provided for Commission consideration:

Option 1 - No catch and release fishing in Spit Area - Department Proposal
After internal discussion and Yurok Tribal coordination, the Department is proposing the following change to the 2015 fall Chinook salmon spit area regulations:

> All legally caught Chinook salmon must be retained. Once the adult Chinook component of the daily bag has been retained, the angler must cease fishing in the spit area.

This regulatory proposal does not preclude anglers from leaving the spit area and fishing other areas once their adult daily bag has been taken. Anglers may fish other areas outside of the spit to fill the grilse (Chinook salmon <22 inches) component of their daily bag limit. This regulation also does do not preclude anglers from filling a daily bag composed entirely of grilse salmon while fishing the spit area.

Option 2 - All Chinook salmon must be kept in Spit Area with Blue Creek closure - Yurok Proposal

The Yurok tribe approached the Commission at the notice hearing for additional proposed modifications to the Klamath River regulations in the spit area and the main Klamath River below the confluence with Blue Creek. The Commission directed the Department to add a regulatory option to allow further consideration of the Yurok proposal:

1) No catch and release fishing allowed in the spit area to reduce pinniped predation on released fish, and
2) Conservation closure below the mouth of Blue Creek to reduce catch and release in a thermal refuge area and protect late-fall Chinook holding to prior to entering Blue Creek.

The first modification is to the spit area at the mouth of the Klamath River to allow no release of Chinook salmon. This revision would add a new subarea on the spit area by adding a new subsection (b)(91.1)(E) for the spit area.

The difference between the Yurok Tribe's proposed regulation and the Department's proposal is that the Tribal proposal requires the retention of all fish caught, regardless of whether they are caught legally or foul hooked. The proposed regulations therefore provide, in this one instance, an exception from the snagging prohibitions in subsections (b) and (c) of Section 2.00. The rationale for this is that a substantial proportion of fish caught in this area are foul hooked due to the nature of the fishery. Given that these fish are exhausted when released, and there is a relatively large presence of sea lions and seals that feed upon these released fish, the Tribe recommends that all fish caught (even those foul hooked) be retained and counted toward an angler's daily bag limit.

The second modification would expand subsection (b)(91.1)(B)3. to add Blue Creek to the September 15 to December 31 stream mouth closures and add a new Klamath River main stem closure from June 15 to September 14 from 500 feet above to ½ mile downstream around the mouth of Blue Creek.

This proposed conservation area has two purposes, depending on the time of year:

1) Mid-June to mid-September: The intent of this closure to fishing is to protect the large numbers of adult summer steelhead, as well as spring

and fall-run Chinook salmon (thousands during some years), that are seeking thermal respite from the excessively warm Klamath River main stem temperatures. The intent is to prevent these fish from being caught by anglers, played for an extended period of time in the ambient river conditions that are several degrees warmer (sometimes near lethal levels) than the thermal refuge, and then eventually released. Forcing fish to go through such abrupt temperature changes, while putting them through excessive stress, results in physiological trauma that can lead to death.

2) Mid-September through December: The intent of this closure is to protect the genetically unique late-fall run chinook salmon that hold at the mouth of Blue Creek prior migrating upstream to spawn in Blue Creek, similar to the protections that are currently given at the mouths of the Salmon, Scott and Shasta Rivers.

Option 3 – A possible combination of Options 1 and 2

The Commission may combine Option 1's prohibition on catch and release fishing in the spit area with Option 2's Blue Creek conservation closure.

1) All legally caught Chinook salmon must be retained. Once the adult Chinook component of the daily bag has been retained, the angler must cease fishing in the spit area.
2) Conservation closure below the mouth of Blue Creek to reduce catch and release in a thermal refuge area and protect late-fall Chinook holding prior to entering Blue Creek.

ADDITIONAL PROPOSED CHANGES

The name of the road listed in subsection (b)(91.1)(B)2. is proposed to be corrected from "Ishi Pishi Falls road" to "Ishi Pishi Road". Cross references are proposed to be corrected in subsection (b)(195) to reduce public confusion. Other changes are proposed for clarity and consistency.

Benefits of the Proposed Regulations

It is the policy of this State to encourage the conservation, maintenance, and utilization of the living resources of the ocean and inland waters under the jurisdiction and influence of the State for the benefit of all the citizens of the State. In addition, it is the policy of this State to promote the development of local California fisheries in harmony with federal law respecting fishing and the conservation of the living resources of the ocean and inland waters under the jurisdiction and influence of the State. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use. Adoption of scientifically-based Klamath River Basin salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of salmon to ensure their continued existence.

The benefits of the proposed regulations are in conformance with federal law, sustainable management of Klamath River Basin salmon resources, and promotion of businesses that rely on recreational salmon fishing in the Klamath River Basin.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 205, 215, 220, 240, 315 and 316.5, Fish and Game Code.

Reference: Sections 200, 202, 205, 215 and 316.5, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None.

(d) Identification of Reports or Documents Supporting Regulation Change:

In-River Sport Fishing Economics Technical Report, National Oceanographic and Atmospheric Administration, National Marine Fisheries Service (NMFS), September 2011.

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

No public meetings are being held prior to the notice publication. The 45-day comment period provides adequate time for review of the proposed amendments.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

The use of more liberal regulations for bag limits, possession limits and fishing methods. For KRFC salmon, more liberal regulations would be less desirable than those proposed because they could create risk of an intense fishery reaching or exceeding the quota in a very short time. Reaching the quota in a very short time could be damaging to the local economy. Exceeding the allowable harvest could be damaging to the KRFC salmon stocks.

(b) No Change Alternative:

The No Change Alternative would leave the current 2014 regulations in place and would not conform to the PFMC Klamath River Basin quota for 2015. Nor would it address the excessive catch and release mortality within the spit area. The change is necessary to continue appropriate harvest rates and an equitable distribution of the harvestable surplus.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed regulations are projected to have some impact on the net revenues to local businesses servicing sport fishermen. Visitor spending may be reduced and in the absence of the emergence of alternative visitor activities, the drop in spending could induce business contraction. However, this will not likely affect the ability of California businesses to compete with businesses in other states. The preservation of Klamath River salmon stocks is necessary for the success of lower and upper Klamath River Basin businesses which provide goods and services related to fishing. The proposed changes are necessary for the continued preservation of the resource and therefore the prevention of adverse economic impacts.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The proposed regulations range from no fishing of KRFC salmon in 2015; to a normal Klamath River Basin salmon season. The Commission anticipates some impact on the creation or elimination of jobs in California. The potential employment impacts range from 0 to 23 jobs which are not

expected to create, eliminate or expand businesses in California. The Commission anticipates impacts on the creation, elimination or expansion of businesses in California ranging from no impact to reduced revenues to approximately 30 businesses that serve sport fishing activities. However, the possibility of growth of businesses to serve substitute activities exists. Adverse impacts to jobs and/or businesses would be less if fishing of grilse KRFC salmon is permitted than under the complete closure to all fishing. The impacted businesses are generally small businesses employing few individuals and, like all small businesses, are subject to failure for a variety of causes. Additionally, the long-term intent of the proposed action is to increase sustainability in fishable salmon stocks and, subsequently, the promotion and long-term viability of these same small businesses.

The Commission anticipates benefits to the health and welfare of California residents. Providing opportunities for a salmon sport fishery encourages consumption of a nutritious food.

The Commission anticipates benefits to the environment by the sustainable management of California's salmon resources.

The Commission does not anticipate any benefits to worker safety.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VI. Economic Impact Assessment:

The regulatory amendments of subsections of Section 7.50 under consideration will set the 2014 Klamath River Basin salmon sport fishing regulations to conform to Pacific Fishery Management Council (PFMC) Fall Chinook allocation guidelines. The Klamath River Basin is anticipated to be open for sport salmon fishing at levels similar to the 2014 quotas; however the possibility of marine fishery area closures still exists. Ocean closures may in turn result in PFMC recommendations for Klamath River Basin sport salmon fishery closures for the take of adult salmon. Adverse or positive impacts to jobs and businesses will depend on the exact regulations ultimately adopted by PFMC and the Fish and Game Commission (Commission).

The Commission is considering proposed changes to Klamath River Fall Chinook (KRFC) quota management and the management of the Klamath River Basin spit area which is the area within 100 yards of the channel through the sand spit formed at the Klamath River mouth:

1) KRFC QUOTA MANAGEMENT
The proposed regulations range from 100% of last year's Klamath River Basin salmon season to 0% or no salmon fishing on adult Chinook salmon (greater than 22 inches) in 2015. Under all scenarios sport fishing will be allowed for grilse fall-run Chinook salmon (2 year-old salmon 22 inches or less) regardless of PFMC regulations, thus any adverse impacts to businesses would be less severe than under a complete closure of fishing.

The projections evaluated here are as follows: 100% of the 2014 Klamath River Basin catch limit; 50% of the 2014 basin catch limit; and 0% of the 2014 basin catch limit.

A. Effects of the Regulation on the Creation or Elimination of Jobs

Projection 1. 100% catch limit: The Commission does not anticipate any adverse impacts on the creation or elimination of jobs, as the quotas would not decrease effort nor curtail the number of visitors and thus probable visitor expenditures in the fisheries areas.

Based on a 2011 NOAA National Marine Fisheries Service (NMFS) report on In-River Sport Fishing Economics of the Klamath River, under a normal season non-resident Klamath River sport salmon anglers contribute about $2,037,424 (2013$) in total economic output to California businesses. This revenue supports about 35 jobs in the state.

An assumption of the NMFS report is that increases in expenditures by resident anglers associated with expanded fishing opportunities would be accommodated by reduced expenditures on other locally purchased goods and services – with

no net change in local economic activity. For non-resident anglers, however, increases in local expenditures associated with increases in local fishing opportunities would be accomplished by diverting money that they would otherwise spend outside the local area. Thus the economic impact analysis focuses on non-resident angler expenditures, which represent 'new money' whose injection serves to stimulate the local economy.

The NMFS study excluded the Trinity River, the largest tributary to the Klamath. The Trinity River is allocated 33% of the Klamath Basin fall-run Chinook salmon total allocation. Using the Trinity allocation as a measure of angler effort, and thus impacts on associated businesses that support anglers, the total non-resident angler contribution to the entire Klamath Basin (including the Trinity River) is estimated to be $2,709,774 (2013$) in total economic output. This revenue, again using a 33% increase to account for the Trinity River, provides an estimated total of 47 jobs in the state (assuming that personnel costs also rise with inflation). This is a conservative estimate of total economic impact as it counts only non-resident angler expenditures. Non-resident average expenditures are estimated to be $106.43 (2013$) per angler day (for lodging, food, gasoline, fishing gear, boat fuel, and guide fees) based on a NMFS sponsored survey. Resident average expenditures per angler day are estimated to be 60% less (markedly reduced lodging, gasoline and food expenditures) which yields an estimate of $42.60 per angler day. Resident anglers comprise about 36% of Klamath Basin anglers.

Projection 2. 50% catch limit: The Commission anticipates some impact on the creation or elimination of jobs. A 50% catch reduction will likely reduce visitor spending by slightly less than 50%, given price elasticities of demand for salmon fishing activity of less than one. As the "price" of fishing per unit catch increases the demand for fishing trips declines by a lesser extent, particularly in the short-run. While difficult to predict, job losses associated with a 50% reduction in the catch limit are expected to be less than half of the estimated total jobs supported by angler visits (i.e. fewer than 23 jobs).

Projection 3. 0% catch limit: In the event of fisheries closures in some or all Klamath River basin areas, the Commission anticipates less than 50% reduction in fishery-related jobs. As mentioned earlier, sport fishing for grilse fall-run Chinook salmon (2–year-old salmon less than 22 inches) will still be allowed, thus lessening any job losses. A closure on the take of adult Chinook salmon was instituted in 2006 and only grilse salmon could be legally harvested that year. The effect of the 2006 closure, as measured by angler days on the Klamath River, resulted in an approximate 50% drop in angler days, compared to the 2000- 2005 average (12,000 angler days vs. 23,300 angler days). Job creation or elimination is assumed to lag in adjustment to changes in consumer demand as is characteristic of the labor market. Thus, the potential impacts of a closure on the take of adult Chinook are estimated to result in the loss of fewer than 23 jobs.

B. Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses

Projection 1: 100% catch limit: The Commission does not anticipate any impacts on the creation of new business or the elimination of existing businesses, as the quotas would not decrease effort nor curtail the number of visitors and thus probable visitor expenditures in the fisheries areas.

Projection 2. 50% catch limit: The Commission anticipates a decline in visits to the fishery areas of less than 50%. This may result in some decline in business activity and no business creation for businesses directly related to fishing activities. However, with less effort being expended on fishing, the possibility of substitute activities and the growth of businesses to serve those activities exists.

Projection 3. 0% catch limit: In the event of fisheries closures in some or all Klamath River basin areas, the Commission anticipates a decline in regional spending and thus reduced revenues to the approximately 30 businesses that serve sport fishing activities. However adverse impacts will be mitigated by the continued opportunity to harvest grilse salmon. Additionally, the long-term intent of the proposed action is to increase sustainability in fishable salmon stocks and, subsequently, the long-term viability of these same small businesses.

C. Effects of the Regulation on the Expansion of Businesses in California

Projection 1. 100% catch limit: The Commission does not anticipate any impacts on the expansion of businesses in California as the quotas would not increase effort nor increase the number of visitors and thus probable visitor expenditures in the fisheries areas.

Projection 2. 50% catch limit: The Commission does not anticipate any impacts on the expansion of businesses in California. Decreases in expenditures by resident anglers associated with reduced fishing opportunities may be offset by increased expenditures on other locally purchased goods and services – with no net change in local economic activity. For non-resident anglers, however, decreases in local expenditures associated with decreases in local fishing opportunities may result in increases in other expenditures outside the Klamath River basin area.

Projection 3. 0% catch limit: In the event of fisheries closures in some or all Klamath River basin areas, the Commission does not anticipate any expansion of businesses in California. Decreases in expenditures by anglers associated with reduced fishing opportunities may be partially offset by increased expenditures on other locally purchased goods and services as visitors substitute salmon fishing with other recreational pursuits.

D. Benefits of the Regulation

Concurrence with Federal Law:
California's sport fishing regulations need to conform to the new Federal regulations to achieve optimum yield in California. The PFMC annually reviews the status of west coast salmon populations. As part of that process, it

recommends west coast adult salmon fisheries regulations aimed at meeting biological and fishery allocation goals specified in law or established in the Salmon Fishery Management Plan. These recommendations coordinate west coast management of sport and commercial ocean salmon fisheries off the coasts of Washington, Oregon, and California and California inland sport salmon fisheries. These recommendations are subsequently implemented as ocean fishing regulations by the NMFS and as sport salmon regulations for state marine and inland waters by the Commission.

Promotion of businesses that rely on Klamath River basin sport salmon fishing. Adoption of scientifically-based inland and ocean salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of salmon to ensure their continued existence and future salmon sport fishing opportunities, and subsequently the long-term viability of businesses that rely on Klamath River Basin sport fishing. Under a normal season, Klamath River Basin (including the Trinity River) sport salmon anglers contribute about $2,709,774 (2013$) in total economic output to the State's business sector. This is based on a 2011 NOAA National Marine Fisheries Service (NMFS) report on In-River Sport Fishing Economics of the Klamath River Basin. This revenue provides for about 47 jobs in the state.

Benefits to the environment: sustainable management of Klamath River basin salmon resources

Projection 1. 100% catch limit: The Commission anticipates benefits to the environment. It is the policy of this state to encourage the conservation, maintenance, and utilization of the living resources of the ocean and inland waters under the jurisdiction and influence of the state for the benefit of all the citizens of the state. In addition, it is the policy of this state to promote the development of local California fisheries in harmony with federal law respecting fishing and the conservation of the living resources of the ocean and inland waters under the jurisdiction and influence of the state. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use. Adoption of scientifically-based Klamath River Basin salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of salmon to ensure their continued existence.

Projection 2. The Commission anticipates benefits to the environment similar to as stated in Projection 1.

Projection 3. The Commission anticipates benefits to the environment similar to as stated in Projection 1.

Benefits to the health and welfare of California residents

Projection 1. The Commission anticipates benefits to the health and welfare of California residents through the protection of aquatic and riparian habitats and

the fish and wildlife resources that depend upon them. Providing opportunities for a Klamath River Basin sport salmon fishery encourages consumption of a nutritious food. Salmon sport fishing also contributes to increased mental health of its practitioners as fishing is a hobby and form of relaxation for many. Salmon sport fishing also provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of California's natural resources.

Projection 2. The Commission anticipates benefits to the health and welfare of California residents similar to as stated in Projection 1.

Projection 3. The Commission anticipates benefits to the health and welfare of California residents similar to as stated in Projection 1.

Benefits to worker safety

Projection 1. The Commission does not anticipate benefits to worker safety because the proposed regulations will not impact worker conditions.

Projection 2. The Commission does not anticipate benefits to worker safety as stated in Projection 1.

Projection 3. The Commission does not anticipate benefits to worker safety as stated in Projection 1.

Informative Digest/Policy Statement Overview

The Klamath River System, which consists of the Klamath River and Trinity River basins, is managed through a cooperative system of State, federal, and tribal management agencies. Salmonid regulations are designed to meet natural and hatchery escapement needs for salmonid stocks, while providing equitable harvest opportunities for ocean recreational, ocean commercial, river recreational and tribal fisheries.

The Pacific Fishery Management Council (PFMC) is responsible for adopting recommendations for the management of recreational and commercial ocean salmon fisheries in the Exclusive Economic Zone (three to 200 miles offshore) off the coasts of Washington, Oregon, and California. When approved by the Secretary of Commerce, these recommendations are implemented as ocean salmon fishing regulations by the National Marine Fisheries Service (NMFS).

The California Fish and Game Commission (Commission) adopts regulations for the ocean salmon recreational (inside three miles) and the Klamath River System recreational fisheries which are consistent with federal fishery management goals.

For the purpose of PFMC mixed-stock fishery modeling and salmon stock assessment, salmon greater than 22 inches are defined as adult salmon (ages 3-5) and salmon less than or equal to 22 inches are defined as grilse salmon (age 2).

Klamath River Fall-Run Chinook

Klamath River fall-run Chinook salmon (KRFC) harvest allocations and natural spawning escapement goals are established by the PFMC. The KRFC harvest allocation between tribal and non-tribal fisheries is based on court decisions and allocation agreements between the various fishery representatives.

The 2015 KRFC in-river recreational fishery allocation recommended by the PFMC is currently unknown. All proposed closures for adult KRFC are designed to ensure sufficient spawning escapement in the Klamath River Basin and equitably distribute harvest while operating within annual allocations.

Klamath River Spring-Run Chinook

The Klamath River System also supports Klamath River spring-run Chinook salmon (KRSC). Naturally produced KRSC are both temporally and spatially separated from KRFC in most cases.

Presently, KRSC stocks are not managed or allocated by the PFMC. The in-river recreational fishery is managed by general basin seasons, daily bag limit, and possession limit regulations.

KRFC Allocation Management

The PFMC 2014 allocation for the Klamath River System recreational harvest was 4,128 adult KRFC. Preseason stock projections of 2015 adult KRFC abundance will not be available from the PFMC until March 2015. The 2015 Klamath River Basin allocation

will be recommended by the PFMC in April 2015 and presented to the Commission for adoption prior to its April 2015 meeting.

For public notice requirements, the Department of Fish and Wildlife (Department) recommends the Commission consider an allocation range of 0 – 67,600 adult KRFC in the Klamath River Basin for the river recreational fishery.

Current Recreational Fishery Management

The KRFC in-river recreational harvest allocation is divided into geographic areas and harvest is monitored under real time subquota management. KRSC in-river recreational harvest is managed by general season, daily bag limit, and possession limit regulations.

The daily bag and possession limits apply to both stocks within the same sub-area and time period.

Proposed Changes

No changes are proposed for the general (KRSC) opening and closing season dates, and bag, possession and size limits.

The following changes to current regulations are proposed:

KRFC QUOTA MANAGEMENT: Seasons, Bag and Possession Limits

For public notice requirements, a range of KRFC bag and possession limits are proposed until the 2015 Klamath River Basin quota is adopted. As in previous years, no retention of adult KRFC salmon is proposed for the following areas, once the subquota has been met.

The proposed open seasons and range of bag and possession limits for KRFC salmon stocks are as follows:

1. Klamath River - August 15 to December 31
2. Trinity River - September 1 to December 31
3. Bag Limit - [0-4] Chinook salmon of which no more than [0-4] fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length.
4. Possession limit - [0-12] Chinook salmon of which [0–12] over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.

SPIT AREA MANAGEMENT

Current regulations specify that the spit area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth) closes to all fishing after 15 percent of the total adult KRFC quota has been taken downstream of the Highway 101 bridge.

In 2014 the Department also evaluated restrictive measures for the spit area which included a "no catch and release" regulation for Chinook salmon legally caught in the spit area to protect Chinook stocks from excessive catch and release mortality. The regulatory time frame did not allow for sufficient time to promulgate such a regulation change. The Department informed the Commission that it would consider this change for the 2015 regulatory cycle.

The following options are being provided for Commission consideration:

Option 1 - No catch and release fishing in Spit Area - Department Proposal

After internal discussion and Yurok Tribal coordination, the Department is proposing the following change to the 2015 fall Chinook spit area regulations:

> All legally caught Chinook salmon must be retained. Once the adult Chinook component of the daily bag has been retained, the angler must cease fishing in the spit area.

This regulatory proposal does not preclude anglers from leaving the spit area and fishing other areas once their adult daily bag has been taken. Anglers may fish other areas outside of the spit to fill the grilse (Chinook salmon <22 inches) component of their daily bag limit. This regulation also does do not preclude anglers from filling a daily bag composed entirely of grilse salmon while fishing the spit area.

Option 2 - All Chinook salmon must be kept in Spit Area with Blue Creek closure - Yurok Proposal

The Yurok tribe is proposing the following modifications to the Klamath River regulations in the spit area and on the main Klamath River below the confluence with Blue Creek:

1) No catch and release fishing allowed in the spit area to reduce pinniped predation on released fish, and
2) Conservation closure below the mouth of Blue Creek to reduce catch and release in a thermal refuge area and protect late-fall Chinook holding prior to entering Blue Creek.

The first modification is to the spit area at the mouth of the Klamath River to allow no release of Chinook salmon, regardless of whether they are legally caught or foul hooked. This option provides an exception from the general snagging prohibitions in Section 2.00. The second modification would add Blue Creek to the September 15 to December 31 stream mouth closures and add a new Klamath River main stem closure from June 15 to September 14 from 500 feet above to ½ mile downstream around the mouth of Blue Creek.

Option 3 – A possible combination of Options 1 and 2

The Commission may combine Option 1's prohibition on catch and release fishing in the spit area with Option 2's Blue Creek conservation closure.

1) All legally caught Chinook salmon must be retained. Once the adult Chinook component of the daily bag has been retained, the angler must cease fishing in the spit area.
2) Conservation closure below the mouth of Blue Creek to reduce catch and release in a thermal refuge area and protect late-fall Chinook holding prior to entering Blue Creek.

ADDITIONAL PROPOSED CHANGES

The name of the road listed in subsection (b)(91.1)(B)2. is proposed to be corrected from "Ishi Pishi Falls road" to "Ishi Pishi Road". Cross references are proposed to be corrected in subsection (b)(195) to reduce public confusion. Other changes are proposed for clarity and consistency.

Benefits of the Proposed Regulations

The benefits of the proposed regulations are in conformance with federal law, sustainable management of Klamath River Basin salmon resources, and promotion of businesses that rely on recreational salmon fishing in the Klamath River Basin.

The proposed regulations are neither inconsistent nor incompatible with existing State regulations. The Legislature has delegated authority to the Commission to promulgate sport fishing regulations (sections 200, 202, 205, 315, and 316.5, Fish and Game Code). Commission staff has searched the California Code of Regulations and has found no other State regulations related to the recreational take of Chinook salmon in the Lower Klamath River Basin.

Attachment 3

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
FINAL STATEMENT OF REASONS FOR REGULATORY ACTION

Amend Subsections (b)(91.1) and (b)(195) of Section 7.50
Title 14, California Code of Regulations
RE: 2015 Klamath River Basin Sport Fishing Regulations

I. Date of Initial Statement of Reasons: January 12, 2014

II. Date of Pre-adoption Statement of Reasons: March 20, 2015

III. Date of Final Statement of Reasons: May 4, 2015

IV. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 3, 2014
Location: Van Nuys

(b) Discussion Hearing: Date: February 12, 2015
Location: Sacramento

(c) Adoption Hearing: Date: April 17, 2015
Location: Teleconference

V. Update:

At the April 17, 2015 teleconference, the Fish and Game Commission (Commission) adopted the following Klamath Basin bag and possession limits, adult quota, and conservation measures:

(1) A daily bag limit of 3 Chinook salmon of which no more than 2 fish greater than 22 inches in length may be taken when the take of adults is allowed.

(2) A possession limit of 9 Chinook salmon of which no more than 6 fish greater than 22 inches in length may be retained when the take of adults is allowed.

(3) A basin quota of 14,133 adult Chinook salmon greater than 22 inches in length.

(4) A closure of the main stem Klamath River near the confluence of Blue Creek between June 15 and December 31. The main stem Klamath River will be closed to sport fishing from 500 feet upstream of the mouth of Blue Creek to ½ mile downstream from the mouth of Blue Creek from June 15 through September 14 and within 500 feet of the Blue Creek confluence from September 15 through December 31.

(5) A mandatory retention of all legally hooked and landed Chinook salmon in

the spit area (mouth of the Klamath River). Additionally, once anglers have retained the adult component of the daily Chinook bag limit, they must cease fishing in the spit area. Anglers may continue to fish other areas of the Klamath River after leaving the spit if they have not retained their daily bag limit.

Sport fishing seasons for KRFC remain unchanged and are as follows:

(1) Klamath River - August 15 through December 31

(2) Trinity River - September 1 through December 31

The Klamath Basin quota of 14,133 adult KRFC aligns with federal regulations which provide guidance on allocations between ocean sport and commercial fisheries, inland sport fisheries, and recognized tribal fisheries.

The Commission adopted non-substantive changes for clarity and consistency.

VI. Summary of Primary Considerations Raised in Support of or Opposition to the Proposed Actions and Reasons for Rejecting Those Considerations:

See Attachment 1 titled "Summary of Public Comments and Responses."

VII. Location and Index of Rulemaking File: A rulemaking file with attached file index is maintained at:

California Fish and Game Commission
1416 Ninth Street
Sacramento, CA 95814

VIII. Location of Department of Fish and Wildlife files:

Department of Fish and Wildlife
1416 Ninth Street
Sacramento, CA 95814

IX. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulatory Action:

The use of more liberal regulations for bag limits, possession limits, and fishing methods. For KRFC, more liberal regulations would be less desirable than those proposed because they could create risk of an intense fishery reaching or exceeding the quota in a very short time. Reaching the quota in a very short time could be damaging to the local economy. Exceeding the allowable harvest could be damaging to the KRFC stocks.

(b) No Change Alternative:

The No Change Alternative would leave the current 2014 regulations in place and would not conform to the Pacific Fishery Management Council Klamath River Basin quota for 2015, nor would it address the excessive catch and release mortality within the spit area. The change is necessary to continue appropriate harvest rates and an equitable distribution of the harvestable surplus.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the adopted regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

X. Impact of Regulatory Action:

The potential for significant Statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant Statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed regulations are projected to have some impact on the net revenues to local businesses servicing sport fishermen. Visitor spending may be reduced and in the absence of the emergence of alternative visitor activities, the drop in spending could induce business contraction. However, this will not likely affect the ability of California businesses to compete with businesses in other states. The preservation of Klamath River salmon stocks is necessary for the **long-term sustainability and** success of lower and upper Klamath River Basin businesses **that** provide goods and services related to fishing. The proposed changes are necessary for the continued preservation of the resource and, **in the long-term,** prevention of adverse economic impacts.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The proposed regulations range from no fishing of KRFC in 2015 to a

normal Klamath River Basin salmon season. The Commission anticipates some impact on the creation or elimination of jobs in California. The potential employment impacts range from 0 to 23 jobs which are not expected to create, eliminate, or expand businesses in California. The Commission anticipates impacts on the creation, elimination, or expansion of businesses in California ranging from no impact to reduced revenues for approximately 30 businesses that serve sport fishing activities. However, the possibility of growth of businesses to serve substitute activities exists. Adverse impacts to jobs and/or businesses would be less if fishing of grilse KRFC is permitted than under the complete closure to all fishing. The impacted businesses are generally small businesses employing few individuals and, like all small businesses, are subject to failure for a variety of causes. Additionally, the long-term intent of the proposed action is to increase sustainability in fishable salmon stocks and, subsequently, the promotion and long-term viability of these same small businesses.

The Commission anticipates benefits to the health and welfare of California residents. Providing opportunities for a salmon sport fishery encourages outdoor recreational activity and consumption of a nutritious food.

The Commission anticipates benefits to the environment by the sustainable management of California's salmon resources.

The Commission does not anticipate any benefits to worker safety.

(c) Cost Impacts on a Representative Private Person or Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

Updated Informative Digest/Policy Statement Overview

The Klamath River System which consists of the Klamath River and Trinity River basins is managed through a cooperative system of State, federal, and tribal management agencies. Salmonid regulations are designed to meet natural and hatchery escapement needs for salmonid stocks, while providing equitable harvest opportunities for ocean recreational, ocean commercial, river recreational, and tribal fisheries.

The Pacific Fishery Management Council (PFMC) is responsible for adopting recommendations for the management of recreational and commercial ocean salmon fisheries in the Exclusive Economic Zone (three to 200 miles offshore) off the coasts of Washington, Oregon, and California. When approved by the Secretary of Commerce, these recommendations are implemented as ocean salmon fishing regulations by the National Marine Fisheries Service.

The California Fish and Game Commission (Commission) adopts regulations for the ocean salmon recreational (inside three miles) and the Klamath River System recreational fisheries which are consistent with federal fishery management goals.

For the purpose of PFMC mixed-stock fishery modeling and salmon stock assessment, salmon greater than 22 inches are defined as adult salmon (ages 3-5) and salmon less than or equal to 22 inches are defined as grilse salmon (age 2).

Klamath River Fall-Run Chinook

Klamath River fall-run Chinook salmon (KRFC) harvest allocations and natural spawning escapement goals are established by the PFMC. The KRFC harvest allocation between tribal and non-tribal fisheries is based on court decisions and allocation agreements between the various fishery representatives.

The 2015 KRFC in-river recreational fishery allocation recommended by the PFMC is currently unknown. All proposed closures for adult KRFC are designed to ensure sufficient spawning escapement in the Klamath River Basin and equitably distribute harvest while operating within annual allocations.

Klamath River Spring-Run Chinook

The Klamath River System also supports Klamath River spring-run Chinook salmon (KRSC). Naturally produced KRSC are both temporally and spatially separated from KRFC in most cases.

Presently, KRSC stocks are not managed or allocated by the PFMC. The in-river recreational fishery is managed by general basin seasons, daily bag limit, and possession limit regulations.

KRFC Allocation Management

The PFMC 2014 allocation for the Klamath River System recreational harvest was 4,128 adult KRFC. Preseason stock projections of 2015 adult KRFC abundance will not be available from the PFMC until March 2015. The 2015 Klamath Basin allocation will be recommended by the PFMC in April 2015 and presented to the Commission for adoption prior to its April 2015 meeting.

For public notice requirements, the Department of Fish and Wildlife (Department) recommended the Commission consider an allocation range of 0 - 67,600 adult KRFC in the Klamath River Basin for the river recreational fishery.

Current Recreational Fishery Management

The KRFC in-river recreational harvest allocation is divided into geographic areas and harvest is monitored under real time subquota management. KRSC in-river recreational harvest is managed by general season, daily bag limit, and possession limit regulations.

The daily bag and possession limits apply to both stocks within the same sub-area and time period.

No changes are proposed for the general KRSC opening and closing season dates, and bag, possession, and size limits.

Proposed Changes

The following changes to current regulations are proposed:

KRFC QUOTA MANAGEMENT: Seasons, Bag, and Possession Limits

For public notice requirements, a range of KRFC bag and possession limits are proposed until the 2015 Klamath Basin quota is adopted. As in previous years, no retention of adult KRFC is proposed for the following areas once the subquota has been met.

The proposed open seasons and range of bag and possession limits for KRFC salmon stocks are as follows:

1. Klamath River - August 15 to December 31

2. Trinity River - September 1 to December 31

3. Bag Limit - [0-4] Chinook salmon of which no more than [0-4] fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length.

4. Possession limit - [0-12] Chinook salmon of which [0-12] over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.

SPIT AREA MANAGEMENT

Current regulations specify that the spit area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth) closes to all fishing after 15 percent of the total adult KRFC quota has been taken downstream of the Highway 101 bridge.

In 2014, the Department also evaluated restrictive measures for the spit area which included a "no catch and release" regulation for Chinook salmon legally caught in the spit area to protect Chinook stocks from excessive catch and release mortality. The regulatory time frame did not allow for sufficient time to promulgate such a regulation change. The Department informed the Commission it would consider this change for the 2015 regulatory cycle.

The following options are being provided for Commission consideration:

Option 1: No catch and release fishing in spit area – Department Proposal

After internal discussion and Yurok Tribal coordination, the Department is proposing the following change to the 2015 fall Chinook spit area regulations:

> All legally caught Chinook salmon must be retained. Once the adult Chinook component of the daily bag has been retained, the angler must cease fishing in the spit area.

This regulatory proposal does not preclude anglers from leaving the spit area and fishing other areas once their adult daily bag has been taken. Anglers may fish other areas outside of the spit to fill the grilse (Chinook salmon ≤22 inches) component of their daily bag limit. This regulation also **does not** preclude anglers from filling a daily bag composed entirely of grilse salmon while fishing the spit area.

Option 2: All Chinook salmon must be kept in spit area with Blue Creek closure – Yurok Tribe Proposal

The Yurok Tribe is proposing the following modifications to the Klamath River regulations in the spit area and on the main Klamath River below the confluence with Blue Creek:

(1) No catch and release fishing allowed in the spit area to reduce pinniped predation on released fish, and

(2) Conservation closure below the mouth of Blue Creek to reduce catch and release **mortality** in a thermal **refugia** area and protect late-fall Chinook holding prior to entering Blue Creek.

The first modification is to the spit area at the mouth of the Klamath River to allow no release of Chinook salmon, regardless of whether they are legally caught or foul hooked. This option provides an exception from the general snagging prohibitions in section 2.00. The second modification would add Blue Creek to the September 15 to December 31 stream mouth closures and add a new Klamath River main stem closure

from June 15 to September 14 from 500 feet above to ½ mile downstream around the mouth of Blue Creek.

Option 3: A possible combination of Options 1 and 2

The Commission may combine Option 1's prohibition on catch and release fishing in the spit area with Option 2's Blue Creek conservation closure:

(1) All legally caught Chinook salmon must be retained. Once the adult Chinook component of the daily bag has been retained, the angler must cease fishing in the spit area.

(2) Conservation closure below the mouth of Blue Creek to reduce catch and release **mortality** in a thermal **refugia** area and protect late-fall Chinook holding prior to entering Blue Creek.

ADDITIONAL PROPOSED CHANGES

The name of the road listed in subsection (b)(91.1)(B)(2) is proposed to be corrected from "Ishi Pishi Falls road" to "Ishi Pishi Road." Cross references are proposed to be corrected in subsection (b)(195) to reduce public confusion. Other changes are proposed for clarity and consistency.

Benefits of the Proposed Regulations

The benefits of the proposed regulations are in conformance with federal law, sustainable management of Klamath River Basin salmon resources, and promotion of businesses that rely on recreational salmon fishing in the Klamath River Basin.

The proposed regulations are neither inconsistent nor incompatible with existing State regulations. The Legislature has delegated authority to the Commission to promulgate sport fishing regulations (Sections 200, 202, 205, 315, and 316.5 **of the** Fish and Game Code). Commission staff has searched the California Code of Regulations and has found no other State regulations related to the recreational take of Chinook salmon in the Lower Klamath River Basin.

At the April 17, 2015 teleconference the Commission adopted the following Klamath Basin bag and possession limits, adult quota, and conservation measures:

(1) A daily bag limit of 3 Chinook salmon of which no more than 2 fish greater than 22 inches in length may be taken when the take of adults is allowed.

(2) A possession limit of 9 Chinook salmon of which no more than 6 fish greater than 22 inches in length may be retained when the take of adults is allowed.

(3) A basin quota of 14,133 adult Chinook salmon greater than 22 inches in length.

(4) A closure of the main stem Klamath River near the confluence of Blue Creek between June 15 and December 31. The main stem Klamath River will be closed to sport fishing from 500 feet upstream of the mouth of Blue Creek to ½ mile downstream from the mouth of Blue Creek from June 15 through September 14 and within 500 feet of the Blue Creek confluence from September 15 through December 31.

(5) A mandatory retention of all legally hooked and landed Chinook salmon in the spit area (mouth of the Klamath River). Additionally, once anglers have retained the adult component of the daily Chinook bag they must cease fishing in the spit area. Anglers may continue to fish other areas of the Klamath River after leaving the spit if they have not retained their daily bag limit.

Sport fishing seasons for KRFC remain unchanged and are as follows:

(1) Klamath River- August 15 through December 31.

(2) Trinity River- September 1 through December 31.

The Basin quota, 14,133 adult KRFC, aligns with federal regulations which provide guidance on allocations between ocean sport and commercial fisheries, inland sport fisheries, and recognized tribal fisheries.

The Commission adopted non-substantive changes for clarity and consistency.

Attachment 4

Attachment 1
Summary of Public Comments and Responses

	Name of Commenter	Type/Date	Summary of Comments	Response
1	Jim Newton	Faxed letter received 10/8/14	Requests repeal of the regulation that prohibits filleting of salmonids until at a place of permanent residence (section 1.45).	Reject: Filleting of salmon in the field creates enforcement issues concerning threatened and endangered species in coastal waters including the Klamath River.
2	Xai Her	Email received 10/17/14	Recommends a regulation that only single point barbless hooks be used for salmon in both inland and saltwater.	Reject: The use of barbless hooks is already required when fishing in anadromous waters of the Klamath River system, and further requiring single point hooks will not measurably reduce hooking mortality. The portion of the recommendation regarding other inland waters and ocean waters is outside the scope of this rulemaking.
3	Thomas O'Rourke, Chairman Yurok Tribe	Letter c/o e-mail from Diane Bowers received 11/20/15	a. Letter documenting Yurok Tribe proposals for Klamath river regulations including: b. All Fall Chinook caught in the spit area must be retained (no catch and release fishing of Fall Chinook regardless of whether the fish is legally taken). Once an angler's daily bag limit (regardless of whether it is an adult or jack) is obtained in the spit area, they must stop fishing for the day.	a. The Yurok Tribe's proposed conservation closure and a modified version of the Yurok Tribe's proposal for the spit area were included in the ISOR as potential options for the 2015 sport fishing season. b. Reject: The Commission adopted the Department alternative for the Klamath River mouth that prohibits catch and release fishing of Chinook salmon for all legally hooked fish. Once the adult component of the total daily bag limit has been retained, anglers must cease fishing in the spit area. The Department option was a compromise option to alleviate catch and release concerns while retaining anti- snagging regulations. The Yurok Tribe's proposal to require anglers to fully stop fishing for entire day unnecessarily reduces fishing opportunities in other river areas.

Attachment 1
Summary of Public Comments and Responses

	Name of Commenter	Type/Date	Summary of Comments	Response
			c. Sport fishing conservation closure of the main stem Klamath River near Blue Creek. No fishing from June 15 to September 14 from 500 feet upstream of the mouth of Blue Creek to ½ mile downstream of the mouth of Blue Creek, and no fishing from September 15 through December 31 within 500 feet of the mouth of Blue Creek.	c. The Commission adopted the Yurok Tribe's recommended conservation option for a sport fishing closure in the vicinity of Blue Creek.
4	Mindy Natt Yurok Tribal Council	Verbal comment 12/3/14	States that there should be no catch and release fishing in the spit area and that Commission should adopt a conservation closure at the mouth of Blue Creek during mid-June through November for Chinook salmon upstream migration. Notes that Blue Creek and the Klamath River are within reservation boundaries.	See Responses 3b and 3c.
5	Dave Hillemeier, Fisheries Program Manager, Yurok Tribe	Verbal comment 12/3/14	a. Stated that given the unique nature of the fishery at the mouth and the severity of seal and sea lion predation, the Yurok Tribe supports the option to require all Chinook salmon caught at the spit, whether foul hooked or not, be retained. b. States that the Blue Creek conservation area is very	a. See Response 3b. b. Comment noted.

	Name of Commenter	Type/Date	Summary of Comments	Response
			important both culturally and biologically.	
			c. States that the late Fall Chinook salmon in Blue Creek are genetically different (a separate evolutionally significant unit) than other Fall Chinook in the Klamath.	c. Comment noted.
			d. States that the Yurok Tribe closes the Klamath River from the third week of September to the end of November from 500' upstream to half a mile below Blue Creek. States that the Yurok Tribe supports a similar closure (500' upstream and downstream) of mouth of Blue Creek (like is in place for the Salmon, Shasta and Scott Rivers) from September 15 through December.	d. See Response 3c.
			e. Supports a conservation closure mid-June through the end of September when Klamath River water temperatures are an issue in order to prevent catching fish in cold water and dragging them into water 6°C warmer which causes extreme stress leading	e. See Response 3c.

Attachment 1
Summary of Public Comments and Responses

	Name of Commenter	Type/Date	Summary of Comments	Response
			to mortality.	
6	Stephen Rosenberg	2 Emails received 1/29/15	a. Does not support the full closure at Blue Creek.	a. The Commission adopted the proposed closure at the mouth of Blue Creek as a precautionary conservation measure.
			b. Recommends a closure in the vicinity of Blue Creek only when undue concentrations of fish occur - and then only in August.	b. Reject. See Response 6a. Scientific studies are needed to determine if, and under what criteria, alternate or additional closures may be necessary.
			c. Recommends artificial flies and lures only for the Blue Creek area.	c. Reject. The recommendation will not reduce the loss of stressed fish released into high water temperatures.
7	Phoebe Lenhart	Letter dated 2/7/15 but received 3/10/15	a. Requests no catch and release fishing at all on the Klamath River.	a. Reject. The recommendation to prohibit catch and release fishing on the Klamath River unnecessarily reduces fishing opportunities. Catch and release fishing is an important recreational pursuit on the Klamath and the regulations are promulgated recognizing some amount of catch and release mortality.
			b. Requests daily bag of 2 fish per adult.	b. Reject: The Commission adopted a three fish daily bag for Chinook salmon based on quota size and Department's recommendation. It is infeasible and discriminatory to adopt separate bag limit based on the angler's age.
			c. Requests no snagging.	c. Sport fishing regulations already prohibit snagging in all waters of the State.
			d. Requests fishing closure	d. Reject. See Response 6b.

Attachment 1
Summary of Public Comments and Responses

	Name of Commenter	Type/Date	Summary of Comments	Response
			when water temperatures exceed 70 degrees.	
			e. Requests closure of Blue Creek and any other location viable for the preservation of fish stocks.	e. Blue Creek is already closed to fishing. See Response 3c. Commenter did not propose specific closure locations for evaluation.
			f. Requests all gill net fishing be ruled illegal.	f. Current sport fishing regulations do not allow gill net fishing. The tribal fishery is not regulated by the Commission.
			g. Requests re-evaluation of hatchery management.	g. Hatchery management is outside the scope of the Commission's authority.
			h. Provide adequate enforcement of regulations with appropriate penalties.	h. Enforcement and penalties are outside the scope of the Commission's authority. The Klamath River has a high level of enforcement and penalties are set by the county judicial system.
8	Dave Fairchild	Faxed letter received 2/8/15	a. Opposes the proposed closure at the mouth of Blue Creek.	a. See Response 6a.
			b. Suggests further scientific investigation before a decision is made regarding Blue Creek closure.	b. Reject. See Responses 6a and 6b.
9	Joseph Falcone	E-mail letter received 2/8/15	a. Opposes the proposed closure at the mouth of Blue Creek.	a. See Response 6a.
			b. Opposes tribal net fishery.	b. Commission does not have regulatory authority

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	Name of Commenter	Type/Date	Summary of Comments	Response
				over tribal fishery.
			c. States that the economic impact to the area would be disastrous.	c. Comment noted. Most of the lower Klamath River (>95%) will remain open to salmon and steelhead fishing which will still provide significant fishing opportunities. The final economic effect related to steelhead fishing will have to be assessed post season due to the lack of adequate fishing effort data for this area.
			d. Believes that the Commission's position is that sport fishing is a major decline of a fishery.	d. The Commission recognizes multiple factors contributing to fishery declines.
10	Fred Johansen	Email received 2/10/15	a. States that the Klamath River is a navigable waterway.	a. Comment noted.
			b. States that the purpose of the Commission is to improve and provide for fishing for all or our State residents, native and others.	b. Adoption of sport fishing regulations is one of the many powers and duties of the Commission. One objective of the Commission is the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use. The Commission does not have authority over tribal fisheries.
			c. Requests opportunity for all stakeholders to participate in the discussion.	c. All proposed Klamath regulatory options were vetted at three publicly accessible Fish and Game Commission meetings. The proposed regulations were made available to the public pursuant to the requirements of Government Code Section 11346.4. The comment period was January 23 to

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	Name of Commenter	Type/Date	Summary of Comments	Response
				April 17, 2015.
			d. Opposes the proposed closure at the mouth of Blue Creek.	d. See Response 6a.
			e. States that the proposed closure at the mouth of Blue Creek will have adverse economic impacts to the Yurok Tribe.	e. See Responses 9b and 9c.
11	David Finigan, Chair, Board of Supervisors Del Norte County	Letter c/o e-mail from Kylie Heriford received 2/10/15, same letter handed in at 2/12/15 meeting, and by U.S. mail on 2/18/15	a. Believes that the concept of a Lower Klamath River main stem closure was not vetted with stakeholders.	a. See Response 10c.
			b. States that no information has been made available suggesting Blue Creek Chinook salmon are present in the proposed closure area before September 15.	b. Comment noted. See Response 6a.
			c. Believes the proposed Blue Creek conservation closure is arbitrary and unscientific.	c. Comment noted. See Response 6a.
			d. States that the economic impacts (of the proposed closure at the mouth of Blue Creek) to small businesses was not fully considered.	d. Comment noted. See Response 9c.
			e. Urges the Commission to not	e. The Commission adopted the Klamath River

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	Name of Commenter	Type/Date	Summary of Comments	Response
			take action on this issue before the 2015 Klamath River Basin allocation is presented to the Commission in April – allowing additional time for public comment and opportunities to develop alternative proposals.	sport fishing regulations on April 17, 2015 – after receiving the 2015 Klamath River Basin allocation.
			f. Requests that the Commission ensure that all new or amended regulation proposals that affect Del Norte County be sent directly to the Del Norte County Board of Supervisors.	f. The Commission mails all its notices of proposed changes in regulations to the Del Norte County Board of Supervisors and the Del Norte County Fish and Game Advisory Commission. The Klamath River notice was mailed on January 21, 2015.
12	Mike Aughney	Email received 2/11/15	a. Opposes the proposed closure at the mouth of Blue Creek.	a. See Response 6a.
			b. States closing the waters around Blue Creek to sport fishing does nothing to protect the fishery in low water years unless they were also closed to all netting.	b. Comment noted. See Response 9b.
			c. Supports Department working with tribal biologists and Bureau of Reclamation staff to develop water management strategies beneficial to salmonids.	c. This comment is outside the scope of the proposed regulations. The Department is actively engaged in water management strategies with tribal and federal partners.
13	William Toth	Email received 2/11/15	a. Asks for information about tribal regulations.	a. See Response 9b.

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Summary of Public Comments and Responses

	Name of Commenter	Type/Date	Summary of Comments	Response
			b. Suggests a catch and release tagging study to determine mortality rates.	b. See Response 6b.
14	Craig Bradford	Email with letter attachment received 2/11/15	a. Does not support the proposed closure at the mouth of Blue Creek.	a. See Response 6a.
			b. States that non-Native Americans have a prescriptive right to fishing for steelhead and salmon in the proposed closure area.	b.Reject. The ability to fish on public waters depends upon legal access and regulations adopted by the Fish and Game Commission as prescribed in the Fish and Game Code.
			c. States that sport fishermen contribute much to the vitality of the river.	c. Comment noted.
			d. States that Native Americans abused anadromous and catadromous fish populations via illegal netting practices and snagging.	d. See Response 9b.
			e. States that Department enforcement officials are reluctant to cite Native Americans when fishing regulations are blatantly violated.	e. See Response 9b.
			f. States that steelhead fishermen are not interested in taking salmon and therefore	f. Comment noted.

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Summary of Public Comments and Responses

	Name of Commenter	Type/Date	Summary of Comments	Response
			break the tippet for quick disconnection if a salmon grabs one of their flies.	
			g. States that most fly fishermen pursue summer steelhead on a catch and release basis.	g. Comment noted.
			h. States that almost no guided clients or bank fishermen target salmon at the mouth of Blue Creek.	h. Comment noted.
			i. States that closing the mouth of Blue Creek to protect salmon unfairly impacts steelhead fishermen.	i. Reject. Because it is difficult to prevent bycatch of salmon while steehead fishing, all fishing must be prohibited to protect salmon.
			j. States that steelhead fishermen do not snag steelhead in the Blue Creek area. They use small barbless hooks to assure the steelhead's survival upon release and all fish are returned to the river.	j. Comment noted.
			k. Hopes that all Commissioners conflicted by previous tribal employment or Native American ancestry will recuse themselves from the docketed process.	k. The Commission is guided by Government Code Section 19990 and Sections 81000, et seq., regarding conflicts of interest. Commissioner Hostler-Carmesin is a current employee of the Trinidad Tribe. The Trinidad Rancheria and Commissioner Hostler-Carmesin will not gain financially from the promulgation of the Klamath

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Summary of Public Comments and Responses

	Name of Commenter	Type/Date	Summary of Comments	Response
				River sport fishing regulations and therefore, appear not to have any conflicts of interest.
15	Frank Galea, Del Norte County Fish and Game Advisory Commission	Verbal comment 2/12/15	a. States that options concerning a conservation closure at the mouth of Blue Creek exceed original intent of minimizing catch and release mortality.	a. Comment noted. See Response 10c.
			b. States that the concept of a lower Klamath main stem closure was not vetted with sport fishery stakeholders and no information was made available suggesting presence of Blue Creek Chinook salmon in the proposed closure area before September 15.	b. Comment noted. See Responses 6a and 10c.
			c. States that the proposed Blue Creek conservation closure is arbitrary and unscientific and does not fully take into consideration economic impacts to small business, and does not take into consideration how steelhead fishing fits into any of proposals.	c. Comment noted. See Responses 6a, 9c and 14i.
			d. States that not enough notice or time was given to stakeholders to address	d. See Responses 10c, 11e and 11f.

	Name of Commenter	Type/Date	Summary of Comments	Response
			proposals. Requests any and all proposed changes to regulations are sent directly to Del Norte County Board of Supervisors so that they may adequately represent their constituents.	
			e. States that early coordination is essential.	e. Comment noted. See Response 10c.
			f. Appreciates the efforts to communicate with the Board of Supervisors and the Del Norte County Fish and Game Advisory Commission.	f. Comment noted.
16	Ken Cunningham, resident fishing guide on Klamath River	Verbal comment 2/12/15	a. Opposes the proposed closure at the mouth of Blue Creek.	a. See Response 6a.
			b. States that the proposed closure at the mouth of Blue Creek will be devastating to people who fish there.	b. See Response 14i.
			c. Opposes snagging.	c. Sport fishing regulations already prohibit snagging in all waters of the State.
			d. States that other river mouths are closed only 500 feet and that it isn't right to close more than that at the mouth of Blue Creek.	d. See Response 6a.

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	Name of Commenter	Type/Date	Summary of Comments	Response
17	Dave Hillemeier, Fisheries Program Manager, Yurok Tribe and Thomas O'Rourke, Chairman Yurok Tribe	Verbal comment 2/12/15, email and letter received 2/5/15	a. States that the Yurok Tribe feels these conservation concerns are important to bring forward to the Commission and appreciates that the Yurok Tribe's alternatives made it into the public process.	a. See Response 3a.
			b. States that in the spit fishery, due to presence of sea lions and seals, the Yurok Tribe thinks retaining all fish caught, whether foul hooked or not is very important. States that the Yurok Tribe does not want to close the fishery, but that it doesn't want the released fish wasted.	b. See Responses 3b and 7a. The released fish are not wasted. If the released fish die or are eaten by seals, they are still an important food source in the ecosystem.
			c. States that there is a half mile of thermal refugia against the north bank at the mouth of Blue Creek and that boats are out in the channel. States that during mid-June through the first week in September, water temperatures are 23-24°C. States that catch and release fishing is taking place – fish are played through 18°C water into 23°C water. States that there is excessive mortality when fish are caught and released in those conditions and that is the	c. See Response 3c.

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	Name of Commenter	Type/Date	Summary of Comments	Response
			Yurok Tribe's greatest concern. States that literature is available that says at 20°C, mortality increases excessively.	
18	Thomas Willson, Yurok Tribal Council – Weitchpec District	Verbal comment 2/12/15	States that traditionally his people don't play with their fish. States that catch and release fishery is basically playing with your food and if you play with your food, it will leave us. States that we have to look seven generations down.	Comments noted.
19	Ron Britschgi, Rivers West Lodge	Verbal comment 2/12/15	a. Opposes the proposed closure at the mouth of Blue Creek. b. Believes that economy and guides will suffer economic impact from Blue Creek closure.	a. See Response 6a. b. See Response 9c.
20	Richard Arimoto	Verbal comment 2/12/15	a. Supports proposed Option I changes to the spit (mouth of Klamath River). b. Opposes the proposed closure at the mouth of Blue Creek.	a. Support noted. The Commission adopted this option. b. See Response 6a.
21	Dave Axt	Email received 2/8/15	Recommends that the Department conduct fishery research on Blue Creek area of Klamath River prior to any closures.	See Responses 6a and 6b.
22	Andy Pozzi, Sonoma County Fish and	Letter received	Request to abolish Section 1.45, Title 14, CCR, (filleting of	See Response 1.

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Summary of Public Comments and Responses

	Name of Commenter	Type/Date	Summary of Comments	Response
	Wildlife Commission	3/5/15	salmonids)	
23	Thomas O'Rourke, Yurok Tribal Chair	Email with attached letter received 4/13/15	Reiterates support for the Yurok Tribe's proposed sport fishing options (No catch and release fishing at the mouth of the Klamath River and conservation closure near Blue Creek).	See Responses 3a, 3b and 3c.
24	Bill Bowman, Friends of Del Norte	Letter received 4/14/15.	a. Supports the Yurok Tribe's proposal for catch and release at the spit and Tribe's proposed closure at the mouth of Blue Creek. b. States that recent studies have shown catch and release mortality to be surprisingly high.	a. See Responses 3b and 3c. b. Comment noted.
25	Dave Hillemeier, Fisheries Program Manager, Yurok Tribe	Verbal comment 04/17/15	a. Presented additional information about thermal refugia and catch and release fishing. b. Supports the mandatory retention in the spit fishery, but reiterates the foul-hooked option. c. Suggests consideration of an alternative such as mandatory retention of fish if they are hooked in the head. d. Supports the proposed Blue	a. Information noted. b. See Response 3b. c. Reject. See Response 3b. d. See Response 3c.

	Name of Commenter	Type/Date	Summary of Comments	Response
			Creek conservation closure.	
26	Ed Salsedo	Verbal comment 04/17/15	a. States that the economic impacts are not addressed.	a. See Response 9c.
			b. States that he does not believe the Commission or Department has jurisdiction on U.S. Trust Lands or the Yurok Tribe Reservation.	b. Non-tribal anglers fishing the Klamath River within the Yurok Tribe Reservation are regulated by Commission authority (Fish and Game Code Sections 16500-16541)
			c. States that the Coastal Commission has the right to weigh in on the spit fishery since the proposed regulations make a major change to activities there.	c. The Coastal Commission has no authority over sport fishing regulations, but it had the opportunity to weigh in on the proposed regulations.
			d. States that the barbless hook requirements are not enforced on Native American anglers.	d. See Response 9b.
			e. States that people have a right to fish. Quotes Article 1, Section 25, of the California Constitution.	e. The so-called "right to fish" is neither absolute nor fundamental, but has been characterized by the courts as only a "privilege" or a "qualified right" subject to the Legislature's regulation of fishing. The California Supreme Court has long declared that the power to regulate fishing has always existed as an aspect of the inherent power of the Legislature to regulate the terms under which a public resource may be taken by private citizens (in re Quinn [1973] 35 Cal.App.3d 473; State of California v. San Luis Obispo Sportsman's

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	Name of Commenter	Type/Date	Summary of Comments	Response
				Association [1978] 22 Cal.3d 440; Paladini v. Superior Court [1918] 178 Cal. 369; California Gillnetters Association v. Department of Fish and Game [1995] 39 Cal.App.4th 1145)."
27	Stephen Rosenberg, fly fisherman	Verbal comment 04/17/15	a. States that he has kept a diary of his fishing activities at Blue Creek since 1978. b. States that he has never seen a constant thermal refugia problem with excessive concentrations of fish but that he has only seen excessive concentrations of fish in 5 years between 1978 – 2014. States that in 1982-83, 1991 and 1994, the excessive concentrations only occurred in mid to late August, and that by Sept 4 the fish were gone upstream; in 1978, the excessive concentration of fish started in mid-July and by Labor Day the fish were gone; in 2000-2002, the excessive concentration of fish started in late July and by Labor Day the problem was over; and in 2014, the excessive concentration of fish started but as soon as water flows were increased, the fish immediately moved upstream.	a. Comment noted. b. Comment noted.

	Name of Commenter	Type/Date	Summary of Comments	Response
			c. States that he has never seen excessive hooking mortality.	c. Comment noted.
			d. States that the degree to which the thermal refugia occurs depends on the geomorphology of the river at the confluence of Blue Creek and Klamath and that the situation only sets up every 10 years or so.	d. Comment noted.
			e. Opposes the proposed closure at the mouth of Blue Creek. Questions the tribe's motives.	e. See Response 6a.
28	John Stokes, recreational fisherman	Verbal comment 04/17/15	a. Opposes the proposed closure at the mouth of Blue Creek.	a. See Response 6a.
			b. States that the proposed closure at the mouth of Blue Creek will gut the entire steelhead fishery.	b. See Response 9c and 14i.
			c. Supports comments made by Stephen Rosenberg concerning how often excessive concentrations of fish occur.	c. See Response 27.
			d. States that steelhead are far less impacted by the phenomena than salmon	d. Comment noted.

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Summary of Public Comments and Responses

	Name of Commenter	Type/Date	Summary of Comments	Response
			e. Suggests using a low flow or temperature closure for regulating the Blue Creek area as is in place for many of the other coastal streams.	e. See Response 6b.
29	Eileen Cooper	Verbal comment 04/17/15	a. Supports no catch and release fishing at all when river temperatures are high. b. Supports the Yurok Tribe's proposed catch and release regulations at spit and Blue creek area.	a. See Response 6b. b. See Responses 3b and 3c.
30	Ted Souza, Friends of Del Norte	Verbal comment 04/17/15	States that catch and release fishing is a problem. States that a study by Dr. Bruce Tufts, Queen's University, Canada, shows that 7 out of 10 fish die when out of water more than 30 seconds. States that while he has practiced catch and release fishing in the past, he now believes anglers should keep what they catch or not fish at all in order to protect the fishery.	Comments noted. The Department research does not support this comment.

Attachment 5

Regulatory Language

Subsection (b)(91.1) of Section 7.50 is amended to read:

(91.1) Anadromous Waters of the Klamath River Downstream of Iron Gate Dam (Lower Klamath River Basin). The regulations in this subsection apply only to waters of the Klamath River system which are accessible to anadromous salmonids. They do not apply to waters of the Klamath River which are inaccessible to anadromous salmon and trout, for example, portions of the Klamath River system upstream of Iron Gate Dam, portions of the Trinity River system upstream of Lewiston Dam, and the Shasta River and tributaries upstream of Dwinnel Dam. Fishing in these waters is governed by the General Regulations for non-anadromous waters of the North Coast District (see Section 7.00(a)(4)).

(A) Hook and Weight Restrictions.

1. Only barbless hooks may be used. (For definitions regarding legal hook types, hook gaps and rigging see Chapter 2, Article 1, Section 2.10.)

2. During closures to the take of adult salmon, anglers shall not remove any adult Chinook salmon from the water by any means, such as by dragging the fish on shore or using a net.

(B) General Area Closures.

1. No fishing is allowed within 750 feet of any Department of Fish and Wildlife fish-counting weir.

2. No fishing is allowed from the Ishi Pishi ~~Falls road~~Road bridge upstream to and including Ishi Pishi Falls from August 15 through December 31. EXCEPTION: members of the Karuk Indian Tribe listed on the current Karuk Tribal Roll may fish at Ishi Pishi Falls using hand-held dip nets.

3. No fishing is allowed from September 15 through December 31 in the Klamath River within 500 feet of the mouths of the Salmon, the Shasta and the Scott rivers and Blue Creek.

4. No fishing is allowed from June 15 through September 14 in the Klamath River from 500 feet above the mouth of Blue Creek to ½ mile downstream of the mouth of Blue Creek.

(C) Klamath River Basin Possession Limits.

1. Trout Possession Limits.

a. The brown trout possession limit is 10 brown trout.

b. The hatchery trout or hatchery steelhead possession limits are as follows:

(i) Klamath River - 4 hatchery trout or hatchery steelhead.

(ii) Trinity River - 4 hatchery trout or hatchery steelhead.

2. Chinook Salmon Possession Limits.

a. Klamath River downstream of the Highway 96 bridge at Weitchpec from January 1 to August 14 and the Trinity River downstream of the Old Lewiston Bridge to the confluence of the South Fork Trinity River from January 1 to ~~August 31.~~ August 31: 2 Chinook salmon.

~~(i) 2 Chinook salmon.~~

b. Klamath River from August 15 to December 31 and Trinity River from September 1 to ~~December 31.~~December 31: 9 Chinook salmon. No more than 6 Chinook salmon over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.

~~(i) 9 Chinook salmon. No more than 3 Chinook salmon over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.~~

(D) Klamath River Basin Chinook Salmon Quotas.

The Klamath River fall Chinook salmon take is regulated using quotas. Accounting of the tribal and non-tribal harvest is closely monitored from August 15 through December 31 each year. These quota areas are noted in subsection (b)(91.1)(E) with "Fall Run Quota" in the *Open Season and Special Regulations* column.

1. Quota for Entire Basin.

The ~~2014~~2015 Klamath River Basin quota is ~~4,128~~ 14,133 Klamath River fall Chinook salmon over

Attachment 6

STATE OF CALIFORNIA–OFFICE OF ADMINISTRATIVE LAW

NOTICE PUBLICATION/REGULATION SUBMISSION — REGULAR

(See Instructions on reverse)

For use by Secretary of State only

STD. 400 (REV. 01-2013)

OAL FILE NUMBERS	NOTICE FILE NUMBER	REGULATORY ACTION NUMBER	EMERGENCY NUMBER
	Z-2015-0113-08	2015-0528-02S	

For use by Office of Administrative Law (OAL) only

2015 MAY 28 PM 4:19

OFFICE OF ADMINISTRATIVE LAW

NOTICE | REGULATIONS

ENDORSED - FILED
In the office of the Secretary of State of the State of California

JUN -4 2015

2:00 PM

AGENCY WITH RULEMAKING AUTHORITY: Fish and Game Commission

AGENCY FILE NUMBER (If any):

A. PUBLICATION OF NOTICE (Complete for publication in Notice Register)

1. SUBJECT OF NOTICE	TITLE(S)	FIRST SECTION AFFECTED	2. REQUESTED PUBLICATION DATE
Klamath River sport fishing	14	7.50	January 23, 2015

3. NOTICE TYPE	4. AGENCY CONTACT PERSON	TELEPHONE NUMBER	FAX NUMBER (Optional)
[X] Notice re Proposed Regulatory Action [ ] Other	Sherrie Fonbuena	(916) 654-9866	(916) 653-5040

OAL USE ONLY	ACTION ON PROPOSED NOTICE	NOTICE REGISTER NUMBER	PUBLICATION DATE
	[ ] Approved as Submitted [ ] Approved as Modified [ ] Disapproved/ Withdrawn		

B. SUBMISSION OF REGULATIONS (Complete when submitting regulations)

1a. SUBJECT OF REGULATION(S)	1b. ALL PREVIOUS RELATED OAL REGULATORY ACTION NUMBER(S)
Klamath River sport fishing	

2. SPECIFY CALIFORNIA CODE OF REGULATIONS TITLE(S) AND SECTION(S) (Including title 26, if toxics related)

SECTION(S) AFFECTED (List all section number(s) individually. Attach additional sheet if needed.)	
	ADOPT
	AMEND: 7.50
TITLE(S): 14	REPEAL

3. TYPE OF FILING

- [X] Regular Rulemaking (Gov. Code §11346)
- [ ] Resubmittal of disapproved or withdrawn nonemergency filing (Gov. Code §§11349.3, 11349.4)
- [ ] Emergency (Gov. Code, §11346.1(b))
- [ ] Certificate of Compliance: The agency officer named below certifies that this agency complied with the provisions of Gov. Code §§11346.2-11347.3 either before the emergency regulation was adopted or within the time period required by statute.
- [ ] Resubmittal of disapproved or withdrawn emergency filing (Gov. Code, §11346.1)
- [ ] Emergency Readopt (Gov. Code, §11346.1(h))
- [ ] File & Print
- [ ] Other (Specify) _____
- [ ] Changes Without Regulatory Effect (Cal. Code Regs., title 1, §100)
- [ ] Print Only

4. ALL BEGINNING AND ENDING DATES OF AVAILABILITY OF MODIFIED REGULATIONS AND/OR MATERIAL ADDED TO THE RULEMAKING FILE (Cal. Code Regs. title 1, §44 and Gov. Code §11347.1)

5. EFFECTIVE DATE OF CHANGES (Gov. Code, §§ 11343.4, 11346.1(d); Cal. Code Regs., title 1, §100)

- [ ] Effective January 1, April 1, July 1, or October 1 (Gov. Code §11343.4(a))
- [ ] Effective on filing with Secretary of State
- [ ] §100 Changes Without Regulatory Effect
- [X] Effective other (Specify) 6/4/15 202F&GC, 11343.4(b)(4) Govt Code

6. CHECK IF THESE REGULATIONS REQUIRE NOTICE TO, OR REVIEW, CONSULTATION, APPROVAL OR CONCURRENCE BY, ANOTHER AGENCY OR ENTITY

- [ ] Department of Finance (Form STD. 399) (SAM §6660)
- [ ] Fair Political Practices Commission
- [ ] State Fire Marshal
- [ ] Other (Specify)

OR per agency request 6/4/15

7. CONTACT PERSON	TELEPHONE NUMBER	FAX NUMBER (Optional)	E-MAIL ADDRESS (Optional)
Sherrie Fonbuena	(916) 654-9866		Sherrie.Fonbuena@fgc.ca.gov

8. **I certify that the attached copy of the regulation(s) is a true and correct copy of the regulation(s) identified on this form, that the information specified on this form is true and correct, and that I am the head of the agency taking this action, or a designee of the head of the agency, and am authorized to make this certification.**

SIGNATURE OF AGENCY HEAD OR DESIGNEE: Sonke Mastrup — DATE: 5/26/15

TYPED NAME AND TITLE OF SIGNATORY: Sonke Mastrup, Executive Director

For use by Office of Administrative Law (OAL) only

ENDORSED APPROVED

JUN 04 2015

Office of Administrative Law

Regulatory Language

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~~(i) 2 Chinook salmon.~~

b. Klamath River from August 15 to December 31 and Trinity River from September 1 to ~~December 31.~~December 31: 9 Chinook salmon. No more than 6 Chinook salmon over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.

~~(i) 9 Chinook salmon. No more than 3 Chinook salmon over 22 inches total length may be retained when the take of salmon over 22 inches total length is allowed.~~

(D) Klamath River Basin Chinook Salmon Quotas.

The Klamath River fall Chinook salmon take is regulated using quotas. Accounting of the tribal and non-tribal harvest is closely monitored from August 15 through December 31 each year. These quota areas are noted in subsection (b)(91.1)(E) with "Fall Run Quota" in the *Open Season and Special Regulations* column.

1. Quota for Entire Basin.

The ~~20142~~2015 Klamath River Basin quota is ~~4,128~~ 14,133 Klamath River fall Chinook salmon over

22 inches total length. The department shall inform the commission, and the public via the news media, prior to any implementation of restrictions triggered by the quotas. (NOTE: A department status report on progress toward the quotas for the various river sections is updated weekly, and available at 1-800-564-6479.)

2. Subquota Percentages.

a. The subquota for the Klamath River upstream of the Highway 96 bridge at Weitchpec and the Trinity River is 50% of the total Klamath River Basin quota.

(i) The subquota for the Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec is 17% of the total Klamath River Basin quota.

(ii) The subquota for the Trinity River main stem downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat is 16.5% of the total Klamath River Basin quota.

(iii) The subquota for the Trinity River main stem downstream of the Denny Road bridge at Hawkins Bar to the confluence with the Klamath River is 16.5% of the total Klamath River Basin quota.

b. The subquota for the Lower Klamath River downstream of the Highway 96 bridge at Weitchpec is 50% of the total Klamath River Basin quota.

(i) The Spit Area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth) will close when 15% of the total Klamath River Basin quota is taken downstream of the Highway 101 bridge.

(E) Klamath River Basin Open Seasons and Bag Limits.

All anadromous waters of the Klamath River Basin are closed to all fishing for all year except those areas listed in the following table. Bag limits are for trout and Chinook salmon in combination unless otherwise specified.

Body of Water	***Open Season and Special Regulations***	***Daily Bag Limit***
1. Bogus Creek and tributaries.	Fourth Saturday in May through August 31. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
2. Klamath River main stem from 3,500 feet downstream of Iron Gate Dam to the mouth.		
a. Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec.	January 1 to August 14.	0 Chinook salmon 2 hatchery trout or hatchery steelhead**
	Fall Run Quota ~~7022~~403 Chinook Salmon August 15 to December 31, ~~20142~~2015.	3 Chinook salmon - no more than ~~4~~2 fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length. 2 hatchery

		trout or hatchery steelhead**
	Fall Run Quota Exception: Chinook salmon over 22 inches total length may be retained from 3,500 feet downstream of Iron Gate Dam to the Interstate 5 bridge when the department determines that the adult fall-run Chinook salmon spawning escapement at Iron Gate Hatchery exceeds 8,000 fish. Daily bag and possession limits specified for fall-run Chinook salmon apply during this exception.	
b. Klamath River downstream of the Highway 96 bridge at Weitchpec.	January 1 to August 14.	2 Chinook salmon 2 hatchery trout or hatchery steelhead**
	Fall Run Quota ~~2,064~~7,067 Chinook Salmon August 15 to December 31, ~~2014~~2015.	3 Chinook salmon - no more than ~~4~~2 fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length. 2 hatchery trout or hatchery steelhead**
	Fall Run Quota Exception: Spit Area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth): This area will be closed to all fishing after 15% of the Total Klamath River Basin Quota has been taken. All legally caught Chinook salmon must be retained. Once the adult (greater than 22 inches) component of the total daily bag limit has been retained anglers must cease fishing in the spit area.	
3. Salmon River main stem, main stem of North Fork downstream of Sawyer's Bar bridge, and main stem of South Fork downstream of the confluence of the East Fork of the South Fork.	November 1 through February 28.	2 hatchery trout or hatchery steelhead**
4. Scott River main stem down-stream of the Fort Jones-Greenview bridge to the confluence with the Klamath River.	Fourth Saturday in May through February 28.	2 hatchery trout or hatchery steelhead**
5. Shasta River main stem	Fourth Saturday in May through August	2 hatchery

downstream of the Interstate 5 bridge north of Yreka to the confluence with the Klamath River.	31 and November 16 through February 28.	trout or hatchery steelhead**
6. Trinity River and tributaries.		
a. Trinity River main stem from 250 feet downstream of Lewiston Dam to the Old Lewiston Bridge.	April 1 through September 15. Only artificial flies with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
b. Trinity River main stem downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat.	January 1 to August 31.	2 Chinook salmon 5 brown trout 2 hatchery trout or hatchery steelhead**
	Fall Run Quota ~~6812~~2,332 Chinook Salmon September 1 through December 31, ~~20142~~2015.	3 Chinook salmon - no more than ~~4~~2 fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length. 5 brown trout 2 hatchery trout or hatchery steelhead**
	Fall Run Quota Exception: Chinook salmon over 22 inches total length may be retained downstream of the Old Lewiston Bridge to the mouth of Indian Creek when the department determines that the adult fall-run Chinook salmon spawning escapement at Trinity River Hatchery exceeds 4,800 fish. Daily bag and possession limits specified for fall-run Chinook salmon apply during this exception.	
c. Trinity River main stem downstream of the Highway 299 West bridge at Cedar Flat to the Denny Road bridge at Hawkins Bar.	January 1 through August 31.	2 Chinook salmon 5 brown trout 2 hatchery trout or hatchery steelhead**
	September 1 through December 31.	Closed to all fishing.
d. New River main stem downstream of the confluence of the East Fork to the confluence with the Trinity River.	September 15 through November 15. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
e. Trinity River main stem downstream of the Denny Road	January 1 to August 31.	2 Chinook salmon

bridge at Hawkins Bar to the mouth of the South Fork Trinity River.		5 brown trout 2 hatchery trout or hatchery steelhead**
	Fall Run Quota ~~6812~~2,331 Chinook Salmon September 1 through December 31, ~~20142~~2015. This is the cumulative quota for subsections 6.e. and 6.f. of this table.	3 Chinook salmon - no more than ~~1~~2 fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length. 5 brown trout 2 hatchery trout or hatchery steelhead**
f. Trinity River main stem downstream of the mouth of the South Fork Trinity River to the confluence with the Klamath River.	January 1 to August 31.	0 Chinook salmon 5 brown trout 2 hatchery trout or hatchery steelhead**
	Fall Run Quota ~~6812~~2,331 Chinook Salmon September 1 through December 31, ~~20142~~2015. This is the cumulative quota for subsections 6.e. and 6.f. of this table.	3 Chinook salmon - no more than ~~1~~2 fish over 22 inches total length until subquota is met, then 0 fish over 22 inches total length. 5 brown trout 2 hatchery trout or hatchery steelhead**
g. Hayfork Creek main stem downstream of the Highway 3 bridge in Hayfork to the confluence with the South Fork Trinity River.	November 1 through March 31. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
h. South Fork Trinity River downstream of the confluence with the East Fork of the South Fork Trinity River to the South Fork Trinity River bridge at Hyampom.	November 1 through March 31. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
i. South Fork Trinity River downstream of the South Fork	November 1 through March 31.	0 Chinook salmon

Trinity River bridge at Hyampom to the confluence with the Trinity River.		2 hatchery trout or hatchery steelhead**

...

Subsection (b)(195) of Section 7.50 is amended to read:

(195) Trinity River and tributaries downstream of Lewiston Dam.	See Klamath River ~~Regulations subsection (b)(91.1)(F)6~~7.50(b)(91.1).

* Wild Chinook salmon are those not showing a healed adipose fin clip and not showing a healed left ventral fin clip.
**Hatchery trout or steelhead in anadromous waters are those showing a healed adipose fin clip (adipose fin is absent). Unless otherwise provided, all other trout and steelhead must be immediately released. Wild trout or steelhead are those not showing a healed adipose fin clip (adipose fin is present).

Note: Authority cited: Sections 200, 202, 205, 215, 220, 240, 315 and 316.5, Fish and Game Code. Reference: Sections 200, 202, 205, ~~206,~~ 215 and 316.5, Fish and Game Code.

Attachment 7

YUROK TRIBE

190 Klamath Boulevard • Post Office Box 1027 • Klamath, CA 95548

November 19, 2014

California Fish and Game Commission
1416 Ninth St.
Room 1320
Sacramento CA, 95814

Re: Lower Klamath River fishing regulations

Dear Commissioners:

The Yurok Tribe formally recommends modifications to the Lower Klamath River recreational fishery regulations. Yurok typically does not become involved with the management of State fisheries unless we consider an issue to be a conservation concern that affects the health of our fishery resource. We propose two modifications to the lower Klamath River regulations within the boundaries of the Yurok Reservation: 1) there should be no catch-and-release fishing allowed in the spit area, where the Klamath River flows through the sand bar to meet the ocean, due to high levels of pinniped predation upon released fish, and 2) we recommend adoption of a conservation closure at the confluence and immediately downstream of Blue Creek (approximately river mile 17) to minimize catch and release fishing for fish that are seeking thermal respite, and to protect late fall-run Chinook that are holding prior to entering Blue Creek.

As you may recall, we provided comments to the Commission during the February and April meetings last year (see attachments) regarding these proposed regulatory modifications, but learned that we were too late to affect change for the 2014 regulation process. Per recommendation of your staff, we are providing recommendations for consideration at your December 2014 meeting, with the hope that these proposed regulations will comprise at least one of the options for public consideration/comment as you move through your 2015 regulatory process.

Recommendation 1 *Catch and Release fishing in the spit-area*
Previous regulations have allowed catch-and-release fishing in the spit area that has resulted in unquantified, but substantial predation upon released fish by the numerous pinnipeds occupying this area. During some previous years, the most successful anglers have released dozens of fish within a given day.

We recommend the Commission adopt regulations requiring all fall Chinook caught within this area be retained, and that there be no catch and release fishing of fall Chinook. Once an

Phone: (707) 482-1350 • Fax: (707) 482-1377

angler's daily bag limit for Chinook (regardless of whether it is an adult or jack) is obtained, they must stop fishing for the day. We propose the following:

Body of Water	Open Season and Special Regulations	Daily Bag Limit
Klamath River Spit (within 100 yards of the channel through the sand spit formed at the Klamath River mouth)	All Chinook salmon (regardless of size) captured must be harvested (i.e. no releasing Chinook salmon). Once the daily bag limit for Chinook is obtained, fishing must stop for the day.	"x" Chinook salmon (regardless of size)

Such a regulation would allow the fishery to continue—which is important for shore- based anglers as well as the local economy—while minimizing excessive mortality associated with releasing fish in the presence of sea lions, such predation is a problem that undeniably needs to be addressed and we hope to work with the Commission in doing so.

Yurok are well aware that many of the fish caught in this fishery are not legally hooked, but snagged outside of the mouth. I appreciate the concern this causes for some regarding the retention of fish that are snagged, because of the perceived precedent this may have to other areas of the state where snagging occurs. However, it's important to realize the uniqueness of this fishery given the presence of pinnipeds preying upon released fish. It is also important to realize that this fishery takes place within the boundaries of the Yurok Reservation, a sovereign nation and Co-Manager of the resource. The wasting of fish is contrary to our culture and a violation of our own Fishing Rights Ordinance.

Recommendation 2 *Blue Creek Conservation Closure*
We recommended the Commission adopt a conservation closure at the mouth of Blue Creek. This conservation closure would serve two purposes: 1) it would provide thermal refugia—free of catch-and-release fishing—for adult salmon (spring and fall Chinook) and summer-run steelhead that migrate up the Klamath River during the summer months (mid-June through mid-September) when ambient water temperatures are excessively warm, and 2) during mid-September through November, it would protect late-run fall chinook that are staging to enter Blue Creek, similar to the closures that are currently in place at the mouths of the Salmon, Scott, and Shasta Rivers.

During the summer months, especially during years of low flow, water temperatures in the mainstem Klamath River often reach 73 - 79° F, well above the optimal migration range and near the acute lethal limit for adult Chinook salmon (Bell 1990, Strange 2010[1]). At these times, adult salmon and steelhead will stop migrating and hold in the cold water effluent

[1] Bell, M.C. 1991. Fisheries Handbook of Engineering Requirements and Biological Criteria.
Strange, J.S. 2010. *Upper Thermal Limits to Migration in Adult Chinook Salmon: Evidence from the Klamath River Basin.* Transactions of the American Fisheries Society 139: 1091 – 1108.

from the mouth of Blue Creek to approximately half mile downstream. During many low flow years, such as we just experienced in 2014, this area holds up to several thousand adult salmonids (steelhead and Chinook), that are escaping the intolerably warm Klamath River. Video footage of a 100 meter stretch of the 2,000 meters these fish in during August 2014 is available at: https://www.youtube.com/watch?v=jpX6lCJZeuA

We believe fish that make it to the thermal refugia should be allowed respite. It is inappropriate to harass (via hook and line) these fish at a time when they are so physiologically vulnerable. Furthermore, often these fish (steelhead and/or salmon) will be hooked while holding in the thermal refugia, then played for an extended period of time in the ambient river conditions that are several degrees warmer (sometimes at lethal levels), and then eventually released. Forcing fish to go through such dramatic temperature changes, while putting them through excessive stress, is contrary to fish culture practices associated with rearing and/or releasing fish, and undoubtedly results in excessive stress and mortality. We recommend that this thermal conservation closure extend from the mouth of Blue Creek to half mile downstream of the wetted channel of Blue Creek.

The second reason for the conservation closure at the mouth of Blue Creek is to protect the genetically unique adult late-fall run Chinook salmon that return to spawn from mid-October through December. These fish are known to hold in the confluence pool in the Klamath River until substantial rains stimulate their migration up Blue Creek. Blue Creek late-fall run Chinook are the stronghold of the Lower Klamath and likely the source population for other Lower Klamath Tributaries. We request that fish holding in this area be given protection from harvest pressure similar to what is given to Chinook returning to the Salmon, Scott, and Shasta Rivers. California regulations currently provide the protection for these stocks:

"No fishing is allowed from September 15 through December 31 in the Klamath River within 500 feet of the mouths of the Salmon, the Shasta and the Scott rivers." We recommend adding Blue Creek to this prevision.

In summary, we recommend the Commission allow the above-mentioned regulatory changes be considered during the upcoming public hearing process for Klamath River sport fishing regulations, and we hope this process results in the adoption of such regulations to conserve the resource that is so important to our people. If you have any questions regarding this letter, or would like to schedule a meeting with our Council, please don't hesitate to contact myself or Dave Hillemeier (Fisheries Program Manager) at the address in the letterhead.

Finally, I would like to reiterate my invitation to the Commission We would welcome the Commission to visit the Yurok Reservation and meet with our Tribal Council. Such a meeting would allow us to discuss issues of mutual concern in regard to the management of the Klamath River fishery and provide you an opportunity to visit the Lower Klamath River via a boat ride if your schedules allow.

Sincerely,

Thomas O'Rourke, Chairman

YUROK TRIBE

190 Klamath Boulevard • Post Office Box 1027 • Klamath, CA 95548

April 8, 2014

California Fish and Game Commission
1416 Ninth St.
Room 1320
Sacramento CA. 95814

Re: Klamath River fishing regulations

Dear Commissioners:

I am writing to express concern with proposed sport fishing regulations for the "spit area" in the Lower Klamath River, which is located within the boundaries of the Yurok Reservation. While we support the continuation of the spit fishery (i.e. we oppose the closure of the spit fishery, as proposed in Option #3 that is being considered by the Commission), we believe it is essential that catch and release fishing in this area be prohibited, to minimize the excessive predation upon released fish by marine mammals. We request that the Commission adopt regulations prohibiting catch and release fishing in this area for the upcoming 2014 season.

We typically do not comment on the management of other fisheries, unless we consider an issue to be a conservation concern. The unquantified, but obviously excessive loss of caught and released fish to marine mammal predation in the spit area is a conservation concern. This problem was most pronounced last year, when fish spent an unusual amount of time within the spit area, resulting in some anglers catching and releasing several dozen fish per day. While catch and release fishing in the presence of marine mammals has been a concern of the Tribe for the past couple decades, as noted in a white paper we presented to the Commission in 1996[1], the problem escalated far beyond acceptable levels during 2013.

As noted in the testimony and handout (attached) that was submitted to you on behalf of the Tribe on February 5, 2014, we are concerned that excessive mortality from marine mammal predation is associated with catch and release fishing in this area. Therefore, we recommend that all fish caught in this area be retained, and that catch and release fishing be prohibited. When our Fisheries Program Manager, Dave Hillemeier, recommended such a regulation at

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[1] The following quote is from an issues paper the Yurok Tribe submitted to the Fish and Game Commission on March 6, 1996: "In addition to hooking mortality, a major concern the Yurok Tribe has with the catch and release fishery in the lower river is the mortality associated with sea lion and seal predation after fish are released. Over 300 seals and several sea lions were seen by Yurok Tribal net harvest monitors in the estuary while fish were being caught and released by sport fishermen.."

the February 5th Commission meeting, it was noted by the Commission, and their attorneys, that such a regulation is within the bounds of the three options currently being considered by the Commission; i.e. such a regulation could be adopted for the 2014 fall season. At a subsequent meeting in Eureka, the Commission's Executive Director noted that the Commission may have been incorrect, however after the meeting he did acknowledge that such a regulation may be possible, but challenging, to implement this year. Our recommendation is that the Commission adopt language similar to the following for 2014 season:

Body of Water	Open Season and Special Regulations	Daily Bag Limit
Klamath River Spit (within 100 yards of the channel through the sand spit formed at the Klamath River mouth)	All Chinook salmon (regardless of size) captured must be harvested (i.e. no releasing Chinook salmon). Once the daily bag limit for Chinook is obtained, fishing must stop for the day.	"x" Chinook salmon (regardless of size)

Such a regulation would allow the fishery to continue, which is important to shore anglers as well as the local economy, while minimizing the excessive mortality associated with releasing fish in the presence of sea lions; a problem that undeniably needs to be addressed.

We had also recommended at your February 5th meeting (see attachment) that the Commission adopt a conservation closure at the mouth of Blue Creek, to provide thermal refuge for migrating adult salmon and steelhead, as well as to protect staging late-fall run Chinook salmon returning to Blue Creek. We learned at this meeting that we were making this proposal too late in your process for consideration in the 2014 regulations, and it did not fall within the bounds of other options already being considered. Therefore, we look forward to discussing this issue with the Commission as you are crafting regulations for 2015.

Finally, I would like to take this opportunity to invite the Commission to visit the Yurok Reservation to meet with the Yurok Tribal Council. Such a meeting would allow us to discuss issues of mutual concern in regard to the management of the Klamath River fishery. We would also welcome you for a boat ride on the Lower Klamath River to experience first-hand the beauty of our land, the fishery in progress, the spit area, and the area near Blue Creek where we are proposing a conservation closure. If you have any questions regarding this letter, or would like to schedule a meeting with our Council, please don't hesitate to contact myself or Dave Hillemeier (Fisheries Program Manager) at the address in the letterhead.

Sincerely,

Thomas O'Rourke, Chairman

Yurok Tribal Comments to the California Fish and Game Commission regarding Lower Klamath River Recreational Fishing Regulations

February 5, 2014

The following recommendations are submitted on behalf of the Yurok Tribe in regard recreational fishing regulations for the Lower Klamath River. We normally do not make recommendations regarding the management of other fisheries, unless there is a conservation concern, which is the basis for these recommendations. We recommend that catch and release fishing in the estuary of the Klamath River be prohibited due to the excessive predation by marine mammals on released fish. We also request that a conservation closure be implemented within the cold water refugia at the confluence and immediately downstream of Blue Creek (river mile 17), to provide thermal refuge for adult salmon and steelhead migrating up the Klamath River when ambient river temperatures are inhospitable; we also recommend a closure during late-September through November, when late-fall chinook are staging to enter Blue Creek, similar to the closures you currently have in place at the mouths of the Salmon, Scott, and Shasta Rivers.

The Yurok reservation is located on the Lower 44 miles of the Klamath River. The fishery resource of the Klamath River is integral to the Yurok way of life for subsistence, cultural, and economic purposes. We go to great lengths to manage our fishery for future generations and request that you do the same when managing Klamath fisheries. Both of these proposed conservation measures we are recommending are for in-river sport fishing that occurs within the boundaries of the Yurok Reservation and is managed under the authority of the California Fish and Wildlife Service.

Catch and Release Fishing in the Estuary of the Klamath River

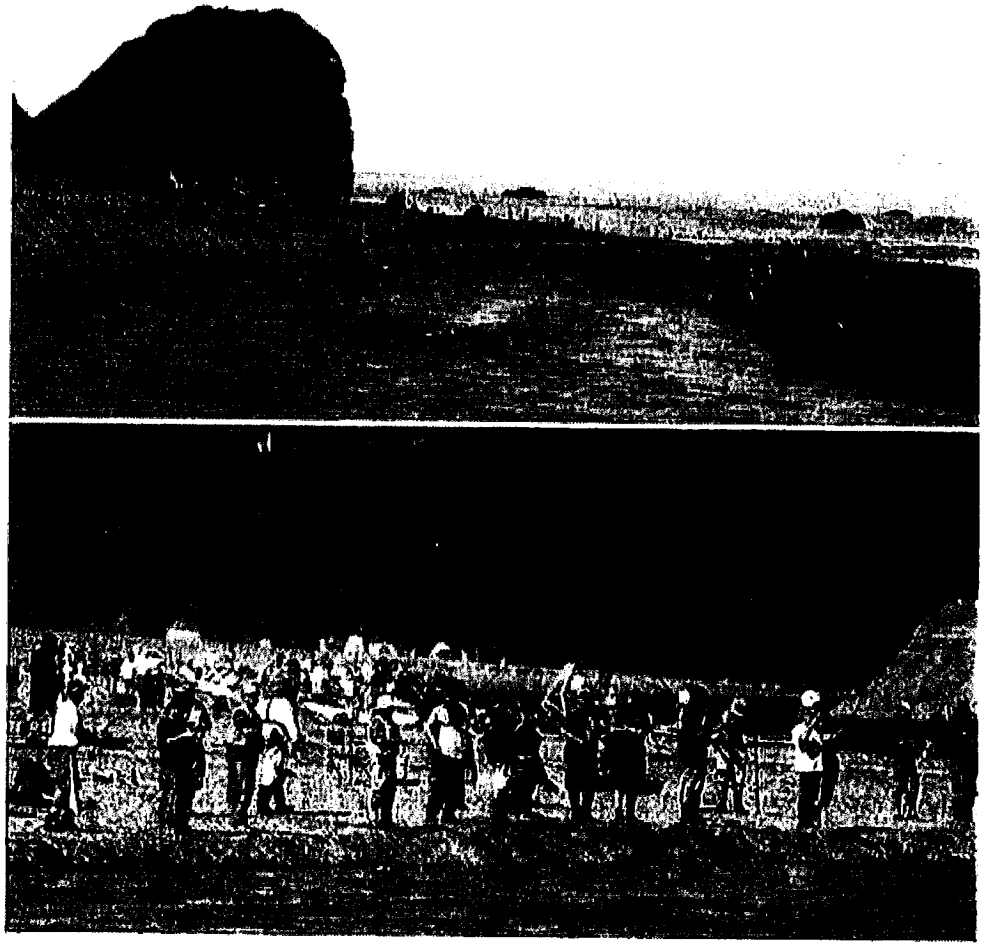
As you may be aware, hook and line fishing at the mouth of the Klamath river, in what is known as the "chute"(where the river meets the ocean), was extraordinary during the late summer of 2013. Due to apparent water quality conditions in the estuary, and the long chute that formed along the spit, the sand bar that separates the river from the ocean, adult salmon spent extended periods of time migrating up and down the chute, rather than entering the estuary. As a result, extremely large numbers of fish were caught by angling (typically by "lining" - a type of "snagging"). There were several problems that arose from this relatively unique situation, such as fish being buried and left in the sand, non-tribal anglers selling fish to Tribal members so they could then be sold in our commercial fishery (against the regulations for both fisheries); however, the worst problem from our perspective was one that has been around for years, fish being caught and released to the waiting sea lions and seals.

While fishermen are notorious for "fish stories", embellishments weren't necessary during the 2013 chuté fishery, as catches were off the charts. Some anglers literally caught dozens of fish/day (some more than 60), for many days/weeks during the season. While such fishing is typically considered good, the chute fishery last year was a major conservation concern because most of these fish were released, in an exhausted condition, to a gauntlet of predatory seals and sea lions. Often times sport Fishers would catch their limit of three adults, and then continue fishing under the pretense of fishing for a jack

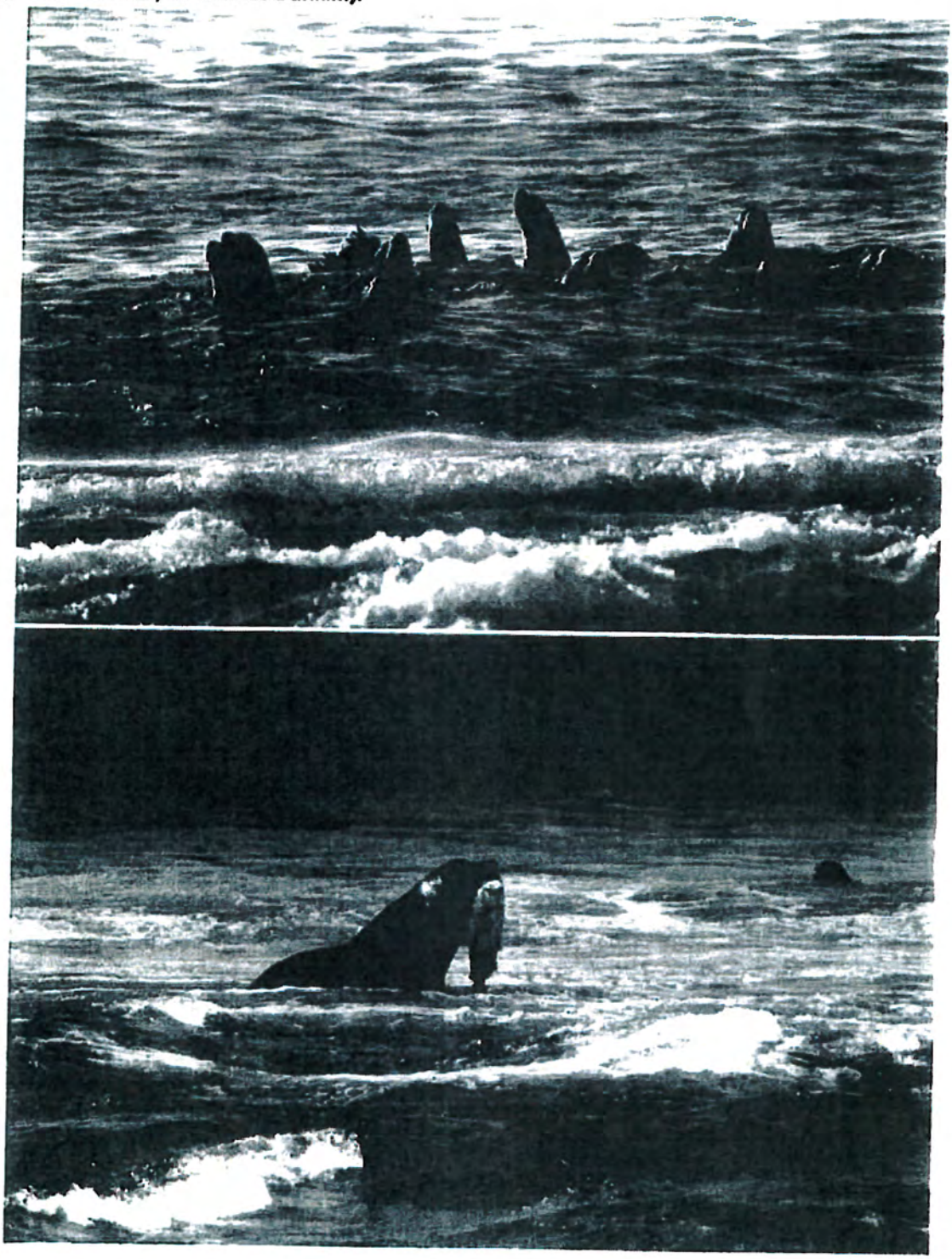
(or steelhead). All the fish that were caught while fishing for this jack had to be released, resulting in many exhausted fish being eaten by the seals and sea lions lined up near the bottom of the chute/surf interface.

We recommend, as we did back in 1996 to the Fish and Game Commission, that catch and release fishing not be allowed in the presence of marine mammals. While the problem was exacerbated in 2013 due to the relatively large number of fish that were caught, it is a problem any time that catch and release fishing occurs in the presence of pinnipeds. Any fish that are caught in the estuary should be harvested, not released to be eaten by sea lions/seals. We recommend that only "catch and keep" fishing occur in the estuary, or at least in the lower portion of the estuary (e.g. downstream of the Requa boat ramp).

Figures 1 and 2. Pictures of the fishery in the Klamath River "chute" during late summer, 2013 (photos courtesy of Thomas Dunklin).



Figures 3 and 4. Pinnipeds at the lower end of the Klamath River "chute" during the 2013 fishery (photos courtesy of Thomas Dunklin).



Blue Creek Refugia

The Yurok Tribe recommends the Fish and Game Commission adopt an additional conservation closure at the confluence and immediately downstream of Blue Creek (river mile 17). This conservation closure would serve two purposes: 1) during the summer months (mid-June through mid-September) it would provide thermal refugia for adult salmon (spring and fall Chinook) and steelhead that migrate up the Klamath River when ambient water temperatures are excessively warm, and 2) during mid-September through November, it would protect late-run fall chinook that are staging to enter Blue Creek during the fall months, similar to the closures that are currently in place at the mouths of the Salmon, Scott, and Shasta Rivers.

During the summer months, especially during years of low flow, water temperatures in the mainstem Klamath River often reach 73 - 79° F (Figure 5 – Yurok Tribal Fisheries Program data), well above the optimal migration range and near the acute lethal limit for adult Chinook salmon (Bell 1990, Strange 2010[1]). During these times, adult salmon and steelhead will stop migrating and hold in the cold water effluent from the mouth of Blue Creek to approximately ½ mile downstream, including "Blue Hole" which is along the bedrock outcropping just downstream of the confluence (Figure 7). During many low flow years, this area holds several hundred, up to a couple thousand, adult salmonids (steelhead and Chinook), that are escaping the intolerably warm Klamath River. These fish are basically on thermal life support.

We believe fish that make it to the thermal refugia should be allowed respite. It is inappropriate to harass (via hook and line) these fish at a time when they are so physiologically vulnerable. Furthermore, often these fish (steelhead and/or salmon) will be hooked while holding in the thermal refugia, but then played for an extended period of time in the ambient river conditions that are several degrees warmer (sometimes at lethal levels) to be eventually released. Forcing fish to go through such dramatic temperature changes, while putting them through excessive stress, is contrary to fish culture practices associated with rearing and/or releasing fish, and undoubtedly results in excessive mortality. We recommend that this thermal conservation closure extend from the mouth of Blue Creek to ½ mile downstream of the wetted channel of Blue Creek, the area where we've detected thermal refugia.

The second reason for the conservation closure at the mouth of Blue Creek is to protect the genetically unique adult late-fall run Chinook salmon that return to spawn from late October through December. These fish are known to hold in the confluence pool in the Klamath River until substantial rains stimulate their migration up Blue Creek. Blue Creek late-fall run Chinook are the stronghold of the Lower Klamath and likely the source population for other Lower Klamath Tributaries.

Blue Creek and other Lower Klamath (downstream of the Trinity River) late-fall run Chinook are genetically unique from other Klamath Basin stocks. The Klamath Basin chinook population upstream of

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[1] Bell, M.C. 1991. Fisheries Handbook of Engineering Requirements and Biological Criteria.
Strange, J.S. 2010. *Upper Thermal Limits to Migration in Adult Chinook Salmon: Evidence from the Klamath River Basin.* Transactions of the American Fisheries Society 139: 1091 – 1108.

the confluence of the Klamath and Trinity Rivers is part of the Upper Klamath-Trinity ESU, while the Lower Klamath River Chinook population, comprised primarily of fish from Blue Creek, is part of the California Coastal Chinook Salmon ESU. We request that fish holding in this area be given protection from harvest pressure similar to what is given to Chinook returning to the Salmon, Scott, and Shasta Rivers. California regulations currently provide the following protection for these stocks:

"No fishing is allowed from September 15 through December 31 in the Klamath River within 500 feet of the mouths of the Salmon, the Shasta and the Scott rivers."

Figure 5. Water temperature in the mainstem Klamath River above Blue Creek, June 1 – September 30, 2013.

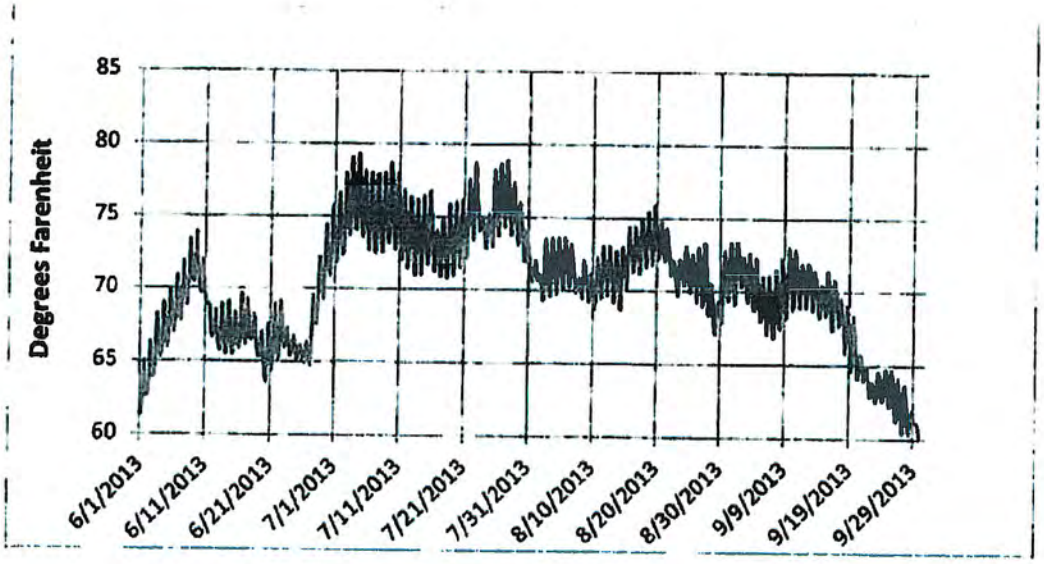

Figure 6. Blue Creek confluence and area of thermal influence (Google Earth, 7/30/2011)

FGC

From: Diane Bowers <dbowers@yuroktribe.nsn.us>
Sent: Thursday, November 20, 2014 1:24 PM
To: FGC
Cc: Dave Hillemeier
Subject: Lower Klamath river fishing regulations
Attachments: SKM_C654e14112014220.pdf

Submitted on behalf of the Yurok Tribe

From: Konica-MinoltaBizhubC-654e@yuroktribe.nsn.us [mailto:Konica-MinoltaBizhubC-654e@yuroktribe.nsn.us]
Sent: Wednesday, November 19, 2014 10:23 PM
To: Dave Hillemeier; Diane Bowers
Subject: Message from KM_C654e

Attachment 8

JARED HUFFMAN
US CONGRESSMAN
Serving California's 2nd District

Rep. Jared Huffman insists federal agencies act to prevent Klamath River fish kill

Aug 3, 2015 | Press Release

Huffman: "The U.S. Bureau of Reclamation must preserve cold water in Trinity Lake to prevent a repeat of the tragic 2002 salmon run."

WASHINGTON—Congressman Jared Huffman, D-San Rafael, has called on the U.S. Department of the Interior to act quickly to prevent a repeat of a massive fish kill on the lower Klamath River as extreme drought conditions threaten struggling salmon.

The deadly parasite that killed up to 68,000 salmon in 2002, commonly known as ich, is infecting this year's run of salmon as they try to survive hot, warm water by crowding into the lower Klamath tributary Blue Creek. The largest portion of the fall run of salmon is likely to begin within the next two or three weeks, and could drastically increase crowding and the spread of the disease.

"I have asked Secretary Sally Jewell to work closely with the Yurok and Hoopa tribes and Humboldt County on a plan to release additional water from the Trinity River, which will boost flows on the Klamath," Huffman said. **"The U.S. Bureau of Reclamation must preserve cold water in Trinity Lake to**

prevent a repeat of the tragic 2002 salmon run disaster."

The 2002 fish kill caused severe damage to tribal trust resources and commercial and sport fisheries for years to come, undermining the regional economy.

In a letter to Secretary Jewell, Huffman asked for up-to-date information on water diversions, temperature, and the incidence of disease on the Klamath and Trinity rivers. He also asked that the bureau minimize any additional export of water from Trinity Lake and to reexamine its future operations on the rivers in light of the unprecedented California drought. Huffman also asked that Reclamation draw on Humboldt County's contractual right to 50,000 acre feet of water from the Trinity River as well as additional flows the tribes, county and agencies have requested to improve conditions on the Klamath.

"Humboldt County's allocation of 50,000 acre feet should be used to protect the fisheries our region depends on," said Humboldt County Fifth District Supervisor Ryan Sundberg. **"We hope the Interior Department recognizes this as an available resource and used that and other sources of water to avoid another horrible fish kill this year."**

"We take this threat to our fish very seriously, and we're looking at every option to protect our fish," said Thomas P. O'Rourke, Chairman of the Yurok Tribe. **"We don't want to go through another catastrophe like the fish kill in 2002, and we will do anything we can to avoid that outcome this year."**

"The Hoopa Valley Tribe and North Coast communities remain concerned about the health of Klamath and Trinity rivers," said Hoopa Valley Tribe Fisheries Director Mike Orcutt. **"We hope and pray that the Interior Department will take appropriate actions to prevent a fish kill this year."**

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Issues: Congressional Issues, Energy and Environment, Jobs and the Economy

Attachment 9

print this
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Blue Creek fishing closure: Parties air their grievances

By Laura Jo Welter, The Triplicate July 16, 2015 03:34 pm

The cooler water from the mouth of Blue Creek enters warmer mainstem Klamath, providing thermal refugia for many fish. Courtesy Dave Jensen

Yurok Tribe hosts public forum to discuss recent disagreements about Blue Creek

Another dry year has the lower Klamath River crawling with tepid water and in low supply, putting its fish population in a vulnerable position — this is an issue that should be considered when making fishing policy decisions, people generally agree, but they don't agree on how the matter should be addressed.

The Yurok Tribe hosted a public forum in Klamath on Monday evening to discuss these differences of opinion following the California Fish and Game Commission's controversial decision to close the Blue Creek-Klamath confluence to sportfishing, beginning last month. It was a meeting well attended by fishing guides, tribal members, public officials and environmentalists.

"The process"

Fishers and Del Norte County supervisors criticized the commission for closing the Blue Creek confluence without due notice to make complaints. By the time supervisors Chris Howard and Gerry Hemmingsen marched their board's grievances to a June 10 Fish and Game Commission meeting in Mammoth Lakes, the decision had already been made to establish a no-fishing buffer zone near the mouth of Blue Creek, between a half mile downstream of the creek to 500 feet above it until mid-September. After that, until the end of the year, the restricted area will be reduced to 500 feet above and below.

Hemmingsen maintained Monday that in addition to the potential impacts on the county's economy if guides aren't able to pull out fish where they reside, he also objects to "the process" that led to the closure.

"This was kind of a push-through deal," he said.

In June, the commission advised the Board of Supervisors to follow pertinent issues more closely to avoid being surprised by policy changes. On Monday, Friends of Del Norte Don Gillespie called out the Board of Supervisors for spending taxpayer money on a too-late, 10-hour trek to Mammoth Lakes, when they could have spoken up earlier. Hemmingsen told the Triplicate last month, however, that the supervisors had written letters to the commission on the issue without hearing a response.

Commissioner Jacque Hostler-Carmesin, of McKinleyville, acknowledged that keeping track of Fish and Game's upcoming decisions is a considerable task.

"It's very difficult if you don't keep up with the rule-making calendar that comes out in December," she said,

adding that she only has three days to read 2,000–3,000 pages pertaining to the meeting's agenda, a feat she said was impossible.

Tribal officials were heard by the commission, however, which took their sportfishing regulation recommendations into consideration this year.

Supporting science

Executive Director Troy Fletcher, who facilitated Monday's meeting, said the Yurok Tribe has been striving to address the Klamath's dwindling fishery for years now, and the closure at Blue Creek is, in part, a result of that.

Having recommended to the Fish and Game Commission a policy that disallows catch and release fishing at the mouth of Blue Creek as well as at the mouth of the Klamath, the commission opted to close the creek's confluence completely, since the state requires that all wild steelhead that are caught be released.

It's well documented that anadromous fish don't take kindly to warm water, and this was the basis for the tribe's recommendation.

Throngs of cold-water fish congregate in the thermal refugia at the mouth of Blue Creek, the first cool-water haven salmonids meet, some 17 miles up the main stem, after heading inland from the chilly Pacific Ocean.

That makes for prime fishing at this spot, particularly in exceptionally hot and dry years, and the fact that it's an important refuge for fish is indisputable, Yurok Fisheries Program Manager Dave Hillemeier addressed the group.

"You know that because you know where the fish are," he said.

But once the fish are dragged on a hook into the warmer water, before being released, their chance of survival lessens with every minute of exposure, their mortality rate increasing as temperatures climb above 20 degrees Centigrade, Hillemeier said, citing a 1995 Trinity River study.

Recent main stem temperatures have been hovering around 23.5 degrees centigrade until last week's thunderstorms cooled the river some, Hillemeier said.

Mike Coopman, of Mike Coopman's Guide Service, said he appreciated the open dialogue at the meeting, but he still wanted to see specific numbers pertaining to the mortalities at Blue Creek. It's possible the stress the fish suffered when hooked could be alleviated, he suggested, if the they were released in the cooler water.

"I'm going to tell you, the mortality rate is not what people were projecting — I can see the bottom of that river just like anybody else. I landed 75 fish a day in my boat alone at Blue Creek last year," Mick Thomas of Lunker Fish Trips attested. "The whole bottom of the river would be lined with fish.

Fisheries biologist Terry Roelofs, a professor emeritus at Humboldt State University, told the Triplicate that the only reason the fish are hunkered down in Blue Creek like that, and seemingly for the picking, is precisely because of the dire conditions of the low-flowing Klamath.

With virtually no snow in the Trinity Alps or the Marble Mountains this winter, Klamath's exceedingly low flows — lower even than they were in 2002, when the Klamath saw the largest fish kill on record — have officials bracing for another die-off.

"That makes perfect sense" that the commission would opt to protect the fish's singular stronghold, Roelofs said, by restricting the fishing there — the closure was warranted years ago.

"The cold water isn't even flowing at the surface, but through the rocks at Blue Creek. And when the Klamath is almost lethally hot, hundreds and hundreds of fish are packed in there," Roelofs said.

When fish are crowded at such high concentrations and for extended periods of time, Hellemeier pointed out, the conditions are ripe for the parasite Ich to incubate. An Ich infestation is responsible for the killing of over 68,000 salmon in 2002. By the time Ich is detected, the four days it takes for a water release to reach the lower river is too late to prevent a die-off.

Chinook salmon and other anadromous fish hang out by the thousands at the mouth of Blue Creek, making the area both an attractive fishing hole and an important area to conserve. Courtesy Barrie Kovish

"It's not our doing"

Tribal member James Dunlap lamented that inflexible policies don't address the shifting problems at hand, though in the meantime they manage to affect the livelihood of people who rely on the fisheries for income.

"You're trying to curtail problems with abusers and problems in our fisheries as well with a crapload of laws, but (the abusers are) not here, and they're not going to follow the policies anyway. It is going to hurt the guys that do follow the rules," Dunlap said.

Margaret Carlson lives on the river, near the confluence with Blue Creek. She said she had won fishing rights in 1978, along with the Yurok Tribe, and she wasn't about to let them go.

"I'm getting too old to fish, but I will catch my catch. I will fill my smoke house, and I will see to it that my children are protected because I am an organized tribe. I organized before the Yurok ever was a tribe. And that Blue Creek there, it belongs to us, and it is our prayer ground," she announced with authority. "I don't like to see the fish being depleted, but it's not our doing, and they're not stopping the people that are farming ahead of us that are poisoning the water."

Margaret's grandson Pergish Carlson, of Blue Creek Guide Service, echoed Mick Thomas' sentiment when he described diving in Blue Creek, and swimming with 500 salmon. He said he was the only Yurok living on tribal land with a guide service, and he did not intend to stop fishing and lose his way of life, though he'd already seen a loss in revenue.

Hearing all of these comments, Commissioner Hostler-Carmesin assured the group that the Fish and Game Commission was not planning an indefinite closure at Blue Creek, as fishing guides feared. It would be reassessed again in the coming year, taking the public's remarks into consideration.

In the meantime, Yurok Tribe officials are agreeable to more studies that would measure the population of fish hiding out in the cool waters trickling from Blue Creek and the stressors that impact them, which may result in better informed policy decisions in the future.

Regular meetings, involving fishing guides, tribal members and county officials were suggested, too, as a means to keep people in the know, and ensure that everybody has a chance to be heard.

Reach Laura Jo Welter at lwelter@triplicate.com.

BOARD OF SUPERVISORS

COUNTY OF HUMBOLDT

825 5TH STREET

EUREKA, CALIFORNIA 95501-1153 PHONE (707) 476-2390 FAX (707) 445-7299

June 3, 2015

California Fish and Game Commission
Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814

RE: Lower Klamath River Fishing Regulations – Blue Creek Closure

Dear Executive Director Mastrup:

On behalf of the Humboldt County Board of Supervisors, I am writing to express our concern with the lack of communication and consequences of closures related to sports fishing at the mouth of the Klamath River and Blue Creek, tributary to the Klamath River.

The proposed amendments to Subsections 7.50(b)(91.1) and (b)(195), Title 14, CCR related to the Klamath River sports fishery closure were hastily made without full consideration to the economic impacts within Humboldt County and our neighbor Del Norte County. Additionally, as supported by the California Department of Fish and Wildlife during reports given to the Commission on February 12, 2015, that science should have been explored to support the decision.

While local input was included for consideration, we feel that they were ignored and the closure of Blue Creek was not fully vetted with sport fishery stakeholders and small businesses that rely on this fishery to support 50% of their yearly revenue. The closure does not just impact fishing guides, but rather a whole host of traveling public that spends the majority of their travel budget on food, lodging and transportation, directly affecting the regional economy.

At a minimum, run timing and species specific impacts affected by this closure should have been considered. As currently suggested by proponents of the closure, do Blue Creek Chinook salmon hold at Blue Creek during this time of year or are these Chinook migrating further up the Klamath? The period impacted traditionally only impacted summer steelhead runs, which guides target at the mouth of Blue Creek, not Chinook salmon. Is there the general belief that Chinook Salmon populations on the Klamath River are in trouble? It is my understanding based on quota's set over the last five (5) years that the Klamath Chinook fishery has been robust. There has been no discussion as to how steelhead fishing fits into any of the proposed closures. As of now, the closure has tied all our hands, keeping fisheries biologists from collecting vitally important information which could help answer some of these questions.

Humboldt County wants to see our vital resources protected. We rely on our fisheries both off and on shore, on the Smith and Klamath Rivers to support our tourism driven economy, it is critical that we work together to insure all aspects of these decisions are considered carefully before we close off resources that affect our economy. As there are many questions left unanswered concerning a population of Chinook that is currently not considered threatened, we would strongly recommend the Commission reconsider the Blue Creek Conservation Closure and the economic impacts to small businesses in our region.

While we understand that the decision has been made for this season, and even if corrective action were taken today, we respectfully request that the Commission reconsider their decision and commit to removing the closure next year at the mouth of Blue Creek so the proper studies requested by the Yurok Tribe can be initiated to form the foundation for decision making processes.

Sincerely,

Estelle Fennell, Chair
Humboldt County Board of Supervisors

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FISH AND GAME COMMISSION
STATEMENT OF EMERGENCY ACTION
FOR RE-ADOPTION OF EMERGENCY REGULATIONS

Emergency Action to Re-adopt Section 8.01, Title 14, CCR,
Re: Fisheries at Risk

I. Request for Approval of Re-adoption of Emergency Regulations

In response to the continued extreme drought conditions, the Department of Fish and Wildlife (Department) is requesting that the Fish and Game Commission (Commission) extend the Department's authority set forth in Section 8.01, Title 14 of the California Code of Regulations, to temporarily close fisheries that are experiencing rapidly degrading environmental conditions within waters of the state. The Department requests that the Commission readopt the emergency regulations that went into effect on July 2, 2015 for an additional period of 90 days while a Certificate of Compliance rulemaking is under consideration.

II. Emergency Regulation in Effect to Date

On January 17, 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency to exist in California due to severe drought conditions. As part of the declaration, the Governor ordered the Department to work with the Commission, using the best available science, to determine whether restricting fishing in certain areas would become necessary and prudent as drought conditions persist.

Over the next several months, environmental conditions resulting from the drought requires temporary restrictions on fishing on parts of four rivers to protect fish populations and sustain future opportunity. The Department and the Commission determined that another approach was needed to give the Department more efficient tools to provide quicker response to deteriorating water quality and quantity conditions in California's waters. As a result, on June 11, 2015, the Commission adopted emergency regulations which established a process to temporarily close fisheries experiencing degraded environmental conditions that may affect fish populations or their habitat within waters of the state. The criteria set forth in these regulations are intended to ensure that fisheries are protected under critical conditions stemming from the drought.

Since adoption of the emergency regulations the Department has implemented one emergency fishing closure on state waters, of the lower Merced River, on August 18, 2015. The Department used the criteria established in subsection (b) of Section 8.01 to determine that a closure was warranted.

Following protocol, the Department held a public meeting in Merced prior to the fishing closure. In addition, the Department provided the Commission the

biological data used to justify the closure and made the data available to the public on the Department's Emergency Fishing Closure webpage.
The Department and Commission are currently working together to formulate a regular rulemaking proposal that will refine the approach and associated language based on experience and feedback from the public, and with revisions to increase the efficacy of this emergency action.

III. Statement of Emergency

The hydrological conditions in 2015 deteriorated from the record low 2014 conditions. The Department of Fish and Wildlife (Department) continues to evaluate and manage the changing impacts of drought on threatened and endangered species and species of special concern, and to develop contingency plans for state Wildlife Areas and Ecological Reserves to manage reduced water resources in the public interest.

Statewide water quality and quantity in many systems is likely to be inadequate to support fisheries until significant and sustained rain and snow accumulate, resulting in impeded passage of spawning fish, increased vulnerability to mortality from predation and physiological stress, and increased angling harvest and/or hooking mortality. Furthermore, survival of eggs and juvenile fish in these systems over the coming months is expected to be extremely low. The historically low water conditions will continue to concentrate coldwater fish populations into shrinking pools of cold water habitat making them easy prey for illegal angling methods such as snagging, increased hooking mortality due to legal catch and release, over-harvest, as well as other human-related disturbances within their freshwater habitat. When coupled with drought-related environmental stressors, such as high water temperature, low dissolved oxygen, and severely reduced suitable habitat, these stressors can seriously affect reproductive success and survival rates.

Since 2014, the Department has worked with the Commission using the best available science, to determine whether restricting fishing in certain areas will become necessary and prudent as drought conditions persist. The Department and Commission have determined that a temporary approach is needed to give the Department effective tools to respond more rapidly to deteriorating water quality and quantity conditions in California's waters for 2015 and early 2016.

V. Re-adoption Criteria

1) Same or Substantially Equivalent

Pursuant to Government Code Section 11346.1(h), the text of a re-adopted regulation must be the "same or substantially equivalent" to the text of the original emergency regulation. The proposed language for the re-adopted

regulatory amendment is substantially the same as the language of the original emergency regulation. The new rulemaking will seek to adjust the following:

- A consecutive 2-day exposure for dissolved oxygen (DO) levels addresses natural variability and risk for juvenile and early life stages of fish

- The 50/500 rule addresses the effects on both the localized level for smaller sub-populations and larger meta-population complexes

- A 14-day recovery for water temperature and DO accounts for natural variability and fluctuations once the upper limits have been exceeded

(2) Substantial Progress

Government Code Section 11346.1(h) specifies that the emergency rulemaking agency must demonstrate that it is making "substantial progress and has proceeded with due diligence" to comply with the standard rulemaking provisions. The Commission, at its December 10, 2015 meeting was requested by the Department to authorize staff to file this emergency readopt, as well as file notice of its intent to file a Certificate of Compliance.

Work on the emergency standard has been conducted by DFW biologists to determine longer term impacts which necessitated filing the notice of the Commissions intent to file a Certificate of Compliance in December. Due to the statutory requirement for the Commission to hear the proposed Certificate of Compliance rulemaking at its February 11, 2016 and April 14, 2016 meetings, it is necessary for the Commission to request this first Emergency Readopt for a period of 90-days, followed by a second 90 day request which is proposed to be voted on at the Commission's March 15, 2016 teleconference.

CALIFORNIA FISH AND GAME COMMISSION
STATEMENT OF PROPOSED EMERGENCY REGULATORY ACTION

Emergency Action to
Add Section 8.01,
Title 14, California Code of Regulations
Re: Special Measures for Fisheries at Risk due to Drought Conditions

I. Statement of Facts Constituting the Need for Emergency Regulatory Action

California continues to suffer under severe drought conditions with record low snow packs in 2014 and 2015. In early 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency for California directing state officials to take all necessary actions to prepare for the record level of drought conditions and also signed an Executive Order redoubling state drought actions with additional measures to strengthen the state's response to drought. On April 1, 2015, the Governor ordered state agencies to impose statewide mandatory water restrictions that will save water, increase enforcement against water waste, streamline the state's drought response, and invest in new drought resilient technologies for California.

The hydrological conditions in 2015 are expected to deteriorate from the record low 2014 conditions. The Department of Fish and Wildlife (Department) continues to evaluate and manage the changing impacts of drought on threatened and endangered species and species of special concern, and develop contingency plans for state Wildlife Areas and Ecological Reserves to manage reduced water resources in the public interest.

Statewide water quality and quantity in many systems is likely to be inadequate to support fisheries as the summer progresses, resulting in impeded passage of spawning fish, increased vulnerability to mortality from predation and physiological stress, and increased angling harvest and/or hooking mortality. Furthermore, survival of eggs and juvenile fish in these systems over the coming months will be extremely low. The historically low water conditions will concentrate coldwater fish populations into shrinking pools of cold water habitat making them easy prey for illegal angling methods such as snagging, increased hooking mortality due to legal catch and release, over-harvest, as well as other human-related disturbances within their freshwater habitat. When coupled with drought-related environmental stressors, such as high water temperature, low dissolved oxygen, and severely reduced suitable habitat, these stressors can seriously affect reproductive success and survival rates.

Since 2014, the Department has worked with the Fish and Game Commission (Commission), using the best available science, to determine whether restricting fishing in certain areas will become necessary and prudent as drought conditions persist. The Department and the Commission have determined that a temporary approach is needed to give the Department effective tools to respond more rapidly to the deteriorating water quality and quantity conditions in California's waters for 2015.

Regulatory Proposal
Environmental conditions resulting from the drought may require temporary restrictions on fishing to protect fish populations and sustain future opportunity. These conditional changes may affect each waterbody and fish population differently based on hydrological responses to the drought. Increased angling mortality, harvest, and angling pressure are the key components used to evaluate potential effects associated with degraded environmental conditions and will need to be evaluated on a water by water basis and over time as conditions change.

To ensure that fisheries are protected under critical conditions stemming from the drought, the Department is proposing a set of triggers to guide fishing closure and reopening decisions. The Department's decision to close or open a water will be based on the most current information available, collected by professional staff trained in the associated fields. Criteria for evaluating aquatic conditions are based on site-specific monitoring efforts with an emphasis on listed fish species, species of special concern, and gamefish.

The following proposed criteria will be used to determine if an emergency fishing closure or associated reopening is warranted:

Any water of the state not currently listed in Section 8.00 of these regulations may be closed to fishing by the Department when the Director, or his or her designee, determines one or more the following conditions have been met:

- Water temperatures in occupied habitat exceed 70° Fahrenheit for over eight hours a day for three consecutive days.
- Dissolved oxygen levels in occupied habitat drop below 5 mg/L for any period of time over three consecutive days.
- Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait.
- Water levels for ponds, lakes and reservoirs drop below 10% of their capacity.
- Adult breeding population levels are estimated to be below 500 individuals.

All waters closed pursuant to this section will be reopened by the Department when the Director, or his or her designee, determines all of the following conditions have been met:

- Water temperatures in occupied habitat do not exceed 70° Fahrenheit for over eight hours a day for seven consecutive days.
- Dissolved oxygen levels in occupied habitat rise above 5 mg/L and are maintained at that level for seven consecutive days.
- Fish passage is available and that no impediment exists to strand or concentrate adults or juveniles during their migration.

- Water levels for ponds, lakes and reservoirs have recovered to greater than 10% of their capacity.
- Adult breeding populations are estimated to be recovered to greater than 500 individuals.

Justification and associated data for closure and reopening decisions will be provided to the Commission for any water that is subject to a fishing closure.

The Department and the Commission will work together to formulate a regular rulemaking proposal that will refine the approach and associated language based on experiences learned, feedback from the public, and revisions to increase the efficacy of this emergency action.

II. Impact of Regulatory Action

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following determinations relative to the required statutory categories have been made:

(a) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(b) Nondiscretionary Costs/Savings to Local Agencies:

None.

(c) Programs Mandated on Local Agencies or School Districts:

None.

(d) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(e) Effect on Housing Costs:

None.

III. Authority and Reference

The Fish and Game Commission proposes this emergency action pursuant to the authority vested by sections 200, 202, 205, 240, and 315 of the Fish and Game Code and to implement, interpret, or make specific sections 200, 202, 205, 240, and 315 of said Code.

IV. Section 240 Finding

Pursuant to Section 240 of the Fish and Game Code, the Commission finds that the adoption of this regulation is necessary for the immediate conservation, preservation, or protection of birds, mammals, reptiles, or fish, including, but not limited to, any nests or eggs thereof.

Updated Informative Digest (Plain English Overview)

California continues to suffer under severe drought conditions with record low snow packs in 2014 and 2015. In early 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency for California directing state officials to take all necessary actions to prepare for the record level of drought conditions and also signed an Executive Order redoubling state drought actions with additional measures to strengthen the state's response to drought. On April 1, 2015, the Governor ordered state agencies to impose statewide mandatory water restrictions that will save water, increase enforcement against water waste, streamline the state's drought response, and invest in new drought resilient technologies for California.

The hydrological conditions in 2015 are expected to deteriorate from the record low 2014 conditions. The Department of Fish and Wildlife (Department) continues to evaluate and manage the changing impacts of drought on threatened and endangered species and species of special concern, and develop contingency plans for state Wildlife Areas and Ecological Reserves to manage reduced water resources in the public interest.

Statewide water quality and quantity in many systems is likely to be inadequate to support fisheries as the summer progresses, resulting in impeded passage of spawning fish, increased vulnerability to mortality from predation and physiological stress, and increased angling harvest and/or hooking mortality. Furthermore, survival of eggs and juvenile fish in these systems over the coming months will be extremely low. The historically low water conditions will concentrate coldwater fish populations into shrinking pools of cold water habitat making them easy prey for illegal angling methods such as snagging, increased hooking mortality due to legal catch and release, over-harvest, as well as other human-related disturbances within their freshwater habitat. When coupled with drought-related environmental stressors, such as high water temperature, poor water quality, and severely reduced suitable habitat, these stressors can seriously affect reproductive success and survival rates.

Since 2014, the Department has worked with the Fish and Game Commission (Commission), using the best available science, to determine whether restricting fishing in certain areas will become necessary and prudent as drought conditions persist. The Department and the Commission have determined that a temporary approach is needed to give the Department effective tools to respond more rapidly to the deteriorating water quality and quantity conditions in California's rivers and streams for 2015.

The following proposed criteria will be used to determine if an emergency fishing closure or associated reopening is warranted:

> Any water of the state not currently listed in Section 8.00 of these regulations may be closed to fishing by the Department when the Director, or his or her designee, determines one or more of the following conditions have been met:
>
> - Water temperatures in occupied habitat exceed 70° Fahrenheit for over eight hours a day for three consecutive days.

- Dissolved oxygen levels in occupied habitat drop below 5 mg/L for any period of time over three consecutive days.
- Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait.
- Water levels for ponds, lakes and reservoirs drop below 10% of their capacity.
- Adult breeding population levels are estimated to be below 500 individuals.

All waters closed pursuant to this section will be reopened by the Department when the Director, or his or her designee, determines all of the following conditions have been met:

- Water temperatures in occupied habitat do not exceed 70° Fahrenheit for over eight hours a day for seven consecutive days.
- Dissolved oxygen levels in occupied habitat rise above 5 mg/L and are maintained at that level for seven consecutive days.
- Fish passage is available and that no impediment exists to strand or concentrate adults or juveniles during their migration.
- Water levels for ponds, lakes and reservoirs have recovered to greater than 10% of their capacity.
- Adult breeding populations are estimated to be recovered to greater than 500 individuals.

Justification and associated data for closure and reopening decisions will be provided to the Commission for any water that is subject to a fishing closure.

The Department and the Commission will work together to formulate a regular rulemaking proposal that will refine the approach and regulatory language based on experiences learned, feedback from the public, and revisions to increase the efficacy of this emergency action.

Benefits: The proposed regulation will provide benefits to the environment through the conservation and preservation of listed species, species of special concern, and gamefish populations.

The proposed regulations are neither inconsistent nor incompatible with existing state regulations. The Legislature has delegated authority to the Commission to promulgate sport fishing regulations (sections 200, 202, 205, 240, and 315 Fish and Game Code).

Pursuant to its June 11, 2015 meeting in Mammoth Lakes, the Fish and Game Commission adopted the emergency action.

Regulatory Language

Section 8.01, Title 14, CCR is amended to read:

Section 8.01. Special ~~Gear Provisions~~Measures for Fisheries at Risk due to Drought Conditions.

(a) In response to continued extreme drought conditions, the commission has established a quick response process to temporarily close fisheries experiencing degraded environmental conditions that may affect fish populations or their habitat within waters of the state. The criteria set forth in subsections (b) and (c) are intended to ensure that fisheries are protected under critical conditions stemming from the drought. These criteria will be monitored in statewide inland fisheries, and they will be evaluated on a water by water basis over time as conditions change.

(b) The department may close to angling any waters of the state not currently listed in Section 8.00 of these regulations if the director, or his or her designee, finds one or more of the following conditions have been met:

(A) Water temperatures in occupied habitat exceed 70° Fahrenheit for over eight hours a day for three consecutive days

(B) Dissolved oxygen levels in occupied habitat drop below 5 mg/L for any period of time over three consecutive days.

(C) Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait.

(D) Water levels for ponds, lakes and reservoirs drop below 10% of their capacity.

(E) Adult breeding population levels are estimated to be below 500 individuals.

(c) Waters closed pursuant to subsection (b) shall be reopened by the department when the director, or his or her designee, finds all of the following conditions have been met:

(A) Water temperatures in occupied habitat do not exceed 70° Fahrenheit over eight hours a day for seven consecutive days

(B) Dissolved oxygen levels in occupied habitat rise above 5 mg/L and are maintained at that level over seven consecutive days.

(C) Fish passage is available and no impediment exists to strand or concentrate adults or juveniles during their migration.

(D) Water levels for ponds, lakes and reservoirs have recovered to greater than 10% of their capacity.

(E) Adult breeding population levels are estimated to be recovered to greater than 500 individuals.

(d) It shall be unlawful to take fish in any waters of the state closed to angling pursuant to this Section.

(e) Notification of department actions.

(1) The department shall maintain a list of closed waters of the state and update that list on Wednesday of each week by 1:00 pm. In the event that water conditions change later in the week, the fishing status for each specific water will not change until the day following the next Wednesday. It shall be the responsibility of the angler to use the telephone number provided on the department's website to obtain the current status of any water. The number to call for information is (916) 445-7600.

Note: Authority cited: Sections 200, 202~~ and 210~~, 205, 240, and 315, Fish and Game Code. Reference: Sections 200, 202, 205~~ and 210~~, 240, and 315, Fish and Game Code.

State of California
Department of Fish and Wildlife

M e m o r a n d u m

Date: November 16, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for the December 9-10, 2015 Fish and Game Commission Meeting Re: Request to Extend Existing Emergency Regulations Establishing Measures for Fisheries at Risk due to Drought Conditions, Section 8.01, Title 14, California Code of Regulations**

In response to the continued extreme drought conditions, the Department of Fish and Wildlife (Department) is requesting that the Fish and Game Commission (Commission) extend the Department's authority set forth in Section 8.01, Title 14 of the California Code of Regulations, to temporarily close fisheries that are experiencing rapidly degrading environmental conditions within waters of the state. The Department requests that the Commission readopt the emergency regulations that went into effect on July 2, 2015 for an additional period of 90 days while the regular rulemaking is under consideration.

On January 17, 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency to exist in California due to severe drought conditions. As part of the declaration, the Governor ordered the Department to work with the Commission, using the best available science, to determine whether restricting fishing in certain areas will become necessary and prudent as drought conditions persist.

Over the next several months, environmental conditions resulting from the drought requires temporary restrictions on fishing on parts of four rivers to protect fish populations and sustain future opportunity. The Department and the Commission determined that an approach was needed to give the Department more efficient tools to provide quicker response to the deteriorating water quality and quantity conditions in California's waters. As a result, on June 11, 2015, the Commission adopted emergency regulations which establish a process to temporarily close fisheries experiencing degraded environmental conditions that may affect fish populations or their habitat within waters of the state. The criteria set forth in these regulations are intended to ensure that fisheries are protected under critical conditions stemming from the drought.

Since adoption of the emergency regulations the Department has implemented one emergency fishing closure on state waters. This emergency closure was implemented on the lower Merced River on August 18, 2015. The Department used the criteria established in subsection (b) of Section 8.01 to determine that a closure was warranted.

Following protocol, the Department held a public meeting in Merced prior to the fishing closure. In addition, the Department provided the Commission the biological data used to justify the closure and made the data available to the public on the Department's Emergency Fishing Closure webpage.
The Department and the Commission are currently working together to formulate a regular rulemaking proposal that will refine the approach and associated language based on experiences learned, feedback from the public, and revisions to increase the efficacy of this emergency action.

If you have any questions regarding this item, please contact Stafford Lehr, Chief, Fisheries Branch, via telephone at (916) 327-8840 or via e-mail at Stafford.Lehr@wildlife.ca.gov.

Attachments

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Fisheries at Risk
Proposed Regulatory Action

Fish and Game Commission Meeting
December 10, 2015
Stafford Lehr
Fisheries Branch

Overarching Goal

To ensure that fisheries are protected from increased angling mortality, harvest, and angling pressure under critical environmental conditions.

Problem Statements

- Environmental conditions resulting in degraded habitat quality and/or extremely low population size may require temporary restrictions on fishing to protect fish populations and sustain future opportunity
- The Department needs a quick response process to temporarily close fisheries experiencing degraded habitat quality and or quantity or extremely low population size within waters of the state

Proposed Solution

- Department **may** close any water when established criteria have been met
- Decisions based on current information collected by trained staff
- Emphasis on listed fish species, species of special concern, and gamefish
- Justification for any closure will be provided to the Commission

Criteria for Fishing Closures

Any water may be closed to fishing when one or more the following conditions have been met:

- Water temperatures exceed 70°F for over eight hours a day for three consecutive days
- Dissolved oxygen levels drop below 5 mg/L for any period of time over **two** consecutive days

Criteria for Fishing Closures

- Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait
- Water levels for ponds, lakes and reservoirs drop below 10% of capacity
- Adult breeding population levels are estimated to be below **50 individuals for a subpopulation** and **500 for a standard or meta-population**

Re-opening Criteria

- Waters closed to fishing will be reopened when the initial closure-based criteria are no longer met; and
- **Water temperatures do not exceed 70°F for over eight hours a day for 14 consecutive days**
- **DO levels remain above 5 mg/L for 14 consecutive days**

Changes from Emergency Regulations

- A consecutive two day exposure for DO addresses natural variability and risk for juvenile and early life stages of fish
- The 50/500 rule addresses the effects on both the localized level for smaller sub-populations and larger meta-population complexes
- A 14 day recovery for water temperature and DO accounts for natural variability and fluctuations once the upper limits have been exceeded

Questions / Thank You

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Add Section 8.01,
Title 14, California Code of Regulations
Re: Special Measures for Fisheries at Risk due to Drought Conditions

I. Date of Initial Statement of Reasons: August 21, 2015

II. Dates and Locations of Scheduled Hearings:

(a)	Notice Hearing:	Date:	December 10, 2015
		Location:	San Diego
(b)	Discussion Hearing:	Date:	February 11, 2016
		Location:	Sacramento
(c)	Adoption Hearing:	Date:	April 14, 2015
		Location:	Santa Rosa

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

California continues to suffer under severe drought conditions with record low snow packs since 2014. In early 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency for California directing state officials to take all necessary actions to prepare for the record level of drought conditions and also signed an Executive Order redoubling state drought actions with additional measures to strengthen the state's response to drought. On April 1, 2015, the Governor ordered state agencies to impose statewide mandatory water restrictions that will save water, increase enforcement against water waste, streamline the state's drought response, and invest in new drought resilient technologies for California.

California's hydrological conditions are expected to deteriorate from the record low 2014 conditions in the near future. The Department of Fish and Wildlife (Department) continues to evaluate and manage the changing impacts of drought on threatened and endangered species and species of special concern, and develop contingency plans for state Wildlife Areas and Ecological Reserves to manage reduced water resources in the public interest.

Statewide water quality and quantity in many systems is likely to be inadequate to support fisheries as the summer progresses, resulting in impeded passage of spawning fish, increased vulnerability to mortality from predation and physiological stress, and increased angling harvest and/or hooking mortality. Furthermore, survival of eggs and juvenile fish in these systems over the coming months will be extremely low. The historically low water conditions will concentrate coldwater fish populations into shrinking pools of cold water habitat making them easy prey for illegal angling methods such as snagging, increased hooking mortality due to legal catch and release, over-harvest, as well as other human-related disturbances within their freshwater habitat. When coupled with drought-related environmental stressors, such as high water temperature, low dissolved oxygen, and severely reduced suitable habitat, these stressors can seriously affect reproductive success and survival rates.

Since 2014, the Department has worked with the Fish and Game Commission (Commission), using the best available science, to determine whether restricting fishing in certain areas will become necessary and prudent as drought conditions persist. The Department and the Commission have determined that an approach is needed to give the Department effective tools to respond more rapidly to the deteriorating water quality and quantity conditions in California's waters.

Regulatory Proposal

Environmental conditions resulting from the drought may require temporary restrictions on fishing to protect fish populations and sustain future opportunity. These conditional changes may affect each waterbody and fish population differently based on hydrological responses to the drought. Increased angling mortality, harvest, and angling pressure are the key components used to evaluate potential effects associated with degraded environmental conditions and will need to be evaluated on a water by water basis and over time as conditions change.

To ensure that fisheries are protected under critical conditions stemming from the drought, the Department is proposing a set of triggers to guide fishing closure and reopening decisions. The Department's decision to close or open a water will be based on the most current information available, collected by professional staff trained in the associated fields. Criteria for evaluating aquatic conditions are based on site-specific monitoring efforts with an emphasis on listed fish species, species of special concern, and gamefish.

The following proposed criteria will be used to determine if a fishing closure or associated reopening is warranted:

Any water of the state not currently listed in Section 8.00 of these regulations may be closed to fishing by the Department when the Director, or his or her designee, determines one or more the following conditions have been met:

- Water temperatures in occupied habitat exceed 70° Fahrenheit for over eight hours a day for three consecutive days.
- Dissolved oxygen levels in occupied habitat drop below 5 mg/L for any period of time over three consecutive days.
- Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait.
- Water levels for ponds, lakes and reservoirs drop below 10% of their capacity.
- Adult breeding population levels are estimated to be below 500 individuals.

All waters closed pursuant to this section will be reopened by the Department when the Director, or his or her designee, determines all of the following conditions have been met:

- Water temperatures in occupied habitat do not exceed 70° Fahrenheit for over eight hours a day for seven consecutive days.
- Dissolved oxygen levels in occupied habitat rise above 5 mg/L and are maintained at that level for seven consecutive days.
- Fish passage is available and that no impediment exists to strand or concentrate adults or juveniles during their migration.
- Water levels for ponds, lakes and reservoirs have recovered to greater than 10% of their capacity.
- Adult breeding populations are estimated to be recovered to greater than 500 individuals.

Justification and associated data for closure and reopening decisions will be provided to the Commission for any water that is subject to a fishing closure.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 205, 240 and 315, Fish and Game Code.

Reference: Sections 200, 205, 240, and 315, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None.

(d) Identification of Reports or Documents Supporting Regulation Change:

None.

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

No public meetings are scheduled prior to the notice publication. The 45-day public notice comment period provides adequate time for review of the proposed changes.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified.

(b) No Change Alternative:

The no change alternative would leave existing regulations in place.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting

Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action is not anticipated to have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states because the expected impact of the proposed regulations on the amount of fishing activity is anticipated to be minimal relative to recreational angling effort statewide.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The expected impact of the proposed regulations on the amount of fishing activity is anticipated to be minimal relative to recreational angling effort statewide. Therefore the Commission does not anticipate any impacts on the creation or elimination of jobs, the creation of new business, the elimination of existing business or the expansion of businesses in California.

The Commission anticipates benefits to the health and welfare of California residents. Providing opportunities for a salmon and trout sport fishery encourages consumption of a nutritious food.

The Commission does not anticipate any non-monetary benefits to worker safety.

The Commission anticipates benefits to the environment by the sustainable management of California's sport fishing resources.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VII. Economic Impact Assessment:

If any closures of waters due to proposed regulatory criteria enacted, the Department's approach will be to achieve adequate resource protection with minimized disruptions to recreational activities and the economy of the immediate surrounding locales. Closures are expected to be implemented over limited areas for short time periods. In many instances, anglers can shift to other areas of the river that remain open. Additionally, other recreational activities such as rafting, hiking, and swimming will most often still be allowed, which can mitigate potential losses in visitor spending to the local economies. However, to derive the most conservative estimates of future economic impacts, any potential mitigation of total economic impact from shifts in effort was not formally considered in the Department quantitative analysis. Estimates of future economic impacts are done with the assumption that anglers would not substitute fishing for other activities in the area or shift trips to other higher effort months of the year.

Impacts of Potential Closures:
Economic impact assessments of past emergency closures provide reasonable estimates of the potential impact of future closures under the proposed regulations. In 2013, a combined emergency closure of the lower American River, Russian River, and a combined coastal area consisting of portions of North Coast, Central Coast and South Central District Low Flow Restricted Areas were in effect for up to three months. In 2014 and 2015, emergency closures along of a portion of the Merced River were put into effect for up to five months. Additionally a hypothetical 2016 seasonal closure of the Klamath River Basin (~50% of the available area) was used to model potential impacts of large watershed closure. Table 1 presents a comparison of the above economic

impact assessments to illustrate the potential low-, mid- and high-economic impact of potential closures under Section 8.01.

Table 1. Economic Impact of Potential Closures (2015$)

Year	Affected Area	Angler Spending	Total Output Loss	Job Loss
2013	American River	-$77,000	-$93,000	-1.9
2013	Russian River	-$24,000	-$29,000	-0.6
2013	Coastal Low-Flow Areas	-$34,000	-$41,000	-0.8
2014	Merced River	-$1,300	-$1,500	-0.03
2015	Merced River	-$1,000	-$1,200	-0.02
2016	Klamath River	-$1,000,000	-$1,040,000	-21.3

- The Merced River 2014 and 2015 closures resulted in a relatively low total economic output loss estimate of $1,200 to $1,500 with less than one job lost for each closure.
- The 2013 Russian River closure occurred during peak fishing months and resulting in an estimated loss of 280 angler trips with an associated $24,000 drop in angler spending resulting in a mid-range total output loss of $29,000 and less than one job lost from the three month closure period.
- The concurrent 2013 coastal low-flow closures resulted in a slightly higher total economic output loss estimate of $34,500 with less than one job lost.
- The American River closure during the same time, resulted in a higher estimated loss of 900 angler trips with an associated $77,000 drop in angler spending resulting in a higher total output loss of $93,000 and about two jobs lost.
- The 2016 hypothetical Klamath River Basin closure is projected to result in the loss of 4,000 angler trips with an associated $1,000,000 drop in angler spending resulting in the highest expected total output loss of $1,040,000 and about 21 jobs lost.

A. Effects of the Regulation on the Creation or Elimination of Jobs

The Commission does not anticipate significant adverse impacts on the creation or elimination of jobs to be precipitated by temporary closures of isolated inland fisheries.

The potential impacts of a short-term closure were estimated to result in the loss of less than one job loss at the low end to a high impact of up to 21 jobs loss depending upon area, duration and location of the potential closure. However overall, the number of visitors and thus probable visitor expenditures in the fisheries areas is expected to decline for the closure period but most often,

significant impacts on job creation or elimination is not likely to occur given the short time period and lags in employment level adjustment.

B. Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses

The projected loss in angler spending for a freshwater closure is estimated to range from $1,000 to $1,000,000. This spending loss is associated with a drop in total economic output as each dollar spent is passed through the economy in the range of $1,200 to $1,040,000. This estimated output loss would be shared by a number of businesses over several months, such that it is not anticipated to constitute sufficient impact to trigger the creation of new businesses or elimination of existing businesses.

C. Effects of the Regulation on the Expansion of Businesses in California

The projected loss in angler spending for a freshwater closure is estimated to range from $1,000 to $1,000,000. This spending loss is associated with a drop in total economic output as each dollar spent is passed through the economy in the range of $1,200 to $1,040,000. This estimated output loss would be shared by a number of businesses over more several months, such that it is not anticipated to constitute sufficient impact to trigger expansion of new businesses.

D. Benefits of the Regulation

Concurrence with Federal Law: N/A

Benefits of the Regulation to the Health and Welfare of California Residents:
The Commission anticipates benefits to the health and welfare of California residents through the protection of aquatic and riparian habitats and the fish and wildlife resources that depend upon them. Trout and salmon are a nutritious food source and increasing inland sport fishery opportunities encourages consumption of this nutritious food. Sport fishing also contributes to increased mental health of its practitioners as fishing is a hobby and form of relaxation for many. Sport fishing also provides opportunities for multi-generational family activities and promotes respect for California's environment by younger generations, the future stewards of California's natural resources.

Benefits to the Environment:
The Commission anticipates benefits to the environment through the protection of aquatic and riparian habitats and the fish and wildlife resources that depend upon them. Stream flows in many systems are inadequate to allow passage of spawning anadromous fish, increasing their vulnerability to mortality from predation, physiological stress, and fishing. Furthermore, survival of eggs and

juvenile fish in these systems is likely to be extremely low in higher temperature waters. Under these extreme conditions, conservation and protection of the juvenile fish populations will protect as many adult fish as possible. It is the policy of the state to encourage the conservation, maintenance, and utilization of the living resources of the inland waters under the jurisdiction and influence of the state for the benefit of all its citizens and to promote the development of local California fisheries. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence and the maintenance of a sufficient resource to support a reasonable sport use, taking into consideration the necessity of regulating individual sport fishery bag limits in the quantity that is sufficient to provide a satisfying sport.

Benefits to Worker Safety: The Commission does not anticipate benefits to worker safety because the proposed regulations will not impact worker conditions.

Informative Digest/Policy Statement Overview

California continues to suffer under severe drought conditions with record low snow packs since 2014. In early 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency for California directing state officials to take all necessary actions to prepare for the record level of drought conditions and also signed an Executive Order redoubling state drought actions with additional measures to strengthen the state's response to drought. On April 1, 2015, the Governor ordered state agencies to impose statewide mandatory water restrictions that will save water, increase enforcement against water waste, streamline the state's drought response, and invest in new drought resilient technologies for California.

California's hydrological conditions are expected to deteriorate from the record low 2014 conditions in the near future. The Department of Fish and Wildlife (Department) continues to evaluate and manage the changing impacts of drought on threatened and endangered species and species of special concern, and develop contingency plans for state Wildlife Areas and Ecological Reserves to manage reduced water resources in the public interest.

Statewide water quality and quantity in many systems is likely to be inadequate to support fisheries as the summer progresses, resulting in impeded passage of spawning fish, increased vulnerability to mortality from predation and physiological stress, and increased angling harvest and/or hooking mortality. Furthermore, survival of eggs and juvenile fish in these systems over the coming months will be extremely low. The historically low water conditions will concentrate coldwater fish populations into shrinking pools of cold water habitat making them easy prey for illegal angling methods such as snagging, increased hooking mortality due to legal catch and release, over-harvest, as well as other human-related disturbances within their freshwater habitat. When coupled with drought-related environmental stressors, such as high water temperature, low dissolved oxygen, and severely reduced suitable habitat, these stressors can seriously affect reproductive success and survival rates.

Since 2014, the Department has worked with the Fish and Game Commission (Commission), using the best available science, to determine whether restricting fishing in certain areas will become necessary and prudent as drought conditions persist. The Department and the Commission have determined that an approach is needed to give the Department effective tools to respond more rapidly to the deteriorating water quality and quantity conditions in California's waters.

Regulatory Proposal

Environmental conditions resulting from the drought may require temporary restrictions on fishing to protect fish populations and sustain future opportunity. These conditional changes may affect each waterbody and fish population differently based on hydrological responses to the drought. Increased angling mortality, harvest, and angling pressure are the key components used to evaluate potential effects associated

with degraded environmental conditions and will need to be evaluated on a water by water basis and over time as conditions change.

To ensure that fisheries are protected under critical conditions stemming from the drought, the Department is proposing a set of triggers to guide fishing closure and reopening decisions. The Department's decision to close or open a water will be based on the most current information available, collected by professional staff trained in the associated fields. Criteria for evaluating aquatic conditions are based on site-specific monitoring efforts with an emphasis on listed fish species, species of special concern, and gamefish.

The following proposed criteria will be used to determine if a fishing closure or associated reopening is warranted:

Any water of the state not currently listed in Section 8.00 of these regulations may be closed to fishing by the Department when the Director, or his or her designee, determines one or more the following conditions have been met:

- Water temperatures in occupied habitat exceed 70° Fahrenheit for over eight hours a day for three consecutive days.
- Dissolved oxygen levels in occupied habitat drop below 5 mg/L for any period of time over three consecutive days.
- Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait.
- Water levels for ponds, lakes and reservoirs drop below 10% of their capacity.
- Adult breeding population levels are estimated to be below 500 individuals.

All waters closed pursuant to this section will be reopened by the Department when the Director, or his or her designee, determines all of the following conditions have been met:

- Water temperatures in occupied habitat do not exceed 70° Fahrenheit for over eight hours a day for seven consecutive days.
- Dissolved oxygen levels in occupied habitat rise above 5 mg/L and are maintained at that level for seven consecutive days.
- Fish passage is available and that no impediment exists to strand or concentrate adults or juveniles during their migration.
- Water levels for ponds, lakes and reservoirs have recovered to greater than 10% of their capacity.
- Adult breeding populations are estimated to be recovered to greater than 500 individuals.

Justification and associated data for closure and reopening decisions will be provided to

the Commission for any water that is subject to a fishing closure.

Regulatory Language

Section 8.01, Title 14, CCR is added to read:

Section 8.01. Special ~~Gear Provisions[Repealed]~~Measures for Fisheries at Risk due to Drought Conditions.

(a) In response to continued extreme drought conditions, the commission has established a quick response process to temporarily close fisheries experiencing degraded environmental conditions that may affect fish populations or their habitat within waters of the state. The criteria set forth in subsections (b) and (c) are intended to ensure that fisheries are protected under critical conditions stemming from the drought. These criteria will be monitored in statewide inland fisheries, and they will be evaluated on a water by water basis over time as conditions change.

(b) The department may close to angling any waters of the state not currently listed in Section 8.00 of these regulations if the director, or his or her designee, finds one or more of the following conditions have been met:

(A) Water temperatures in occupied habitat exceed 70° Fahrenheit for over eight hours a day for three consecutive days

(B) Dissolved oxygen levels in occupied habitat drop below 5 mg/L for any period of time over three consecutive days.

(C) Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait.

(D) Water levels for ponds, lakes and reservoirs drop below 10% of their capacity.

(E) Adult breeding population levels are estimated to be below 500 individuals.

(c) Waters closed pursuant to subsection (b) shall be reopened by the department when the director, or his or her designee, finds all of the following conditions have been met:

(A) Water temperatures in occupied habitat do not exceed 70° Fahrenheit over eight hours a day for seven consecutive days

(B) Dissolved oxygen levels in occupied habitat rise above 5 mg/L and are maintained at that level over seven consecutive days.

(C) Fish passage is available and no impediment exists to strand or concentrate adults or juveniles during their migration.

(D) Water levels for ponds, lakes and reservoirs have recovered to greater than 10% of their capacity.

(E) Adult breeding population levels are estimated to be recovered to greater than 500 individuals.

(d) It shall be unlawful to take fish in any waters of the state closed to angling pursuant to this Section.

(e) Notification of department actions.

(1) The department shall maintain a list of closed waters of the state and update that list on Wednesday of each week by 1:00 pm. In the event that water conditions change later in the week, the fishing status for each specific water will not change until the day following the next Wednesday. It shall be the responsibility of the angler to use the telephone number provided below or go to the department's website at https://www.wildlife.ca.gov/Regulations to obtain the current status of any water. The

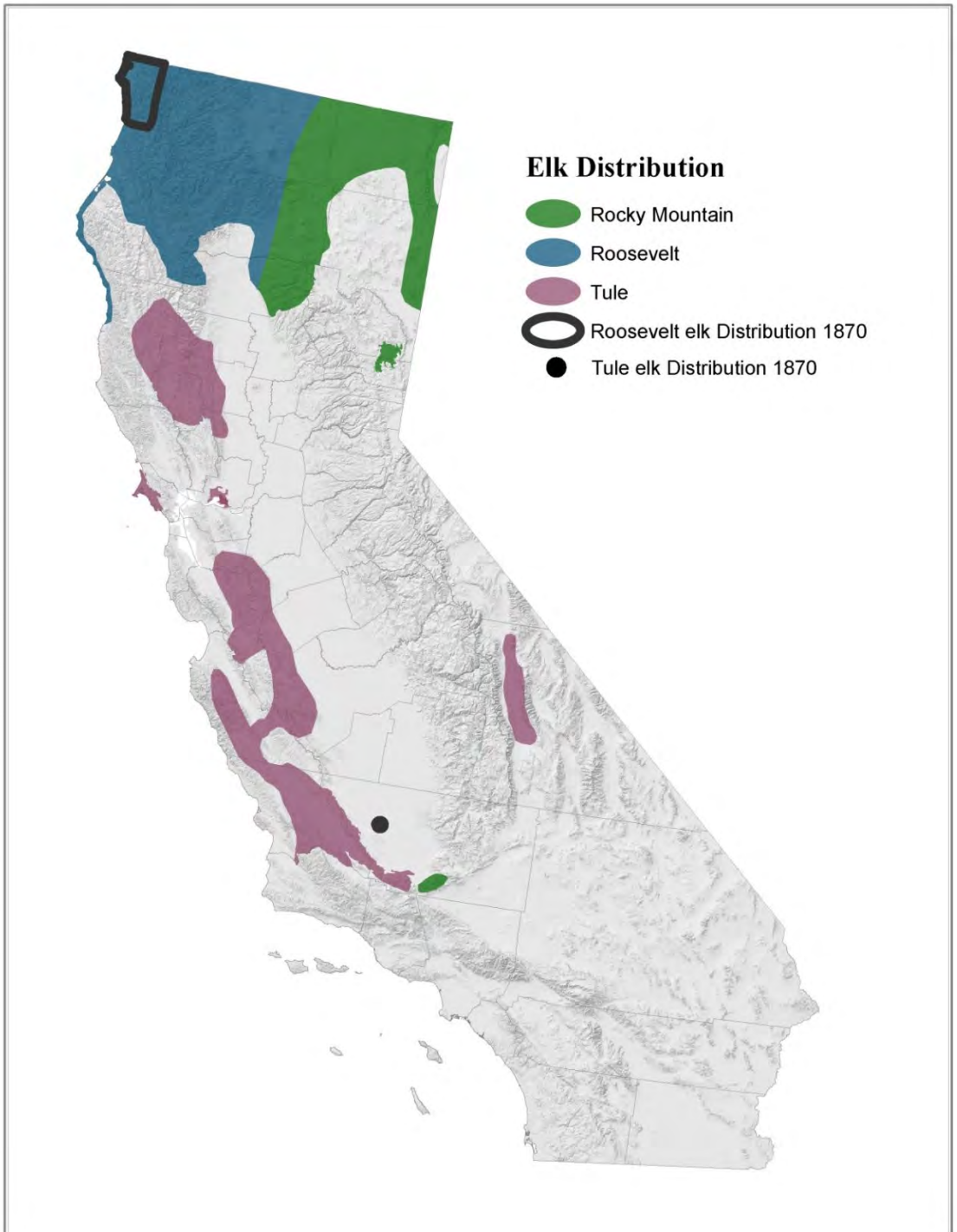
number to call for information is (916) 445-7600.
Note: Authority cited: Sections 200, 202 ~~and 210~~, 205, 240, and 315, Fish and Game Code. Reference: Sections 200, 202, 205 ~~and 210~~, 240, and 315, Fish and Game Code.

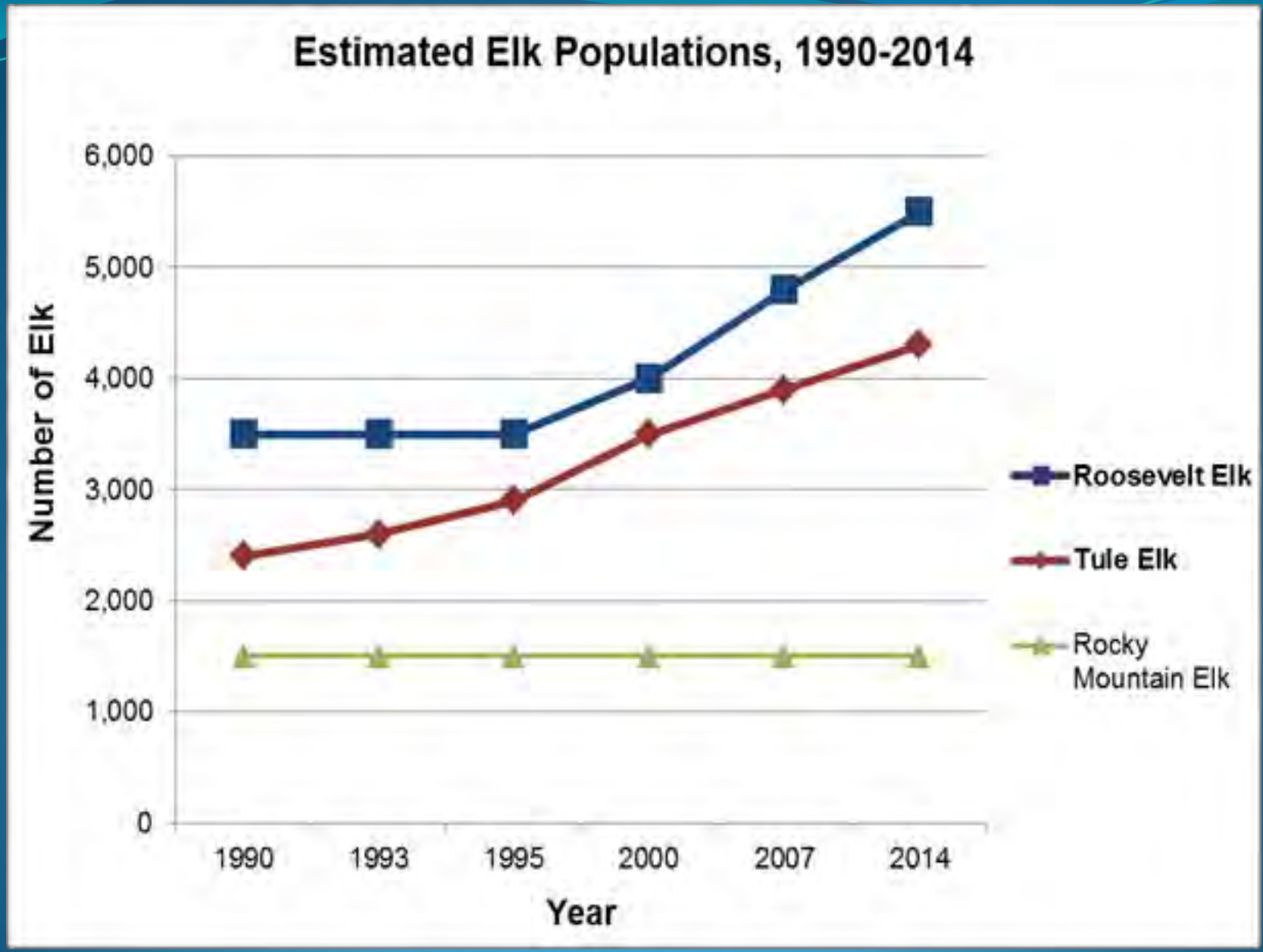
2016 Proposed Elk Hunting Regulation Changes

Background on California's Elk

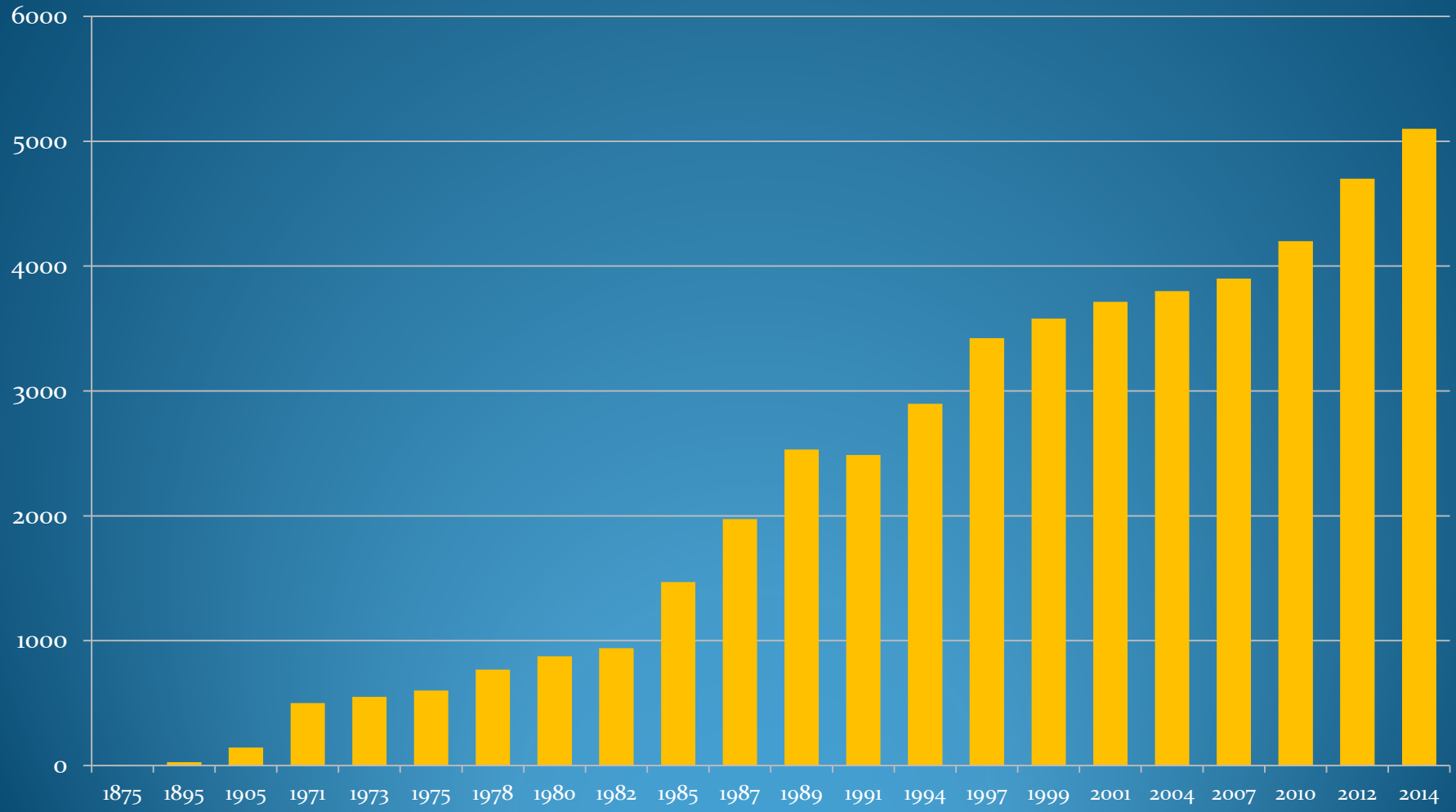
Three subspecies in CA

Tule Elk is endemic




Estimated Elk Populations, 1990-2014
Number of Elk
6,000
5,000
4,000
3,000
2,000
1,000
0
1990
1993
1995
2000
2007
2014
Year
Roosevelt Elk
Tule Elk
Rocky Mountain Elk

California's Estimated Tule Elk Population



Specific to Tule Elk

- Legislative action in 1971 - goal of 2,000 tule elk, above which the Commission may authorize take. See FGCode 3951
- Relocate elk to suitable areas where possible.
- Manage each tule elk herd to reduce property and environmental damage.
- *1979 Management Plan for the Conservation of Tule Elk* (Tule Elk Interagency Task Force) has been, and continues to be, a success for Tule elk conservation

Example model run in Elk Draft ED

```
SAN EMIGDIO ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
              Ratio = 52/100/20 - Maximum Calf Survival = 67%
                 THIS PROGRAM CALCULATES CHANGES IN
                 HERD
                 CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

PROPOSED PROJECT: BULL, COW, INCLUDING COOPERATIVE
TAGS
TO HARVEST UP TO 10 BULLS & 24 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless
                                          HERD SIZE    360  ELK
       % BULLS LOST TO NON HUNTING CAUSES              25  %
        % COWS LOST TO NON HUNTING CAUSES              12  %
                % OF BULLS KILLED BY HUNTERS           10  %
                 % OF COWS KILLED BY HUNTERS           12  %
```

Est. carrying capacity

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	109	209	42	360	360	0	0
YEAR 1	"	97	203	140	440	600	10	24
YEAR 2	"	118	219	119	456	600	10	24
YEAR 3	"	126	224	130	480	600	10	24
YEAR 4	"	136	233	133	502	600	10	24
YEAR 5	"	145	242	140	526	600	10	24
YEAR 6	"	154	253	146	553	600	10	24
YEAR 7	"	163	265	153	581	600	10	24
YEAR 8	"	172	280	148	600	600	10	24
YEAR 9	"	177	290	133	600	600	10	24
YEAR 10	"	176	292	132	600	600	10	24

BULL CALF

As a result of the Commission, Department, and others efforts for over 108 years since hunting licenses were 1st required, regulations were starting to be enforced, and active management and relocation began to occur:

- Great wildlife conservation and management success story for tule elk in California
- Eliminated nearly all confined herds (now free-ranging); limited opportunity for more relocation
- Widespread in California's Coastal Ranges & Owens Valley
- Extremely popular game animal
- Increasingly seen and enjoyed by the public for wildlife viewing
- Continuing to increase (as evidenced by increased problems from landowners)

- **Roosevelt Elk**- Similar story to tule elk in terms of decline and then rebuilding through management efforts and regulation of harvest to attempt to manage growth of the population

- Elk concentrate on bottomlands/pastures in NW part of state = increasing conflict with landowners

- Population concentration too high in these areas, and there is limited access for hunting opportunity, but great viewing opportunity along the Hwy 101 corridor

Proposed Solutions:

Complete statewide management plan

- Draft Statewide framework plan nearly done
- Specific EMU- Elk Management Unit drafts nearly done

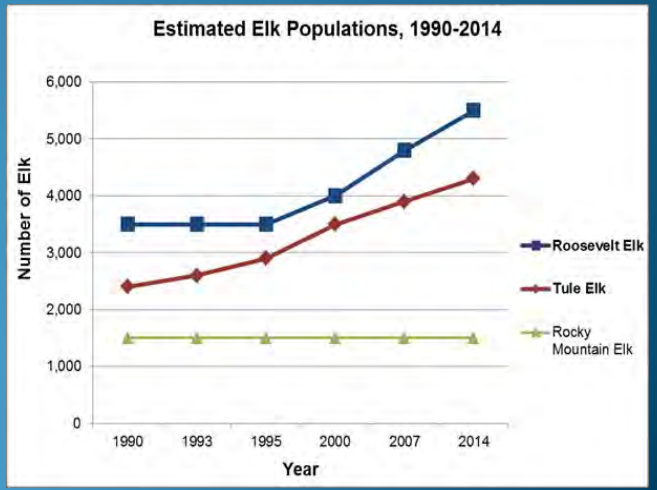
Proposed regulations consistent with final plan because both are necessarily guided by existing legislative mandate.

Redefine boundaries/add zones for effective use of hunting to address elk/landowner conflict; provide hunting opportunity

Increase tag quotas where elk problems are increasing

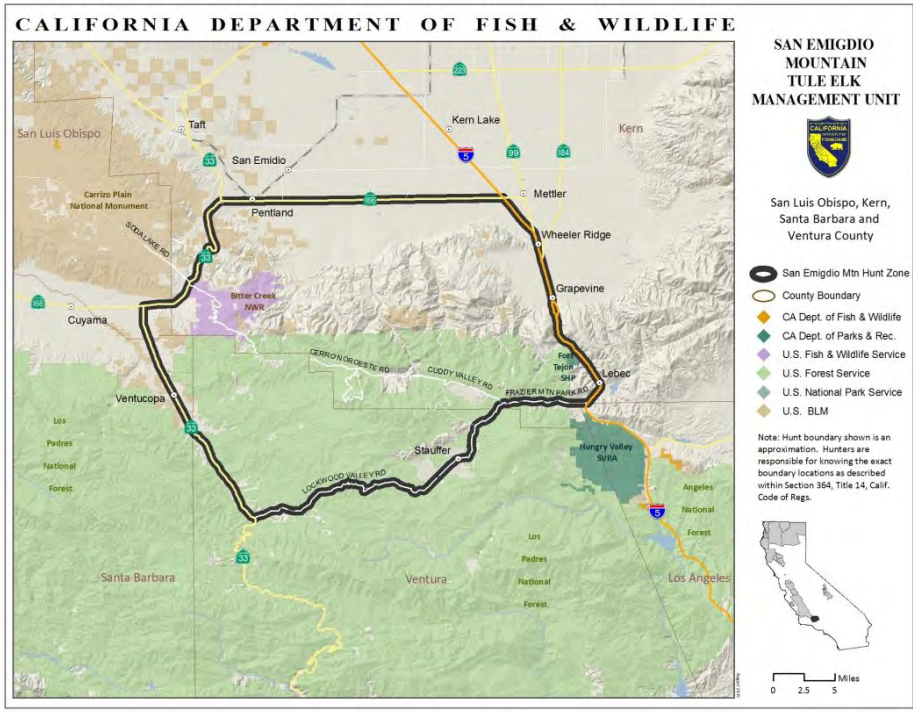
Incentive-based to increase landowner support
Of elk on their property (SHARE or PLM)

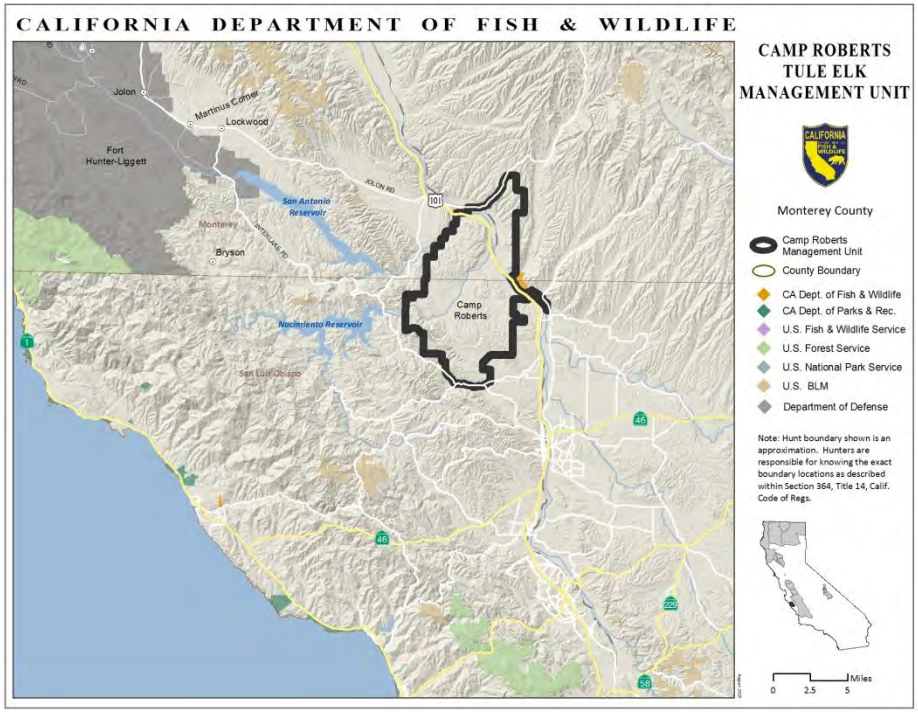
Reduce need/pressure to issue depredation permits



Example- New Zones

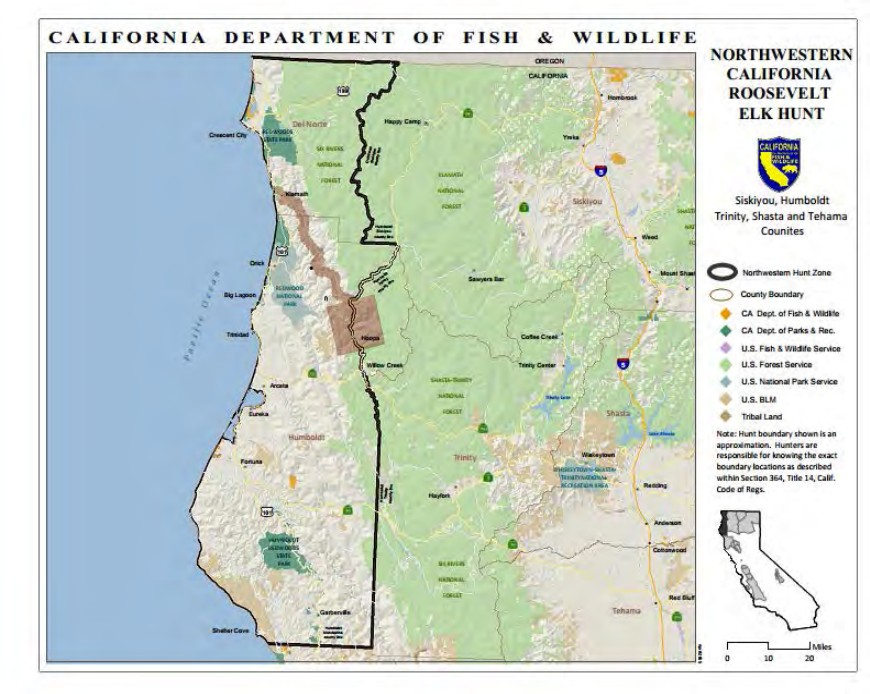
- San Emigdio (Kern, San Luis Obispo, Santa Barbara, and Ventura Counties)
- Camp Roberts (Monterey and San Luis Obispo Counties)

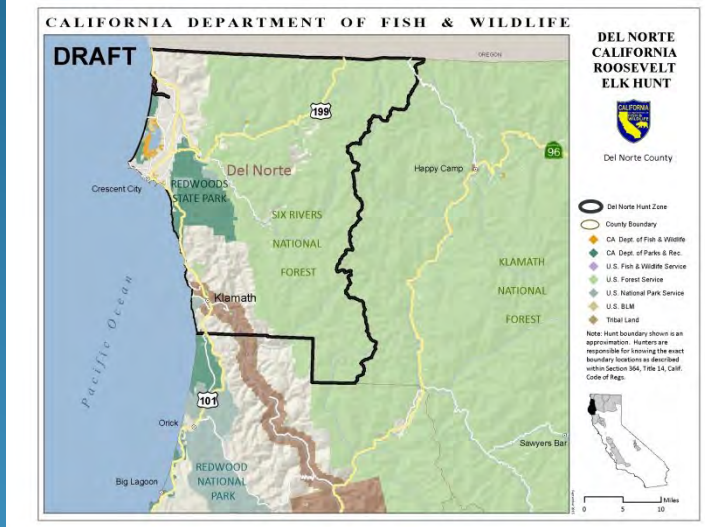


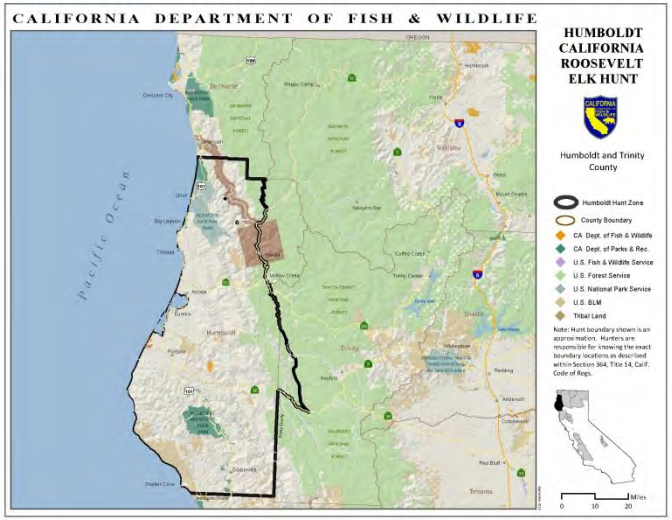


Example -Zone Splits - Northwestern

Now - Del Norte and Humboldt
(minor boundary modification to follow roads)

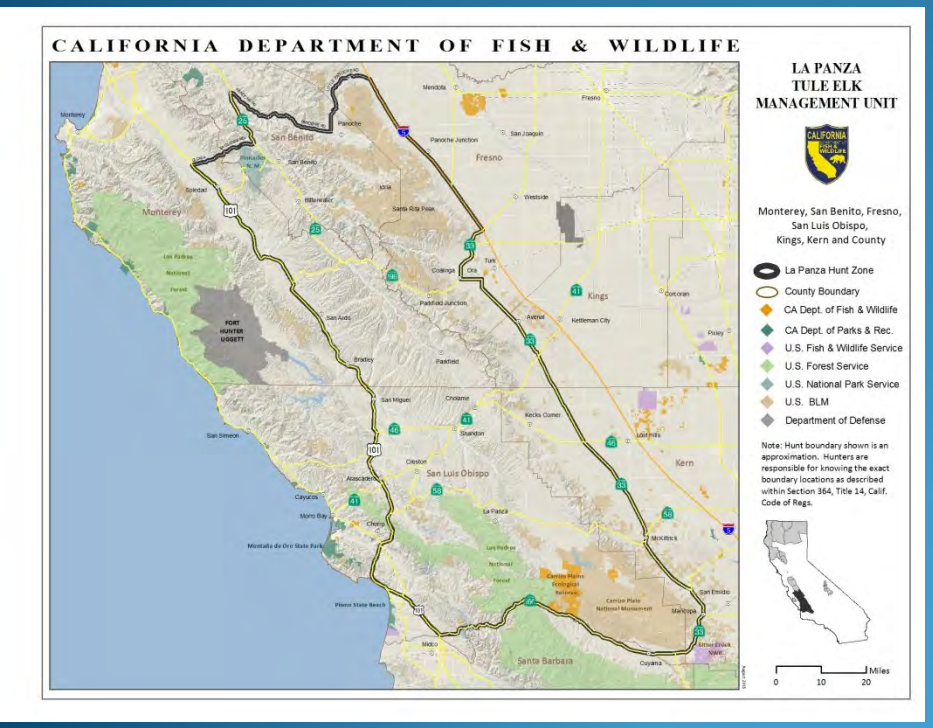


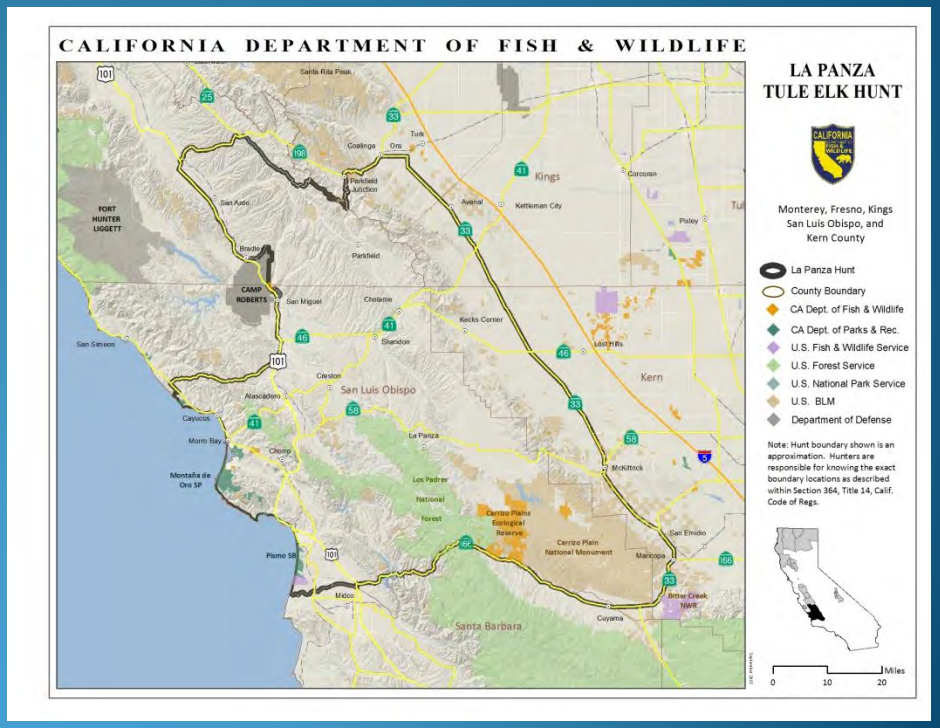




Example- Zone Modifications – La Panza

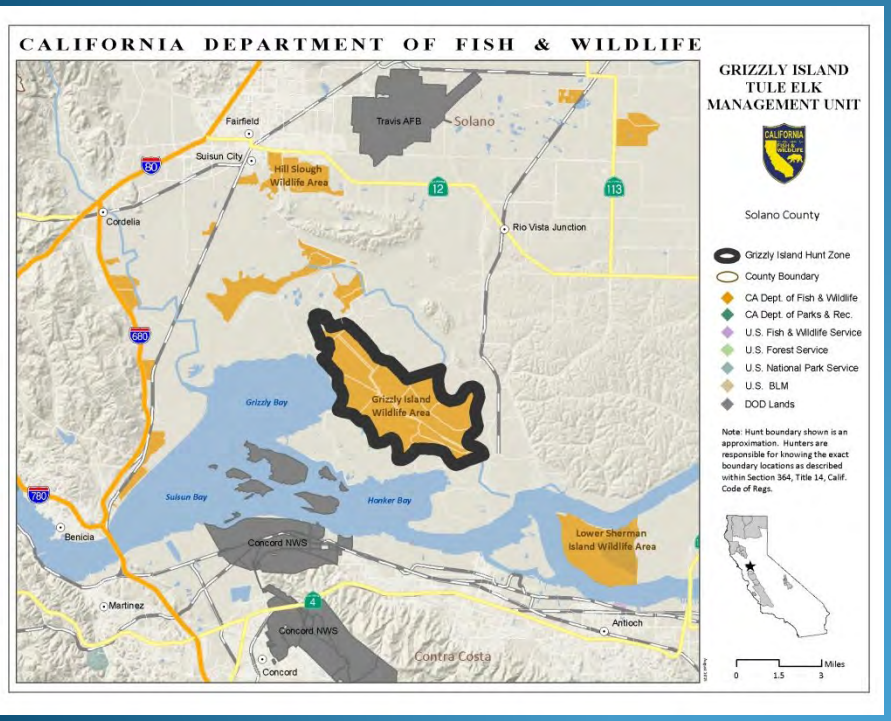
Overall boundaries modified – Expanded to the west

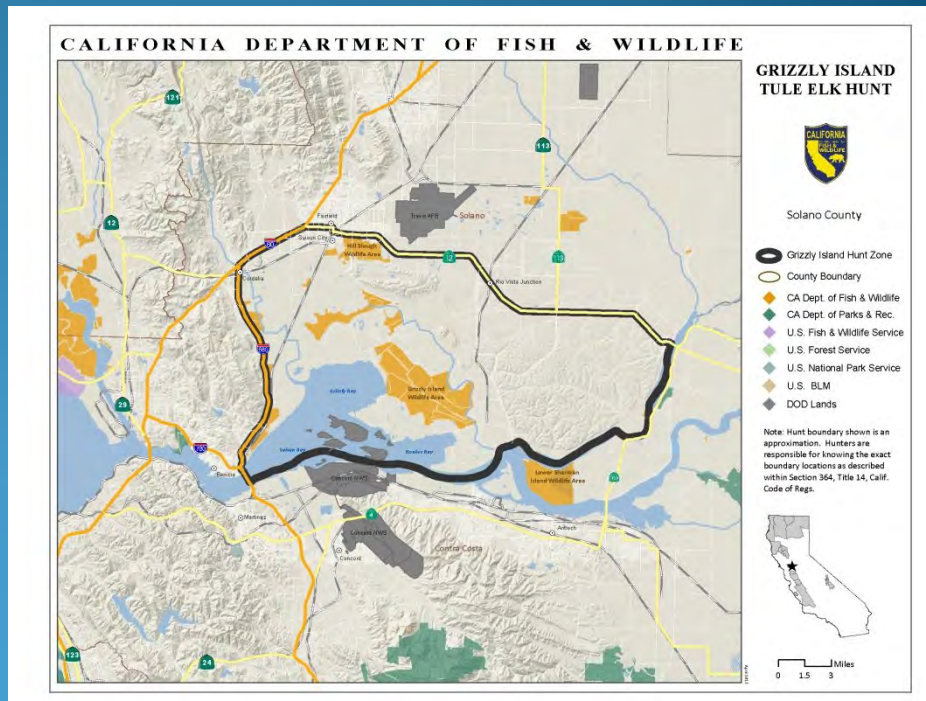




Example- Zone Modification - Grizzly Island

Expanded boundary





Proposal Would Result in: Additional Hunt Periods and Types

- Del Norte and Humboldt (5 periods)
- Marble Mountain North and South (3 periods and muzzleloader/archery period)
- Siskiyou (3 periods and muzzleloader/archery period)
- San Luis Reservoir (3 periods)
- Grizzly Island (13 periods)
- Lake Pillsbury (3 Periods)

Proposal also modifies: Multi-Zone Fund Raising Tag

- Modify season dates so it is consistent across all zones
- Tag is valid in Del Norte, Humboldt, Marble Mountain North, Marble Mountain South, Siskiyou, Northeastern, and La Panza.
- Tag will be valid for 90 days beginning in mid-August

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Amend Section 265
Title 14, California Code of Regulations (CCR)
Re: Use of Dogs for Pursuit/Take of Mammals or for Dog Training

Date of Initial Statement of Reasons: November 2, 2015

II. Dates and Locations of Scheduled Hearings:

(a)	Notice Hearing:	Date:	December 10, 2015
		Location:	San Diego, CA
b)	Discussion Hearings:	Date:	February 11, 2016
		Location:	Sacramento, CA
(c)	Adoption Hearing:	Date:	April 14, 2016
		Location:	Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Subsection 265(d)(1): Delete the provision prohibiting the use of treeing switches.

The provision is no longer necessary and the amendment will eliminate the prohibition. This type of equipment might only used when pursuing an animal that can climb, such as bear or bobcat. However, recent changes in legislation have greatly restricted the use of dogs and the pursuit of bear and bobcat with dogs is prohibited. The use of dogs is now limited to only wild pigs and deer, rendering the current prohibition on the use of treeing switches unnecessary.

Subsection 265(d)(2): Delete the provision prohibiting the use global positioning system (GPS) equipped dog collars.

The provision is no longer necessary and the amendment will eliminate the prohibition. Prohibiting the use of GPS equipment is unnecessary and increases the possibility that downed game (wild pigs and deer) may be lost to the hunter creating waste. GPS equipped collars would also aid in the retrieval of lost dogs.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 203, 3960, 3960.2 and 3960.4, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 207, 3960, 3960.2, 3960.4 and 4756, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None.

(d) Identification of Reports or Documents Supporting Regulation Change: None.

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

Fish and Game Commission's Wildlife Resources Committee (WRC) meeting held on September 9, 2015 in Fresno, California. The proposed changes to the regulation were discussed and the members of the WRC concurred with the Department's recommendations.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified.

(b) No Change Alternative:

The no change alternative was considered and rejected because it would not eliminate the unnecessary regulation concerning the use of treeing switches. The no change alternative would also continue the regulation prohibiting the use of GPS equipped collars and therefore continue the problem of hunters unable to retrieve wounded game (wanton waste) or locating lost dogs.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made.

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. Removing outdated prohibitions on treeing switches and GPS collars are not anticipated to affect current levels of hunting effort for species that can legally be pursued with dogs.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources. The Commission anticipates benefits to the State's environment in the sustainable management of natural resources.

The proposed action will not have significant impacts on jobs or business within California and does not provide benefits to worker safety.

(c) Cost Impacts on Representative Private Persons/Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

(e) Other Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School Districts: None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4: None.

(h) Effect on Housing Costs: None.

VII. Economic Impact Assessment

The proposed action will have no statewide economic or fiscal impact because the proposed action modifies the regulation regarding the use of electronic dog collars while hunting only for deer and wild pigs. The regulation eliminates unnecessary language prohibiting the use of treeing switches; and, permits GPS equipped collars increasing the hunter's ability to find and retrieve downed wild pigs and deer as well as lost dogs. There are no costs to businesses or persons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs because it is unlikely to cause an increase or decrease in hunting effort.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation will not create new businesses or eliminate businesses within the State because it is unlikely to cause an increase or decrease in hunting effort.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State:

The regulation will not affect the expansion of businesses currently doing business in the State because it is unlikely to cause an increase or decrease in hunting effort.

(d) Benefits of the regulation to the health and welfare of California residents:

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety.

(f) Benefits of the regulation to the State's environment:

It is the policy of the State to encourage the conservation, maintenance, and utilization of the living resources of the State. The Commission anticipates benefits to the State's environment in the sustainable management of natural resources.

INFORMATIVE DIGEST

(Policy Statement Overview)

Amend Section 265, Title 14, CCR, by deleting subsections (d)(1) and (d)(2). The current regulations prohibit the use of treeing switches and GPS collar equipment for dogs used in the taking of mammals. Recent changes to statutes have restricted the use of dogs by hunters to only the taking of wild pigs and deer. The prohibition on the use of treeing switches is therefore unnecessary. Allowing the use of GPS collar equipment will improve a hunter's ability to find and retrieve downed game and lost dogs.

Benefits of the regulations

The regulation eliminates unnecessary language regarding the prohibition on the use of treeing switches; and, permits GPS equipped collars increasing the hunter's ability to find and retrieve downed wild pigs and deer as well as lost dogs.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to the use of dogs for hunting mammals to be consistent with the provisions of Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations.

REGULATORY TEXT

Section 265, Title 14, CCR is amended to read:

§265. Use of Dogs for Pursuit/Take of Mammals or for Dog Training.

... [No changes to subsections (a) through (c)]

~~(d) Prohibition on Treeing Switches and Use of Global Positioning System Equipment.~~
~~(1) Treeing Switches. Electronic dog retrieval collars containing functioning treeing switches (devices consisting of a switch mechanism that results in a change in the transmitted signals when the dog raises its head to a treed animal) are prohibited on dogs used for the pursuit/take of mammals.~~
~~(2) Global Positioning System Equipment. Electronic dog retrieval collars employing the use of global positioning system equipment (devices that utilize satellite transmissions) are prohibited on dogs used for the pursuit/take of mammals.~~
Authority cited: Sections 200, 202, 203, 3960, 3960.2 and 3960.4, Fish and Game Code. Reference: Sections ~~200, 202, 203, 203.1, 207,~~ 3960, 3960.2, and 3960.4 ~~and 4756~~, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Amend Section 353
Title 14, California Code of Regulations (CCR)
Re: Methods Authorized for Taking Big Game

I. Date of Initial Statement of Reasons: November 2, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing:	Date:	December 10, 2015
	Location:	San Diego, CA
(b) Discussion Hearing:	Date:	February 11, 2016
	Location:	Sacramento, CA
(c) Adoption Hearing:	Date:	April 14, 2016
	Location:	Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

It is necessary to amend subdivision (a) of Section 353 in order to specifically require compliance with this section and Section 250.1 when taking big game. The proposed language, "It shall be unlawful…" is intended to clearly communicate to the public that compliance with these provisions is mandatory. The proposed amendment will also facilitate enforcement of these provisions by providing citing language that can be used by wildlife officers when issuing citations. Prosecutors throughout the state have expressed their preference that sections used as citing authorities be phrased in this manner, and Section 353 is commonly used as a citing section.

The current regulations in Section 353, Title 14, CCR, provide method of take restrictions for big game using centerfire cartridges in rifles, pistols and revolvers. The projectiles used in these firearms are required under subsection 353(c) to be "cartridges with softnose or expanding projectiles." While the terms "softnose" and "expanding" are commonly accepted from the standpoint of bullet design and trade industry terminology, no clear definition of either is provided in regulation. These same terms are difficult to apply to newly developed bullet types such as those commonly described as "frangible" bullets. The lack of distinction between

projectile types is confusing to hunters and difficult to interpret by law enforcement. Furthermore, frangible bullets designed primarily for security or tactical purposes are not an efficient and effective means to take big game.

The commonly accepted industry standard for centerfire cartridges (recommended by most major bullet/ammunition manufacturers for the take of big game animals) is a softnose or expanding type bullet that upon impact or while passing through animal tissue: 1) increases in diameter (mushrooms) from its original diameter; and 2) maintains close to its original manufactured weight. Bullets designed to demonstrate these terminal performance characteristics are considered the most effective in obtaining the quickest, most efficient humane kills. Further, softnose or expanding bullets are thought to provide the best combination of deep penetration through various tissue types including bone, and expansion (mushrooming) which results in the greatest damage to vital organs through direct trauma to tissues and surrounding areas, and to circulatory and central nervous systems through hydrostatic and hydraulic forces.

Frangible bullets are typically manufactured by fusing or binding a powdered metal component composed of copper or copper-tin in jacketed or unjacketed formats. Frangible bullets are designed to disintegrate or fragment upon impact with a hard surface, with the intent to reduce or eliminate ricochet and pass through conditions which can result in impact to secondary or unintended targets under non-hunting uses. In hunting applications this would result in a decrease in penetration due to the loss of momentum through extreme fragmentation.

The terminal performance characteristics of the more traditional softnose or expanding bullets differ substantially from those of frangible bullets. While the intended design of softnose/expanding bullets is to maintain a bullet's integrity in order to obtain maximum penetration and tissue destruction, the opposite is true regarding frangible bullets designed to disintegrate or break into a number of bullet fragments resulting in reduced penetration.

The proposed regulation changes are as follows:

1) Add clause to subsection 353(a) specifically making it unlawful to use methods of take or projectiles for big game other than what is authorized in Sections 250.1 and 353;

2) Add a new subsection 353(b)(1) defining the term "softnose or expanding projectile" based upon design and common accepted terminology of mushrooming, bullet diameter increase, and bullet weight retention; and

3) Add a new subsection 353(b)(2) to clarify that "frangible" bullets are not softnose or expanding projectiles and therefore not legal for the take of big game in accordance with subsection 353(c).

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority cited: Sections 200, 202 and 203, Fish and Game Code. Reference: Sections 2005, 2055, 3004.5 and 3950, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None

(d) Identification of Reports or Documents Supporting Regulation Change: None

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

The Department's regulation change concepts for the 2016-17 big game hunting seasons were presented and discussed at the Fish and Game Commission Wildlife Resources Committee meeting held in Fresno on September 9, 2015.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternative was identified.

(b) No Change Alternative:

The “No Change Alternative” was considered and found inadequate to attain the project objectives. Retaining the current terminology without clear, concise definitions results in confusion on the part of hunters and creates a legal obstacle to enforcement of existing method of take restrictions.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

(d) Description of Reasonable Alternatives That Would Lessen Adverse Impact on Small Business: None.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States.

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed action adds definitions to method of take regulations for big game in order to clarify regulations for law enforcement and legal applications, and eliminate possible confusion on the part of hunters. The proposal is economically neutral to business.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission anticipates benefits to the health and welfare of California residents and to the state's environment. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources and the action contributes to the sustainable management of natural resources.

The proposed action will not have significant impacts on jobs or business within California and does not provide benefits to worker safety.

(c) Cost Impacts on Private Persons.

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with this proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None

(e) Other Nondiscretionary Costs/Savings to Local Agencies: None

(f) Programs Mandated on Local Agencies or School Districts: None

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4: None

(h) Effect on Housing Costs: None

VII. Economic Impact Assessment

The purpose of the proposed amendments is to specifically require compliance with sections 353 and 250.1 when taking big game, and to clarify which cartridges may be used by defining “softnose or expanding projectile.” There are no costs to businesses or persons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs because defining projectile types that are authorized for big game hunting is unlikely to change current levels of hunting activity.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation will not create new businesses or eliminate businesses within the State because defining projectile types that are authorized for big game hunting is unlikely to change current levels of hunting activity.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State:

The regulation will not affect the expansion of businesses currently doing business in the State because defining projectile types that are authorized for big game hunting is unlikely to change current levels of hunting activity.

(d) Benefits of the regulation to the health and welfare of California residents:

The Commission anticipates benefits to the health and welfare of California residents and benefits to the State’s environment because the proposed regulation assists the Department in the sustainable management of California’s big game populations.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety.

(f) Benefits of the regulation to the State's environment:

It is the policy of the State to encourage the conservation, maintenance, and utilization of the living resources. The proposed action does not impact the State’s environment.

INFORMATIVE DIGEST
(Policy Statement Overview)

Amend Section 353, Title 14, California Code of Regulations (CCR), Methods Authorized for Taking Big Game. The purpose of the proposed amendments is to specifically require compliance with sections 353 and 250.1 when taking big game, and to clarify which cartridges may be used by defining "softnose or expanding projectile."

The current regulations in Section 353, Title 14, CCR, provide method of take restrictions for big game using centerfire cartridges in rifles, pistols and revolvers. The projectiles used in these firearms are required to be "softnose or expanding." However, these words are not defined in the regulation. While "softnose or expanding" is commonly accepted from the standpoint of bullet design and trade industry terminology, some have suggested that it could include frangible bullets. The lack of distinction between projectile types is confusing to hunters and difficult to interpret by law enforcement. Furthermore, frangible bullets are not an efficient and effective means to take big game.

The proposed regulation changes are as follows:

1) Add clause to subsection 353(a) specifically making it unlawful to use methods of take or projectiles for big game other than what is authorized in Sections 250.1 and 353;

2) Add a new subsection 353(b)(1) to define "softnose or expanding projectile" based upon design and common accepted terminology of mushrooming, bullet diameter increase and bullet weight retention; and

3) Add a new subsection 353(b)(2) to clarify that "frangible" bullets are not softnose or expanding projectiles.

Benefits of the regulations

The Commission anticipates benefits to the health and welfare of California residents and benefits to the State's environment because the proposed regulation assists the Department in the sustainable management of California's big game populations.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State or Federal Regulations

The Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate the hunting of big game species in California. Commission staff has searched the California Code of Regulations and has found the proposed regulations are consistent with the hunting of big game species, specifically Sections 360, 362, 363, 364, 365 and 368 of Title 14. Therefore the Commission has determined that the proposed amendment is neither inconsistent nor incompatible with existing State regulations.

The proposed amendments are consistent with federal laws, which generally allow states to specify ammunition that is appropriate to be used for hunting purposes.

REGULATORY TEXT

Section 353 is amended to read:

§353. Methods Authorized for Taking Big Game.

(a) It shall be unlawful to take or attempt to take big game in violation of this section or Section 250.1. The take or attempted take of any big game (as defined by Section 350 of these regulations) with a firearm shall be in accordance with the use of nonlead projectiles and ammunition pursuant to Section 250.1 of these regulations.
(b) Definition. For purposes of this section, a projectile is any bullet, ball, sabot, slug, buckshot or other device that is expelled from a firearm through a barrel by force. The following definitions shall apply:
(1) A softnose or expanding projectile is a bullet designed to increase from its original diameter, commonly referred to as “mushrooming”, and retain a significant part of its original weight upon impact with, or when passing through the tissues of an animal.
(2) Projectiles commonly referred to as “frangible” bullets, designed to disintegrate upon impact with, or when passing through the tissues of an animal are not softnose or expanding projectiles.

... [No changes to subsections (c) through (m)]

Note: Authority cited: Sections 200, 202 and 203, Fish and Game Code. Reference: Sections ~~200, 202, 203, 203.1, 207,~~ 2005, 2055, 3004.5 and 3950, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Amend Subsection 360(a)
Title 14, California Code of Regulations (CCR)
Re: Deer: A, B, C, and D Zone Hunts

I. Date of Initial Statement of Reasons: September 21, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 10, 2015
Location: San Diego, CA

(b) Discussion Hearing: Date: February 11, 2016
Location: Sacramento, CA

(c) Adoption Hearing: Date: April 14, 2016
Location: Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

1. Number of Tags

Existing regulations provide for the number of deer hunting tags in the A, B, C, and D zones. The proposed action changes the number of tags for all existing zones to a series of ranges as indicated in the Informative Digest.

This proposal initially provides a range of tag numbers for each zone from which a final number will be determined, based on the post-winter status of each deer herd. Ranges are necessary at this time because the final number of tags cannot be determined until spring herd data are collected in March/April.

In early spring, surveys of deer herds are conducted to determine the proportion of fawns that have survived the winter. This information is used in conjunction with the prior year harvest and fall herd composition data to estimate overall herd size, sex and age ratios, and the predicted number of available bucks next season. The number of bucks and does needs to be estimated prior to the hunting season to determine how many surplus bucks will exist over and above the number required to maintain the desired buck ratio objectives stated in the approved deer herd management plans.

This regulatory proposal changes the number of tags for all Deer Zone Hunts to a series of ranges presented in the table below.

	Deer: § 360(a) A, B, C, and D Zone Hunts Tag Allocations		
§	Zone	Current 2015	Proposed 2016 [Range]
(1)	A	65,000	30,000-65,000
(2)	B	35,000	35,000-65,000
(3)	C	8,150	5,000-15,000
(4)	D3-5	33,000	30,000-40,000
(5)	D-6	10,000	6,000-16,000
(6)	D-7	9,000	4,000-10,000
(7)	D-8	8,000	5,000-10,000
(8)	D-9	2,000	1,000-2,500
(9)	D-10	700	400-800
(10)	D-11	5,500	2,500-6,000
(11)	D-12	950	100-1,500
(12)	D-13	4,000	2,000-5,000
(13)	D-14	3,000	2,000-3,500
(14)	D-15	1,500	500-2,000
(15)	D-16	3,000	1,000-3,500
(16)	D-17	500	100-800
(17)	D-19	1,500	500-2,000

The actual tag numbers for each affected zone will be reflected in the Final Statement of Reasons and will be selected from the range of values provided by this proposal. The number of tags is intended to allow the appropriate level of hunting opportunity and harvest of bucks in the population, while achieving or maintaining the buck ratios at, or near, objective levels set forth in the approved deer herd management plans. These final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts. However, under circumstances where various environmental factors including severe winter conditions can adversely affect herd recruitment and over-winter adult survival, final tag quotas may fall below the proposed tag range into the “Low Kill” alternative identified in the most recent Environmental Document Regarding Deer Hunting.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 203, 220, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code.

Reference: Sections 200, 202, 203, 203.1, 207, 458, 459, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None

(d) Identification of Reports or Documents Supporting Regulation Change:

2007 Final Environmental Document Regarding Deer Hunting

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

Fish and Game Commission Wildlife Resources Committee meeting held in Fresno on September 9, 2015.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

The Fish and Game Commission forwarded the following public recommendations to the Department for study and consideration:

Section 360(a). Sam Craig – 8/23/14. Request for changes in B zones for black-tailed deer.

Response: Rejected. Deer hunting seasons and quotas are established based on a combination of herd performance, harvest, terrain, weather patterns, and hunter demand, relative to individual deer herd management plan objectives. There is no data to suggest that restricting hunter opportunity by implementing the changes requested would serve to increase deer populations. The Department rejects this proposal because it is inconsistent with objectives outlined in individual deer herd management plans, would not produce the results identified by the requestor, and would unnecessarily restrict hunter opportunity.

Section 360(a). Lucas Murgia – 10/6/14. Requests temporary ban on deer hunting in zone D-7.

Response: Rejected. Deer hunting seasons are established based on a combination of herd performance, harvest, terrain, weather patterns, and hunter demand, relative to individual deer herd management plan objectives. Hunting in Zone D-7 as proposed is not expected to have a negative effect on

the deer population. The Department rejects this proposal because it conflicts with objectives outlined in the individual deer herd management plans and Section 1801 of the Fish and Game Code, and would unnecessarily restrict hunter opportunity.

Section 360 (a). Brian Russell – 12/18/14. Request to include harvesting of 3-point or better bucks in zone C4.

Response: Rejected. The Department rejects the recommendation to return to the three point or better restriction because it is inconsistent with sound management practices. The bag and possession limit for zones X-1 through X-5C was modified from bucks three point or better to forked horn or better beginning with the 1990 season in order to reduce waste due to illegal killing of forked-horn bucks and to reduce harvest pressure on older age class bucks. The result of the change was that fewer forked horn bucks were killed by mistake and left in the field during the season and more large antlered bucks remained in the herd post season. The recommendation would cause an unnecessary waste of illegally killed forked horned bucks and require the Department to reduce the tag quotas to compensate for increased kill.

Section 360 (b),(c). Lassen County Board of Supervisors - Supervisors request an overall tag allocation of 10% archery, 10% muzzleloader, and 80% rifle for hunt zones 3, 4, 5, 6, 7, X1, X3A, X3B, X4, X7A and C4 to increase hunting opportunities (Resolution 14-016).

Response: Rejected. Tag quotas recommended by the Department are established in conformance with management objectives contained within individual deer herd management plans. The distribution of tag quotas between various methods of take is based on a combination of herd performance and allowable buck harvest (ABH); method specific harvest success; and method specific demand. Therefore, because the Department uses a data-driven objective process to determine deer tag quotas, this proposal is rejected.

(b) No Change Alternative:

The “No Change Alternative” was considered and found inadequate to attain the project objectives. Retaining the current number of tags for the zones listed may not be responsive to changes in the status of the herds. The deer herd management plans specify objective levels for the proportion of bucks in the herds. These ratios are maintained and managed in part by modifying the number of tags. The “No Change Alternative” would not allow management of the desired proportion of bucks stated in the approved deer herd management plans.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the

regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

(d) Description of Reasonable Alternatives That Would Lessen Adverse Impact on Small Business: None.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed. The maximum number of tags available in the newly proposed range is at or below the number of tags analyzed in the most recent Final Environmental Document Regarding Deer Hunting and related documents.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States.

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed action adjusts tag quotas for existing deer hunts. Given the number of tags available and the area over which they are distributed, these proposals are economically neutral to business.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission anticipates benefits to the health and welfare of California residents and to the state's environment. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources and the action contributes to the sustainable management of natural resources.

The proposed action will not have significant impacts on jobs or business within California and does not provide benefits to worker safety.

(c) Cost Impacts on Private Persons.

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with this proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None

(e) Other Nondiscretionary Costs/Savings to Local Agencies: None

(f) Programs Mandated on Local Agencies or School Districts: None

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4: None

(h) Effect on Housing Costs: None

VII. Economic Impact Assessment:

The proposed action will have no statewide economic or fiscal impact because the proposed action would not constitute a significant change from the last deer season in the A, B, C, and D zones. The number of tags to be set in regulation for 2016 is intended to achieve or maintain the levels set forth in the approved deer herd management plans to preserve herd health and hunting opportunities in subsequent seasons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation is unlikely to result in the creation of new businesses or the elimination of existing businesses because no major changes in the number of tags issued are anticipated.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State

The regulation is unlikely to cause the expansion of businesses currently doing business within the State because no major changes in the number of tags issued are anticipated.

(d) Benefits of the regulation to the health and welfare of California residents:

The proposed regulation will have a positive effect on the health and welfare of California residents. Recreational hunting is a healthy outdoor activity and venison is a nutritious food.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety because it does not address working conditions.

(f) Benefits of the regulation to the State's environment

It is the policy of the State to encourage the conservation, maintenance, and utilization of the living resources. The proposed action will forward this core objective.

INFORMATIVE DIGEST
(Policy Statement Overview)

Existing regulations provide for the number of license tags available for deer in the A, B, C, and D Zones. This regulatory proposal changes the number of tags for all existing zones to a series of ranges presented in the table below. These ranges are necessary because the final number of tags cannot be determined until spring herd data are collected in March/April. Because various environmental factors including severe winter conditions can adversely affect herd recruitment and over-winter adult survival, the final recommended quotas may fall below the current proposed range into the "Low Kill" alternative identified in the most recent Environmental Document Regarding Deer Hunting.

	Deer: § 360(a) A, B, C, and D Zone Hunts Tag Allocations		
§	Zone	Current 2015	Proposed 2016 [Range]
(1)	A	65,000	30,000-65,000
(2)	B	35,000	35,000-65,000
(3)	C	8,150	5,000-15,000
(4)	D3-5	33,000	30,000-40,000
(5)	D-6	10,000	6,000-16,000
(6)	D-7	9,000	4,000-10,000
(7)	D-8	8,000	5,000-10,000
(8)	D-9	2,000	1,000-2,500
(9)	D-10	700	400-800
(10)	D-11	5,500	2,500-6,000
(11)	D-12	950	100-1,500
(12)	D-13	4,000	2,000-5,000
(13)	D-14	3,000	2,000-3,500
(14)	D-15	1,500	500-2,000
(15)	D-16	3,000	1,000-3,500
(16)	D-17	500	100-800
(17)	D-19	1,500	500-2,000

Benefits of the regulations

The deer herd management plans specify objective levels for the proportion of bucks in the herds. These ratios are maintained and managed in part by annually modifying the number of hunting tags. The final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate deer hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to deer tag allocations are consistent with Sections 361, 701, 702, 708.5 and 708.6 of Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations.

REGULATORY TEXT

Subsection (a) of Section 360 is amended to read:

§360. Deer.
Except as otherwise provided in this Title 14, deer may be taken only as follows:
(a) A, B, C, and D Zone Hunts.
(1) Zone A.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~30,000~~ [30,000-65,000]. Zone A tags are valid in Zone A-South Unit 110 and Zone A-North Unit 160.

(2) Zone B.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~35,000~~ [35,000-65,000]. Zone B tags are valid in Zones B-1, B-2, B-3, B-4, B-5 and B-6

(3) Zone C.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~8,150~~ [5,000-15,000]. Zone C tags are valid in Zones C-1, C-2, C-3, and C-4 during the general season only as described above in subsections 360(a)(3)(B)1. through 4.

(4) Zone D-3-5.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~33,000~~ [30,000-40,000]. The Zone D-3-5 tag is valid in zones D-3, D-4, and D-5.

(5) Zone D-6.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~10,000~~ [6,000-16,000].

(6) Zone D-7.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~9,000~~ [4,000-10,000].

(7) Zone D-8.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~8,000~~ [5,000-10,000].

(8) Zone D-9.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~2,000~~ [1,000-2,500].

(9) Zone D-10.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~700~~ [400-800].

(10) Zone D-11.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~5,500~~ [2,500-6,000].

... [No change to subsection (E)]

(11) Zone D-12.

... [No changes to subsections (A) through (C)]
(D) Number of Tags: ~~950~~ [100-1,500].

(12) Zone D-13.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~4,000~~ [2,000-5,000].

... [No change to subsection (E)]

(13) Zone D-14.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~3,000~~ [2,000-3,500].

(14) Zone D-15.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~1,500~~ [500-2,000].

... [No change to subsection (E)]

(15) Zone D-16.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~3,000~~ [1,000-3,500].

(16) Zone D-17.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~500~~100-800. [100-800].

(17) Zone D-19.

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~1,500~~ [500-2,000].

[subsections (b), (c), (d), (e)]

Note: Authority: Sections 200, 202, 203, 220, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 207, 458, 459, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Amend Subsection 360(b),
Title 14, California Code of Regulations (CCR)
Re: Deer: X-Zone Hunts

I. Date of Initial Statement of Reasons: October 12, 2015

II. Dates and Locations of Scheduled Hearings:

(a)	Notice Hearing:	Date:	December 10, 2015
		Location:	San Diego, CA
(b)	Discussion Hearing:	Date:	February 11, 2016
		Location:	Sacramento, CA
(c)	Adoption Hearing:	Date:	April 14, 2016
		Location:	Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

1. Number of Tags

Existing regulations provide for the number of deer hunting tags for the X zones. This proposed action initially provides a range of tag numbers for each zone from which a final number will be determined based on the post-winter status of each deer herd. Ranges are necessary at this time because the final number of tags cannot be determined until spring herd data are collected in March/April.

In early spring, surveys of deer herds are conducted to determine the proportion of fawns that have survived the winter. This information is used in conjunction with the prior year harvest and fall herd composition data to estimate overall herd size, sex and age ratios, and the predicted number of available bucks next season. The number of bucks and does needs to be estimated prior to the hunting season to determine how many surplus bucks will exist over and above the number required to maintain the desired buck ratio objectives stated in the approved deer herd management plans.

The following table provides a proposed range of tag numbers for each zone from which a final number of tags will be determined:

	Deer: § 360(b) X-Zone Hunts Tag Allocations		
§	Zone	Current 2015	Proposed 2016 [Range]
(1)	X-1	775	1,000-6,000
(2)	X-2	160	50-500
(3)	X-3a	315	100-1,200
(4)	X-3b	795	200-3,000
(5)	X-4	435	100-1,200
(6)	X-5a	75	25-200
(7)	X-5b	50	50-500
(8)	X-6a	320	100-1,200
(9)	X-6b	305	100-1,200
(10)	X-7a	225	50-500
(11)	X-7b	135	25-200
(12)	X-8	210	100-750
(13)	X-9a	650	100-1,200
(14)	X-9b	325	100-600
(15)	X-9c	325	100-600
(16)	X-10	400	100-600
(17)	X-12	680	100-1,200

The actual tag numbers for each affected zone will be reflected in the Final Statement of Reasons and will be selected from the range of values provided by this proposal. The number of tags is intended to allow the appropriate level of hunting opportunity and harvest of bucks in the population, while achieving or maintaining the buck ratios at, or near, objective levels set forth in the approved deer herd management plans. These final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts. However, under circumstances where various environmental factors such as severe winter conditions can adversely affect herd recruitment and over-winter adult survival, final tag quotas may fall

below the proposed tag range into the “Low Kill” alternative identified in the most recent Environmental Document Regarding Deer Hunting.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 203, 220, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code.

Reference: Sections 200, 202, 203, 203.1, 207, 458, 459, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None

(d) Identification of Reports or Documents Supporting Regulation Change:

2007 Final Environmental Document Regarding Deer Hunting

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

Fish and Game Commission Wildlife Resources Committee meeting held in Fresno on September 9, 2015.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

There is no reasonable alternative to the proposed action.

(b) No Change Alternative:

The “No Change Alternative” was considered and found inadequate to attain the project objectives. Retaining the current number of tags for the zones listed may not be responsive to changes in the status of the herds. The deer herd management plans specify objective levels for the proportion of bucks in the herds. These ratios are maintained and managed in part by modifying the number of hunting tags. The “No Change Alternative” would not allow management of the desired proportion of bucks stated in the approved deer herd management plans.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the

statutory policy or other provision of law.

(d) Description of Reasonable Alternatives That Would Lessen Adverse Impact on Small Business: None.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed. The maximum number of tags available in the newly proposed range is at or below the number of tags analyzed in the most recent Final Environmental Document regarding Deer Hunting and related documents.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made.

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed action adjusts tag quotas for existing deer hunts. Given the number of tags available and the area over which they are distributed, these proposals are economically neutral to business.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission anticipates benefits to the health and welfare of California residents and to the state's environment. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources and the action contributes to the sustainable management of natural resources.

The proposed action will not have significant impacts on jobs or business within California because it will not result in significant changes in hunting effort in the affected zones, The proposed action does not provide benefits to worker safety because it does not address working conditions..

(c) Cost Impacts on Private Persons:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with this proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None

(e) Other Nondiscretionary Costs/Savings to Local Agencies: None

(f) Programs Mandated on Local Agencies or School Districts: None

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4: None

(h) Effect on Housing Costs: None

VII. Economic Impact Assessment:

The proposed action will have no statewide economic or fiscal impact because the proposed action would not constitute a significant change from the 2015 deer season in the X zones. The number of tags to be set in regulation for 2016 is intended to achieve or maintain the levels set forth in the approved deer herd management plans to preserve herd health and hunting opportunities in subsequent seasons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs because no significant changes in hunting activity levels are anticipated.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation will not impact the creation of new businesses or the elimination of businesses because no significant changes is hunting activity levels are anticipated.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State

The regulation will not affect the expansion of businesses currently doing business within the State because no significant changes in hunting activity levels are anticipated.

(d) Benefits of the regulation to the health and welfare of California residents:

The proposed regulation will benefit the health and welfare of California residents by maintaining healthy deer herds and providing opportunities for the public to participate in a healthy outdoor activity.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety.

(f) Benefits of the regulation to the State's environment

It is the policy of the State to encourage the conservation, maintenance, and utilization of the State’s living resources. The proposed action will further this core objective.

INFORMATIVE DIGEST
(Policy Statement Overview)

Existing regulations provide for the number of deer hunting tags for the X zones. The proposed action changes the number of tags for all existing zones to a series of ranges presented in the table below. These ranges are necessary at this time because the final number of tags cannot be determined until spring herd data are collected in March/April. Because various environmental factors such as severe winter conditions can adversely affect herd recruitment and over-winter adult survival, the final recommended quotas may fall below the current proposed range into the "Low Kill" alternative identified in the most recent Environmental Document Regarding Deer Hunting.

	Deer: § 360(b) X-Zone Hunts Tag Allocations		
§	Zone	Current 2015	Proposed 2016 [Range]
(1)	X-1	775	1,000-6,000
(2)	X-2	160	50-500
(3)	X-3a	315	100-1,200
(4)	X-3b	795	200-3,000
(5)	X-4	435	100-1,200
(6)	X-5a	75	25-200
(7)	X-5b	50	50-500
(8)	X-6a	320	100-1,200
(9)	X-6b	305	100-1,200
(10)	X-7a	225	50-500
(11)	X-7b	135	25-200
(12)	X-8	210	100-750
(13)	X-9a	650	100-1,200
(14)	X-9b	325	100-600
(15)	X-9c	325	100-600
(16)	X-10	400	100-600
(17)	X-12	680	100-1,200

Benefits of the regulations

The deer herd management plans specify objective levels for the proportion of bucks in the herds. These ratios are maintained and managed in part by annually modifying the

number of hunting tags. The final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate deer hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to deer tag allocations are consistent with Sections 361, 701, 702, 708.5 and 708.6 of Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations.

REGULATORY TEXT

Subsection (b) of Section 360 is amended to read:

§360. Deer.
[subsection (a)]...

(b) X-Zone Hunts.
(1) Zone X-1.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~775~~ [1,000-6,000].

(2) Zone X-2.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~160~~ [50-500].

(3) Zone X-3a.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~315~~ [100-1,200].

(4) Zone X-3b.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~795~~ [200-3,000].

(5) Zone X-4.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~435~~ [100-1,200].

(6) Zone X-5a.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~75~~ [25-200].

(7) Zone X-5b.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~50~~ [50-500].

(8) Zone X-6a.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~320~~ [100-1,200].

(9) Zone X-6b.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~305~~ [100-1,200].

(10) Zone X-7a.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~225~~ [50-500].

(11) Zone X-7b.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~135~~ [25-200].

(12) Zone X-8.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~210~~. [100-750].

(13) Zone X-9a.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~650~~ [100-1,200].

(14) Zone X-9b.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~325~~ [100-600].

(15) Zone X-9c.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~325~~ [100-600].

(16) Zone X-10.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~400~~ [100-600].

(17) Zone X-12.

[No changes to subsections (A) through (C)]

(D) Number of Tags: ~~680~~ [100-1,200].

...[subsections (c), (d), (e)]

Note: Authority: Sections 200, 202, 203, 220, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 207, 458, 459, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Amend Subsection 360(c)
Title 14, California Code of Regulations (CCR)
Re: Deer: Additional Hunts

I. Date of Initial Statement of Reasons: September 21, 2015

II. Dates and Locations of Scheduled Hearings:

(a)	Notice Hearing:	Date:	December 10, 2015
		Location:	San Diego, CA
(b)	Discussion Hearing:	Date:	February 11, 2016
		Location:	Sacramento, CA
(c)	Adoption Hearing:	Date:	April 14, 2016
		Location:	Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

1. Number of Tags

Existing regulations provide for the number of deer hunting tags in the Additional Hunts. The proposed action provides a range of tag numbers for each hunt from which a final number will be determined, based on the post-winter status of each deer herd. Ranges are necessary at this time because the final number of tags cannot be determined until spring herd data are collected in March/April.

In early spring, surveys of deer herds are conducted to determine the proportion of fawns that have survived the winter. This information is used in conjunction with the prior year harvest and fall herd composition data to estimate overall herd size, sex and age ratios, and the predicted number of available bucks next season. The number of bucks and does needs to be estimated prior to the hunting season to determine how many surplus bucks will exist over and above the number required to maintain the desired buck ratio objectives stated in the approved deer herd management plans.

The proposed action changes the number of tags for all existing hunts to a series of ranges as indicated in the following table:

	Deer: § 360(c) Additional Hunts Tag Allocations		
§	**Hunt Number (and Title)**	**Current 2015**	**Proposed 2016 [Range]**
(1)	G-1 (Late Season Buck Hunt for Zone C-4)	2,710	500-5,000
(2)	G-3 (Goodale Buck Hunt)	35	5-50
(3)	G-6 (Kern River Deer Herd Buck Hunt)	50	25-100
(4)	G-7 (Beale Either-Sex Deer Hunt)	20 Military*	20 Military*
(5)	G-8 (Fort Hunter Liggett Antlerless Deer Hunt)	20 Tags Total* (10 Military & 10 Public)	20 Tags Total* (10 Military and 10 Public)
(6)	G-9 (Camp Roberts Antlerless Deer Hunt)	0	30 Tags Total* (15 Military and 15 Public)
(7)	G-10 (Camp Pendleton Either-Sex Deer Hunt)	250 Military*	250 Military*
(8)	G-11 (Vandenberg Either-Sex Deer Hunt)	200 Military*, DOD and as Authorized by the Installation Commander**	200 Military*, DOD and as Authorized by the Installation Commander**
(9)	G-12 (Gray Lodge Shotgun Either-Sex Deer Hunt)	30	10-50
(10)	G-13 (San Diego Antlerless Deer Hunt)	300	50-300
(11)	G-19 (Sutter-Yuba Wildlife Areas Either-Sex Deer Hunt)	25	10-50
(12)	G-21 (Ventana Wilderness Buck Hunt)	25	25-100
(13)	G-37 (Anderson Flat Buck Hunt)	25	25-50
(14)	G-38 (X-10 Late Season Buck Hunt)	300	50-300
(15)	G-39 (Round Valley Late Season Buck Hunt)	5	5-150

	Deer: § 360(c) Additional Hunts Tag Allocations		
§	**Hunt Number (and Title)**	**Current 2015**	**Proposed 2016 [Range]**
(16)	M-3 (Doyle Muzzleloading Rifle Buck Hunt)	20	10-75
(17)	M-4 (Horse Lake Muzzleloading Rifle Buck Hunt)	5	5-50
(18)	M-5 (East Lassen Muzzleloading Rifle Buck Hunt)	5	5-50
(19)	M-6 (San Diego Muzzleloading Rifle Either-Sex Deer Hunt)	80	25-100
(20)	M-7 (Ventura Muzzleloading Rifle Either-Sex Deer Hunt)	150	50-150
(21)	M-8 (Bass Hill Muzzleloading Rifle Buck Hunt)	20	5-50
(22)	M-9 (Devil's Garden Muzzleloading Rifle Buck Hunt)	15	5-100
(23)	M-11 (Northwestern California Muzzleloading Rifle Buck Hunt)	20	20-200
(24)	MA-1 (San Luis Obispo Muzzleloading Rifle/Archery Either-Sex Deer Hunt)	150	20-150
(25)	MA-3 (Santa Barbara Muzzleloading Rifle/Archery Buck Hunt)	150	20-150
(26)	J-1 Lake Sonoma Apprentice Either-Sex Deer Hunt)	25	10-25
(27)	J-3 (Tehama Wildlife Area Apprentice Buck Hunt)	15	15-30
(28)	J-4 Shasta-Trinity Apprentice Buck Hunt)	15	15-50
(29)	J-7 (Carson River Apprentice Either-Sex Deer Hunt)	15	10-50
(30)	J-8 (Daugherty Hill Wildlife Area Apprentice Either-Sex Deer Hunt)	15	10-20
(31)	J-9 (Little Dry Creek Apprentice Shotgun Either-Sex Deer Hunt)	5	5-10
(32)	J-10 (Fort Hunter Liggett Apprentice Either-Sex Deer Hunt)	75 Tags Total* (15 Military & 60 Public)	85 Tags Total* (25 Military & 60 Public)

	Deer: § 360(c) Additional Hunts Tag Allocations		
§	**Hunt Number (and Title)**	**Current 2015**	**Proposed 2016 [Range]**
(33)	J-11 (San Bernardino Apprentice Either-Sex Deer Hunt)	40	10-50
(34)	J-12 (Round Valley Apprentice Buck Hunt)	10	10-20
(35)	J-13 (Los Angeles Apprentice Either-Sex Deer Hunt)	40	25-100
(36)	J-14 (Riverside Apprentice Either-Sex Deer Hunt)	30	15-75
(37)	J-15 (Anderson Flat Apprentice Buck Hunt)	10	5-30
(38)	J-16 (Bucks Mountain-Nevada City Apprentice Either-Sex Deer Hunt)	75	10-75
(39)	J-17 (Blue Canyon Apprentice Either-Sex Deer Hunt)	25	5-25
(40)	J-18 (Pacific-Grizzly Flat Apprentice Either-Sex Deer Hunt)	75	10-75
(41)	J-19 (Zone X-7a Apprentice Either-Sex Deer Hunt)	25	10-40
(42)	J-20 (Zone X-7b Apprentice Either-Sex Deer Hunt)	20	5-20
(43)	J-21 (East Tehama Apprentice Either-Sex Deer Hunt)	50	20-80

* *Specific numbers of tags are provided for military hunts through a system which restricts hunter access to desired levels and ensures biologically conservative hunting programs.*

** *DOD = Department of Defense and eligible personnel as authorized by the Installation Commander.*

The actual tag numbers for each affected hunt will be reflected in the Final Statement of Reasons and will be selected from the range of values provided by this proposal. The number of tags is intended to allow the appropriate level of hunting opportunity and harvest of bucks in the population, while achieving or maintaining the buck ratios at, or near, objective levels set forth in the approved deer herd management plans. These final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts. However, under circumstances where various

environmental factors including severe winter conditions can adversely affect herd recruitment and over-winter adult survival, final tag quotas may fall below the proposed tag range into the “Low Kill” alternative identified in the most recent Environmental Document Regarding Deer Hunting.

Note: The current tag quota of zero (0) for additional deer hunt G-9 (Camp Roberts Antlerless Deer Hunt) reflects the Base’s closure to hunting while construction was under way on the base. Construction was scheduled for completion in 2013; however the timetable for resumption of base hunting programs has not been determined. The Department is currently in meetings with base command, and a decision regarding tag quotas is anticipated by the early March Fish and Game Commission meeting date. At this time, the current tag quota of zero (0) has been modified to the former tag quota of thirty (30) in anticipation of the possible resumption of deer hunting activities by the Base in the 2016/2017 season. However, if Base operations take precedence over conducting the G-9 hunt, the tag quota will be reduced to zero (0) and reflected in the Final Statement.

In addition, Fort Hunter Liggett base command has requested a minor tag quota increase of 10 total tags back to their original tag quota for Hunt J-10 (From 75 to 85 total tags) identified in the authorizing Environmental Document. This request has been accepted by the Department and is reflected in the proposed regulatory change.

2. Modify Season for Additional Hunt G-8

   Existing regulations in subsection 360(c)(5) for Additional Hunt G-8 (Fort Hunter Liggett Antlerless Deer Hunt) provide for hunting to begin on October 3 and October 10, and continue for 2 and 3 days respectively, inclusive of the Columbus Day holiday, in order to accommodate Base operations and other hunt opportunities.

   The current proposal would modify the season to account for the annual calendar shift by changing the season dates to open on October 8 and continue for three (3) consecutive days, including the Columbus Day holiday, and reopen on October 15 and continue for two (2) consecutive days. Additionally, the Base requested the season for Hunt G-8 be shifted one week later in order to accommodate base operations and eliminate season overlap with elk hunts and conflict with deer hunts during the first week of October. These activities had effectively reduced the size of the hunt area for G-8 deer hunters. No loss of hunter opportunity would result from this action and the proposal is consistent with existing deer herd management plan recommendations.

3. Modify Season for Additional Hunt J-10

   Existing regulations in subsection 360(c)(32) for Additional Hunt J-10 (Fort Hunter Liggett Junior Either-Sex Deer Hunt) provide for hunting to begin on October 3 and October 10, and continue for 2 and 3 days respectively,

inclusive of the Columbus Day holiday, in order to accommodate for Base operations and other hunt opportunities.

The current proposal would modify the season to account for the annual calendar shift by changing the season dates to open on October 8 and continue for three (3) consecutive days, including the Columbus Day holiday, and reopen on October 15 and continue for two (2) consecutive days. Additionally, the Base requested the season for Hunt J-10 be shifted one week later in order to accommodate for base operations and eliminate season overlap with elk hunts and conflict with deer hunts during the first week of October. These activities had effectively reduced the size of the hunt area for J-10 deer hunters. No loss of hunter opportunity would result from this action and the proposal is consistent with existing deer herd management plan recommendations.

4. Minor Editorial Changes

Minor editorial changes are necessary for consistency in subsection numbering, spelling, grammar, and clarification.

Recent changes to Section 550 require that such references be changed to Section 551.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 203, 220, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code.

Reference: Sections 200, 202, 203, 203.1, 207, 458, 459, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None

(d) Identification of Reports or Documents Supporting Regulation Change:

2007 Final Environmental Document Regarding Deer Hunting.

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

Fish and Game Commission Wildlife Resources Committee meeting held in Fresno on September 9, 2015.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

1. Number of Tags

There is no reasonable alternative to the proposed action.

2. Modify Season for Additional Hunt G-8

   Modify season to include all weekdays. This proposal was considered and rejected because it would not accommodate for military operations which primarily occur on weekdays, resulting in daily hunt cancellations, hunter dissatisfaction and the unnecessary restricting of hunter opportunity.

3. Modify Season and Special Conditions for Additional Hunt J-10

   Modify season to include all weekdays. This proposal was considered and rejected because it would not accommodate for military operations which primarily occur on weekdays, resulting in daily hunt cancellations, hunter dissatisfaction and the unnecessary restriction of hunter opportunity.

4. Minor Editorial Changes

   There is no reasonable alternative to the proposed action.

(b) No Change Alternative:

1. Number of Tags

   The “No Change Alternative” was considered and found inadequate to attain the project objectives. Retaining the current number of tags for the hunts listed may not be responsive to changes in the status of the herds. The deer herd management plans specify objective levels for the proportion of bucks in the herds. These ratios are maintained and managed in part by modifying the number of tags. The “No Change Alternative” would not allow management of the desired proportion of bucks stated in the approved deer herd management plans.

2. Modify Season for Additional Hunt G-8

   The “No Change Alternative” was considered and found inadequate to attain the project objectives. Retaining the current season length and timing would be unresponsive to Base operations, scheduled activities and unnecessarily restrict hunter opportunity.

3. Modify Season for Additional Hunt J-10

   The “No Change Alternative” was considered and found inadequate to attain the project objectives. Retaining the current season length and timing would be unresponsive to Base operations, scheduled activities and/or unnecessarily restrict hunter opportunity.

4. Minor Editorial Changes

The “No Change Alternative” was considered and found inadequate to attain the project objectives, because inconsistencies in section and subsection references, numbering, spelling, grammar and lack of clarification would exist within the regulations, potentially leading to confusion and possible violations.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed. The maximum number of tags available in the newly proposed range is at or below the number of tags analyzed in the most recent Final Environmental Document regarding Deer Hunting and related documents.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and following initial determinations relative to the required statutory categories have been made.

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed action adjusts tag quotas for existing hunts, modifies season dates for two hunts on military land and makes minor editorial changes for consistency in Section numbering. Given the number of tags available and the area over which they are distributed, these proposals are economically neutral to business.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State’s Environment:

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family

activities and promotes respect for California's environment by the future stewards of the State's resources. The Commission anticipates benefits to the State's environment in the sustainable management of natural resources.

The proposed action will not have significant impacts on jobs or business within California because it will not result in a change in hunting effort. The proposed action does not provide benefits to worker safety because it does not address working conditions.

(c) Cost Impacts on Private Persons:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with this proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None

(e) Other Nondiscretionary Costs/Savings to Local Agencies: None

(f) Programs Mandated on Local Agencies or School Districts: None

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4: None

(h) Effect on Housing Costs: None

VII. Economic Impact Assessment:

The proposed action will have no statewide economic or fiscal impact because the proposed action would not constitute a significant change from the 2015 deer season in the additional hunt zones. The number of tags to be set in regulation for 2016 is intended to achieve or maintain the levels set forth in the approved deer herd management plans to preserve herd health and hunting opportunities in subsequent seasons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs because no significant changes in hunting activity levels are anticipated.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation will not impact the creation of new businesses or the elimination of businesses because no significant changes in hunting activity levels are anticipated.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State

The regulation will not affect the expansion of businesses currently doing business within the State because no significant changes in hunting activity levels are anticipated.

(d) Benefits of the regulation to the health and welfare of California residents:

The proposed regulation will benefit the health and welfare of California residents by maintaining sustainable deer populations and providing opportunities for the public to participate in a healthy outdoor activity.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety.

(f) Benefits of the regulation to the State's environment

It is the policy of the State to encourage the conservation, maintenance, and utilization of the State’s living resources. The proposed action will further this core objective.

INFORMATIVE DIGEST
(Policy Statement Overview)

Existing regulations provide for the number of deer hunting tags in the Additional Hunts. The proposed action provides a range of tag numbers for each hunt from which a final number will be determined, based on the post-winter status of each deer herd. These ranges are necessary at this time because the final number of tags cannot be determined until spring herd data are collected in March/April. Because various environmental factors such as severe winter conditions can adversely affect herd recruitment and over-winter adult survival, the final recommended quotas may fall below the current proposed range into the "Low Kill" alternative identified in the most recent Environmental Document Regarding Deer Hunting.

Existing regulations for Additional Hunts G-8 (Fort Hunter Liggett Antlerless Deer Hunt) and J-10 (Fort Hunter Liggett Apprentice Either-Sex Deer Hunt) provide for hunting to begin on October 3 and continue for two (2) consecutive days and reopen on October 10 and continue for three (3) consecutive days, inclusive of the Columbus Day holiday, in order to accommodate for Base operations and other hunt opportunities. The proposal would modify the season to account for the annual calendar shift and move the seasons one week later to eliminate conflicts with elk hunting during the first week of October. The proposal would change the season dates to open on October 8 and October 15, for 3 and 2 consecutive days respectively, and include the Columbus Day holiday, in order to accommodate for Base operations.

Minor editorial changes are necessary to provide consistency in subsection numbering, spelling, grammar, and clarification.

The proposed action changes the number of tags for all existing hunts to a series of ranges as indicated in the table below.

	Deer: § 360(c) Additional Hunts Tag Allocations		
§	**Hunt Number (and Title)**	**Current 2015**	**Proposed 2016 [Range]**
(1)	G-1 (Late Season Buck Hunt for Zone C-4)	2,710	500-5,000
(2)	G-3 (Goodale Buck Hunt)	35	5-50
(3)	G-6 (Kern River Deer Herd Buck Hunt)	50	25-100
(4)	G-7 (Beale Either-Sex Deer Hunt)	20 Military*	20 Military*
(5)	G-8 (Fort Hunter Liggett Antlerless Deer Hunt)	20 Tags Total* (10 Military & 10 Public)	20 Tags Total* (10 Military and 10 Public)

	Deer: § 360(c) Additional Hunts Tag Allocations		
§	**Hunt Number (and Title)**	**Current 2015**	**Proposed 2016 [Range]**
(6)	G-9 (Camp Roberts Antlerless Deer Hunt)	0	30 Tags Total* (15 Military and 15 Public)
(7)	G-10 (Camp Pendleton Either-Sex Deer Hunt)	250 Military*	250 Military*
(8)	G-11 (Vandenberg Either-Sex Deer Hunt)	200 Military*, DOD and as Authorized by the Installation Commander**	200 Military*, DOD and as Authorized by the Installation Commander**
(9)	G-12 (Gray Lodge Shotgun Either-Sex Deer Hunt)	30	10-50
(10)	G-13 (San Diego Antlerless Deer Hunt)	300	50-300
(11)	G-19 (Sutter-Yuba Wildlife Areas Either-Sex Deer Hunt)	25	10-50
(12)	G-21 (Ventana Wilderness Buck Hunt)	25	25-100
(13)	G-37 (Anderson Flat Buck Hunt)	25	25-50
(14)	G-38 (X-10 Late Season Buck Hunt)	300	50-300
(15)	G-39 (Round Valley Late Season Buck Hunt)	5	5-150
(16)	M-3 (Doyle Muzzleloading Rifle Buck Hunt)	20	10-75
(17)	M-4 (Horse Lake Muzzleloading Rifle Buck Hunt)	5	5-50
(18)	M-5 (East Lassen Muzzleloading Rifle Buck Hunt)	5	5-50
(19)	M-6 (San Diego Muzzleloading Rifle Either-Sex Deer Hunt)	80	25-100
(20)	M-7 (Ventura Muzzleloading Rifle Either-Sex Deer Hunt)	150	50-150
(21)	M-8 (Bass Hill Muzzleloading Rifle Buck Hunt)	20	5-50

	Deer: § 360(c) Additional Hunts Tag Allocations		
§	**Hunt Number (and Title)**	**Current 2015**	**Proposed 2016 [Range]**
(22)	M-9 (Devil's Garden Muzzleloading Rifle Buck Hunt)	15	5-100
(23)	M-11 (Northwestern California Muzzleloading Rifle Buck Hunt)	20	20-200
(24)	MA-1 (San Luis Obispo Muzzleloading Rifle/Archery Either-Sex Deer Hunt)	150	20-150
(25)	MA-3 (Santa Barbara Muzzleloading Rifle/Archery Buck Hunt)	150	20-150
(26)	J-1 Lake Sonoma Apprentice Either-Sex Deer Hunt)	25	10-25
(27)	J-3 (Tehama Wildlife Area Apprentice Buck Hunt)	15	15-30
(28)	J-4 Shasta-Trinity Apprentice Buck Hunt)	15	15-50
(29)	J-7 (Carson River Apprentice Either-Sex Deer Hunt)	15	10-50
(30)	J-8 (Daugherty Hill Wildlife Area Apprentice Either-Sex Deer Hunt)	15	10-20
(31)	J-9 (Little Dry Creek Apprentice Shotgun Either-Sex Deer Hunt)	5	5-10
(32)	J-10 (Fort Hunter Liggett Apprentice Either-Sex Deer Hunt)	75 Tags Total* (15 Military & 60 Public)	85 Tags Total* (25 Military & 60 Public)
(33)	J-11 (San Bernardino Apprentice Either-Sex Deer Hunt)	40	10-50
(34)	J-12 (Round Valley Apprentice Buck Hunt)	10	10-20
(35)	J-13 (Los Angeles Apprentice Either-Sex Deer Hunt)	40	25-100
(36)	J-14 (Riverside Apprentice Either-Sex Deer Hunt)	30	15-75
(37)	J-15 (Anderson Flat Apprentice Buck Hunt)	10	5-30
(38)	J-16 (Bucks Mountain-Nevada City Apprentice Either-Sex Deer Hunt)	75	10-75

	Deer: § 360(c) Additional Hunts Tag Allocations		
§	**Hunt Number (and Title)**	**Current 2015**	**Proposed 2016 [Range]**
(39)	J-17 (Blue Canyon Apprentice Either-Sex Deer Hunt)	25	5-25
(40)	J-18 (Pacific-Grizzly Flat Apprentice Either-Sex Deer Hunt)	75	10-75
(41)	J-19 (Zone X-7a Apprentice Either-Sex Deer Hunt)	25	10-40
(42)	J-20 (Zone X-7b Apprentice Either-Sex Deer Hunt)	20	5-20
(43)	J-21 (East Tehama Apprentice Either-Sex Deer Hunt)	50	20-80

**Specific numbers of tags are provided for military hunts through a system which restricts hunter access to desired levels and ensures biologically conservative hunting programs.*

***DOD = Department of Defense and eligible personnel as authorized by the Installation Commander.*

Benefits of the regulations

The deer herd management plans specify objective levels for the proportion of bucks in the herds. These ratios are maintained and managed in part by annually modifying the number of hunting tags. The final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate deer hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to deer tag allocations are consistent with Sections 361, 701, 702, 708.5 and 708.6 of Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations.

REGULATORY TEXT

Subsection (c) of Section 360 is amended to read:

§360. Deer.

...[subsections (a) and (b)]

(c) Additional Hunts.
(1) G-1 (Late Season Buck Hunt for Zone C-4).

... [No change to subsections (A) through (C)]

(D) Number of Tags: ~~2,710~~ [500-5,000].

(2) G-3 (Goodale Buck Hunt).

... [No change to subsections (A) through (C)]

(D) Number of Tags: ~~35~~ [5-50].

(3) G-6 (Kern River Deer Herd Buck Hunt).

... ... [No change to subsections (A) through (C)]

(D) Number of Tags: ~~50~~ [25-100].

... [No change to subsection (c)(4)]

(5) G-8 (Fort Hunter Liggett Antlerless Deer Hunt).

... [No change to subsection (A)]

(B) Season: The season for additional hunt G-8 (Fort Hunter Liggett Antlerless Deer Hunt) shall open on October ~~3~~ 8 and extend for ~~2~~ 3 consecutive days and reopen on October ~~10~~ 15 and extend for ~~3~~ 2 consecutive days, except if rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.

... [No change to subsections (C) through (E)]

(6) G-9 (Camp Roberts Antlerless Deer Hunt).

... [No change to subsections (A) through (C)]

(D) Number of Tags: ~~0~~ 30 (15 military and 15 public).

... [No change to subsection (E)]

... [No change to subsections (c)(7) and (8)]

(9) G-12 (Gray Lodge Shotgun Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~30~~ [10-50].

... [No change to subsection (E)]

(10) G-13 (San Diego Antlerless Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~300~~ [50-300].

(11) G-19 (Sutter-Yuba Wildlife Areas Either-Sex Deer Hunt).
(A) Area: Those portions of Yuba and Sutter counties within the exterior boundaries of: (1) the Feather River Wildlife Area, and (2) the Sutter Bypass Wildlife Area (as defined in Section ~~550~~ 551, Title 14, CCR).

... [No changes to subsections (B) and (C)]

(D) Number of Tags: ~~25~~ [10-50].

... [No change to subsection (E)]

(12) G-21 (Ventana Wilderness Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~25~~ [25-100].

(13) G-37 (Anderson Flat Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~25~~ [25-50].

(14) G-38 (X-10 Late Season Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~300~~ [50-300].

(15) G-39 (Round Valley Late Season Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~5~~ [5-150].

(16) M-3 (Doyle Muzzleloading Rifle Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~20~~ [10-75].

... [No change to subsection (E)]

(17) M-4 (Horse Lake Muzzleloading Rifle Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~5~~ [5-50].

... [No change to subsection (E)]

(18) M-5 (East Lassen Muzzleloading Rifle Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~5~~ [5-50].

... [No change to subsection (E)]

(19) M-6 (San Diego Muzzleloading Rifle Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~80~~ [25-100].

... [No change to subsection (E)]

(20) M-7 (Ventura Muzzleloading Rifle Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~150~~ [50-150].

... [No change to subsection (E)]

(21) M-8 (Bass Hill Muzzleloading Rifle Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~20~~ [5-50].

... [No change to subsection (E)]

(22) M-9 (Devil's Garden Muzzleloading Rifle Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~15~~ [5-100].

... [No change to subsection (E)]

(23) M-11 (Northwestern California Muzzleloading Rifle Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~20~~ [20-200].

... [No change to subsection (E)]

(24) MA-1 (San Luis Obispo Muzzleloading Rifle/Archery Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~150~~ [20-150].

... [No change to subsection (E)]

(25) MA-3 (Santa Barbara Muzzleloading Rifle/Archery Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~150~~ [20-150].

... [No change to subsection (E)]

(26) J-1 (Lake Sonoma Apprentice Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~25~~ [10-25].

... [No change to subsection (E)]

(27) J-3 (Tehama Wildlife Area Apprentice Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~15~~ [15-30].

... [No change to subsection (E)]

(28) J-4 (Shasta-Trinity Apprentice Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~15~~ [15-50].

... [No change to subsection (E)]

(29) J-7 (Carson River Apprentice Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~15~~ [10-50].

... [No change to subsection (E)]

(30) J-8 (Daugherty Hill Wildlife Area Apprentice Either-Sex Deer Hunt).
(A) Area: That portion of Yuba County within the exterior boundaries of the Daugherty Hill Wildlife Area (as defined in Section ~~550~~ 551, Title 14, CCR).

... [No changes to subsections (B) through (C)]

(D) Number of Tags: ~~15~~ [10-20].

... [No change to subsection (E)]

(31) J-9 (Little Dry Creek Apprentice Shotgun Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~5~~ [5-10].

... [No change to subsection (E)]

(32) J-10 (Fort Hunter Liggett Apprentice Either-Sex Deer Hunt).

... [No change for subsection (A)]

(B) Season: The season for additional hunt J-10 (Fort Hunter Liggett Apprentice Either-Sex Deer Hunt) shall open on October ~~3~~ 8 and extend for ~~2~~ 3 consecutive days and reopen on October ~~10~~ 15 and extend for ~~3~~ 2 consecutive days, except if rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.

... [No change to subsection (C)]

(D) Number of Tags: ~~75~~ 85 (~~15~~ 25 military and 60 general public).

... [No change to subsection (E)]

(33) J-11 (San Bernardino Apprentice Either-Sex Deer Hunt).

... [No changes for subsections (A) through (C)]

(D) Number of Tags: ~~40~~ [10-50].

... [No change to subsection (E)]

(E) Special Conditions:

(34) J-12 (Round Valley Apprentice Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~10~~ [10-20].

... [No change to subsection (E)]

(35) J-13 (Los Angeles Apprentice Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~40~~ [25-100].

... [No change to subsection (E)]

(36) J-14 (Riverside Apprentice Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~30~~ [15-75].

... [No change to subsection (E)]

(37) J-15 (Anderson Flat Apprentice Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~10~~ [5-30].

... [No change to subsection (E)]

(38) J-16 (Bucks Mountain-Nevada City Apprentice Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~75~~ [10-75].

... [No change to subsection (E)]

(39) J-17 (Blue Canyon Apprentice Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~25~~ [5-25].

... [No change to subsection (E)]

(40) J-18 (Pacific-Grizzly Flat Apprentice Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~75~~ [10-75].

... [No change to subsection (E)]

(41) J-19 (Zone X-7a Apprentice Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~25~~ [10-40].

... [No change to subsection (E)]

(42) J-20 (Zone X-7b Apprentice Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~20~~ [5-20].

... [No change to subsection (E)]

(43) J-21 (East Tehama Apprentice Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~50~~ [20-80].

... [No change to subsection (E)]

(E) Special Conditions:

(44) Conditions for Additional Hunts.

... [No changes to subsections (A) and (B)]

... [subsections (d) and (e)]

Note: Authority: Sections 200, 202, 203, 220, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 207, 458, 459, 460, 3051, 3452, 3453, 3953 and 4334, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Amend Section 361
Title 14, California Code of Regulations (CCR)
Re: Archery Deer Hunting

I. Date of Initial Statement of Reasons: October 12, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 10, 2015
Location: San Diego, CA

(b) Discussion Hearing: Date: February 11, 2016
Location: Sacramento, CA

(c) Adoption Hearing: Date: April 14, 2016
Location: Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

1. Number of Tags

Existing regulations provide for the number of deer hunting tags for area-specific archery hunts. The proposed action provides a range of tag numbers for each hunt from which a final number will be determined, based on the post-winter status of each deer herd. Ranges are necessary at this time because the final number of tags cannot be determined until spring herd data are collected in March/April.

In early spring, surveys of deer herds are conducted to determine the proportion of fawns that have survived the winter. This information is used in conjunction with the prior year harvest and fall herd composition data to estimate overall herd size, sex and age ratios, and the predicted number of available bucks next season. The number of bucks and does needs to be estimated prior to the hunting season to determine how many surplus bucks will exist over and above the number required to maintain the desired buck ratio objectives stated in the approved deer herd management plans.

This proposed regulatory action would change the number of tags for all existing hunts to a series of ranges as indicated in the following table:

	Archery Deer Hunting: § 361(b) Tag Allocations		
§	**Hunt Number (and Title)**	**Current 2015**	**Proposed 2016 [Range]**
(1)	A-1 (C Zones Archery Only Hunt)	1,945	[150-3,000]
(2)	A-3 (Zone X-1 Archery Hunt)	115	[50-1,000]
(3)	A-4 (Zone X-2 Archery Hunt)	10	[5-100]
(4)	A-5 (Zone X-3a Archery Hunt)	35	[10-300]
(5)	A-6 (Zone X-3b Archery Hunt)	70	[25-400]
(6)	A-7 (Zone X-4 Archery Hunt)	120	[25-400]
(7)	A-8 (Zone X-5a Archery Hunt)	15	[15-100]
(8)	A-9 (Zone X-5b Archery Hunt)	5	[5-100]
(9)	A-11 (Zone X-6a Archery Hunt)	50	[10-200]
(10)	A-12 (Zone X-6b Archery Hunt)	90	[10-200]
(11)	A-13 (Zone X-7a Archery Hunt)	45	[10-200]
(12)	A-14 (Zone X-7b Archery Hunt)	25	[5-100]
(13)	A-15 (Zone X-8 Archery Hunt)	40	[5-100]
(14)	A-16 (Zone X-9a Archery Hunt)	140	[50-500]
(15)	A-17 (Zone X-9b Archery Hunt)	300	[50-500]
(16)	A-18 (Zone X-9c Archery Hunt)	350	[50-500]
(17)	A-19 (Zone X-10 Archery Hunt)	100	[25-200]

	Archery Deer Hunting: § 361(b) Tag Allocations		
§	**Hunt Number (and Title)**	**Current 2015**	**Proposed 2016 [Range]**
(18)	A-20 (Zone X-12 Archery Hunt)	100	[50-500]
(19)	A-21 (Anderson Flat Archery Buck Hunt)	25	[25-100]
(20)	A-22 (San Diego Archery Either-Sex Deer Hunt)	1,000	[200-1,500]
(21)	A-24 (Monterey Archery Either-Sex Deer Hunt)	100	[25-200]
(22)	A-25 (Lake Sonoma Archery Either-Sex Deer Hunt)	35	[20-75]
(23)	A-26 (Bass Hill Archery Buck Hunt)	30	[10-100]
(24)	A-27 (Devil's Garden Archery Buck Hunt)	5	[5-75]
(25)	A-30 (Covelo Archery Buck Hunt)	40	[20-100]
(26)	A-31 (Los Angeles Archery Either-Sex Deer Hunt)	1,000	[200-1,500]
(27)	A-32 (Ventura/Los Angeles Archery Late Season Either-Sex Deer Hunt)	250	[50-300]
(28)	A-33 (Fort Hunter Liggett Late Season Archery Either-Sex Deer Hunt)	50 Tags Total* (25 Military & 25 Public)	50 Tags Total* (25 Military & 25 Public)

The actual tag numbers for each affected hunt will be reflected in the Final Statement of Reasons and will be selected from the range of values provided by this proposal. The number of tags is intended to allow the appropriate level of hunting opportunity and harvest of bucks in the population, while achieving or maintaining the buck ratios at, or near, objective levels set forth in the approved deer herd management plans. These final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts. However, under circumstances where various environmental factors such as severe winter conditions can adversely affect herd recruitment and over-winter adult survival, final tag quotas may fall

below the proposed tag range into the “Low Kill” alternative identified in the most recent Environmental Document Regarding Deer Hunting.

A minor editorial correction is proposed for subsection 361(b)(26)(C) changing the referenced subsection to 351(c) which is the correct citation for the definition of either-sex deer.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 203, 220, and 4370, Fish and Game Code.

Reference: Sections 200, 202, 203, 203.1, 207, and 4370, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None

(d) Identification of Reports or Documents Supporting Regulation Change:

2007 Final Environmental Document Regarding Deer Hunting

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

Fish and Game Commission Wildlife Resources Committee meeting held in Fresno on September 9, 2015.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

There is no reasonable alternative to the proposed action.

(b) No Change Alternative:

The “No Change Alternative” was considered and found inadequate to attain the project objectives. Retaining the current number of tags for the hunts listed may not be responsive to changes in the status of the herds. The deer herd management plans specify objective levels for the proportion of bucks in the herds. These ratios are maintained and managed in part by modifying the number of hunting tags. The “No Change Alternative” would not allow management of the desired proportion of bucks stated in the approved deer herd management plans.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the

regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

(d) Description of Reasonable Alternatives That Would Lessen Adverse Impact on Small Business: None.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed. The maximum number of tags available in the newly proposed range is at or below the number of tags analyzed in the most recent Final Environmental Document Regarding Deer Hunting and related documents.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made.

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed action adjusts tag quotas for existing hunts. Given the number of tags available and the area over which they are distributed, these proposals are economically neutral to business.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission anticipates benefits to the health and welfare of California residents and to the state's environment. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources and the action contributes to the sustainable management of natural resources.

The proposed action will not have significant impacts on jobs or business within California because no significant changes in hunting activity levels

are anticipated. The proposed action does not provide benefits to worker safety.

(c) Cost Impacts on Private Persons:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with this proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None

(e) Other Nondiscretionary Costs/Savings to Local Agencies: None

(f) Programs Mandated on Local Agencies or School Districts: None

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4: None

(h) Effect on Housing Costs: None

VII. Economic Impact Assessment:

The proposed action will have no statewide economic or fiscal impact because the proposed action would not constitute a significant change from the 2015 deer season in the archery hunt zones. The number of tags to be set in regulation for 2016 is intended to achieve or maintain the levels set forth in the approved deer herd management plans to preserve herd health and hunting opportunities in subsequent seasons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs because no significant changes in hunting activity levels are anticipated.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation will not impact the creation of new businesses or the elimination of businesses because no significant changes in hunting activity levels are anticipated.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State

The regulation will not affect the expansion of businesses currently doing business within the State because no significant changes in hunting activity levels are anticipated.

(d) Benefits of the regulation to the health and welfare of California residents:

The proposed regulation will benefit the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources and the action contributes to the sustainable management of natural resources.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety.

(f) Benefits of the regulation to the State's environment

It is the policy of the State to encourage the conservation, maintenance, and utilization of the State's living resources. The proposed action will further this core objective.

INFORMATIVE DIGEST
(Policy Statement Overview)

Existing regulations provide for the number of deer hunting tags for existing area-specific archery hunts. The proposed action changes the number of tags for existing hunts to a series of ranges presented in the table below. These ranges are necessary at this time because the final number of tags cannot be determined until spring herd data are collected in March/April. Because various environmental factors such as severe winter conditions can adversely affect herd recruitment and over-winter adult survival, the final recommended quotas may fall below the current proposed range into the "Low Kill" alternative identified in the most recent Environmental Document Regarding Deer Hunting.

	Archery Deer Hunting: § 361(b) Tag Allocations		
§	**Hunt Number (and Title)**	**Current 2015**	**Proposed 2016 [Range]**
(1)	A-1 (C Zones Archery Only Hunt)	1,945	[150-3,000]
(2)	A-3 (Zone X-1 Archery Hunt)	115	[50-1,000]
(3)	A-4 (Zone X-2 Archery Hunt)	10	[5-100]
(4)	A-5 (Zone X-3a Archery Hunt)	35	[10-300]
(5)	A-6 (Zone X-3b Archery Hunt)	70	[25-400]
(6)	A-7 (Zone X-4 Archery Hunt)	120	[25-400]
(7)	A-8 (Zone X-5a Archery Hunt)	15	[15-100]
(8)	A-9 (Zone X-5b Archery Hunt)	5	[5-100]
(9)	A-11 (Zone X-6a Archery Hunt)	50	[10-200]
(10)	A-12 (Zone X-6b Archery Hunt)	90	[10-200]
(11)	A-13 (Zone X-7a Archery Hunt)	45	[10-200]

(12)	A-14 (Zone X-7b Archery Hunt)	25	[5-100]
(13)	A-15 (Zone X-8 Archery Hunt)	40	[5-100]
(14)	A-16 (Zone X-9a Archery Hunt)	140	[50-500]
(15)	A-17 (Zone X-9b Archery Hunt)	300	[50-500]
(16)	A-18 (Zone X-9c Archery Hunt)	350	[50-500]
(17)	A-19 (Zone X-10 Archery Hunt)	100	[25-200]
(18)	A-20 (Zone X-12 Archery Hunt)	100	[50-500]
(19)	A-21 (Anderson Flat Archery Buck Hunt)	25	[25-100]
(20)	A-22 (San Diego Archery Either-Sex Deer Hunt)	1,000	[200-1,500]
(21)	A-24 (Monterey Archery Either-Sex Deer Hunt)	100	[25-200]
(22)	A-25 (Lake Sonoma Archery Either-Sex Deer Hunt)	35	[20-75]
(23)	A-26 (Bass Hill Archery Buck Hunt)	30	[10-100]
(24)	A-27 (Devil's Garden Archery Buck Hunt)	5	[5-75]
(25)	A-30 (Covelo Archery Buck Hunt)	40	[20-100]
(26)	A-31 (Los Angeles Archery Either-Sex Deer Hunt)	1,000	[200-1,500]
(27)	A-32 (Ventura/Los Angeles Archery Late Season Either-Sex Deer Hunt)	250	[50-300]
(28)	A-33 (Fort Hunter Liggett Late Season Archery Either-Sex Deer Hunt)	50 Tags Total* (25 Military & 25 Public)	50 Tags Total* (25 Military & 25 Public)

* *Specific numbers of tags are provided for military hunts through a system which restricts hunter access to desired levels and ensures biologically conservative hunting programs.*

Benefits of the regulations

The deer herd management plans specify objective levels for the proportion of bucks in the herds. These ratios are maintained and managed in part by annually modifying the number of hunting tags. The final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate archery deer hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to archery deer tag allocations are consistent with Sections 360, 701, 702, 708.5 and 708.6 of Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations.

REGULATORY TEXT

Section 361 is amended to read:

§361. Archery Deer Hunting.

... [No changes in subsection (a)]

(b) Archery Hunting With Area-specific Archery Tags. Deer may be taken only with archery equipment specified in Section 354, only during the archery seasons as follows:
(1) A-1 (C Zones Archery Only Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~1,945~~ [150-3,000] A-1 (C Zones Archery Only Hunt) tags are valid in Zones C-1, C-2, C-3, and C-4 only during the archery season as specified above in subsections 361(b)(1)(B)1 through 4.

(2) A-3 (Zone X-1 Archery Hunt)

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~115~~ [50-1,000].

(3) A-4 (Zone X-2 Archery Hunt)

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~10~~ [5-100].

(4) A-5 (Zone X-3a Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~35~~ [10-300].

(5) A-6 (Zone X-3b Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~70~~ [25-400].

(6) A-7 (Zone X-4 Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~120~~ [25-400].

(7) A-8 (Zone X-5a Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~15~~ [15-100].

(8) A-9 (Zone X-5b Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~5~~ [5-100].

(9) A-11 (Zone X-6a Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~50~~ [10-200].

(10) A-12 (Zone X-6b Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~90~~ [10-200].

(11) A-13 (Zone X-7a Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~45~~ [10-200].

(12) A-14 (Zone X-7b Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~25~~ [5-100].

(13) A-15 (Zone X-8 Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~40~~ [5-100].

(14) A-16 (Zone X-9a Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~140~~ [50-500].

(15) A-17 (Zone X-9b Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~300~~ [50-500].

(16) A-18 (Zone X-9c Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~350~~ [50-500].

(17) A-19 (Zone X-10 Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~100~~ [25-200].

(18) A-20 (Zone X-12 Archery Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~100~~ [50-500].

(19) A-21 (Anderson Flat Archery Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~25~~ [25-100].

(20) A-22 (San Diego Archery Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~1,000~~ [200-1,500].

(21) A-24 (Monterey Archery Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~100~~ [25-200].

(22) A-25 (Lake Sonoma Archery Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~35~~ [20-75].

... [No change to subsection (E)]

(23) A-26 (Bass Hill Archery Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~30~~ [10-100].

(24) A-27 (Devil's Garden Archery Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~5~~ [5-75].

(25) A-30 (Covelo Archery Buck Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~40~~ [20-100].

(26) A-31 (Los Angeles Archery Either-Sex Deer Hunt).

... [No changes to subsections (A) through (B)]

(C) Bag and Possession Limit: One either-sex deer (see subsection 351 ~~(b)~~ (c)) per tag.

(D) Number of Tags: ~~1,000~~ [200-1,500].

(27) A-32 (Ventura/Los Angeles Late Season Archery Either-Sex Deer Hunt).

... [No changes to subsections (A) through (C)]

(D) Number of Tags: ~~250~~ [50-300].

... [No changes to subsection (b)(28)]

... [No changes to subsections (c) through (e)]

Note: Authority cited: Sections 200, 202, 203, 220 and 4370, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 207 and 4370, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Amend Subsection 362,
Title 14, California Code of Regulations (CCR)
Re: Nelson Bighorn Sheep

Date of Initial Statement of Reasons: November 2, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 10, 2015
Location: San Diego, CA

(b) Discussion Hearings: Date: February 11, 2016
Location: Sacramento, CA

(c) Adoption Hearing: Date: April 14, 2016
Location: Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

In accordance with management goals and objectives, and in order to maintain hunting quality, tag quotas for hunts need to be adjusted annually. Current regulations specify the number of bighorn sheep hunting tags for the 2015 season. This proposed regulatory action will amend subsection 362(d) providing the number of tags for bighorn sheep hunting in 2016.

Preliminarily, the tag numbers are presented in ranges (e.g., [0-3]) in the table in subsection 362(d) of the amended Regulatory Text. Final tag quotas for each zone will be identified and recommended to the Fish and Game Commission at the April 14, 2016, adoption hearing.

Section 4902 of the Fish and Game Code specifies that the Commission may allow the take of no more than 15 percent of the mature Nelson bighorn rams estimated in the hunt areas in a single year, based on the Department's annual estimate of the population in each management unit. The Department is currently implementing aerial surveys. The proposed tag ranges are biologically conservative by design to ensure that harvest is consistent with management plan guidelines for individual units and not more than 15 percent of the mature rams in any zone are taken. The Department's research indicates that aerial surveys do not detect all mature rams present.

The Department's recommendations to the Commission will be consistent with the following criteria as supported by management plans:

- If the Department's annual population estimate for any of the individual management units is below 50 adult ewes and/or the ram/ewe ratio falls below 40:100, then the Department will recommend a 0 tag quota for the 2016 season in that unit.

- If no substantial reduction in population is determined in the estimate of the population, then tag quotas for 2016 will be recommended consistent with management plan guidelines and the statutory requirement that no more than 15% of the mature rams may be harvested through hunting, Fish and Game Code section 4902(a)(2).

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 203, 220, 1050, and 4902, Fish and Game Code.
Reference: Sections 1050, 3950, and 4902, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None.

(d) Identification of Reports or Documents Supporting Regulation Change:

2011 Final Environmental Document Regarding Bighorn Sheep Hunting

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

Fish and Game Commission's Wildlife Resources Committee meeting held on September 9, 2015 in Fresno, California.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified.

(b) No Change Alternative:

The no-change alternative was considered and rejected because it would not attain project objectives of providing for hunting opportunities while maintaining bighorn sheep populations within desired population objectives. Retaining the current tag quota for each zone may not be responsive to biologically-based changes in the status of various herds.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the

regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed. The maximum number of tags available in the newly proposed range is at or below the number of tags analyzed in the 2011 Final Environmental Document Regarding Bighorn Sheep Hunting.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made.

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed action adjusts tag quotas for existing hunts. Given the number of tags available and the area over which they are distributed, these proposals are economically neutral to business.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources. The Commission anticipates benefits to the State's environment in the sustainable management of natural resources.

The proposed action will not have significant impacts on jobs or business within California and does not provide benefits to worker safety.

(c) Cost Impacts on Representative Private Persons/Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

(e) Other Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School Districts: None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4: None.

(h) Effect on Housing Costs: None.

VII. Economic Impact Assessment

The proposed action will have no statewide economic or fiscal impact because the proposed action would not constitute a significant change from the last bighorn sheep season. The number of tags to be set in regulation for 2016 is intended to achieve or maintain the levels set forth in the approved management plans to preserve herd health and hunting opportunities in subsequent seasons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs because no substantial changes in hunting activity are anticipated.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation will not impact the creation of new businesses or the elimination of businesses because no substantial changes in hunting activity are anticipated.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State

The regulation will not affect the expansion of businesses currently doing business within the State because no substantial changes in hunting activity are anticipated.

(d) Benefits of the regulation to the health and welfare of California residents:

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety.

(f) Benefits of the regulation to the State's environment

It is the policy of the State to encourage the conservation, maintenance, and utilization of the living resources. The proposed action will further this core objective.

INFORMATIVE DIGEST
(Policy Statement Overview)

The current regulation in Section 362, T14, CCR, provides for limited hunting of Nelson bighorn rams in specified areas of the State. The proposed amendments are intended to adjust the number of hunting tags for the 2016 season based on the Department's annual estimate of the population in each of the nine hunt zones. The Department's final recommendations will ensure that the take will be no more than 15 percent of the mature rams estimated in each zone in accordance with Fish and Game Code Section 4902.

Preliminarily, the tag numbers are presented as ranges (e.g., [0 -3]) in the table in subsection 362(d) of the amended Regulatory Text. Final tag quotas for each zone will be identified and recommended to the Fish and Game Commission at the April 14, 2016, adoption hearing.

Benefits of the regulations

The Nelson Bighorn Sheep management plans specify objective levels for the herds. These ratios are maintained and managed in part by annually modifying the number of tags. The final values for the license tag numbers will be based upon findings from the population surveys.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate Nelson Bighorn Sheep hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to Nelson Bighorn Sheep tag allocations are consistent with the provisions of Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations.

REGULATORY TEXT

Subsection (d) of Section 362, Title 14, CCR is amended to read:

§ 362. Nelson Bighorn Sheep.

[No changes to subsections (a) through (c)]

(d) Number of License Tags:

Nelson Bighorn Sheep Hunt Zones	*Tag Allocation*
Zone 1 - Marble/Clipper Mountains	~~3~~ [0-4]
Zone 2 - Kelso Peak/Old Dad Mountains	~~0~~ [0-4]
Zone 3 - Clark/Kingston Mountain Ranges	~~1~~ [0-2]
Zone 4 - Orocopia Mountains	~~1~~ [0-2]
Zone 5 - San Gorgonio Wilderness	~~2~~ [0-3]
Zone 6 - Sheep Hole Mountains	~~0~~ [0-2]
Zone 7 - White Mountains	~~1~~ [0-5]
Zone 8 - South Bristol Mountains	~~1~~ [0-3]
Zone 9 - Cady Mountains	~~2~~ [0-4]
Open Zone Fund-Raising Tag	~~1~~ [0-1]
Marble/Clipper/South Bristol Mountains Fund-Raising Tag	~~0~~ [0-1]
Kelso Peak/Old Dad Mountains Fund-Raising Tag	~~0~~ [0-1]
Total:	~~12~~ [0-32]

[No change to subsection (e)]

Note: Authority cited: Sections 200, 202, 203, 220, 1050 and 4902, Fish and Game Code. Reference: Sections ~~200, 202, 203, 203.1, 207,~~ 1050, 3950 and 4902, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Amend Section 363
Title 14, California Code of Regulations (CCR)
Re: Pronghorn Antelope

I. Date of Initial Statement of Reasons: October 12, 2015

II. Dates and Locations of Scheduled Hearings:

(a)	Notice Hearing:	Date:	December 10, 2015
		Location:	San Diego, CA
(b)	Discussion Hearings:	Date:	February 11, 2016
		Location:	Sacramento, CA
(c)	Adoption Hearing:	Date:	April 14, 2016
		Location:	Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

1. Number of Tags

In accordance with management goals and objectives, and in order to maintain hunting quality, tag quotas for hunts need to be adjusted annually. Current regulations specify the number of pronghorn antelope hunting tags for the 2015 season. This proposed regulatory action will amend subsection 363(m) providing the number of tags for hunting in 2016.

Preliminarily, the tag numbers are presented as ranges (e.g., [0-3]) in the table in subsection 363(m) of the amended Regulatory Text. Final tag quotas for each zone will be identified and recommended to the Fish and Game Commission at the April 14, 2016, adoption hearing.

Ranges are necessary because final quotas cannot be determined until survey data is analyzed. Winter surveys are scheduled for January, 2016. Analysis of survey results will be completed by March, 2016. Final tag quotas will allow for a biologically appropriate harvest of bucks and does in the population and will achieve/maintain buck ratios at or above minimum levels specified in appropriate management plans. Administrative procedures and the Fish and Game Code require the Fish and Game Commission to receive proposed changes to existing regulations prior to the time winter pronghorn

antelope surveys are completed. Final tag quotas for each zone will be identified and reported in the Final Statement of Reasons based upon findings from the annual winter surveys.

2. Minor Editorial Changes

The current regulations specify the Number of License Tags (i.e. quota) for each hunt in two places: within the hunt zone text itself (for example, subsection 363(a)(4)(A and B); and, the same quota appears in subsection 363 (m) Pronghorn Antelope Tag Allocations Table. In order to simplify, insure accuracy, and make clear, all references to Number of License Tags in the hunt zones 363(a) through (k) are deleted and the Table in 363(m) will remain.

Clarifying language regarding license possession and accompaniment by an adult chaperon is proposed for Lassen apprentice tag holders to be consistent with the other apprentice hunt information.

The regulations also propose replacing area boundary descriptions for the apprentice hunts with a reference to the general zone boundaries to reduce redundancy.

Minor editorial changes are also proposed for consistency in subsection numbering, spelling, grammar, and clarity.

(b) Authority and Reference:

Authority: Fish and Game Code sections 219, 220, 331, 1050 and 10502.

Reference: Fish and Game Code Sections 331, 713, 1050, 10500 and 10502.

(c) Specific Technology or Equipment Required by Regulatory Change:

None.

(d) Identification of Reports or Documents Supporting Regulation Change:

None.

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

Fish and Game Commission's Wildlife Resources Committee meeting held on September 9, 2015 in Fresno, California.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

1. Number of Tags

   No alternatives were identified. Pronghorn antelope license tag quotas must be changed periodically in response to a variety of biological and environmental conditions.

2. Minor Editorial Changes

   No alternatives were identified.

(b) No Change Alternative:

1. Number of Tags

   The no change alternative was considered and rejected because it would not attain project objectives of providing for hunting opportunities while maintaining pronghorn antelope populations within desired population objectives. Retaining the current tag quota for each zone may not be responsive to biologically-based changes in the status of various herds. Management plans specify minimum desired buck to doe ratios which are attained/maintained in part by modifying tag quotas on an annual basis. The no change alternative would not allow for adjustment of tag quotas in response to changing environmental/biological conditions.

2. Minor Editorial Changes

   The no change alternative was considered and rejected because it would not attain consistency across or reduce redundancy in regulation.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed. The maximum number of tags available in the newly proposed range is at or below the number of tags analyzed in the 2004 Final Environmental Document Regarding Pronghorn Antelope Hunting.

VI. Impact of Regulatory Action.

This proposed action adjusts tag quotas for existing hunts. Given the number of tags available, and the area over which they are distributed, this proposal is economically neutral to business.

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States.

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed action adjusts tag quotas for existing hunts. Considering the small number of tags issued over the entire state, this proposal is economically neutral to business.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources. The Commission anticipates benefits to the State's environment in the sustainable management of natural resources.

The proposed action will not have significant impacts on jobs or business within California and does not provide benefits to worker safety.

(c) Cost Impacts on Private Persons.

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

(e) Other Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School District: None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4: None.

(h) Effect on Housing Costs: None.

VII. Economic Impact Analysis

The proposed action will have no statewide economic or fiscal impact because the proposed action would not constitute a significant change from the last pronghorn antelope season. The number of tags to be set in regulation for 2016 is intended to achieve or maintain the levels set forth in the approved management plans to preserve herd health and hunting opportunities in subsequent seasons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs because no substantial changes in hunting activity are anticipated.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation will not impact the creation of new businesses or the elimination of businesses because no substantial changes in hunting activity are anticipated.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State

The regulation will not affect the expansion of businesses currently doing business within the State because no substantial changes in hunting activity are anticipated.

(d) Benefits of the regulation to the health and welfare of California residents:

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California’s environment by the future stewards of the State’s resources.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety.

(f) Benefits of the regulation to the State's environment

It is the policy of the State to encourage the conservation, maintenance, and utilization of the living resources. The proposed action will further this core objective.

INFORMATIVE DIGEST
(Policy Statement Overview)

Amend Section 363, Pronghorn Antelope, Title 14, California Code of Regulations (CCR).

In accordance with management goals and objectives, and in order to maintain hunting quality, tag quotas for Pronghorn Antelope hunts need to be adjusted annually. Current regulations specify the number of pronghorn antelope hunting tags for the 2015 season. This proposed regulatory action will amend subsection 363(m) providing the number of tags for hunting in 2016.

Preliminarily, the tag numbers are presented as ranges (e.g., [0-3]) in the table in subsection 363(m) of the amended Regulatory Text. Final tag quotas for each zone will be identified and recommended to the Fish and Game Commission at the April 14, 2016, adoption hearing.

Other minor changes to the regulatory text to reduce redundancy, improve accuracy and clarity are proposed.

Benefits of the regulations

The management plans specify objective levels for the herds. These ratios are maintained and managed in part by annually modifying the number of tags. The final values for the license tag numbers will be based upon findings from the population surveys.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate pronghorn antelope hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to pronghorn antelope tag allocations are consistent with the provisions of Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations.

REGULATORY TEXT

Section 363 is amended to read:

§ 363. Pronghorn Antelope.
The Lava Beds National Monument and Federal and State Game Refuges lying within the hunt boundary are closed to pronghorn antelope hunting, except for the state's Hayden Hill (1S) and Blacks Mountain (1F) game refuges in Lassen County and the Clear Lake National Wildlife Refuge in Modoc County. Refer to subsection 363(b)(5) for special conditions for permission to enter and hunt pronghorn antelope in the Clear Lake National Wildlife Refuge.
(a) Zone 1 - Mount Dome:

... [No changes to subsections 363(a)(1) through (3)]

~~(4) Number of License Tags:~~
~~(A) General Season: 0 buck tags and 0 doe tags.~~
~~(B) Archery Only Season: 0 buck tags and 0 doe tags.~~
(b) Zone 2 - Clear Lake:

... [No changes to subsections 363(b)(1) through (3)]

~~(4) Number of License Tags:~~
~~(A) General Season: 15 buck tags and 0 doe tags.~~
~~(B) Archery Only Season: 1 buck tags and 0 doe tags.~~
~~(5)~~ (4) Special Conditions: The special regulations regarding the Peninsula “U” portion of the Clear Lake National Wildlife Refuge are summarized as follows:

... [No changes to subsections 363(b)(5)(A) through (E)]

(c) Zone 3 - Likely Tables:

... [No changes to subsections 363(c)(1) through (3)]

~~(4) Number of License Tags:~~
~~(A) General Season: Period One: 40 buck tags and 0 doe tags. Period Two: 40 buck tags and 0 doe tags.~~
~~(B) Archery Only Season: 10 buck tags and 0 doe tags.~~
(d) Zone 4 - Lassen:

... [No changes to subsections 363(d)(1) through (3)]

~~(4) Number of License Tags:~~
~~(A) General Season: Period One: 45 buck tags and 0 doe tags. Period Two: 45 buck tags and 0 doe tags.~~
~~(B) Archery Only Season: 10 buck tags and 0 doe tags.~~
(e) Zone 5 - Big Valley:

... [No changes to subsections 363(e)(1) through (3)]

~~(4) Number of License Tags:~~
~~(A) General Season: 20 buck tags and 0 doe tags.~~
~~(B) Archery Only Season: 1 buck tags and 0 doe tags.~~
(f) Zone 6 - Surprise Valley:

... [No changes to subsections 363(f)(1) through (3)]

~~(4) Number of License Tags:~~
~~(A) General Season: 10 buck tags and 0 doe tags.~~
~~(B) Archery Only Season: 1 buck tags.~~
(g) Big Valley Pronghorn Antelope Apprentice Hunt:
(1) Area: ~~Those portions of Modoc, Lassen, Shasta and Siskiyou counties within a line beginning at the intersection of Highway 299 and 89; north and northwest along Highway 89 to the Bartle-Telephone Flat Road; northeast along the Bartle-Telephone Flat Road to the Iodine Prairie-Long Bell Road; southeast along the Iodine Prairie-Long Bell Road to the North Main Road at Long Bell Forest Service Station; northeast along the North Main Road and the Mud Springs-Mud Lake Road to Modoc County Road 91; south along Modoc County Road 91 to the Happy Camp-Cottonwood Flat Road; southeast along the Happy Camp-Cottonwood Flat Road to the Cottonwood Flat-Canby Bridge Road; southeast along the Cottonwood Flat-Canby Bridge Road to Highway 299; south along Highway 299 to the Hunters Ridge-Sweagert Flat Road near Lower Rush Creek Recreation Site; east and south along the Hunters Ridge-Sweagert Flat Road to the Sweagert Flat-Hunsinger Draw Road; south and west along the Sweagert Flat-Hunsinger Draw Road to the Adin-Madeline Road; southeast along the Adin-Madeline Road to the Hunsinger Flat-Willow Creek Road; southeast and southwest along the Hunsinger Flat-Willow Creek Road to Highway 139; northwest along Highway 139 to the Hayden Hill-Snag Hill Road; south and southwest along the Hayden Hill-Snag Hill Road to the Boyd Hill-Dixie Valley Road; southeast along the Boyd Hill-Dixie Valley Road to the Dixie Valley-Coyote Canyon Road; southeast along the Dixie Valley-Coyote Canyon Road to the State Game Refuge 1S boundary; southeast along the State Game Refuge 1S boundary to U.S. Forest Service Road 35N06; south and west along U.S. Forest Service Road 35N06 to U.S. Forest Service Road 22; west along U.S. Forest Service Road 22 to Highway 89 near the Hat Creek Ranger Station; north along Highway 89 to Highway 299, to the point of beginning.~~ The tag shall be valid in the area described in subsection 363(e)(1).

... [No changes to subsections 363(g)(2) and (3)]

~~(4) Number of License Tags: 1 either-sex tags.~~
~~(5)~~ (4) Special Conditions: Tagholders wishing to hunt the Ash Creek Wildlife Area may contact Ash Creek Wildlife Area by telephone at (530) 294-5824, and shall attend an orientation meeting before hunting. Only persons possessing valid junior hunting licenses and apprentice hunt license tags may hunt during the pronghorn antelope apprentice hunt season in the Ash Creek Wildlife Area. Tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
(h) Lassen Pronghorn Antelope Apprentice Hunt:

(1) Area: ~~Those portions of Lassen, Plumas and Shasta counties within a line beginning at the junction of Highway 36 and the Juniper Lake Road in the town of Chester; north along the Juniper Lake Road to the Lassen National Park boundary; north and west along the Lassen National Park boundary to Highway 89; north along Highway 89 to U.S. Forest Service Road 22 near the Hat Creek Ranger Station; east along U.S. Forest Service Road 22 to U.S. Forest Service Road 35N06; east and north along U.S. Forest Service Road 35N06 to the State Game Refuge 1S boundary; northwest along the State Game Refuge 1S boundary to the Coyote Canyon-Dixie Valley Road; northwest along the Coyote Canyon-Dixie Valley Road to the Dixie Valley-Boyd Hill Road; northwest along the Dixie Valley-Boyd Hill Road to the Snag Hill-Hayden Hill Road; northeast and north along the Snag Hill-Hayden Hill Road to Highway 139; southeast on Highway 139 to the Willow Creek-Hunsinger Flat Road; northeast and northwest along the Willow Creek-Hunsinger Flat Road to the Adin-Madeline Road; southeast along the Adin-Madeline Road to Highway 395 at the town of Madeline; south along Highway 395 to the Madeline-Clarks Valley Road; east along the Madeline-Clarks Valley Road to the Clarks Valley-Tuledad Road; east and southeast along the Clarks Valley-Tuledad Road to the California-Nevada state line; south along the California-Nevada state line to the Lassen-Sierra county line; west along the Lassen-Sierra county line to the Lassen-Plumas county line; north and west along the Lassen-Plumas county line to Highway 36, west along Highway 36 to the Juniper Lake Road, to the point of beginning. The Honey Lake Wildlife Area shall not be open to antelope apprentice hunt tag holders.~~ The tag shall be valid in the area described in subsection 363(d)(1).

... [No changes to subsection 363(h)(2) and (3)

~~(4) Number of License Tags: 5 either-sex tags.~~
(4) Special Conditions: Tagholders must possess valid junior hunting licenses and apprentice hunt license tags. Tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting. The Honey Lake Wildlife Area shall not be open to antelope apprentice hunt tag holders.
(i) Surprise Valley Pronghorn Antelope Apprentice Hunt:
(1) Area: ~~Those portions of Modoc and Lassen counties within a line beginning at the intersection of the crest of the Warner Mountains and the California-Oregon state line; east along the California-Oregon state line to the California-Nevada state line; south along the California-Nevada state line to the Tuledad-Clarks Valley Road; west and northwest along the Tuledad-Clarks Valley Road to the Clarks Valley-Long Valley Road; north on the Clarks Valley-Long Valley Road to the South Warner Road; east along the South Warner Road to the Summit Trail near Patterson Guard Station; north along the Summit Trail to the crest of the Warner Mountains at Pepperdine Camp; north along the crest of the Warner Mountains to the California-Oregon state line to the point of beginning.~~ The tag shall be valid in the area described in subsection 363(f)(1).

... [No changes to subsections 363(i)(2) and (3)]

(4) ~~Number of License Tags: 4 either-sex tags.~~
~~(5)~~ Special Conditions: Tagholders must possess valid junior hunting licenses and apprentice hunt license tags. Tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
(j) Likely Tables Pronghorn Antelope Apprentice Hunt

(1) Area: ~~Those portions of Modoc and Lassen counties within a line beginning at the junction of the Crowder Flat Road and the California-Oregon state line; east along the California-Oregon state line to the crest of the Warner Mountains; south along the crest of the Warner Mountains to the Summit Trail at Pepperdine Camp; south along the Summit Trail to the South Warner Road near Patterson Forest Service Station; west along the South Warner Road to the Long Valley-Clarks Valley Road; south along the Long Valley-Clarks Valley Road to the Clarks Valley-Madeline Road; west along the Clarks Valley-Madeline Road to Highway 395 at the town of Madeline; north along Highway 395 to the Madeline-Adin Road; northwest along the Madeline-Adin Road to the Hunsinger Draw-Sweagert Flat Road; east and north along the Hunsinger Draw-Sweagert Flat Road to the Sweagert Flat-Hunters Ridge Road; north and west along the Sweagert Flat-Hunters Ridge Road to Highway 299 near Lower Rush Creek Recreation Site; north along Highway 299 to the Canby Bridge-Cottonwood Flat Road; northwest along the Canby Bridge-Cottonwood Flat Road to the Cottonwood Flat-Happy Camp Road; northwest along the Cottonwood Flat-Happy Camp Road to Modoc County Road 91; north along Modoc County Road 91 to Highway 139; north along Highway 139 to the Hackamore-Sorholus Tank Road; northeast along the Hackamore-Sorholus Tank Road to the Browns Well-Badger Well Road; north along the Browns Well-Badger Well Road to the Badger Well-Deadhorse Flat Road; northeast and east along the Badger Well-Deadhorse Flat Road to the Mowitz-Blue Mountain Road; north and east along the Mowitz-Blue Mountain Road to Modoc County Road 136; east along Modoc County Road 136 to Modoc County Road 73; north along Modoc County Road 73 to the Crowder Flat Road; north along the Crowder Flat Road to the California-Oregon state line, to the point of beginning.~~ The tag shall be valid in the area described in subsection 363(c)(1).

... [No changes to subsections 363(j)(2) and (3)]

(4) ~~Number of License Tags: 5 either-sex tags.~~
~~(5)~~ Special Conditions: Tagholders must possess valid junior hunting licenses and apprentice hunt license tags. Tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
(k) Fund-raising Hunt:

... [No changes to subsections 363(k)(1) through (3)]

~~(4) Number of License Tags: 2 buck tags.~~

... [No changes to subsection 363(*l*)]

(m) Pronghorn Antelope Tag Allocations Table.

~~2015~~ 2016 Pronghorn Antelope Tag Allocations						
	Archery-Only Season		General Season			
Hunt Area	Buck	Doe	Buck	Doe	Buck	Doe
Zone 1 - Mount Dome	~~0~~ [0-10]	~~0~~ [0-3]	~~0~~ [0-60]	~~0~~ [0-20]	0	0
Zone 2 - Clear Lake	~~1~~ [0-10]	~~0~~ [0-3]	~~15~~ [0-80]	~~0~~ [0-25]	0	0
Zone 3 - Likely Tables	~~10~~ [0-20]	~~0~~ [0-7]	~~40~~ [0-150]	~~0~~ [0-50]	~~40~~ [0-130]	~~0~~ [0-50]
Zone 4 – Lassen	~~10~~ [0-20]	~~0~~ [0-7]	~~45~~ [0-150]	~~0~~ [0-50]	~~45~~ [0-130]	~~0~~ [0-50]
Zone 5 - Big Valley	~~1~~ [0-15]	~~0~~ [0-5]	~~20~~ [0-150]	~~0~~ [0-50]	0	0
Zone 6 - Surprise Valley	~~1~~ [0-10]	0	~~10~~ [0-25]	~~0~~ [0-7]	0	0
Likely Tables Apprentice Hunt	N/A		~~5~~ [0-15] Either Sex		0	
Lassen Apprentice Hunt	N/A		~~5~~ [0-15] Either Sex		0	
Big Valley Apprentice Hunt	N/A		~~1~~ [0-4] Either Sex		0	
Surprise Valley Apprentice Hunt	N/A		~~4~~ [0-5] Either Sex		0	
Fund-Raising Hunt	N/A		~~2~~ [0-10] Buck			

Note: Authority cited: Sections 219, 220, 331, 1050, Fish and Game Code. Reference: Sections 331, 713, and 1050, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Amend Section 364
Title 14, California Code of Regulations (CCR)
Re: Elk Hunts

I. Date of Initial Statement of Reasons: November 6, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 10, 2015
Location: San Diego, CA

(b) Discussion Hearings: Date: February 11, 2016
Location: Sacramento, CA

(c) Adoption Hearing: Date: April 14, 2016
Location: Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

1. It is necessary for the Fish and Game Commission (Commission) to improve the hunting regulations and make them more user-friendly.

The current Elk Hunt regulations in Title 14, Section 364, are overly long and the current format makes it difficult to navigate to find pertinent hunting information. The Department of Fish and Wildlife (CDFW) is recommending placing a substantial amount of information from Section 364, which is currently in a narrative format, into a Table that is more easily reviewed by the public. The new table replaces two subparts in regulation: Number of License Tags in each hunt area and Season dates. Area descriptions and conditions will remain in narrative form.

For example, part of the current regulation in subsection 364(a) reads as follows:

§364. Elk.
(a) Department Administered General Methods Roosevelt Elk Hunts:
(1) Siskiyou Roosevelt Elk Hunt:
(A) Area: In that portion of Siskiyou County beginning at the junction of Interstate Highway 5 with the California-Oregon state line; east along the state line to Hill Road at Ainsworth Corner; south along Hill Road to Lava Beds National Monument Road; south along Lava Beds National Monument Road to USDA Forest Service Road 49; south along USDA Forest Service Road 49 to USDA Forest Service Road 77; west along

USDA Forest Service Road 77 to USDA Forest Service Road 15 (Harris Spring Road); south along USDA Forest Service Road 15 to USDA Forest Service Road 13 (Pilgrim Creek Road); southwest along USDA Forest Service Road 13 to Highway 89; northwest along Highway 89 to Interstate Highway 5; north along Interstate Highway 5 to the point of beginning.
(B) Season: The season shall open on the Wednesday preceding the second Saturday in September and continue for 12 consecutive days.
(C) Number of License Tags: 20 bull tags and 20 antlerless tags.

Subparts (B) Season, and (C) Number of License Tags, are proposed to be moved to the new Table as shown in the example below:

§	Hunt	1. Bull Tags	2. Antlerless Tags	3. Either-Sex Tags	4. Spike Tags
		5. Season			
(r) Department Administered General Methods Roosevelt Elk Hunts					
(1)(A)	Siskiyou	20	20		
		Shall open on the Wednesday preceding the second Saturday in September and continue for 12 consecutive days.			

The complete Table and text is found in the attached amended Regulatory Text of Section 364.

2. Number of Tags.

In order to maintain appropriate harvest levels and hunting quality it is necessary to annually adjust quotas (total number of tags) in response to dynamic environmental and biological conditions. Current regulations in Section 364 specify elk license tag quotas for each hunt in accordance with management goals and objectives.

The proposed amendments will modify Section 364, adding new subsections 364(r) through (aa) in a Table which specifies the number of elk tags in each hunt type and area for the 2016 season. However, since the Department's final recommendations for quotas cannot be determined until winter survey data and harvest results are analyzed, the amendments to Section 364 will begin with a range of tags (expressed as [0-40], etc.). The final number of tags will be recommended to the Commission at the adoption hearing in April 2016.

The proposed ranges of elk tags for 2016 are presented in the amended Regulatory Text of Section 364.

3. Remove, Amend, and Establish New Hunt Areas:

The Department is recommending changes to the Hunt Areas as described in amended subsections 364(a)(1) through (d)(20). Some hunt areas are deleted, split into new hunt areas or boundaries changed as necessary to distribute

hunting pressure, address landowner concerns over elk damage, and increase or decrease hunting opportunity. Boundary and Area changes are made while providing a biologically appropriate harvest within each zone in accordance with management goals and objectives.

(Note: The following text which is proposed for deletion (italicized) refers to the current subsection number. Text to be added or amended (normal type) refers to the new renumbered subsection. The referenced subsections appear in the same order as in the attached amended regulatory text.)

The following Hunt Areas are proposed for amendment:

364(a)(2) Big Lagoon Roosevelt Elk Hunt: (Deleted from regulation)

This hunt boundary is no longer being utilized and has been split and incorporated into the Del Norte and Humboldt Roosevelt Elk Hunts.

364(a)(3) Northwestern California Roosevelt Elk Hunt: (Deleted from regulation)

This hunt boundary is no longer being utilized and has been split and incorporated into the Del Norte and Humboldt Roosevelt Elk Hunts.

364(a)(4) Klamath Roosevelt Elk Hunt: (Deleted from regulation)

This hunt boundary is no longer being utilized and has been split and incorporated into the Del Norte and Humboldt Roosevelt Elk Hunts.

364(a)(5) Del Norte Roosevelt Elk Hunt: (Deleted from regulation)

This hunt boundary is no longer being utilized; this hunt area has been incorporated into the larger new Del Norte hunt area.

364(a)(2) Del Norte General Methods Roosevelt Elk Hunt: (Added to regulation)

Two new zones will be created by splitting the Northwestern Roosevelt elk zone (Del Norte and Humboldt). The establishment of these zones will allow the Department to manage hunting pressure in relation to elk distribution, increase opportunity, and obtain an appropriate harvest level.

364(a)(3) Humboldt General Methods Roosevelt Elk Hunt: (Added to regulation)

Two new zones will be created by splitting the Northwestern Roosevelt elk zone (Del Norte and Humboldt). The establishment of these zones will allow the Department to manage hunting pressure in relation to elk distribution, increase opportunity, and obtain an appropriate harvest level.

364(a)(6) Marble Mountains Roosevelt Elk Hunt: (Deleted from regulation)

This area has been separated into two separate zones within Humboldt, Shasta, Siskiyou, and Trinity counties (Marble Mountain North and Marble Mountain South Roosevelt elk hunts).

364(a)(4) Marble Mountains North General Methods Roosevelt Elk Hunt: (Added to regulation)

Two new zones will be created by splitting the Marble Mountain Roosevelt elk zone (North and South). The establishment of these zones will allow the Department to manage hunting pressure in relation to elk distribution, increase opportunity, and obtain an appropriate harvest level.

364(a)(5) Marble Mountains South General Methods Roosevelt Elk Hunt: (Added to regulation)

Two new zones will be created by splitting the Marble Mountain Roosevelt elk zone (North and South). The establishment of these zones will allow the Department to manage hunting pressure in relation to elk distribution, increase opportunity, and obtain an appropriate harvest level.

364(c)(1) Mendocino Elk Hunt: (Deleted from regulation)

This area has been split and expanded into five separate zones within Mendocino County as follows:

364(c)(1) Mendocino North Coast General Methods Roosevelt/Tule Elk Hunt: (Added to regulation);
364(c)(2) Mendocino Middle Fork General Methods Roosevelt/Tule Elk Hunt: (Added to regulation);
364(c)(3) Mendocino Upper Russian River General Methods Roosevelt/Tule Elk Hunt: (Added to reg);
364(c)(4) Mendocino Little Lake General Methods Roosevelt/Tule Elk Hunt: (Added to regulation);
364(c)(5) Mendocino South Coast General Methods Roosevelt/Tule Elk Hunt: (Added to regulation):

It is proposed to split and expand the existing Mendocino Roosevelt/Tule elk hunt into five elk hunts within Mendocino County. Public opportunities to hunt elk are limited in Mendocino County. Sufficient numbers of elk occur within the proposed hunt boundaries to provide opportunity for the public to hunt elk. The establishment of these zones will allow the Department to distribute hunting pressure to address landowner concerns over elk damage and increase hunter opportunity while providing a biologically appropriate harvest within each zone

364(d)(2) La Panza General Methods Tule Elk Hunt: (Amend regulatory text)

Some of the area previously within the La Panza zone north of highway 198 will now be within the Fort Hunter Liggett Central Coast zone described in subsection

364(d)(12). This is intended to better distribute harvest within these zones, increase opportunity, and address landowner concerns. The La Panza season framework will remain as previously identified.

364(d)(4) Independence General Methods Tule Elk Hunt: (Amend regulatory text)

It is proposed to split the Independence tule elk hunt area in Inyo County and establish a new tule elk zone (Goodale) in the Owens Valley. Sufficient numbers of elk occur within the proposed hunt boundary to provide opportunity for the public to hunt elk. Creating a new hunt boundary (splitting the zone) allows the Department to more appropriately manage harvest.

364(d)(5) Goodale General Methods Tule Elk Hunt: (Added to regulatory text)

In conjunction with zone boundary modifications for the Independence tule elk zone, a new zone (Goodale) is proposed to be created by dividing the zone. This new zone is being established to efficiently distribute hunting pressure and manage harvest.

364(d)(11) Grizzly Island General Methods Tule Elk Hunt: (Amend regulatory text)

The area description for Grizzly Island is proposed to be amended. Existing regulations specify boundaries for the Grizzly Island tule elk hunt. During the last several years elk population numbers have increased and their range has expanded beyond existing hunt boundaries. The modifications will expand the boundary to outside of the Grizzly Island Wildlife Area. The proposal to expand boundaries for the Grizzly Island tule elk hunt is necessary to improve hunter opportunity and implement an appropriate harvest level.

364(d)(11) Fort Hunter Liggett Tule Elk Hunt: (Deleted from regulation)

Public opportunities to hunt elk in Monterey, San Benito, and San Luis Obispo counties are currently limited to the lands within the boundary of the Fort Hunter Liggett Military base and a portion of the La Panza and San Luis Reservoir tule elk zones. To increase public hunting opportunity (military only remains within the perimeter of the base) the boundary is proposed to be expanded as set forth in 364(n)(12).

364(d)(12) Fort Hunter Liggett Central Coast General Public General Methods Tule Elk Hunt: (Added to regulatory text)

Public opportunities to hunt elk in Monterey, San Benito, and San Luis Obispo counties are currently limited to the lands within the confines of the Fort Hunter Liggett Military base and a portion of the La Panza and San Luis Reservoir tule elk zones. Tule elk populations have increased and their range has expanded beyond the existing hunt boundaries. The proposal increases the boundary for the Fort Hunter Liggett Central Coast zone to encompass areas not previously part of an established hunt zone except for the inclusion of the northern portion of the La Panza zone north of highway 198 to the boundary of the San Luis

Reservoir tule elk zone. This will improve hunter opportunity, address expanding elk populations, and respond to landowner concerns. (Note: the military only hunts will remain within the exterior boundaries of the military base.)

364(d)(19) San Emigdio Mountain General Methods Tule Elk Hunt: (Added to regulatory text)

The proposed amendment establishes a new tule elk hunt in portions of Kern, San Luis Obispo, Santa Barbara, and Ventura Counties). Public opportunities to hunt elk have been limited or non-existent. Sufficient numbers of elk occur within the proposed hunt boundary to provide additional opportunity for the public to hunt elk.

364(d)(20) Camp Roberts General Methods Tule Elk Hunt: (Added to regulatory text)

The proposed amendment establishes a new tule elk hunt in portions of Monterey and San Luis Obispo Counties. Public opportunities to hunt elk have been limited. Sufficient numbers of elk occur within the proposed hunt boundary to provide additional opportunity for the public to hunt elk.

4. Add New Opportunities for Specialized Hunts:

The Department makes many different specialized hunts available to the public including Archery, Muzzleloader, and Apprentice hunts. Because of the proposed new hunt areas, some new opportunities will be made available:

364(e)(1) Siskiyou General Methods Roosevelt Elk Apprentice Hunt

364(e)(2) Marble Mountains North General Methods Roosevelt Elk Apprentice Hunt

364(e)(3) Marble Mountains South General Methods Roosevelt Elk Apprentice Hunt

364(e)(9) Fort Hunter Liggett Central Coast General Methods General Public Tule Elk Apprentice Hunt

364(f)(3) Goodale Tule Elk Archery Only Hunt

364(f)(7) Fort Hunter Liggett Central Coast General Public Tule Elk Archery Only Hunt

364(g)(3) Goodale Tule Elk Muzzleloader Only Hunt

364(g)(4) Fort Hunter Liggett Central Coast General Public Tule Elk Muzzleloader Only Hunt:

364(h)(1) Siskiyou Roosevelt Elk Muzzleloader/Archery Only Hunt

354(i)(2) Marble Mountains North Roosevelt Elk Muzzleloader/Archery Only Hunt

364(i)(3) Marble Mountains South Roosevelt Elk Muzzleloader/Archery Only Hunt

364(j)(5) Camp Roberts Military Only Tule Elk Hunt

5. Modify Season Dates and Hunt Periods:

The Department makes many different times and seasons of the year available to the public. In order to provide opportunity for hunters, the Department modifies the calendar day for the start of hunts and the number of days of hunting. The new Table in subsections 364(r) through (aa) proposes the recommended days for each hunt.

These recommended changes will increase opportunity and address private property conflicts through the establishment of multiple hunt periods while maintaining an appropriate harvest level. Opportunity is also provided by separate hunting periods for bull, antlerless, either-sex, and spike elk.

In a number of hunt areas the elk population has increased substantially over the last several years. The proposed seasonal framework, additional hunt periods, and the proposed number of tags, are designed to safely distribute the additional hunting pressure while maintaining an appropriate level of harvest.

Due to military use constraints at Fort Hunter Liggett and Camp Roberts, hunt dates are subject to change from year to year and may be changed or cancelled by the base commander

6. Modifications to Hunt Area Special Conditions.

Current regulations require a hunter orientation in certain hunt areas prior to hunting. This requirement is not necessary in most areas since all pertinent information is sent to the successful tag purchaser (hunter) along with their tag. Tag holders are also provided contact numbers for local Department employees to answer any additional questions. Where required, the Special Conditions appear in regulation with the hunt area description.

Special Conditions for hunting on military installations appear in subsection (u) Fort Hunter Liggett Special Conditions; and, (v) Camp Roberts Special Conditions.

7. Minor Editorial Changes.

364(*l*)(4) Proposed amendments to this subsection clarify the definition of either-sex elk and make it clear that a spike elk is included within the definition of either-sex elk.

364(n) is proposed for deletion as it restates subsection (m).

Other minor editorial changes are proposed for consistency in subsection numbering, spelling, grammar, and clarity.

a) Authority and Reference:

Authority: Fish and Game Code sections 200, 202, 203, 332 and 1050.
Reference: Fish and Game Code sections 332 and 1050.

(c) Specific Technology or Equipment Required by Regulatory Change: None.

(d) Identification of Reports or Documents Supporting Regulation Change:

2016 Draft Environmental Document Regarding Elk Hunting

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

Fish and Game Commission's Wildlife Resources Committee meeting held on September 9, 2015 in Fresno, California.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

1. Improve the hunting regulations and make them more user-friendly.

No alternatives were identified. The Department makes extensive use of Tables in regulations. Currently, tables are used in Section 362, Big Horn Sheep, 363 Antelope, and 364.1 SHARE Elk. Department publications use tables to provide information to the public in an easier format than written text.

2. Number of Tags

A recommendation was submitted 10/1/2014 by the Colusa County Fish and Game Commission. Request to increase elk hunting in Stonyford to control the growing size of the herd:

Department staff met with the Colusa County Fish and Game Commission last year to discuss potential solutions. The Department has analyzed the potential for increased harvest in this zone in the Draft Environmental Document. Tag adjustments will be reviewed after surveys are complete. One of the limiting factors for this zone is access to private property for public elk hunters; currently there is very limited public land for elk hunters to access which contain elk. The newly adopted SHARE elk tags (Section 364.1) are a potential solution for allowing access to private lands for elk hunters. Depending on tag allocation for the general draw and analyzed harvest rates, SHARE elk tags may be available for landowners within the Priest Valley desiring to contract with the Department.

Elk license tag quotas must be adjusted periodically in response to a variety of environmental and biological conditions including forage availability, population structure, and over-winter survival rates. Elk populations have increased and landowner conflicts have also escalated in several areas. Adjusting tag quotas provides for appropriate harvest levels within the zones.

3. Remove, Amend, and Establish New Hunt Areas:

   Public recommendation submitted 3/27/2014 by Howard Strohn. Request for better herd management of tule elk in Priest Valley:

   > With this rulemaking, the Department has recommended boundary modification which would include the Priest Valley elk herd within the proposed Fort Hunter Liggett Central Coast zone. This would potentially increase the number of landowner tags available. In addition to the proposed boundary modifications the Department has analyzed the potential for increased harvest for this zone in the Draft Environmental Document (DED). Tag adjustments will be reviewed after surveys are complete. In 2015 the Department implemented the SHARE elk tag (Section 364.1) as an option for landowners. Depending on tag allocation for the general draw and analyzed harvest rates, SHARE elk tags may be available for landowners within the Priest Valley desiring to contract with the Department.

   Not modifying boundaries would not allow the Department to appropriately manage the subgroups through existing harvest regulations. New hunt areas for San Emigdio Mountain and Camp Roberts elk zones are necessary because existing regulations provide no public elk hunting opportunity in these areas. These areas currently maintain adequate numbers of elk to support a limited harvest. Establishing (new) tule elk hunts in these areas is proposed to improve hunter opportunity and provide an appropriate harvest level.

4. <u>Add New Opportunities for Specialized Hunts:</u>

   No alternatives were identified. Not modifying opportunity for special hunts would not allow the Department to appropriately manage the subgroups through existing harvest regulations.

5. Modify Season Dates and Hunt Periods:

   No alternatives were identified. The Department makes many different times and seasons of the year available to the public. In order to provide opportunity for each group, the Department modifies the calendar day for the start of hunts and the number of days of hunting.

   Due to military use constraints at Fort Hunter Liggett and Camp Roberts, hunt dates are subject to change from year to year and may be changed or cancelled by the base commander.

6. Modifications to Hunt Area Special Conditions.

No alternatives were identified. Current regulations require a hunter orientation in certain hunt areas prior to hunting. Where required, the Special Conditions appear in regulation with the hunt area description.

(b) No Change Alternative:

The no-change alternative was considered and rejected because it would not attain project objectives. Elk hunts and opportunity must be adjusted periodically in response to a variety of environmental and biological conditions including forage availability, population structure, and over-winter survival rates. Elk populations have increased and landowner conflicts have also escalated in several areas. Adjusting tag quotas provides for appropriate harvest levels within the hunt zones.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed. The number of tags that will be issued from the newly proposed tag range will result in a harvest that is at or below the harvest analyzed in the 2016 Draft Environmental Document Regarding Elk hunting.

VI. Impact of Regulatory Action.

This proposed action adjusts tag quotas, modifies existing hunt zones, and creates new zones to increase hunting opportunities for the public. Given the number of tags available, and the area over which they are distributed, this proposal is economically neutral to business.

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businessmen to Compete with Businesses in Other States.

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. Considering the relatively small number of tags issued over the entire state, this proposal is economically neutral to business.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources. The Commission anticipates benefits to the State's environment in the sustainable management of natural resources.

The proposed action will not have significant impacts on jobs or business within California and does not provide benefits to worker safety.

(c) Cost Impacts on Representative Private Persons/Business.

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with this proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

(e) Other Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School Districts: None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4: None.

(h) Effect on Housing Costs: None.

VII. Economic Impact Assessment

The proposed action will have no statewide economic or fiscal impact because the proposed action would not constitute a significant change from the 2015 elk season. The number of tags to be set in regulation for 2016 is intended to achieve or maintain the levels set forth in the approved management plans to sustainably manage elk populations and maintain hunting opportunities in subsequent seasons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs because no significant changes in hunting activity levels are anticipated.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation will not impact the creation of new businesses or the elimination of businesses because no significant changes in hunting activity levels are anticipated.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State

The regulation will not affect the expansion of businesses currently doing business within the State because no significant changes in hunting activity levels are anticipated.

(d) Benefits of the regulation to the health and welfare of California residents:

The proposed regulation will benefit the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources and the action contributes to the sustainable management of natural resources.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety.

(f) Benefits of the regulation to the State's environment

It is the policy of the State to encourage the conservation, maintenance, and utilization of the State's living resources. The proposed action will further this core objective.

INFORMATIVE DIGEST
(Policy Statement Overview)

Existing regulations in Section 364, Title 14, CCR, specify elk license tag quotas for each hunt. In order to achieve elk herd management goals and objectives and maintain hunting quality, it is periodically necessary to adjust quotas, seasons, hunt areas and other criteria, in response to dynamic environmental and biological conditions. The proposed amendments to Section 364 will establish 2016 tag quotas within each hunt adjusting for annual fluctuations in population number, season dates and tag distribution.

The complete amended text is found in the amended Regulatory Text of Section 364 with the Initial Statement of Reasons.

Proposed Amendments:

1. The current Elk Hunt regulations in Title 14, Section 364, are overly long and the format makes it difficult to navigate to find pertinent hunting information. The Department of Fish and Wildlife (Department) is recommending placing a substantial amount of information from Section 364 in a Table to improve the hunting regulations and make them more user-friendly.

2. In order to achieve appropriate harvest levels and maintain hunting quality it is necessary to annually adjust quotas (total number of tags) in response to dynamic environmental and biological conditions. Section 364 regulations specify elk license tag quotas for each hunt in accordance with management goals and objectives.

3. Remove, Amend, and Establish New Hunt Areas. The Department is recommending changes to the Hunt Areas as described in amended subsections 364(a)(1) through (d)(20).

4. Add New Opportunities for Specialized Hunts. The Department makes many different specialized hunts available to the public including Archery, Muzzleloader, and Apprentice hunts. Because of the new areas added, some new opportunities will be made available.

5. Modify Season Dates and Hunt Periods. The Department makes many different times and seasons of the year available to the public. In order to provide opportunity for hunters, the Department modifies the calendar day for the start of individual hunts and the number of days of hunting. The new Table sets forth the recommended days for each hunt.

6. Modifications to Hunt Area Special Conditions.

   Current regulations require a hunter orientation in certain hunt areas prior to hunting. This requirement is not necessary in most areas since all pertinent information is sent to the successful tag purchaser (hunter) along with their tag. Tag holders are also provided contact numbers for local Department employees to answer any additional questions. Where required, the Special Conditions appear in regulation

with the hunt area description. Special Conditions for hunting on military installations appear in new subsections (p) Fort Hunter Liggett Special Conditions; and, (q) Camp Roberts Special Conditions.

7. Minor Editorial Changes are proposed to improve clarity and reduce redundancy.

Benefits of the regulations

The proposed regulations will contribute to the sustainable management of elk populations in California. Existing elk herd management goals specify objective levels for the proportion of bulls in the herds. These ratios are maintained and managed in part by annually modifying the number of tags. The final values for the license tag numbers will be based upon findings from annual harvest and herd composition counts where appropriate.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate elk hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to elk tag allocations are consistent with Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations.

REGULATORY TEXT

Section 364 is amended to read as follows:

§364. Elk Hunts, Seasons, and Number of Tags

(a) Department Administered General Methods Roosevelt Elk Hunt Areas.
(1) Siskiyou General Methods Roosevelt Elk Hunt:
(A) Area: In that portion of Siskiyou County beginning at the junction of Interstate Highway 5 with the California-Oregon state line; east along the state line to Hill Road at Ainsworth Corner; south along Hill Road to Lava Beds National Monument Road; south along Lava Beds National Monument Road to USDA Forest Service Road 49; south along USDA Forest Service Road 49 to USDA Forest Service Road 77; west along USDA Forest Service Road 77 to USDA Forest Service Road 15 (Harris Spring Road); south along USDA Forest Service Road 15 to USDA Forest Service Road 13 (Pilgrim Creek Road); southwest along USDA Forest Service Road 13 to Highway 89; northwest along Highway 89 to Interstate Highway 5; north along Interstate Highway 5 to the point of beginning.
~~(B) Season: The season shall open on the Wednesday preceding the second Saturday in September and continue for 12 consecutive days.~~
~~(C) Number of License Tags: 20 bull tags and 20 antlerless tags.~~
~~(2) Big Lagoon Roosevelt Elk Hunt:~~
~~(A) Area: In that portion of Humboldt County owned or leased by the California Redwood Company and the Green Diamond Resource Company within a line beginning at the intersection of Highway 101 and Hiltons Road; south on Hiltons Road to the western boundary of Redwood National Park; south and east along the western to its southern tip; north and east along the eastern boundary of Redwood National Park to Redwood Creek; south along Redwood Creek to Highway 299; east along Highway 299 to Forest Service Road 1; south along Forest Service Road 1 to Roddiscraft Road; west along Roddiscraft Road to the intersection of Snow Camp Road and the power line road within the right-of-way of Humboldt-Trinity 115 Line and Trinity-Maple Creek 60 Line power line; west along the power line road within the right-of-way of the Humboldt-Trinity 115 Line and Trinity-Maple Creek 60 Line to Maple Creek Road; south along Maple Creek Road to Butler Valley Road; west along Butler Valley Road to Fickle Hill Road; north along Fickle Hill Road to Bayside Road; west along Bayside Road and 7th Street to Highway 101; north along Highway 101 to point of beginning.~~
~~(B) Season: The season shall open the last Wednesday in August and continue for 10 consecutive days.~~
~~(C) Number of License Tags: 0 bull tags and 0 antlerless tags.~~
~~(D) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.~~
~~(3) Northwestern California Roosevelt Elk Hunt:~~
~~(A) Area: In those portions of Humboldt and Del Norte counties within a line beginning at the intersection of Highway 299 and Highway 96, north along Highway 96 to the Del~~

~~Norte-Siskiyou county line, north along the Del Norte-Siskiyou county line to the California-Oregon state line, west along the state line to the Pacific Coastline, south along the Pacific coastline to the Humboldt-Mendocino county line, east along the Humboldt-Mendocino county line to the Humboldt-Trinity county line, north along the Humboldt-Trinity county line to Highway 299, west along Highway 299 to the point of beginning, excluding those areas owned or leased by the California Redwood Company and the Green Diamond Resource Company within existing elk hunt boundaries as described in subsections 364(a)(2)(A), (a)(4)(A), and (a)(5)(A).~~
~~(B) Season: The season shall open on the first Wednesday in September and continue for 23 consecutive days.~~
~~(C) Number of License Tags: 0 bull tags, 0 antlerless tags, and 45 either-sex tags.~~
~~(4) Klamath Roosevelt Elk Hunt:~~
~~(A) Area: Those portions of Humboldt and Del Norte counties owned or leased by the Green Diamond Resource Company within a line beginning at the intersection of Highway 101 and the Klamath River; south on Highway 101 to South Klamath Beach Road; west on South Klamath Beach Road to the Redwood National Park boundary; southwest and south along the Redwood National Park boundary to Highway 101; south on Highway 101 to the Redwood National Park boundary; southeast along the Redwood National Park boundary to the Bald Hills Road; southeast along the Bald Hills Road to the Klamath River; northwest along the Klamath River to the point of beginning.~~
~~(B) Season: The season shall open on the first Wednesday in September and continue for 10 consecutive days.~~
~~(C) Number of License Tags: 0 bull tags and 0 antlerless tags.~~
~~(D) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.~~
~~(5)~~ (2) Del Norte General Methods Roosevelt Elk Hunt:
(A) Area: ~~Those portions of Del Norte County owned or leased by the Green Diamond Resource Company within a line beginning at the intersection of Highway 101 and the California-Oregon state line; south along Highway 101 to North Bank Road; southeast along North Bank Road to High Divide Road; northeast along High Divide Road to North Fork Smith River/Wimer Road; north along North Fork Smith River/Wimer Road to the California Oregon state line; west along the California-Oregon state line to the point of beginning.~~ In those portions of Del Norte County within a line beginning at the intersection of the California-Oregon state line and the Del Norte Siskiyou County line; south along the Del Norte County line to the intersection of the Siskiyou-Humboldt county lines; west along the Del Norte County Line to the Pacific coastline; north along the Pacific coastline to the Oregon-California border; east along the border to the intersection with the Del Norte-Siskiyou County line at the point of beginning.
~~(B) Season: The season shall open on the last Wednesday in August and continue for 10 consecutive days.~~
~~(C) Number of License Tags: 0 bull tags and 0 antlerless tags.~~
~~(D) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting upon receipt of their elk license tags.~~

(3) Humboldt General Methods Roosevelt Elk Hunt:
(A) Area: In those portions of Humboldt and Trinity counties within a line beginning at the intersection of the Del Norte, Humboldt, and Siskiyou county lines; south along Forest Service Road 12N12 (Cedar Camp Road) to the intersection of Forest Service Road 11N05 (Slate Creek Road); south along Forest Service Road 11N05 (Slate Creek Road) to the intersection of Highway 96; south along Highway 96 to Highway 299; south along Highway 299 to the Intersection of the South Fork of the Trinity River; south along the South Fork of the Trinity River to the intersection of Highway 36; west along Highway 36 to the Humboldt-Trinity county lines; south along the Humboldt -Trinity County line to the intersection of the Humboldt-Mendocino County line; west along the Mendocino County line to the Pacific Coast; north along the Pacific coast to the Humboldt-Del Norte County line; east along the Humboldt County line to the intersection of the Humboldt-Del Norte-Siskiyou County lines at the point of beginning.
~~(6)~~ (4) Marble Mountains North General Methods Roosevelt Elk Hunt:
(A) Area: ~~In those portions of Humboldt, Tehama, Trinity, Shasta and Siskiyou counties beginning at the intersection of Interstate Highway 5 and the California-Oregon state line; west along the state line to the Del Norte County line; south along the Del Norte County line to the intersection of the Siskiyou-Humboldt county lines; east along the Siskiyou-Humboldt county lines to Highway 96; south along Highway 96 to Highway 299; south along Highway 299 to the Intersection of the Humboldt/Trinity County line; south along the Humboldt Trinity County Line to the intersection of Highway 36; east along Highway 36 to the intersection of Interstate 5;north on Interstate Highway 5 to the point of beginning.~~ In those portions of Humboldt and Siskiyou counties beginning at the intersection of Interstate Highway 5 and the California-Oregon state line; west along the state line to the Del Norte County line; south along the Del Norte County line to the intersection of the Siskiyou-Humboldt county lines; south along Forest Service Road 12N12 (Cedar Camp Road) to the intersection of Forest Service Road 11N05 (Slate Creek Road); south along Forest Service Road 11N05 (Slate Creek Road) to the intersection of Highway 96; north along Highway 96 to the intersection of Salmon River Road; east along Salmon River Road to the intersection of Cecilville Road in the town of Forks of Salmon; east along Cecilville Road to the intersection of Highway 3 in the town of Callahan; south along Highway 3 to the intersection of Gazelle Callahan Road; east along Gazelle Callahan Road to the intersection of Old Highway 99 in the town of Gazelle; south along Old Highway 99 to the intersection of Interstate Highway 5; north on Interstate Highway 5 to the point of beginning.
~~(B) Season: The season shall open on the Wednesday preceding the second Saturday in September and continue for 12 consecutive days.~~
~~(C) Number of License Tags: General Season: 35 bull tags and 10 antlerless tags.~~
(5) Marble Mountains South General Methods Roosevelt Elk Hunt:
(A) Area: In those portions of Humboldt, Tehama, Trinity, Shasta, and Siskiyou counties beginning at the intersection of Interstate Highway 5 and Highway 36; north along Interstate 5 to the intersection of Old Highway 99 near the town of Edgewood; north along Old Highway 99 to the intersection of the Gazelle Callahan road in the town of Gazelle; west along Gazelle Callahan Road to the intersection of Highway 3; west along Highway 3 to the intersection of Cecilville Road in the town of Callahan; west along

Cecilville Road to the intersection of Salmon river Road at Forks of Salmon; North and West along Salmon River Road to the intersection of Highway 96 near Somes Bar; south along Highway 96 to Highway 299; south along Highway 299 to the Intersection of the South Fork of the Trinity River; south along the South Fork of the Trinity River to the intersection of Highway 36; east along Highway 36 to the intersection of Interstate 5;north on Interstate Highway 5 to the point of beginning.

(b) Department Administered General Methods Rocky Mountain Elk Hunts:

(1) Northeastern California General Methods Rocky Mountain Elk Hunt:

(A) Area: Those portions of Siskiyou, Modoc, Lassen, and Shasta counties within a line beginning in Siskiyou County at the junction of the California-Oregon state line and Hill Road at Ainsworth Corner; east along the California-Oregon state line to the California-Nevada state line; south along the California-Nevada state line to the Tuledad-Red Rock-Clarks Valley Road (Lassen County Roads 506, 512 and 510); west along the Tuledad-Red Rock-Clarks Valley Road to Highway 395 at Madeline; west on USDA Forest Service Road 39N08 to the intersection of Highway 139/299 in Adin; south on Highway 139 to the intersection of Highway 36 in Susanville; west on Highway 36 to the intersection of Interstate 5 in Red Bluff; north on Interstate 5 to Highway 89; southeast along Highway 89 to USDA Forest Service Road 13 (Pilgrim Creek Road); northeast along USDA Forest Service Road 13 to USDA Forest Service Road 15 (Harris Spring Road); north along USDA Forest Service Road to USDA Forest Service Road 77; east along USDA Forest Service Road 77 to USDA Forest Service Road 49; north along USDA Forest Service Road 49 to Lava Beds National Monument Road; north along Lava Beds National Monument Road to Hill Road; north along Hill Road to the point of beginning.

~~(B) Season: The season shall open on the Wednesday preceding the third Saturday in September and continue for 12 consecutive days.~~

~~(C) Number of License Tags: 15 bull tags and 10 antlerless tags.~~

(c) Department Administered General Methods Roosevelt/Tule Elk Hunts:

(1) Mendocino North Coast General Methods Roosevelt/Tule Elk Hunt:

(A) Area: Those portions in Mendocino County within a line beginning at the Pacific Coastline and the Mendocino/Humboldt County line south of Shelter Cove; ~~east along the Mendocino/Humboldt County line to the intersection of the Humboldt, Mendocino, and Trinity County lines; south and east along the Mendocino/Trinity County line to the intersection of the Mendocino, Trinity, and Tehama County lines; south along the Mendocino County line to the intersection of Highway 20; north and west along Highway 20 to the intersection of Highway 101 near Calpella; south along Highway 101 to the intersection of Highway 253; southwest along Highway 253 to the intersection of Highway 128; north along Highway 128 to the intersection of Mountain View Road near the town of Boonville; west along Mountain View Road to the intersection of Highway 1; south along Highway 1 to the intersection of the Garcia River; west along the Garcia River to the Pacific Coastline; north along the Pacific Coastline to the point of beginning.~~ proceed east along the Mendocino- Humboldt-Trinity County line to its intersection with the Eel River Main stem; proceed south along the Eel River Main stem to confluence of Outlet Creek and the State Highway 162 crossing; west on State Highway 162 to the intersection with State Highway 101, south on State Highway 101 to its intersection with

State Highway 20 (Willits); west on State Highway 20 to the intersection with State Highway 1; north on State Highway 1 to the intersection of the Noyo River; west along the Noyo River to the Pacific Coast and north along with Pacific Coast to the Mendocino- Humboldt County line point of beginning.

~~(B) Season: The season shall open on the Wednesday preceding the fourth Saturday in September and continue for 12 consecutive days.~~

~~(C) Number of License Tags: 2 bull tags and 2 antlerless tags.~~

(2) Mendocino Middle Fork General Methods Roosevelt/Tule Elk Hunt:

(A) Area: Those portions in Mendocino County within a line beginning at the Eel River Main stem intersection with the Mendocino-Trinity County line; east along the Mendocino-Trinity County line to the intersection with the Mendocino-Tehama County line; south along the Mendocino County line (Glenn–Lake County) to its junction with the Eel River Main stem; north along the Eel River Main stem to its intersection with Mendocino-Trinity County line point of beginning.

(3) Mendocino Upper Russian River General Methods Roosevelt/Tule Elk Hunt:

(A) Area: Those portions in Mendocino County within a line beginning at East Road intersection with State Highway 20 (Redwood Valley) proceed north on East Road to Tomki Road and continue to Hearst Road/Willits-Hearst Road east to the Eel River Main stem; follow the Eel River Main stem east to the Mendocino-Lake County line; than south along the Mendocino-Lake County line to its junction with State Highway 20; west on State Highway 20 to the East Road intersection (Redwood Valley) point of beginning.

(4) Mendocino Little lake General Methods Roosevelt/Tule Elk Hunt:

(A) Area: Those portions in Mendocino County within a line beginning at State Highway 101\State Highway 20 intersection Redwood Valley – proceed north on State Highway 101 to the intersection with State Highway 162; proceed east on State Highway 162 to its intersection with the Eel River Main stem; following the Eel River Main stem south to its intersection with the Hearst Road/Willits-Hearst Road bridge; west along the Willits-Hearst Road to its intersection with Tomki Road; south on Tomki Road to its intersection with East Road (Redwood Valley); East Road south to its intersection with State Highway 20; west to intersection with State Highway 101 at the point of beginning.

(5) Mendocino South Coast General Methods Roosevelt/Tule Elk Hunt:

(A) Area: Those portions in Mendocino County within a line beginning at the intersection of the Noyo River and the Pacific Ocean (Noyo Bay). Continue east on the Noyo River to the intersection with State Highway 1. South on State Highway 1 to the intersection of State Highway 20 (Noyo- Fort Bragg); proceed east on State Highway 20 to its intersection with State Highway 101 (Willits); south on State Highway 101 to its intersection with State Highway 20 (Redwood Valley) proceed east to the Mendocino-Lake County line; south along the Mendocino-Lake County line to the Mendocino-Sonoma County line; west along the Mendocino-Sonoma County line to the Pacific Ocean; north along the Pacific Ocean to the intersection with the Noyo River at the point of beginning.

(d) Department Administered General Methods Tule Elk Hunts

(1) Cache Creek General Methods Tule Elk Hunt:

(A) Area: Those portions of Lake, Colusa and Yolo counties within the following line: beginning at the junction of Highway 20 and Highway 16; south on Highway 16 to Reiff-Rayhouse Road; west on Reiff-Rayhouse Road to Morgan Valley Road; west on

Morgan Valley Road to Highway 53; north on Highway 53 to Highway 20; east on Highway 20 to the fork of Cache Creek; north on the north fork of Cache Creek to Indian Valley Reservoir; east on the south shore of Indian Valley Reservoir to Walker Ridge-Indian Valley Reservoir Access Road; east on Walker Ridge-Indian Valley Reservoir Access Road to Walker Ridge Road; south on Walker Ridge Road to Highway 20; east on Highway 20 to the point of beginning.

~~(B) Season:~~

~~1. The Bull season shall open on the second Saturday in October and continue for 16 consecutive days.~~

~~2. The Antlerless season shall open on the third Saturday in October and continue for 16 consecutive days.~~

~~(C) Number of License Tags: 3 bull tags and 3 antlerless tags.~~

~~(D)~~ (B) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.

(2) La Panza General Methods Tule Elk Hunt:

(A) Area: ~~In those portions of San Luis Obispo, Kern, Monterey, Kings, Fresno, San Benito, and Santa Barbara counties within a line beginning in San Benito County at the junction of Highway 25 and County Highway J1 near the town Pacines, south along Highway 25 to La Gloria road, west along La Gloria road, La Gloria road becomes Gloria road, west along Gloria road to Highway 101 near Gonzales, south along Highway 101 to Highway 166 in San Luis Obispo County; east along Highway 166 to Highway 33 at Maricopa in Kern County; north and west along Highway 33 to Highway 198 at Coalinga in Fresno County, north along Highway 33 to Interstate 5 in Fresno County, north along Interstate 5 to Little Panoche road/County Highway J1, southwest along Little Panoche road/County Highway J1 to the intersection of Little Panoche road/County Highway J1 and Panoche road/County Highway J1 in San Benito County, northwest along Panoche road/County Highway J1 to the point of beginning.~~

In those portions of San Luis Obispo, Kern, Monterey, Kings, Fresno, and Santa Barbara counties within a line beginning in Monterey County at the junction of Highway 198 and Highway 101; south along Highway 101 to the northern boundary of Camp Roberts California Army National Guard Base near the town of Bradley; northeast and then south along the northern and eastern boundaries of Camp Roberts to Highway 101 in San Luis Obispo County; south along Highway 101 to Highway 46; south and west along Highway 46 to Highway 1; south along Highway 1 to Nikki Beach Drive south of the town of Harmony; southwest along Nikki Beach Drive to the southern boundary of Section 19, Township 28S, Range 9E; west along the southern boundary of Section 19, Township 28S, Range 9E to the Pacific Coastline; south and east along the Pacific Coastline to the mouth of the Santa Maria River in Santa Barbara County; east along the Santa Maria River to Highway 101 near Santa Maria; north on Highway 101 to Highway 166; east along Highway 166 to Highway 33 at Maricopa in Kern County; north along Highway 33 to Highway 198 at Coalinga in Fresno County; west along Highway 198 to Parkfield Grade Road/Parkfield Coalinga Road near Parkfield Junction; south along Parkfield Grade Road/Parkfield Coalinga Road to the intersection with the Fresno-Monterey County Line; north along the Fresno-Monterey County Line to the

intersection of Smith Mountain Lookout road; south and west along Smith Mountain Lookout road to the intersection with Slack Canyon Road; north and west along Slack Canyon road to Peach Tree Road; north along Peach Tree Road to the Junction of Highway 198; west along Highway 198 to the point of beginning.

~~(B) Season:~~

~~1. Period One: The season shall open on the second Saturday in October and extend for 23 consecutive days.~~

~~2. For Period Two: the season shall open on the second Saturday in November and extend for 23 consecutive days.~~

~~(C) Number of License Tags:~~

~~1. Period One: 6 bull tags and 5 antlerless tags.~~

~~2. Period Two: 6 bull tags and 6 antlerless tags.~~

~~(D)~~ (B) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting upon receipt of their elk license tags.

(3) Bishop General Methods Tule Elk Hunt:

(A) Area: In that portion of Inyo County beginning at the junction of Highway 395 and Highway 6 in the town of Bishop; north and east along Highway 6 to the junction of Silver Canyon Road; east along Silver Canyon Road to the White Mountain Road (Forest Service Road 4S01); south along the White Mountain Road to Highway 168 at Westgard Pass; south and west along Highway 168 to the junction of Highway 395; north on Highway 395 to the point of beginning.

~~(B) Season:~~

~~1. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.~~

~~2. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.~~

~~3. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.~~

~~(C) Number of License Tags:~~

~~1. Period Three: 2 bull tags and 0 antlerless tags.~~

~~2. Period Four: 0 bull tags and 0 antlerless tags.~~

~~3. Period Five: 0 bull tags and 0 antlerless tags.~~

(4) Independence General Methods Tule Elk Hunt:

(A) Area: In that portion of Inyo County beginning at the junction of Highway 395 and Aberdeen Station Road; east on Aberdeen Station Road to its terminus at the southern boundary of Section 5, Township 11S, Range 35E; east along the southern boundary of sections 5, 4, 3, and 2, Township 11S, Range 35E to the Papoose Flat Road at Papoose Flat; south and east on Papoose Flat Road to Mazourka Canyon Road; south and then west on Mazourka Canyon Road to Highway 395; ~~west along Onion Valley Road to the intersection of the Section 25 Township 13S, Range 33E; south along the eastern boundary of Section 25 Township 13S, Range 33E to the southern boundary of Section 25 Township 13S, Range 33E; west along the southern boundary of sections 27, 26, 25 Township 13S, Range 33E to the Inyo County line; North along the Inyo~~

~~County Line to Taboose Creek; east along Taboose Creek to the intersection of Highway 395; south~~ north along Highway 395 to the point of beginning.
~~(B) Season:~~
~~1. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.~~
~~2. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.~~
~~3. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.~~
~~4. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.~~
~~(C) Number of License Tags:~~
~~1. Period Two: 2 bull tags and 0 antlerless tags.~~
~~2. Period Three: 0 bull tags and 0 antlerless tags.~~
~~3. Period Four: 0 bull tags and 0 antlerless tags.~~
~~4. Period Five: 0 bull tags and 0 antlerless tags~~
(5) Goodale General Methods Tule Elk Hunt:
(A) Area: In that portion of Inyo County beginning at the junction of Highway 395 and Taboose Creek in Section 14, Township 11S, Range 34E; south along Highway 395 to Onion Valley Road; west along Onion Valley Road to the intersection of the Section 25 Township 13S, Range 33E; south along the eastern boundary of Section 25 Township 13S, Range 33E to the southern boundary of Section 25 Township 13S, Range 33E; west along the southern boundary of sections 27, 26, 25 Township 13S, Range 33E to the Inyo County line; North along the Inyo County Line to Taboose Creek; east along Taboose Creek to the point of beginning.
~~(5)~~ (6) Lone Pine General Methods Tule Elk Hunt:
(A) Area: In that portion of Inyo County beginning at the junction of Highway 395 and Mazourka Canyon Road; east and then north on Mazourka Canyon Road to the Inyo National Forest Boundary at the junction of the southern boundary of Township 12S and the northern boundary of Township 13S; east along the southern boundary of Township 12S to Saline Valley Road; south on Saline Valley Road to Highway 190; north and then southwest on Highway 190 to the junction of Highway 395 at Olancha; north on Highway 395 to the point of beginning.
~~(B) Season:~~
~~1. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.~~
~~2. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.~~
~~3. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.~~
~~4. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.~~
~~(C) Number of License Tags:~~
~~1. Period Two: 0 bull tags and 0 antlerless tags.~~
~~2. Period Three: 2 bull tags and 0 antlerless tags.~~

~~3. Period Four: 2 bull tags and 0 antlerless tags.~~
~~4. Period Five: 0 bull tags and 0 antlerless tags.~~
~~(6)~~ (7) Tinemaha General Methods Tule Elk Hunt:
(A) Area: In that portion of Inyo County beginning at the junction of Highway 395 and Highway 168 in the town of Big Pine; north and east along Highway 168 to the junction of the Death Valley Road; south and east along the Death Valley Road to the junction of the Papoose Flat Road; south along the Papoose Flat Road to the southern boundary of Section 2, Township 11S, Range 35E; west along the southern boundaries of sections 2, 3, 4 and 5 to the terminus of the Aberdeen Station Road in Section 5, Township 11S, Range 35E; south and west along the Aberdeen Station Road to Highway 395; north along Highway 395 to the point of beginning.
~~(B) Season:~~
~~1. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.~~
~~2. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.~~
~~3. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.~~
~~4. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.~~
~~(C) Number of License Tags:~~
~~1. Period Two: 1 bull tag and 0 antlerless tags.~~
~~2. Period Three: 0 bull tags and 0 antlerless tags.~~
~~3. Period Four: 0 bull tags and 0 antlerless tags.~~
~~4. Period Five: 0 bull tags and 0 antlerless tags.~~
~~(7)~~ (8) West Tinemaha General Methods Tule Elk Hunt:
(A) Area: In that portion of Inyo County beginning at the junction of Highway 395 and Highway 168 in the town of Big Pine; south along Highway 395 to the north junction of Fish Springs Road; south along Fish Springs Road to the junction of Highway 395; south along Highway 395 to Taboose Creek in Section 14, Township 11S, Range 34E; west along Taboose Creek to the Inyo County line; north and west along the Inyo County line to the intersection of Tinemaha Creek; east along Tinemaha Creek to the intersection of McMurray Meadow Road; north on McMurray Meadow Road to the intersection of Glacier Lodge Road; north and east on Glacier Lodge Road to Crocker Avenue; east along Crocker Avenue to Highway 395; north along Highway 395 to the point of beginning.
~~(B) Season:~~
~~1. Period One: The season shall open on the second Saturday in September and extend for 16 consecutive days.~~
~~2. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.~~
~~3. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.~~
~~4. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.~~

~~5. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.~~
~~(C) Number of License Tags:~~
~~1. Period One: 0 bull tags and 0 antlerless tags.~~
~~2. Period Two: 0 bull tags and 0 antlerless tags.~~
~~3. Period Three: 0 bull tags and 0 antlerless tags.~~
~~4. Period Four: 0 bull tags and 0 antlerless tags.~~
~~5. Period Five: 0 bull tags and 0 antlerless tags.~~
~~(8)~~ (9) Tinemaha Mountain General Methods Tule Elk Hunt:
(A) Area: In that portion of Inyo County with a line beginning at the intersection of Glacier Lodge Road (9S21) and McMurray Meadow Road (9S03); south on McMurray Meadow Road to Tinemaha Creek; west along Tinemaha Creek to the Inyo County line; north and west along the Inyo County line to the southeast corner of Section 23, Township 10S, Range 32E; north along the eastern boundaries of sections 23, 14, 11, 2, Township 10S, Range 32E, and the eastern boundary of Section 36, Township 9S, Range 32E to Glacier Lodge Road; east along Glacier Lodge Road to the beginning.
~~(B) Season:~~
~~1. Period One: The season shall open on the second Saturday in September and extend for 16 consecutive days.~~
~~2. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.~~
~~3. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.~~
~~4. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.~~
~~5. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.~~
~~(C) Number of License Tags:~~
~~1. Period One: 0 bull tags.~~
~~2. Period Two: 0 bull tags.~~
~~3. Period Three: 1 bull tag.~~
~~4. Period Four: 1 bull tag.~~
~~5. Period Five: 0 bull tags.~~
~~(9)~~ (10) Whitney General Methods Tule Elk Hunt:
(A) Area: In that portion of Inyo County with a line beginning at the intersection of Highway 395 and Onion Valley Road; south on Highway 395 to the intersection of Whitney Portal Road; west along Whitney Portal Road to the northern boundary of Section 36, Township 15S, Range 34E; west along the northern boundary of sections 36, 35, 34 and 33 Township 15S, Range 34 E to the Inyo County Line; north along the Inyo County Line to the intersection of Section 27 Township 13S, range 33E; east along the southern boundary of sections 27, 26 and 25 Township 13S, Range 33E; north along the eastern boundary of Section 25 Township 13S, Range 33E to the intersection of Onion Valley Road; east along Onion Valley Road to the point of beginning.
~~(B) Season:~~

~~1. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.~~
~~2. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.~~
~~3. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.~~
~~4. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.~~
~~(C) Number of License Tags:~~
~~1. Period Two: 1 bull tag and 0 antlerless tags.~~
~~2. Period Three: 1 bull tag and 0 antlerless tags.~~
~~3. Period Four: 0 bull tags and 0 antlerless tags.~~
~~4. Period Five: 0 bull tags and 0 antlerless tags.~~
~~(10)~~ (11) Grizzly Island General Methods Tule Elk Hunt:
(A) Area: ~~Those lands owned and managed by the Department of Fish and Game as the Grizzly Island Wildlife Area.~~ In that portion of Solano County within a line beginning at the junction of Highway 12 and Highway 80; southwest along Highway 80 to Highway 680; south along Highway 680 to the Solano County line at the Benecia Bridge; east and north along the Solano County line to Highway 12 near the town of Rio Vista; north and west along Highway 12 to the point of beginning.
~~(B) Season:~~
~~1. Period One: The season for antlerless elk shall open on the Tuesday after the second Saturday in August and continue for 4 consecutive days, whereas the season for bulls and spike bulls shall open on the Thursday after the second Saturday in August and continue for 4 consecutive days.~~
~~2. Period Two: The season for antlerless elk shall open on the Tuesday after the third Saturday in August and continue for 4 consecutive days, whereas the season for bulls and spike bulls shall open on the Thursday after the third Saturday in August and continue for 4 consecutive days.~~
~~3. Period Three: The season for antlerless elk shall open on the Tuesday after the fourth Saturday in August and continue for 4 consecutive days, whereas the season for bulls and spike bulls shall open on the Thursday after the first Monday in September and continue for 4 consecutive days.~~
~~4. Period Four: The season for antlerless elk shall open on the second Tuesday in September and continue for 4 consecutive days, whereas the season for bulls and spike bulls shall open on Thursday following the second Tuesday in September and continue for 4 consecutive days.~~
~~5. Period Five: The season for antlerless elk shall open on the third Tuesday in September and continue for 4 consecutive days, whereas the season for bulls and spike bulls shall open on the Thursday following the third Tuesday in September and continue for 4 consecutive days.~~
~~(C) Number of License Tags:~~
~~1. Period One: 0 bull tags, 4 spike bull tags, and 5 antlerless tags.~~
~~2. Period Two: 0 bull tags, 3 spike bull tags, and 8 antlerless tags.~~
~~3. Period Three: 0 bull tags, 2 spike bull tags, and 8 antlerless tags.~~

~~4. Period Four: 2 bull tags, 0 spike bull tags, and 8 antlerless tags.~~
~~5. Period Five: 2 bull tags, 2 spike bull tags, and 8 antlerless tags~~
~~(D)~~ (B) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
~~(11)~~ (12) Fort Hunter Liggett Central Coast General Public General Methods Tule Elk Hunt:
(A) Area: ~~That portion of Monterey County lying within the exterior boundaries of Fort Hunter Liggett, except as restricted by the Commanding Officer.~~ In those portions of San Luis Obispo, Monterey, Kings, Fresno, San Benito, Santa Cruz and Santa Clara counties within a line beginning in Monterey County at the junction of Highway 198 and Highway 101; south along Highway 101 to the northern boundary of Camp Roberts California Army National Guard Base near the town of Bradley; northeast and then south along the northern and eastern boundaries of Camp Roberts to Highway 101 in San Luis Obispo County; south along Highway 101 to Highway 46; south and west along Highway 46 to Highway 1; south and east along Highway 1 to Nikki Beach Drive south of the town of Harmony; west and south along Harmony Ranch Road to the southern boundary of Section 19, Township 28S, Range 9E; west along the southern boundary of Section 19,Township 28S, Range 9E to the Pacific Coastline; north along the Pacific Coastline to the Monterey-Santa Cruz county line north of Zmudowski State Beach: northeast along the Monterey-Santa Cruz county line to Highway 1; northwest on Highway 1 to Highway 152 in Santa Cruz County; east and north along Highway 152 to Highway 156 in Santa Clara; southwest along Highway 156 to Highway 25 near the town of Hollister in San Benito County, south along Highway 25 to Panoche Road/County Highway J1 near the town Paicines, south and east along Panoche Road/County Highway J1 to Little Panoche Road/County Highway J1; north and east along Little Panoche Road/County Highway J1 to Interstate 5 in Fresno County; south along Interstate 5 to Highway 33: southwest along Highway 33 to the Highway 198 in Coalinga; west along Highway 198 to Parkfield Grade Road/Parkfield Coalinga Road near Parkfield Junction; south along Parkfield Grade Road/Parkfield Coalinga Road to the intersection with the Fresno-Monterey County Line; north along the Fresno-Monterey County Line to the intersection of Smith Mountain Lookout road; south and west along Smith Mountain Lookout road to the intersection with Slack Canyon Road; north and west along Slack Canyon road to Peach Tree Road; north along Peach Tree Road to the Junction of Highway 198; west along Highway 198 to the point of beginning. including portions lying within the exterior boundaries of Fort Hunter Liggett, except as restricted by the Commanding Officer.
(B) ~~Season:~~ Fort Hunter Liggett Special Conditions: See subsection 364(p).
~~1. Period One: The season shall open on the first Tuesday in November and continue for 9 consecutive days.~~
~~2. Period Two: The season shall open on the Tuesday preceding the fourth Thursday in November and continue for 9 consecutive days.~~
~~3. Period Three: The season shall open on the Saturday preceding December 25 and continue for 14 consecutive days.~~
~~(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.~~

~~(D) Number of License Tags:~~
~~1. Period One: 4 antlerless tags.~~
~~2. Period Two: 4 antlerless tags.~~
~~3. Period Three: 4 bull tags.~~
~~(E) Special Conditions:~~
~~1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.~~
~~2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.~~
~~3. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.~~
~~4. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.~~
~~(12)~~ (13) East Park Reservoir General Methods Tule Elk Hunt:
(A) Area: In those portions of Glenn and Colusa counties within a line beginning in Glenn County at the junction of Interstate Highway 5 and Highway 162 at Willows; west along Highway 162 (Highway 162 becomes Alder Springs Road) to the Glenn-Mendocino County line; south along the Glenn-Mendocino County line to the Glenn-Lake County line; east and then south along the Glenn-Lake County line to the Colusa-Lake County line; west, and then southeast along the Colusa-Lake County line to Goat Mountain Road; north and east along Goat Mountain Road to the Lodoga-Stonyford Road; east along the Lodoga-Stonyford Road to the Sites-Lodoga Road at Lodoga; east along the Sites-Lodoga Road to the Maxwell-Sites Road at Sites; east along the Maxwell-Sites Road to Interstate Highway 5 at Maxwell; north along Interstate Highway 5 to the point of beginning.
~~(B) Season: The season shall open the first Saturday in September and continue for 27 consecutive days.~~
~~(C) Number of License Tags: 2 bull tags and 2 antlerless tags.~~
~~(D)~~ (B) Special Conditions:
1. All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
2. Access to private land may be restricted or require payment of an access fee.
3. A Colusa County ordinance prohibits firearms on land administered by the USDI Bureau of Reclamation in the vicinity of East Park Reservoir. A variance has been requested to allow use of muzzleloaders (as defined in Section 353) on Bureau of Reclamation land within the hunt zone.
~~(13)~~ (14) San Luis Reservoir General Methods Tule Elk Hunt:
(A) Area: In those portions of Merced, Fresno, San Benito, and Santa Clara counties within a line beginning in Merced County at the junction of Highway 152 and Interstate 5 near the town of Santa Nella, west along Highway 152 to Highway 156 in Santa Clara County, southwest along Highway 156 to Highway 25 near the town of Hollister in San Benito County, south along Highway 25 to the town of Paicine, south and east along J1

to Little Panoche Road, North and east along Little Panoche Road to Interstate 5 in Fresno County, north along Interstate 5 to the point of beginning.
~~(B) Season: The season shall open on the first Saturday in October and continue for 23 consecutive days.~~
~~(C) Number of License Tags: 0 bull tags, 0 antlerless tags, and 5 either-sex tags.~~
~~(14)~~ (15) Bear Valley General Methods Tule Elk Hunt:
(A) Area: in those portions of Colusa, Lake, and Yolo counties within a line beginning in Colusa County at the junction of Interstate Highway 5 and Maxwell Sites Road at Maxwell; west along Maxwell Sites Road to the Sites Lodoga Road; west along the Sites Lodoga Road to Lodoga Stonyford Road; west along Lodoga Stonyford Road to Goat Mountain Road; west and south along Goat Mountain Road to the Colusa-Lake County line; south and west along the Colusa-Lake County line to Forest Route M5; south along Forest Route M5 to Bartlett Springs Road; east along Bartlett Springs Road to Highway 20; east on Highway 20 to the fork of Cache Creek; north on the north fork of Cache Creek to Indian Valley Reservoir to Walker Ridge-Indian Valley Reservoir Access Road; east on Walker Ridge-Indian Valley Reservoir Access Road to Walker Ridge Road; south on Walker Ridge Road to Highway 20; east on Highway 20 to Highway 16; south on Highway 16 to Rayhouse Road; south and west on Rayhouse Road to the Yolo-Napa County line; east and south along the Yolo-Napa County line to Road 8053; east on Road 8053 to County Road 78A; east on County Road 78A to Highway 16; east on Highway 16 to Route E4 at Capay; north and east on Route E4 to Interstate Highway 5; north on Interstate Highway 5 to the point of beginning.
~~(B) Season: The season shall open on the second Saturday in October and continue for 9 consecutive days.~~
~~(C) Number of License Tags: 3 bull tags and 2 antlerless tags.~~
~~(15)~~ (16) Lake Pillsbury General Methods Tule Elk Hunt:
(A) Area: in those portions of Lake County within a line beginning at the junction of the Glenn-Lake County line and the Mendocino County line; south and west along the Mendocino-Lake County line to Highway 20; southeast on Highway 20 to the intersection of Bartlett Springs Road; north and east along Bartlett Springs Road to the intersection of Forest Route M5; northwest on Forest Route M5 to the Colusa-Lake County Line; northwest and east on the Colusa-Lake County Line to the junction of the Glenn-Colusa County Line and the Lake-Glenn County Line; north and west on the Lake-Glenn County Line to the point of beginning.
~~(B) Season:~~
~~1. Antlerless Season. The antlerless season shall open on the Wednesday preceding the second Saturday in September and continue for 10 consecutive days.~~
~~2. Bull Season. The bull season shall open Monday following the fourth Saturday in September and continue for 10 consecutive days.~~
~~(C) Number of License Tags: 2 bull tags and 4 antlerless tags.~~
~~(16)~~ (17) Santa Clara General Methods Tule Elk Hunt:
(A) Area: Those portions of Merced, Santa Clara, and Stanislaus Counties within the following line: beginning at the intersection of the Interstate 5 and the San Joaquin/Stanislaus County line; southeast along Interstate 5 to the intersection of Highway 152; west along Highway 152 to the intersection of Highway 101 near the town

of Gilroy; north along Highway 101 to the intersection of Interstate 680 near San Jose; north along Interstate 680 to the intersection of the Alameda/Santa Clara County line; east along the Alameda/Santa Clara County line to the intersection of the San Joaquin, Stanislaus, Alameda, Santa Clara County lines; northeast along the San Joaquin/Stanislaus County line to the point of beginning.
~~(B) Season: The season shall open on the second Saturday in October and continue for 16 consecutive days.~~
~~(C) Number of License Tags: 0 bull tags.~~
~~(17)~~ (18) Alameda General Methods Tule Elk Hunt:
(A) Area: Those portions of Alameda and San Joaquin Counties within the following line: beginning at the intersection of the Interstate 5 and the San Joaquin/Stanislaus County line; southwest along the San Joaquin/Stanislaus County line to the intersection of the San Joaquin, Stanislaus, Alameda, Santa Clara County lines; west along the Alameda/Santa Clara County Line to the intersection of Interstate 680; north along Interstate 680 to the intersection of Interstate 580; east and south along Interstate 580 to the intersection of Interstate 5; south along Interstate 5 to the point of beginning.
~~(B) Season: The season shall open on the second Saturday in October and continue for 16 consecutive days.~~
~~(C) Number of License Tags: 0 bull tags.~~
(19) San Emigdio Mountain General Methods Tule Elk Hunt:
(A) Area: Those portions of Kern, San Luis Obispo, Santa Barbara and Ventura counties within the following line: beginning at the junction of Highway 166 (Maricopa Highway) and Interstate Highway 5 in Kern County; west along Highway 166 to where it joins Highway 33 (West Side Highway) near Maricopa; south and west along highways 166 and 33 to their point of divergence in San Luis Obispo County; south along Highway 33 to Lockwood Valley Road in Ventura County; east and north along Lockwood Valley Road to Lake of the Woods where Lockwood Valley Road becomes Frazier Mountain Park Road; west along Frazier Mountain Park Road to Interstate Highway 5; and north along Interstate Highway 5 to the point of beginning.
(20) Camp Roberts General Public General Methods Tule Elk Hunt
(A) Area: That portion of Monterey and San Luis Obispo counties lying within the exterior boundaries of Camp Roberts, except as restricted by the Commanding Officer.
(B) Camp Roberts Special Conditions: See Subsection 364(q).
(e) Department Administered General Methods Apprentice Elk Hunts
(1) Siskiyou General Methods Roosevelt Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(a)(1)(A).
~~(1)~~ (2) Marble Mountains North General Methods Roosevelt Elk Apprentice ~~Elk~~ Hunt:
(A) Area: The tag shall be valid in the area described in subsection ~~364(a)(6)(A)~~ 364(a)(4)(A).
~~(B) Season: The season shall open on the Wednesday preceding the second Saturday in September and continue for 12 consecutive days.~~
~~(C) Number of License Tags: 2 either-sex tags.~~
~~(D)~~ (B) Special Conditions: Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be

accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
(3) Marble Mountains South General Methods Roosevelt Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(a)(5)(A).
(B) Special Conditions: Only persons possessing valid junior Hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
~~(2)~~ (4) Northeastern California General Methods Rocky Mountain Elk Apprentice ~~Elk~~ Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(b)(1)(A).
~~(B) Season: The season shall open on the Wednesday preceding the third Saturday in September and continue for 12 consecutive days.~~
~~(C) Number of License Tags: Apprentice Season: 2 either-sex tags.~~
~~(D)~~ (B) Special Conditions: Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt License tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
~~(3)~~ (5) Cache Creek General Methods Tule Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(1)(A).
~~(B) Season: The season shall open on the second Saturday in October and continue for 16 consecutive days.~~
~~(C) Number of License Tags: Apprentice Season: 1 bull tag.~~
~~(D)~~ (B) Special Conditions:
1. All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting upon receipt of their elk license tags.
2. Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
~~(4)~~ (6) La Panza General Methods Tule Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(2)(A).
~~(B) Season: Period One shall open on the second Saturday in October and extend for 23 consecutive days.~~
~~(C) Number of License Tags: Period One: 1 antlerless tag and 0 bull tags.~~
~~(D)~~ (B) Special Conditions:
1. All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
2. Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunter tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
~~(5)~~ (7) Bishop General Methods Tule Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(3)(A).

~~(B) Season: Period Two shall open on the first Saturday in October and extend for 9 consecutive days.~~
~~(C) Number of License Tags: Period Two: 0 bull tags and 0 antlerless tags.~~
~~(D)~~ (B) Special Conditions: Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
~~(6)~~ (8) Grizzly Island General Methods Tule Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection ~~364(d)(10)(A)~~ 364(d)(11)(A).
~~(B) Season:~~
~~1. Period One Season for antlerless elk shall open on the Tuesday after the second Saturday in August and continue for 4 consecutive days, whereas the season for spike bulls shall open on the Thursday after the second Saturday in August and continue for 4 consecutive days.~~
~~2. Period Two Season for spike bulls shall open on the Thursday after the third Saturday in August and continue for 4 consecutive days.~~
~~(C) Number of License Tags:~~
~~1. Period One: 3 antlerless tags and 1 spike bull tag.~~
~~2. Period Two: 2 spike bull tags.~~
~~(D)~~ (B) Special Conditions:
1. All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
2. Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
~~(7)~~ (9) Fort Hunter Liggett Central Coast General Methods General Public Tule Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection ~~364(d)(11)(A)~~ 364(d)(12)(A).
~~(B) Season: The season shall open on the Saturday preceding December 25 and continue for 14 consecutive days.~~
~~(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.~~
~~(D) Number of License Tags: 1 bull tag and 1 antlerless tags.~~
~~(E)~~ (B) Special Conditions: See subsection 364(p).
~~1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.~~
~~2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.~~

~~3.~~(C) Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
~~4. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.~~
~~5. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.~~
(f) Department Administered Archery Only Elk Hunts:
(1) Northeastern California ~~Rocky Mountain~~ Archery Only Rocky Mountain Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(b)(1)(A).
~~(B) Season: The season shall open on the Wednesday preceding the first Saturday in September and continue for 12 consecutive days~~
~~(C) Number of License Tags: 10 either-sex tags.~~
~~(E)~~ (B) Special Conditions: Elk may be taken with Archery Equipment only as specified in Section 354.
(2) Owens Valley Multiple Zone ~~Tule Elk~~ Archery Only Tule Elk Hunt:
(A) Area: The tag shall be valid in areas described in subsections 364(d)(3)(A), (d)(4)(A), and (d)(5)(A)~~, (d)(8)(A), and (d)(9)(A)~~.
~~(B) Season: The season shall open on the second Saturday in August and extend for 9 consecutive days.~~
~~(C) Number of License Tags: 5 bull tags and 0 antlerless tags.~~
~~(D)~~ (B) Special Conditions: Elk may be taken with Archery Equipment only as specified in Section 354.
(3) Goodale Archery Only Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(5)(A).
(B) Special Conditions: Elk may be taken with Archery Equipment only as specified in Section 354.
~~(3)~~ (4) Lone Pine ~~Tule Elk~~ Archery Only Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection ~~364(d)(5)(A)~~ 364(d)(6)(A).
~~(B) Season: Period One Season shall open on the second Saturday in September and extend for 16 consecutive days.~~
~~(C) Number of License Tags: Period One: 0 bull tags and 0 antlerless tags.~~
~~(D)~~ (B) Special Conditions: Elk may be taken with Archery Equipment only as specified in Section 354.
~~(4)~~ (5) Tinemaha ~~Tule Elk~~ Archery Only Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection ~~364(d)(6)(A)~~ 364(d)(7)(A).
~~(B) Season: Period One Season shall open on the second Saturday in September and extend for 16 consecutive days.~~
~~(C) Number of License Tags: Period One: 1 bull tag and 0 antlerless tags.~~
~~(D)~~ (B) Special Conditions: Elk may be taken with Archery Equipment only as specified in Section 354.
~~(5)~~ (6) Whitney ~~Tule Elk~~ Archery Only Tule Elk Hunt:

(A) Area: The tag shall be valid in the area described in subsection ~~364(d)(9)(A)~~ 364(d)(10)(A).
~~(B) Season: Period One Season shall open on the second Saturday in September and extend for 16 consecutive days.~~
~~(C) Bag and Possession Limit: 1 elk per season.~~
~~(D) Number of License Tags: Period One: 0 bull tags and 0 antlerless tags.~~
~~(E)~~ (B) Special Conditions: Elk may be taken with Archery Equipment only as specified in Section 354.
~~(6)~~ (7) Fort Hunter Liggett Central Coast General Public ~~Tule Elk~~ Archery Only Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection ~~364(d)(11)(A)~~ 364(d)(12)(A).
(B) ~~Season:~~ Special Conditions: See subsection 364(p).
~~1. Either-sex season shall open on the last Wednesday in July and continue for 9 consecutive days.~~
~~2. Antlerless Season shall open on the last Wednesday in September and continue for 9 consecutive days.~~
~~(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.~~
~~(D) Number of License Tags: 2 either-sex tags and 4 antlerless tags.~~
~~(E) Special Conditions:~~
~~1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.~~
~~2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.~~
~~3.~~ (C) Elk may be taken with Archery Equipment only as specified in Section 354.
~~4. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.~~
~~5. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.~~
(g) Department Administered Muzzleloader Only Elk Hunts:
(1) Bishop ~~Tule Elk Hunt~~ Muzzleloader Only Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(3)(A).
~~(B) Season: Period One Season shall open on the second Saturday in September and extend for 16 consecutive days.~~
~~(C) Number of License Tags: Period One: 1 bull tag and 0 antlerless tags.~~
~~(D)~~ (B) Special Conditions: Elk may be taken with muzzleloader equipment only as specified in Section 353.
(2) Independence ~~Tule Elk~~ Muzzleloader Only Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(4)(A).
~~(B) Season: Period One Season shall open on the second Saturday in September and for extend 16 consecutive days.~~
~~(C) Number of License Tags: Period One: 1 bull tag and 0 antlerless tags.~~

~~(D)~~ (B) Special Conditions: Elk may be taken with muzzleloader equipment only as extend specified in Section 353.
(3) Goodale Muzzleloader Only Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(5)(A).
(B) Special Conditions: Elk may be taken with muzzleloader equipment only as specified in Section 353.
~~(3)~~ (4) Fort Hunter Liggett Central Coast General Public ~~Tule Elk~~ Muzzleloader Only Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection ~~364(d)(11)(A)~~ 364(d)(12)(A).
(B) ~~Season: The season shall open on the Wednesday preceding the fourth Thursday in November and continue for 9 consecutive days.~~ Special Conditions: See subsection 364(p).
~~(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.~~
~~(D) Number of License Tags: 0 bull tags.~~
~~(E) Special Conditions:~~
~~1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.~~
~~2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.~~
~~3.~~ (C) Elk may be taken with Muzzleloader Equipment only as specified in Section 353.
~~4. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.~~
~~5. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.~~
(h) Department Administered Muzzleloader/Archery Only Elk Hunts:
(1) Siskiyou Muzzleloader/Archery Only Roosevelt Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(a)(1)(A).
(B) Special Conditions: Elk may be taken with archery or muzzleloader equipment only as specified in Sections 353 and 354.
~~(1)~~ (2) Marble Mountains North ~~Roosevelt Elk~~ Muzzleloader/Archery Only Roosevelt Elk Hunt.
(A) Area: The tag shall be valid in the area described in subsection ~~364(a)(6)(A)~~ 364(a)(4)(A).
~~(B) Season: The Season shall open on the last Saturday in October and extend for 9 consecutive days.~~
~~(C) Number of License Tags: 5 either-sex tags.~~
~~(D)~~ (B) Special Conditions: Elk may be taken with archery or muzzleloader equipment only as specified in Sections 353 and 354.
(3) Marble Mountains South Muzzleloader/Archery Only Roosevelt Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(a)(5)(A).

(B) Special Conditions: Elk may be taken with archery or muzzleloader equipment only as specified in Sections 353 and 354.
(i) Fund Raising Elk ~~Tags~~ Hunts.
(1) Multi-zone Fund Raising ~~License Tag~~ Elk Hunt.
(A) Area: The tag shall be valid in the areas described in subsections 364(a)(1)(A), (a)(2)(A), (a)(3)(A), (a)(4)(A), (a)(5)(A), ~~(a)(6)(A),~~ (b)(1)(A), and (d)(2)(A).
~~(B) Season: The tag shall be valid during the following seasons.~~
~~1. Siskiyou and Marble Mountains Roosevelt Elk Season shall open on the Wednesday preceding the first Saturday in September and continue for 19 consecutive days.~~
~~2. Northwestern Roosevelt Elk Season shall open on last Wednesday in August and continue for 30 consecutive days.~~
~~3. Northeastern Rocky Mountain Elk Season shall open on the Wednesday preceding the last Saturday in August and continue for 33 consecutive days.~~
~~4. La Panza Tule Elk Season shall open on the first Saturday in October and extend for 65 consecutive days.~~
~~(C) Number of License Tags: 1 bull tag.~~
(2) Grizzly Island Fund Raising ~~License Tag~~ Tule Elk Hunt.
(A) Area: The tag shall be valid in the area described in subsection ~~364(d)(10)(A)~~ 364(d)(11)(A).
(B) ~~Season: The Season shall open on the first Saturday in August and continue for 30 consecutive days, with advance~~ Special Conditions: Advance reservations required by contacting the Grizzly Island Wildlife Area by telephone at (707) 425-3828.
~~(C) Number of License Tags: 1 bull tag.~~
(3) Owens Valley Fund Raising ~~License Tag~~ Tule Elk Hunt.
(A) Area: The tag shall be valid in areas described in subsections 364(d)(3)(A), (d)(4)(A), (d)(5)(A), (d)(6)(A), (d)(7)(A), (d)(8)(A), ~~and~~ (d)(9)(A), and (d)(10)(A).
~~(B) Season: The Season shall open on the last Saturday in July and extend for 30 consecutive days.~~
~~(C) Number of License Tags: 1 bull tag.~~
(j) Military Only Elk ~~Tags~~ Hunts. These hunts are sponsored and tag quotas are set by the Department. The tags are assigned and the hunts are administered by the Department of Defense:
(1) Fort Hunter Liggett Military Only General Methods Tule Elk Hunt:
(A) Area: ~~The tag shall be valid in the area described in subsection 364(d)(11)(A).~~ That portion of Monterey County lying within the exterior boundaries of Fort Hunter Liggett, except as restricted by the Commanding Officer.
(B) ~~Season:~~ Special Conditions: See subsection 364(p).
~~1. The Early Season shall open on the third Monday in August and continue for 5 consecutive days and reopen on the fourth Monday in August and continue for 5 consecutive days.~~
~~2. Period One: The season shall open on the first Tuesday in November and continue for 9 consecutive days.~~
~~3. Period Two: The season shall open on the Tuesday preceding the fourth Thursday in November and continue for 9 consecutive days.~~

~~4. Period Three: The season shall open on the Saturday preceding December 25 and continue for 14 consecutive days.~~
~~(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.~~
~~(D) Number of License Tags:~~
~~1. Early Season: 2 bull tags and 1 antlerless tag.~~
~~2. Period One: 4 antlerless tags.~~
~~3. Period Two: 4 antlerless tags.~~
~~4. Period Three: 4 bull tags.~~
~~(E) Special Conditions:~~
~~1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.~~
~~2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.~~
~~3. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.~~
~~4. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.~~
(2) Fort Hunter Liggett Military Only General Methods Tule Elk Apprentice ~~Tule Elk~~ Hunt:
(A) Area: ~~The tag shall be valid in the area described in subsection 364(d)(11)(A).~~ That portion of Monterey County lying within the exterior boundaries of Fort Hunter Liggett, except as restricted by the Commanding Officer.
(B) ~~Season: The season shall open on the Saturday preceding December 25 and continue for 14 consecutive days~~ Special Conditions: See subsection 364(p).
~~(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.~~
~~(D) Number of License Tags: 1 bull tag and 1 antlerless tags.~~
~~(E) Special Conditions:~~
~~1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.~~
~~2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.~~
~~3. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.~~
~~4. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.~~
~~5.~~ (C) Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
(3) Fort Hunter Liggett Military Only Archery Only Tule Elk Hunt:

(A) Area: ~~The tag shall be valid in the area described in subsection 364(d)(11)(A).~~ That portion of Monterey County lying within the exterior boundaries of Fort Hunter Liggett, except as restricted by the Commanding Officer.
(B) ~~Season:~~ Special Conditions: See subsection 364(p).
~~1. Either-sex season shall open on the last Wednesday in July and continue for 9 consecutive days.~~
~~2. Antlerless Season shall open on the last Wednesday in September and continue for 9 consecutive days.~~
~~(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.~~
~~(D) Number of License Tags: 2 either-sex tags and 4 antlerless tags.~~
~~(E) Special Conditions:~~
~~1.~~ (C) Elk may be taken with Archery Equipment only as specified in Section 354.
~~2. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting upon receipt of their elk license tags.~~
~~3. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.~~
~~4. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.~~
~~5. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.~~
(4) Fort Hunter Liggett Military Only Muzzleloader Only Tule Elk Hunt:
(A) Area: ~~The tag shall be valid in the area described in subsection 364(d)(11)(A).~~ That portion of Monterey County lying within the exterior boundaries of Fort Hunter Liggett, except as restricted by the Commanding Officer.
(B) ~~Season: The season shall open on the Wednesday preceding the fourth Thursday in November and continue for 9 consecutive days~~ Special Conditions: See subsection 364(p).
~~(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.~~
~~(D) Number of License Tags: 0 bull tags.~~
~~(E) Special Conditions:~~
~~1. Elk may be taken with Muzzleloader Equipment only as specified in Section 353.~~
~~2. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting upon receipt of their elk license tags.~~
~~3. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.~~
~~4. All successful tagholders The tag shall be valid in the area described in subsection 364(d)(11)(A) will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.~~

~~5. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.~~
(5) Camp Roberts Military Only General Methods Tule Elk Hunt.
(A) Area: That portion of Monterey and San Luis Obispo counties lying within the exterior boundaries of Camp Roberts, except as restricted by the Commanding Officer.
(B) Special Conditions: See subsection 364(q).
(k) Bag and Possession Limit: Each elk tag is valid only for one elk per season and only in the hunt area drawn. ~~Hunt areas are described in subsections 364(a), (b), (c), (d), (e), (f), (g), (h), and (j) and persons shall only be eligible for one elk tag per season.~~
(*l*) Definitions:
(1) Bull elk: Any elk having an antler or antlers at least four inches in length as measured from the top of the skull.
(2) Spike bull: A bull elk having no more than one point on each antler. An antler point is a projection of the antler at least one inch long and longer than the width of its base.
(3) Antlerless elk: Any elk, with the exception of spotted calves, with antlers less than four inches in length as measured from the top of the skull.
(4) Either-sex elk: For the purposes of these regulations, either-sex is defined as bull elk, ~~as described in subsection 364(*l*)(1),~~ spike elk, or antlerless elk ~~as, described in subsection 364(*l*)(3)~~.
(m) Method of Take: Only methods for taking elk as defined in Sections 353 and 354 may be used.
~~(n) General Method of take are those methods defined in Sections 353 and 354.~~
~~(o)~~ (n) Tagholder Responsibilities:
(1) No tagholder shall take or possess any elk or parts thereof governed by the regulations except herein provided.
(2) The department reserves the right to use any part of the tagholder's elk for biological analysis as long as the amount of edible meat is not appreciably decreased.
(3) Any person taking an elk which has a collar or other marking device attached to it shall provide the department with such marking device within 10 days of taking the elk.
~~(p)~~ (o) The use of dogs to take or attempt to take elk is prohibited.
(p) Fort Hunter Liggett Special Conditions:
(1) All tagholders hunting within the exterior boundaries of Fort Hunter Liggett will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting upon receipt of their elk license tags.
(2) Tagholders hunting within the exterior boundaries of Fort Hunter Liggett shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.
(3) All successful tagholders hunting within the exterior boundaries of Fort Hunter will be required to have their tags validated on Fort Hunter Liggett prior to leaving.
(4) Due to military operations and training, the specified season dates within the exterior boundaries of Fort Hunter Liggett are subject to further restriction, cancellation, or may be rescheduled, between August 1 and January 31, by the Commanding Officer.
(q) Camp Roberts Special Conditions:
(1) All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.

(2) Tagholders shall be required to purchase an annual hunting pass available from Camp Roberts.
(3) All successful tagholders will be required to have their tags validated on Camp Roberts prior to leaving.
(4) Due to military operations and training, the specified season dates within the exterior boundaries of Camp Roberts are subject to further restriction, cancellation, or may be rescheduled, between August 1 and January 31, by the Commanding Officer.

[*Proposed 2016 Elk Tag Allocations are shown in ranges*]

§	Hunt	1. Bull Tags	2. Antlerless Tags	3. Either-Sex Tags	4. Spike Tags
		5. Season			
(r) Department Administered General Methods Roosevelt Elk Hunts					
(1)(A)	Siskiyou Period 1	[0-40]	[0-40]		
		Shall open on the second Saturday in September and continue for 12 consecutive days.			
(B)	Period 2	[0-10]	[0-40]		
		Shall open on the last Saturday in September and continue for 12 consecutive days.			
(C)	Period 3	[0-5]	[0-20]		
		Shall open on the first Wednesday in November and continue for 16 consecutive days.			
(2)(A)	Del Norte Period 1	[0-15]	[0-25]	[0-10]	
		Shall open on September 1 and continue for 20 consecutive days.			
(B)	Period 2	[0-15]	[0-25]	[0-10]	
		Shall open on October 1 and continue for 20 consecutive days.			
(C)	Period 3	[0-15]	[0-25]	[0-10]	
		Shall open on November 1 and continue for 20 consecutive days.			

(D)	Period 4	[0-15]	[0-25]	[0-10]	
		Shall open on December 1 and continue for 20 consecutive days.			
(E)	Period 5	[0-15]	[0-25]	[0-10]	
		Shall open on January 1 and continue for 20 consecutive days.			
(3)(A)	Humboldt Period 1	[0-20]	[0-50]	[0-10]	
		Shall open on September 1 and continue for 20 consecutive days.			
(B)	Period 2	[0-20]	[0-50]	[0-10]	
		Shall open on October 1 and continue for 20 consecutive days.			
(C)	Period 3	[0-20]	[0-50]	[0-10]	
		Shall open on November 1 and continue for 20 consecutive days.			
(D)	Period 4	[0-20]	[0-50]	[0-10]	
		Shall open on December 1 and continue for 20 consecutive days.			
(E)	Period 5	[0-20]	[0-50]	[0-10]	
		Shall open on January 1 and continue for 20 consecutive days.			
(4)(A)	Marble Mountain North Period 1	[0-50]	[0-20]		
		Shall open on the second Saturday in September and continue for 12 consecutive days.			
(B)	Period 2	[0-10]	[0-40]		
		Shall open on the last Saturday in September and continue for 12 consecutive days.			
(C)	Period 3	[0-5]	[0-15]		
		Shall open on the first Wednesday in November and continue for 16 consecutive days.			

(5)(A)	Marble Mountain South Period 1	[0-50]	[0-20]		
		Shall open on the second Saturday in September and continue for 12 consecutive days.			
(B)	Period 2	[0-10]	[0-40]		
		Shall open on the last Saturday in September and continue for 12 consecutive days.			
(C)	Period 3	[0-5]	[0-15]		
		Shall open on the first Wednesday in November and continue for 16 consecutive days.			
(s) Department Administered General Methods Rocky Mountain Elk Hunts					
(1)(A)	Northeast California Bull	[0-30]			
		The bull season shall begin on September 19 and continue for 12 consecutive days			
(B)	Antlerless		[0-20]		
		The antlerless season shall begin on the second Saturday in November and continue for 12 consecutive days.			
(t) Department Administered General Methods Roosevelt/Tule Elk Hunts					
(1)(A)	Mendocino North Coast Bull	[0-10]			
		The bull season shall open on the Wednesday preceding the third Saturday in August and continue for 10 consecutive days.			
(B)	Antlerless		[0-40]		
		The antlerless season shall open the first Saturday in November and continue for 10 consecutive days.			
(2)(A)	Mendocino Middle Fork Bull	[0-10]			
		The bull season shall open on the Wednesday preceding the third Saturday in August and continue for 10 consecutive days.			
(A)	Antlerless		[0-40]		
		The antlerless season shall open the first Saturday in November and continue for 10 consecutive days.			

(3)(A)	Mendocino Upper Russian River Bull	[0-10]			
		The bull season shall open on the Wednesday preceding the third Saturday in August and continue for 10 consecutive days			
(B)	Antlerless		[0-40]		
		The antlerless season shall open the first Saturday in November and continue for 10 consecutive days.			
(4)(A)	Mendocino Little Lake Bull	[0-5]			
		The bull season shall open on the Wednesday preceding the third Saturday in August and continue for 10 consecutive days			
(A)	Antlerless		[0-10]		
		The antlerless season shall open the first Saturday in November and continue for 10 consecutive days.			
(5)(A)	Mendocino South Coast Bull	[0-5]			
		The bull season shall open on the Wednesday preceding the third Saturday in August and continue for 10 consecutive days			
(B)	Antlerless		[0-10]		
		The antlerless season shall open the first Saturday in November and continue for 10 consecutive days.			
(u) Department Administered General Methods Tule Elk Hunts					
(1)(A)	Cache Creek Bull	[0-10]			
		The Bull season shall open on the second Saturday in October and continue for 16 consecutive days.			
(B)	Antlerless		[0-10]		
		The Antlerless season shall open on the third Saturday in October and continue for 16 consecutive days.			
(2)(A)	La Panza Period 1	[0-20]	[0-30]		
		Shall open on the second Saturday in October and extend for 23 consecutive days			

(B)	Period 2	[0-20]	[0-30]		
		Shall open on the second Saturday in November and extend for 23 consecutive days.			
(3)(A)	Bishop Period 3	[0-10]	[0-30]		
		Shall open on the third Saturday in October and extend for 9 consecutive days.			
(B)	Period 4	[0-10]	[0-30]		
		Shall open on the first Saturday in November and extend for 9 consecutive days.			
(C)	Period 5	[0-10]	[0-30]		
		Shall open on the first Saturday in December and continue for 9 consecutive days.			
(4)(A)	Independence Period 2	[0-10]	[0-30]		
		Shall open on the first Saturday in October and extend for 9 consecutive days.			
(B)	Period 3	[0-10]	[0-30]		
		Shall open on the third Saturday in October and extend for 9 consecutive days.			
(C)	Period 4	[0-10]	[0-30]		
		Shall open on the first Saturday in November and extend for 9 consecutive days.			
(D)	Period 5	[0-10]	[0-30]		
		Shall open on the first Saturday in December and continue for 9 consecutive days.			
(5)(A)	Goodale Period 1	[0-10]	[0-10]		
		Shall open on the second Saturday in September and extend for 16 consecutive days.			
(B)	Period 2	[0-10]	[0-10]		
		Shall open on the first Saturday in October and extend for 9 consecutive days.			

(C)	Period 3	[0-10]	[0-10]		
		Shall open on the third Saturday in October and extend for 9 consecutive days.			
(D)	Period 4	[0-10]	[0-10]		
		Shall open on the first Saturday in November and extend for 9 consecutive days.			
(E)	Period 5	[0-10]	[0-10]		
		Shall open on the first Saturday in December and continue for 9 consecutive days.			
(6)(A)	Lone Pine Period 2	[0-10]	[0-30]		
		Shall open on the first Saturday in October and extend for 9 consecutive days.			
(B)	Period 3	[0-10]	[0-30]		
		Shall open on the third Saturday in October and extend for 9 consecutive days.			
(C)	Period 4	[0-10]	[0-30]		
		Shall open on the first Saturday in November and extend for 9 consecutive days.			
(D)	Period 5	[0-10]	[0-30]		
		Shall open on the first Saturday in December and continue for 9 consecutive days.			
(7)(A)	Tinemaha Period 2	[0-10]	[0-30]		
		Shall open on the first Saturday in October and extend for 9 consecutive days.			
(B)	Period 3	[0-10]	[0-30]		
		Shall open on the third Saturday in October and extend for 9 consecutive days.			
(C)	Period 4	[0-10]	[0-30]		
		Shall open on the first Saturday in November and extend for 9 consecutive days.			

(D)	Period 5	[0-10]	[0-30]		
		Shall open on the first Saturday in December and continue for 9 consecutive days.			
(8)(A)	West Tinemaha Period 1	[0-10]	[0-30]		
		Shall open on the second Saturday in September and extend for 16 consecutive days.			
(B)	Period 2	[0-10]	[0-30]		
		Shall open on the first Saturday in October and extend for 9 consecutive days.			
(C)	Period 3	[0-10]	[0-30]		
		Shall open on the third Saturday in October and extend for 9 consecutive days.			
(D)	Period 4	[0-10]	[0-30]		
		Shall open on the first Saturday in November and extend for 9 consecutive days.			
(E)	Period 5	[0-10]	[0-30]		
		Shall open on the first Saturday in December and continue for 9 consecutive days.			
(9)(A)	Tinemaha Mountain Period 1	[0-8]			
		Shall open on the second Saturday in September and extend for 16 consecutive days.			
(B)	Period 2	[0-8]			
		Shall open on the first Saturday in October and extend for 9 consecutive days.			
(C)	Period 3	[0-8]			
		Shall open on the third Saturday in October and extend for 9 consecutive days			
(D)	Period 4	[0-8]			
		Shall open on the first Saturday in November and extend for 9 consecutive days.			

(E)	Period 5	[0-8]			
		Shall open on the first Saturday in December and continue for 9 consecutive days.			
(10)(A)	Whitney Period 2	[0-4]	[0-10]		
		Shall open on the first Saturday in October and extend for 9 consecutive days.			
(B)	Period 3	[0-4]	[0-10]		
		Shall open on the third Saturday in October and extend for 9 consecutive days			
(C)	Period 4	[0-4]	[0-10]		
		Shall open on the first Saturday in November and extend for 9 consecutive days.			
(D)	Period 5	[0-4]	[0-10]		
		Shall open on the first Saturday in December and continue for 9 consecutive days.			
(11)(A)	Grizzly Island Period 1	[0-3]	[0-12]		[0-10]
		Shall open on the second Tuesday after the first Saturday in August and continue for 4 consecutive days.			
(B)	Period 2	[0-3]	[0-12]		[0-10]
		Shall open on the first Thursday following the opening of period one and continue for 4 consecutive days.			
(C)	Period 3	[0-3]	[0-12]		[0-10]
		Shall open on the first Tuesday following the opening of period two and continue for 4 consecutive days			
(D)	Period 4	[0-3]	[0-12]		[0-10]
		Shall open on the first Thursday following the opening of period three and continue for 4 consecutive days.			
(E)	Period 5	[0-3]	[0-12]		[0-10]
		Shall open on the first Tuesday following the opening of period four and continue for 4 consecutive days			

(F)	Period 6	[0-3]	[0-12]		[0-10]
		Shall open on the first Thursday following the opening of period five and continue for 4 consecutive days.			
(G)	Period 7	[0-3]	[0-12]		[0-10]
		Shall open on the first Tuesday following the opening of period six and continue for 4 consecutive days			
(H)	Period 8	[0-3]	[0-12]		[0-10]
		Shall open on the first Thursday following the opening of period seven and continue for 4 consecutive days.			
(I)	Period 9	[0-3]	[0-12]		[0-10]
		Shall open on the first Tuesday following the opening of period eight and continue for 4 consecutive days.			
(J)	Period 10	[0-3]	[0-12]		[0-10]
		Shall open on the first Thursday following the opening of period nine and continue for 4 consecutive days.			
(K)	Period 11	[0-3]	[0-12]		[0-10]
		Shall open on the first Tuesday following the opening of period ten and continue for 4 consecutive days.			
(L)	Period 12	[0-3]	[0-12]		[0-10]
		Shall open on the first Thursday following the opening of period eleven and continue for 4 consecutive days.			
(M)	Period 13	[0-3]	[0-12]		[0-10]
		Shall open on the first Tuesday following the opening of period twelve and continue for 4 consecutive days.			
(12)(A)	Fort Hunter Liggett Central Coast General Public Period 1	[0-14]	[0-16]		
		Shall open on the first Thursday in November and continue for 9 consecutive days.			
(B)	Period 2	[0-14]	[0-16]		
		Shall open November 22 and continue for 9 consecutive days.			

(C)	Period 3	[0-14]	[0-14]		
		Shall open on the third Saturday in December and continue for 16 consecutive days.			
(13)(A)	East Park Reservoir	[0-6]	[0-20]		
		Shall open the first Saturday in September and continue for 27 consecutive days.			
(14)(A)	San Luis Reservoir Period 1	[0-10]	[0-20]	[0-10]	
		Shall open on the first Saturday in October and continue for 23 consecutive days.			
(B)	Period 2	[0-10]	[0-20]	[0-10]	
		Shall open on the second Saturday in November and continue for 12 consecutive days.			
(C)	Period 3	[0-10]	[0-20]	[0-10]	
		Shall open on the third Saturday in December and continue for 12 consecutive days.			
(15)(A)	Bear Valley	[0-10]	[0-10]		
		Shall open on the second Saturday in October and continue for 9 consecutive days.			
(16)(A)	Lake Pillsbury Period 1	[0-10]	[0-10]		
		Shall open on the Monday following the fourth Saturday in September and continue for 10 consecutive days.			
(B)	Period 2	[0-10]	[0-10]		
		Shall open on the second Wednesday in October and continue for 10 consecutive days.			
(C)	Period 3	[0-10]	[0-10]		
		Shall open on the fourth Wednesday in October and continue for 10 consecutive days.			
(17)(A)	Santa Clara	[0-15]	[0-20]		
		Shall open on the second Saturday in October and continue for 16 consecutive days.			

(18)(A)	Alameda	[0-4]	[0-10]		
		Shall open on the second Saturday in October and continue for 16 consecutive days.			
(19)(A)	San Emigdio Mountain	[0-15]	[0-40]		
		Shall open on the second Saturday in November and continue for 14 consecutive days.			
(20)(A)	Camp Roberts Public Period 1	[0-10]	[0-20]		
		Shall open on the third Saturday in September and continue for 16 consecutive days.			
(B)	Period 2	[0-10]	[0-20]		
		Shall open on the second Saturday in November and continue for 16 consecutive days			
(C)	Period 3	[0-10]	[0-20]		
		Shall open 16 days prior to January 2 and continue for 16 consecutive days.			
(v) Department Administered Apprentice Hunts					
(1)(A)	Siskiyou General Methods Roosevelt Elk Apprentice			[0-2]	
		Shall open on the second Saturday in September and continue for 12 consecutive days.			
(2)(A)	Marble Mountain North General Methods Roosevelt Elk Apprentice			[0-4]	
		Shall open on the second Saturday in September and continue for 12 consecutive days.			
(3)(A)	Marble Mountain South General Methods Roosevelt Elk Apprentice			[0-4]	
		Shall open on the second Saturday in September and continue for 12 consecutive days.			
(4)(A)	Northeast California General Methods Rocky Mountain Elk Apprentice			[0-4]	
		Shall open on the Wednesday preceding the third Saturday in September and continue for 12 consecutive days			

(5)(A)	Cache Creek General Methods Tule Elk Apprentice	[0-2]	[0-2]		
		Shall open on the second Saturday in October and continue for 16 consecutive days.			
(6)(A)	La Panza General Methods Tule Elk Apprentice	[0-2]	[0-2]		
		Shall open on the second Saturday in October and extend for 23 consecutive days.			
(7)(A)	Bishop General Methods Tule Elk Apprentice Period 2	[0-10]	[0-30]		
		Shall open on the first Saturday in October and extend for 9 consecutive days.			
(8)(A)	Grizzly Island General Methods Tule Elk Apprentice Period 1		[0-4]		[0-4]
		Shall open on the second Tuesday after the first Saturday in August and continue for 4 consecutive days			
(B)	Period 2		[0-4]		[0-4]
		Shall open on the first Thursday following the opening of period one and continue for 4 consecutive days.			
(C)	Period 3		[0-4]		[0-4]
		Shall open on the first Tuesday following the opening of period two and continue for 4 consecutive days.			
(D)	Period 4		[0-4]		[0-4]
		Shall open on the first Thursday following the opening of period three and continue for 4 consecutive days.			
(9)(A)	Fort Hunter Liggett Central Coast General Public General Methods Apprentice	[0-2]	[0-8]		
		Shall open on the third Saturday in December and continue for 16 consecutive days.			
(w) Department Administered Archery Only Hunts					
(1)(A)	Northeast California Archery Only	[0-10]	[0-10]	[0-20]	
		Shall open on the Wednesday preceding the first Saturday in September and continue for 12 consecutive days			

(2)(A)	Owens Valley Multiple Zone Archery Only	[0-10]	[0-10]		
		Shall open on the second Saturday in August and extend for 9 consecutive days.			
(3)(A)	Goodale Archery Only Period 1	[0-10]	[0-10]		
		Shall open on the second Saturday in September and extend for 16 consecutive days.			
(4)(A)	Lone Pine Archery Only Period 1	[0-10]	[0-30]		
		Shall open on the second Saturday in September and extend for 16 consecutive days.			
(5)(A)	Tinemaha Archery Only Period 1	[0-10]	[0-30]		
		Shall open on the second Saturday in September and extend for 16 consecutive days.			
(6)(A)	Whitney Archery Only Period 1	[0-10]	[0-30]		
		Shall open on the second Saturday in September and extend for 16 consecutive days.			
(7)(A)	Fort Hunter Liggett Central Coast General Public Archery Only Either Sex			[0-10]	
		Shall open on the last Wednesday in July and continue for 9 consecutive days			
(B)	Fort Hunter Liggett Central Coast General Public Archery Only Antlerless		[0-10]		
		Shall open on the last Wednesday in September and continue for 9 consecutive days			
(x) Department Administered Muzzleloader Only Tule Elk Hunts					
(1)(A)	Bishop Muzzleloader Only Period 1	[0-10]	[0-30]		
		Shall open on the second Saturday in September and extend for 16 consecutive days.			
(2)(A)	Independence Muzzleloader Only Period 1	[0-10]	[0-10]		
		Shall open on the second Saturday in September and extend for 16 consecutive days.			
(3)(A)	Goodale Muzzleloader Only Period 1	[0-10]	[0-10]		
		Shall open on the second Saturday in September and extend for 16 consecutive days.			

(4)(A)	Fort Hunter Liggett Central Coast General Public Muzzleloader Only	[0-6]	[0-10]		
		Shall open on the second Saturday in October and continue for 12 consecutive days.			
(*y*) Department Administered Muzzleloader/Archery Only Hunts					
(1)(A)	Siskiyou Muzzleloader/Archery Roosevelt Elk			[0-20]	
		Shall open on the last Wednesday in August and continue for 9 consecutive days.			
(2)(A)	Marble Mountain North Muzzleloader/Archery Roosevelt Elk			[0-20]	
		Shall open on the last Wednesday in August and continue for 9 consecutive days.			
(3)(B)	Marble Mountain South Muzzleloader/Archery Roosevelt Elk			[0-20]	
		Shall open on the last Wednesday in August and continue for 9 consecutive days.			
(z) Fund Raising Elk Tags					
(1)(A)	Multi-zone Fund Raising Tags	1			
		Shall open on the second Saturday in August and continue for 90 consecutive days.			
(2)(A)	Grizzly Island Fund Raising Tags	1			
		Shall open on the first Saturday in August and continue for 30 consecutive days.			
(3)(A)	Owens Valley Fund Raising Tags	1			
		Shall open on the last Saturday in July and extend for 30 consecutive days.			
(aa) Military Only Tule Elk Hunts					
(1)(A)	Fort Hunter Liggett Military Only General Methods Early Season	[0-2]	[0-2]		
		The early season shall open on the second Monday in August and continue for 5 consecutive days and reopen on the fourth Monday in August and continue for 5 consecutive days.			
(B)	Period 1		[0-16]		
		Shall open on the first Thursday in November and continue for 9 consecutive days.			

(C)	Period 2		[0-14]		
		Shall open November 22 and continue for 9 consecutive days.			
(D)	Period 3	[0-14]			
		Shall open on the third Saturday in December and continue for 16 consecutive days			
(2)(A)	Fort Hunter Liggett Military Only General Methods Apprentice	[0-2]	[0-8]		
		Shall open on the third Saturday in December and continue for 16 consecutive days.			
(3)(A)	Fort Hunter Liggett Military Only Archery Only Either sex			[0-6]	
		Shall open on the last Wednesday in July and continue for 9 consecutive days			
(B)	Antlerless		[0-10]		
		Shall open on the last Wednesday in September and continue for 9 consecutive days.			
(4)(B)	Fort Hunter Liggett Military Only Muzzleloader Only	[0-6]			
		Shall open on the second Saturday in October and continue for 12 consecutive days.			
(5)(A)	Camp Roberts Military Only General Methods Period 1	[0-10]	[0-20]		
		Shall open on the third Saturday in September and continue for 16 consecutive days.			
(B)	Period 2	[0-10]	[0-20]		
		Shall open on the second Saturday in November and continue for 16 consecutive days.			
(C)	Period 3	[0-10]	[0-20]		
		Shall open 16 days prior to January 2 and continue for 16 consecutive days.			

Note: Authority cited: Sections 200, 202, 203, 332 and 1050, Fish and Game Code. Reference: Sections ~~203, 203.1,~~ 332~~, 713~~ and 1050, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Amend Section 364.1
Title 14, California Code of Regulations (CCR)
Re: SHARE Elk Hunts

I. Date of Initial Statement of Reasons: October 12, 2015

II. Dates and Locations of Scheduled Hearings:

(a)	Notice Hearing:	Date:	December 10, 2015
		Location:	San Diego, CA
(b)	Discussion Hearing:	Date:	February 11, 2016
		Location:	Sacramento, CA
(c)	Adoption Hearing:	Date:	April 14, 2016
		Location:	Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

1. <u>It is necessary for the Department of Fish and Wildlife (Department) to improve the hunting regulations and make them more user-friendly.</u>

Section 364.1, SHARE Elk Hunts, is proposed to be amended in conjunction with the amendments to Section 364, Elk. This is necessary because of the addition of new hunt zones, zone splitting, zone boundary modifications, and tag quota modifications in the amended 364 regulations. The SHARE private property elk hunts correspond with elk hunts identified in 364. These regulations authorize SHARE elk hunts with separate seasons and tag quotas. Tag issuance will be through the SHARE program utilizing the department's existing tag distribution procedures.

Current subsection 364.1(c) contains a Table setting forth the hunt tag quotas. CDFW proposes to move the area descriptions (in the same order and number as provided in Section 364) to the table. For example, part of the current regulation in subsection 364(a) reads as follows:

"§ 364.1. SHARE Elk Hunts.
(a) Department Administered Shared Habitat Alliance for Recreational Enhancement (SHARE) Elk Hunts:

(1) Siskiyou Roosevelt Elk SHARE Hunt:
(A) Area: Within the boundaries identified in Section 364(a)(1)(A). Individual property boundaries will be identified in the SHARE application package."

The Table will be formatted in the same order as the hunts described in Section 364 and the Areas will be placed in the amended Table as shown in the example below:

§ 364.1. SHARE: Department Administered Shared Habitat Alliance for Recreational Enhancement Elk Hunts

§	Hunt	(A) Tag Quota	1. Bull Tags	2. Antlerless Tags	3. Either-Sex Tags	4. Spike Tags
			(B) Area			
(i) Department Administered SHARE Roosevelt Elk Hunts						
(1)	Siskiyou		10	10		
			(B) Area: The tag shall be valid in the area described in subsection 364(a)(1)(A).			

The complete Table and text is found in the attached amended Regulatory Text of Section 364.1.

2. Number of Tags.

In order to achieve appropriate harvest levels and maintain hunting quality it is necessary to annually adjust quotas (total number of tags) in response to dynamic environmental and biological conditions. Department regulations specify elk license tag quotas for each hunt in accordance with management goals and objectives. The proposed amendments will modify Section 364.1, adding a new subsection (a) to include a Table which specifies the number of elk tags in each hunt area for the 2016 season. However, the amendments to Section 364.1 will begin with a range of tags (expressed as [0 - 40], etc.) since the final recommendations for quotas cannot be determined until winter survey data and harvest results are analyzed.

The final number of tags will be recommended to the Commission at the adoption hearing in April 2016, based upon the completion of winter elk surveys and resulting data analysis.

(b) Authority and Reference:

Authority: Fish and Game Code sections 200, 202, 203, 332 and 1050.
Reference: Fish and Game Code sections 203, 203.1, 332, 713, and 1050.

(c) Specific Technology or Equipment Required by Regulatory Change: None.

(d) Identification of Reports or Documents Supporting Regulation Change:

2016 Draft Environmental Document Regarding Elk Hunting

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

A public discussion was held at the Fish and Game Commission's Wildlife Resources Committee meeting held on September 9, 2015 in Fresno, California.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified. Elk tag quotas must be adjusted periodically in response to a variety of environmental and biological conditions including forage availability, population structure, and overwinter survival rates. Elk populations have increased and landowner conflicts have also escalated in several areas. Adjusting tag quotas provides for appropriate harvest levels within the zones.

Failure to adjust SHARE hunt areas in Section 364.1 to correspond with elk hunts in Section 364 would create inconsistency in regulation regarding both zone boundaries and tag ranges.

(b) No Change Alternative:

The no change alternative was considered and rejected because Section 364.1 must correspond with the elk hunts described in amended Section 364; not doing so would create confusion in both zone boundaries and tag ranges.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed. The number of tags that will be issued from the newly proposed range will result in a harvest that is at or below the harvest analyzed in the 2016 Draft Environmental Document Regarding Elk hunting.

VI. Impact of Regulatory Action.

This proposed action adjusts tag quotas. Given the number of tags available, and the area over which they are distributed, this proposal is economically neutral to business.

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businessmen to Compete with Businesses in Other States.

The proposed action will not have a significant statewide economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. Considering the small number of tags issued over the entire state, this proposal is economically neutral to business.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The proposed action will not affect jobs or businesses in California and does not provide benefits to worker safety.

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources. The Commission anticipates benefits to the State's environment in the sustainable management of natural resources.

(c) Cost Impacts on Representative Private Persons/Business.

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with this proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State. None.

(e) Other Nondiscretionary Costs/Savings to Local Agencies. None.

(f) Programs Mandated on Local Agencies or School Districts. None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4. None.

(h) Effect on Housing Costs. None.

VII. Economic Impact Assessment.

The proposed action will have no statewide economic or fiscal impact because the proposed action will not constitute a significant change from the last elk season. The number of tags to be set in regulation for 2016 is intended to achieve or maintain the levels set forth in the approved management plans to sustainably

manage elk populations and maintain hunting opportunities in subsequent seasons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs because no significant changes in hunting activity levels are anticipated.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation will not impact the creation of new businesses or the elimination of businesses because no significant changes in hunting activity levels are anticipated.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State

The regulation will not affect the expansion of businesses currently doing business within the State because no significant changes in hunting activity levels are anticipated.

(d) Benefits of the regulation to the health and welfare of California residents:

The proposed regulation will not have a direct benefit on the health and welfare of California residents.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety.

(f) Benefits of the regulation to the State's environment

It is the policy of the State to encourage the conservation, maintenance, and utilization of the living resources. The proposed action will further this core objective.

INFORMATIVE DIGEST
(Policy Statement Overview)

Current regulations in Section 364.1, SHARE Elk Hunts, T14, CCR, specify elk tag quotas for each hunt area. In order to achieve elk herd management goals and objectives and maintain hunting quality, it is periodically necessary to adjust quotas in response to dynamic environmental and biological conditions. In conjunction with proposed amendments to Section 364, Elk, which will delete, amend and add hunt areas, it is necessary to similarly amend Section 364.1 for consistency.

Preliminary tag quota ranges are indicated pending final 2016 tag allocations in accordance with elk management goals and objectives. Survey data collected between October 2015, and March 2016, will be the basis for the final tag numbers recommended to the Commission at the April 2016 adoption hearing. The quota ranges for 2016 elk tags are indicated in the proposed Regulatory Text.

Other minor editorial changes and renumbering have also been made.

The complete Table and text is found in the attached proposed Regulatory Text of Section 364.1.

Benefits of the regulations

The proposed regulations will contribute to the sustainable management of elk populations in California. Existing elk herd management goals specify objective levels for the proportion of bulls in the herds. These ratios are maintained and managed in part by annually modifying the number of tags. The final values for the license tag numbers will be based upon findings from annual harvest and herd composition counts where appropriate.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate elk hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to elk tag allocations are consistent with Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations.

REGULATORY TEXT

Section 364.1 is amended to read:

§ 364.1. SHARE ~~Elk Hunts.~~
~~(a)~~ : Department Administered Shared Habitat Alliance for Recreational Enhancement (SHARE) Elk Hunts
~~(1) Siskiyou Roosevelt Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(a)(1)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(2) Big Lagoon Roosevelt Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(a)(2)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(3) Northwestern California Roosevelt Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(a)(3)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(4) Klamath Roosevelt Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(a)(4)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(5) Del Norte Roosevelt Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(a)(5)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(6) Marble Mountains Roosevelt Elk SHARE Hunt~~
~~(A) Area: Within the boundaries identified in Section 364(a)(6)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(7) Northeastern California Rocky Mountain Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(b)(1)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(8) Mendocino Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(c)(1)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(9) Cache Creek Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(1)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(10) La Panza Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(2)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(11) Bishop Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(3)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(12) Independence Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(4)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(13) Lone Pine Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(5)(A). Individual property boundaries will be identified in the SHARE application package.~~

~~(14) Tinemaha Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(6)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(15) West Tinemaha Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(7)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(16) Tinemaha Mountain Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(8)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(17) Whitney Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(9)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(18) Grizzly Island Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(10)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(19) Fort Hunter Liggett General Public Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(11)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(20) East Park Reservoir Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(12)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(21) San Luis Reservoir Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(13)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(22) Bear Valley Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(14)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(23) Lake Pillsbury Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(15)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(24) Santa Clara Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(16)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(25) Alameda Tule Elk SHARE Hunt:~~
~~(A) Area: Within the boundaries identified in Section 364(d)(17)(A). Individual property boundaries will be identified in the SHARE application package.~~
~~(b)~~ (a) Season: The overall season shall open on the August 15 through January 31. Individual SHARE properties will be assigned seasons corresponding with management goals.
~~(c) Number of SHARE Elk License Tags~~

	2015 Final SHARE Elk Tag Allocation				
	Hunt Name	Bull	Antlerless	Either-sex	Spike
(1)	Siskiyou	10	10	-	-
(2)	Big Lagoon	0	0	-	-
(3)	Northwestern California	0	0	0	-
(4)	Klamath	0	0	-	-
(5)	Del Norte	0	0	-	-
(6)	Marble Mountains	5	10	-	-
(7)	Northeastern California	0	0	-	-
(8)	Mendocino	2	2	-	-
(9)	Cache Creek	1	1	-	-
(10)	La Panza	12	11	-	-
(11)	Bishop	0	0	-	-
(12)	Independence	0	0	-	-
(13)	Lone Pine	0	0	-	-
(14)	Tinemaha	0	0	-	-
(15)	West Tinemaha	0	0	-	-
(16)	Tinemaha Mountain	0	-	-	-
(17)	Whitney	0	0	-	-
(18)	Grizzly Island	0	0	-	0
(19)	Fort Hunter Liggett	0	0	0	-
(20)	East Park Reservoir	2	4	-	-
(21)	San Luis Reservoir	0	0	5	-
(22)	Bear Valley	1	0	-	-
(23)	Lake Pillsbury	0	0	-	-
(24)	Santa Clara	0	-	-	-
(25)	Alameda	0	-	-	-

(d) (b) Bag and Possession Limit: Each elk tag is valid only for one elk per season and only in the SHARE hunt area drawn, and persons shall only be eligible for one elk tag per season through 364 or 364.1.

(e) Definitions:

(1) Bull elk: Any elk having an antler or antlers at least four inches in length as measured from the top of the skull.

(2) Spike bull: A bull elk having no more than one point on each antler. An antler point is a projection of the antler at least one inch long and longer than the width of its base.

(3) Antlerless elk: Any elk, with the exception of spotted calves, with antlers less than four inches in length as measured from the top of the skull.

(4) Either-sex elk: For the purposes of these regulations, either-sex is defined as bull elk or antlerless elk.

(c) Individual property boundaries will be identified in the SHARE application package.
~~(f)~~ (d) Method of Take: Only methods for taking elk as defined in Sections 353 and 354 may be used.
~~(g)~~ (e) Tagholder Responsibilities: See subsection 364(z).
~~(1) No tagholder shall take or possess any elk or parts thereof governed by the regulations except as provided herein.~~
~~(3) Any person taking an elk that has a collar or other marking device attached to it shall~~
~~(2) The department reserves the right to use any part of the tagholder's elk for biological analysis as long as the amount of edible meat is not appreciably decreased.~~
~~provide the department with such marking device within 10 days of taking the elk.~~
~~(h)~~ (f) The use of dogs to take or attempt to take elk is prohibited.
~~(i)~~ (g) Applicants shall apply for a SHARE Access Permit, and pay a nonrefundable application fee as specified in Section 602, through the department's Automated License Data System terminals at any department license agent, department license sales office, or online.
~~(j)~~ (h) Upon receipt of winner notification, successful applicants shall submit the appropriate tag fee as specified in Section 702 through any department license sales office or online through the department's Automated License Data System.

§	(A) Hunts	1. Bull Tags	2. Antlerless Tags	3. Either-Sex Tags	4. Spike Tags
		(B) Area			
(i) Department Administered SHARE Roosevelt Elk Hunts					
(1)	Siskiyou	[0-55]	[0-100]		
		(B) Area: The tag shall be valid in the area described in subsection 364(a)(1)(A).			
(2)	Del Norte	[0-25]	[0-100]	[0-50]	
		(A) Area: The tag shall be valid in the area described in subsection 364(a)(2)(A).			
(3)	Humboldt	[0-25]	[0-100]	[0-50]	
		(B) Area: The tag shall be valid in the area described in subsection 364(a)(3)(A).			
(4)	Marble Mountain North	[0-20]	[0-25]		
		(B) Area: The tag shall be valid in the area described in subsection 364(a)(4)(A).			
(5)	Marble Mountain South	[0-20]	[0-25]		
		(B) Area: The tag shall be valid in the area described in subsection 364(a)(5)(A).			
(*j*) Department Administered General Methods SHARE Rocky Mountain Elk Hunts					
(1)	Northeast California	[0-20]	[0-20]		
		(B) Area: The tag shall be valid in the area described in subsection 364(b)(1)(A).			
(k) Department Administered SHARE Roosevelt/Tule Elk Hunts					
(1)	Mendocino North Coast	[0-10]	[0-40]		
		(B) Area: The tag shall be valid in the area described in subsection 364(c)(1)(A).			
(2)	Mendocino Middle Fork	[0-10]	[0-40]		
		(B) Area: The tag shall be valid in the area described in subsection 364(c)(2)(A).			
(3)	Mendocino Upper Russian River	[0-10]	[0-40]		
		(B) Area: The tag shall be valid in the area described in subsection 364(c)(3)(A).			

(4)	Mendocino Little Lake	[0-1]	[0-5]		
		(B) Area: The tag shall be valid in the area described in subsection 364(c)(4)(A).			
(5)	Mendocino South Coast	[0-5]	[0-10]		
		(B) Area: The tag shall be valid in the area described in subsection 364(c)(5)(A).			
(l) Department Administered SHARE Tule Elk Hunts					
(1)	Cache Creek	[0-10]	[0-10]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(1)(A).			
(2)	La Panza	[0-40]	[0-60]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(2)(A).			
(3)	Bishop	[0-10]	[0-30]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(3)(A).			
(4)	Independence	[0-10]	[0-30]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(4)(A).			
(5)	Goodale	[0-10]	[0-10]		
		B) Area: The tag shall be valid in the area described in subsection 364(d)(5)(A).			
(6)	Lone Pine Period 2	[0-40]	[0-30]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(6)(A).			
(7)	Tinemaha	[0-10]	[0-30]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(7)(A).			
(8)	West Tinemaha	[0-10]	[0-30]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(8)(A).			
(9)	Tinemaha Mountain	[0-8]			
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(9)(A).			
(10)	Whitney	[0-4]	[0-10]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(10)(A).			

(11)	Grizzly Island	[0-2]	[0-50]		[0-50]
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(11)(A).			
(12)	Fort Hunter Liggett Central Coast	[0-42]	[0-44]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(12)(A).			
(13)	East Park Reservoir	[0-6]	[0-20]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(13)(A).			
(14)	San Luis Reservoir	[0-30]	[0-30]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(14)(A).			
(15)	Bear Valley	[0-10]	[0-10]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(15)(A).			
(16)	Lake Pillsbury	[0-10]	[0-10]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(16)(A).			
(17)	Santa Clara	[0-15]	[0-20]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(17)(A).			
(18)	Alameda	[0-4]	[0-10]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(18)(A).			
(19)	San Emigdio Mountain	[0-15]	[0-40]		
		(B) Area: The tag shall be valid in the area described in subsection 364(d)(19)(A).			
(20)	Camp Roberts NO SHARE				

Note: Authority Cited: Sections 332 and 1050, Fish and Game Code. Reference: Sections 332, 1050 and 1574, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Amend Subsection 472
Title 14, California Code of Regulations (CCR)
Re: Nongame Animals, General Provisions

I. Date of Initial Statement of Reasons: November 2, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 10, 2015
Location: San Diego, CA

(b) Discussion Hearings: Date: February 11, 2016
Location: Sacramento, CA

(c) Adoption Hearing: Date: April 14, 2016
Location: Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

1. It is necessary to amend subsection 472(a), Title 14, California Code of Regulations (CCR), in order to specify rock doves (*Columba livia*) as a nongame bird in conformance with Fish and Game Code (FGC), Section 3680 regarding take.

The hunting status of rock doves (*Columba livia*), commonly referred to as domestic pigeons, is unclear under existing law. FGC Section 3680 presumes that the shooting or taking of rock doves is lawful. However, since their status (e.g. as a nongame bird) in the Code is unclear, the actual conditions under which they can be shot or taken is also unclear. FGC Section 3800 makes it unlawful to take nongame birds except as authorized by code or regulation. Nongame birds are defined in that section as all birds "…occurring naturally in California…" that are not otherwise classified. While rock doves are not native to California, at this time they are naturally occurring meaning they live and raise their young here. Adding rock doves to subsection 472(a) will make clear their status as nongame birds and the conditions under which they can be taken.

The prohibition on the intentional take of racing pigeons as provided under FGC 3680 will be maintained.

2. It is necessary to extend the season for take of nonnative deer as set forth in subsection 472(b).

   The purpose of this amendment is to create new hunting opportunities in order to reduce the populations of nonnative deer species to the benefit of all species that are native to California. This regulation change will extend the hunting season beyond the general deer season by allowing the take of nonnative deer during any deer, elk or pronghorn antelope season and on private properties with authorized hunts.

   Current regulation, subsection 472(b), permits the take of nonnative deer [including: fallow (*Dama dama*), sambar (*Rusa unicolor*), sika (*Cervus nippon*), and axis (*Axis axis*) deer] during the general deer season in the deer zone where they are found. However, increased populations of these nonnative species have developed in many areas of California to the detriment of our native wildlife. Nonnative deer species compete with native species for the limited resources, forage, and habitat, necessary for survival. They may also transmit diseases or parasites for which native species have no natural immunity or defenses. (For example, hairless deer syndrome in native deer is associated with lice found naturally on fallow deer.)

   The amendment of subsection 472(b) further clarifies that hunters taking nonnative deer must possess a valid hunting license in accordance with Fish and Game Code 3007. However, no tag, stamp, or additional endorsement of any kind is required.

   While the take and reduction of nonnative deer populations is considered beneficial by the Department, Fish and Game Code, Section 4304 provides that it is unlawful to allow "flesh normally eaten by humans to go to waste." For the purpose of clarification, the regulatory text is amended stating that the flesh of nonnative deer should not go to waste.

   The proposed amendments to subsection 472(b) specifically:

   - Require the possession of a valid CA hunting license, however, no tag, stamp, or additional endorsement of any kind is required;
   - Establish an extended season concurrent with the general seasons for deer, elk, or pronghorn antelope and during authorized seasons on private property;
   - Clarify that It is unlawful to needlessly waste the edible flesh of nonnative deer; and,
   - Establish that there is no bag or possession limit for hunting of nonnative deer.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

   Authority: Sections 3800 and 4150 Fish and Game Code.

Reference: Sections 2003, 3007, 3680, 3800, 3801, 3801.5, 4150, and 4304, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None.

(d) Identification of Reports or Documents Supporting Regulation Change: None.

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

A public discussion was held at the Fish and Game Commission's Wildlife Resources Committee meeting held on September 9, 2015 in Fresno, California.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified.

(b) No Change Alternative:

Regarding the take of rock doves, the no change alternative was considered and rejected because the regulation would continue to be confusing and applied inconsistently on a state-wide basis.

The no change alternative was considered and rejected for the extended seasons for take of nonnative deer because it would not allow for the management of these nonnative species; the negative impacts to native species populations and their habitats would continue to occur.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made.

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed regulations are unlikely to increase or decrease current levels of hunting effort in California.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources. The Commission anticipates benefits to the State's environment in the sustainable management of natural resources.

The proposed action will not have significant impacts on jobs or business within California and does not provide benefits to worker safety.

(c) Cost Impacts on Representative Private Persons/Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:
None.

(e) Other Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School Districts: None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4:
None.

(h) Effect on Housing Costs: None.

VII. Economic Impact Assessment.

The proposed amendments will clarify the regulation regarding the take of rock doves, and extend the season for the take of nonnative deer. There are no costs to businesses or persons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs because it is unlikely to increase or decrease current levels of hunting effort in California.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation will not impact the creation of new businesses or the elimination of businesses because it is unlikely to increase or decrease current levels of hunting effort in California.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State

The regulation will not affect the expansion of businesses currently doing business within the State because it is unlikely to increase or decrease current levels of hunting effort in California.

(d) Benefits of the regulation to the health and welfare of California residents:

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety.

(f) Benefits of the regulation to the State's environment

It is the policy of the State to encourage the conservation, maintenance, and utilization of the living resources. The proposed action will further this core objective.

INFORMATIVE DIGEST
(Policy Statement Overview)

The current regulations in subsections 472(a) and (b), T14, CCR do not address the take of rock doves and limits the take of nonnative deer species (including fallow, sambar, sika, and axis deer) to the general deer season. The proposed amendments will clarify the regulation regarding the take of rock doves, and extend the season for the take of nonnative deer.

Subsection 472(a) will specify rock doves as a nongame species that can be taken by any means at any time.

Subsection 472(b) will extend the season for take of nonnative deer and:

- Require the possession of a valid CA hunting license, however, no tag, stamp, or additional endorsement of any kind is required;
- Permit hunts on properties where an authorized deer, elk or pronghorn antelope season is open;
- Clarify that it is unlawful to needlessly waste the edible flesh of nonnative deer; and,
- Establish that there is no bag or possession for hunting of nonnative deer.

Benefits of the regulations

The regulation will clarify the conditions of take for rock doves to provide consistency in application on a state-wide basis. Establishing specific regulations regarding the take of nonnative deer species will create new hunting opportunities and help reduce negative impacts on native species populations and habitats by reducing the population of the competing nonnative species.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate hunting in California and the take of species in general in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to the general provisions of the nongame section consistent with the provisions of Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations. There are no related federal regulations.

REGULATORY TEXT

Section 472, Title 14, CCR, is amended to read:

§ 472. General Provisions.
Except as otherwise provided in Sections 478 and 485 and subsections (a) through (d) below, nongame birds and mammals may not be taken.
(a) The following nongame birds and mammals may be taken at any time of the year and in any number except as prohibited in Chapter 6: English sparrow, starling, rock dove (*Columba livia*) (except as prohibited in Fish and Game Code section 3680), coyote, weasels, skunks, opossum, moles and rodents (excluding tree and flying squirrels, and those listed as furbearers, endangered or threatened species).
(b) Fallow, sambar, sika, and axis deer may be taken only ~~concurrently with the general deer season.~~ as follows:
(1) Possession of a valid hunting license is required. No tag, stamp, or additional endorsement of any kind is required.
(2) On properties where an authorized deer, elk or pronghorn antelope season is open.
(3) It shall be unlawful to detach or remove only the head, hide or antlers of any deer taken under this section, or to leave through carelessness or neglect any portion of the flesh normally eaten by humans to go to waste.
(4) Bag and Possession Limit: None.

... [No changes to subsections (c) through (e)]

Note: Authority cited: Sections ~~355,~~ 3800 and 4150, Fish and Game Code. Reference: Sections ~~355,~~ 2003, 3800, 3007, 3680, 3801, 3801.5, ~~and~~ 4150, and 4304, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-Publication of Notice Statement)

Add Section 708.18
Title 14, California Code of Regulations (CCR)
Re: Fund Raising Big Game License Tags, Return for Refund

I. Date of Initial Statement of Reasons: November 2, 2015

II. Dates and Locations of Scheduled Hearings:

(a)	Notice Hearing:	Date:	December 10, 2015
		Location:	San Diego, CA
(b)	Discussion Hearings:	Date:	February 11, 2016
		Location:	Sacramento, CA
(c)	Adoption Hearing:	Date:	April 14, 2016
		Location:	Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

It is necessary for the Commission to provide a method for the return of Fund Raising Big Game License Tags (FRT) and a refund of the purchase price. The purpose of the addition of the new section is to address unforeseen circumstances that affect the ability of the successful tag purchaser to use the FRT.

FRT are provided by statute for sale by qualifying non-governmental organizations at auction. The proceeds of the sale of the fund raising tags are deposited to the Big Game Management Account established by the Legislature in Fish and Game Code Section 3953 for the sustainable management of the state's big game resources. There is a great deal of interest by hunters in acquiring these unique tags and often the price exceeds several thousand dollars. In rare cases, the FRT has gone unused because of circumstances beyond the control of the successful bidder. Under current regulations, the money spent cannot be refunded.

However, tags awarded through the normal allocation process, and for far less cost, can under current regulations (Section 708.14) be returned or exchanged by hunters. The proposed regulation sets forth a procedure to allow the return of the FRT and to provide a refund under certain conditions. The new provisions set forth a few possible circumstances beyond the control of the holder under which, by example, the tag holder may not be able to use

the FRT. These include, but are not limited to, illness, military deployment, and hunt area closure (e.g. fire, etc.). However, the decision to return the tag must be made at least ten business days before the start of the season. If possible, the returned FRT will be made available for purchase by the next highest bidder(s).

Proposed Regulations

Add a new Section 708.18 setting forth a procedure to allow the refund of the price of Fund Raising Tags provided that a written request citing the circumstances beyond the control of the holder that prevent the use of the tag, and the tag are received by the Department at least ten business days before the start of the season.

(b) Authority and Reference:

Note: Authority cited: Sections 200, 202, 331, 332, 1050, 4334, and 4902 Fish and Game Code. Reference: Sections 331, 332, 1050, 4334, and 4902 Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None.

(d) Identification of Reports or Documents Supporting Regulation Change: None

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

Fish and Game Commission's Wildlife Resources Committee meeting held on September 9, 2015 in Fresno, California.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified.

(b) No Change Alternative:

The no change alternative was considered and rejected because it does not provide a method by which purchasers of fund-raising tags, who cannot use the tag, may seek a refund.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost

effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action.

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businessmen to Compete with Businesses in Other States.

The proposed action will not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states. The proposed changes merely specify the process for refunding the cost of a FRT that cannot be used by the purchaser due to circumstances beyond their control.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate any impact on jobs or businesses in California; the regulation does not provide benefits to California residents or to worker safety.

The Commission does a expect a small benefit to the State's environment because the proceeds of the sale of the fund raising tags are deposited to the Big Game Management Account established by the Legislature in Fish and Game Code Section 3953 for the sustainable management of the state's big game resources. The refund process, and subsequent re-sale of the tag, assures hunters that the money spent is worthwhile and without risk.

(c) Cost Impacts on Representative Private Persons/Business.

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with this proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

(e) Other Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School Districts: None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed under Part 7 (commencing with Section 17500) of Division 4. None.

(h) Effect on Housing Costs: None.

VII. Economic Impact Assessment

The purpose of the proposed amendments is to establish a process for refunding the price of fund raising license tags purchased at auction. Although the hunter may successfully bid on these highly desirable tags, there are rare instances when the hunter cannot use or is prevented from using the tag. The refund is an equitable method of providing relief under circumstances beyond the control of the hunter. There are no costs to businesses or persons.

(a) Effects of the regulation on the creation or elimination of jobs within the State:

The regulation will not affect the creation or elimination of jobs. The proposed changes merely specify the process for refunding the cost of a FRT that cannot be used by the purchaser due to circumstances beyond their control.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State:

The regulation will not create new businesses or eliminate businesses within the State. The proposed changes merely specify the process for refunding the cost of a FRT that cannot be used by the purchaser due to circumstances beyond their control.

(c) Effects of the regulation on the expansion of businesses currently doing business within the State:

The regulation will not affect the expansion of businesses currently doing business in the State. The proposed changes merely specify the process for refunding the cost of a FRT that cannot be used by the purchaser due to circumstances beyond their control.

(d) Benefits of the regulation to the health and welfare of California residents:

The proposed regulation will not have a direct benefit on the health and welfare of California residents.

(e) Benefits of the regulation to worker safety.

The proposed regulation will not affect worker safety.

(f) Benefits of the regulation to the State's environment:

The Commission expects a small benefit to the State's environment because the proceeds of the sale of the fund raising tags are deposited to the Big Game Management Account established by the Legislature in Fish and Game Code Section 3953 for the sustainable management of the state's big game resources.

INFORMATIVE DIGEST
(Policy Statement Overview)

Existing regulations in Section 708, T14, CCR specify procedures and conditions for returning or exchanging big game tags and refunding tag fees but do not identify similar procedures to allow the return of big game fund raising tags sold by qualifying non-governmental organizations at auction.

This proposal would add Subsection 708.18 to establish regulations which allow the return of the purchase price for fund raising tags. The new provisions set forth a few possible circumstances beyond the control of the holder under which, by example, the tag holder may not be able to use the FRT. These include, but are not limited to, illness, military deployment, and hunt area closure (i.e., fire, etc.). However, the request to return the tag must be made in writing to the Department, at least ten business days before the start of the season. If possible, the returned FRT will be made available for purchase by the next highest bidder(s).

Benefits of the Regulation

The Commission anticipates benefits to the health and welfare of California residents and benefits to the State's environment because the proposed regulations assist the Department in the sustainable management of California's natural resources.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202 and 203, has the sole authority to regulate big game hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to the refund of the price of unused fund raising tags to be consistent with the provisions of Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations.

REGULATORY TEXT

Section 708.18 is added to read as follows:

§ 708.18. Fund Raising Big Game License Tags, Return for Refund

(a) Any tagholder who was awarded a big game fund raising tag through an auction and cannot hunt may submit a written request to the department for a refund of the amount paid for the tag provided that:

(1) The request is due to circumstances beyond the control of the tag holder that prevent the use of the tag during the length of the season and in any zone open for hunting, including, but not limited to:

(A) Serious medical condition, or death, of the tag holder;

(B) Military deployment of the tag holder; or

(C) An area closure that prohibits or limits the tag holder's ability to hunt.

(2) The tag holder shall return the tag with the written request and supporting documentation to the department's License and Revenue Branch at least ten business days before the start of the season for which the tag is valid.

(3) The department will consider the request and may refund the amount paid for the tag.

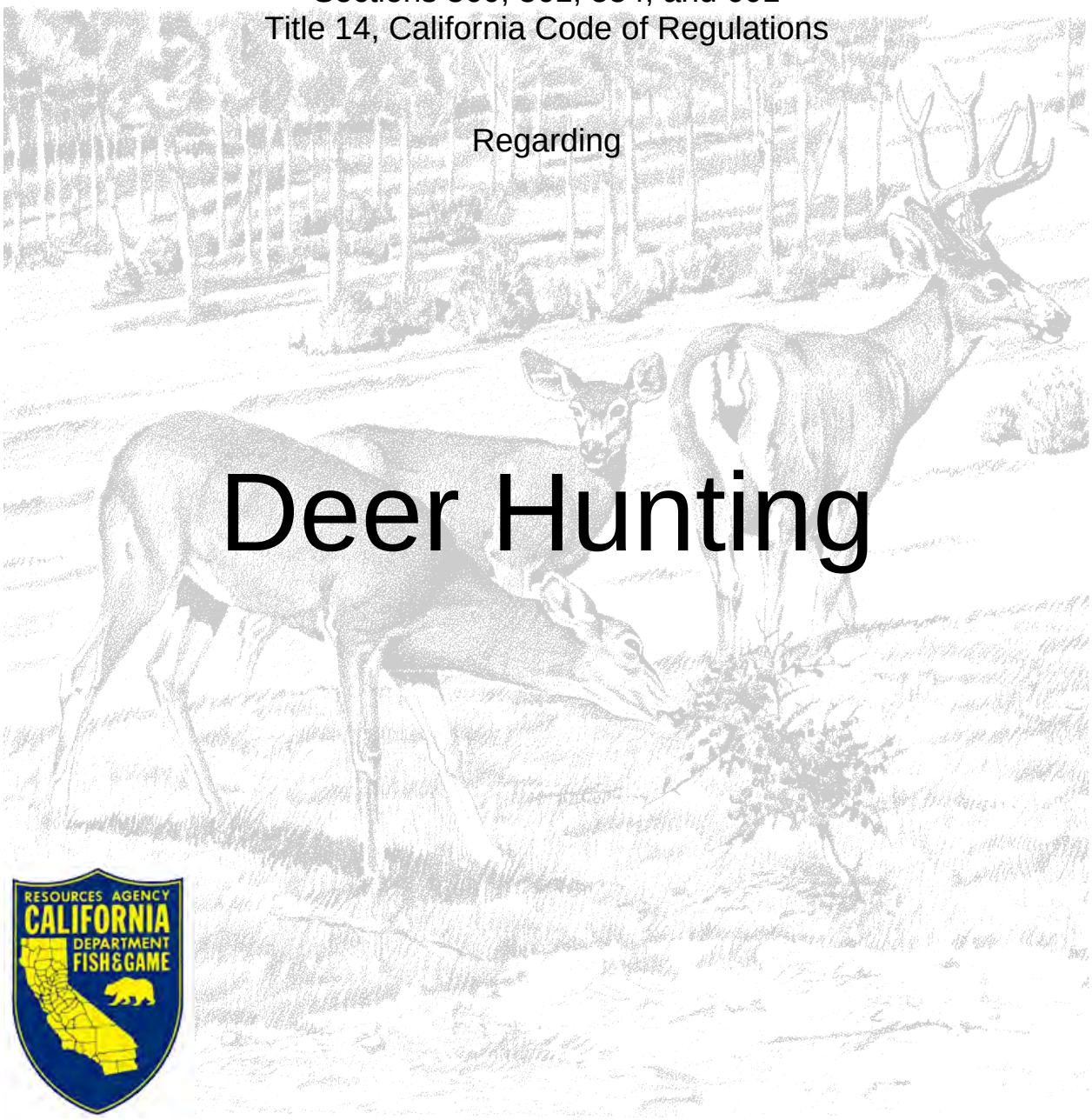
(4) The department may offer the tag to the next highest bidder(s) at the auction event in the amount of their final bid.

Note: Authority cited: Sections 200, 202, 331, 332, 1050, 4334, and 4902, Fish and Game Code. Reference: Sections 331, 332, 1050, 4334, and 4902, Fish and Game Code.

FINAL
ENVIRONMENTAL DOCUMENT

Sections 360, 361, 554, and 601
Title 14, California Code of Regulations

Regarding



Deer Hunting

April 10, 2007

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

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CHAPTER 1 – SUMMARY

PROPOSED PROJECT AND ALTERNATIVES

The project under consideration consists of adjustments to tag quotas for each deer hunting zone and additional hunts, modifications to existing seasons, creation of new seasons, and modifications of regulation for clarity. The Department is recommending that the Commission adopt regulations that will provide for limited public hunting of buck, antlerless and either-sex deer in a total of 44 hunting zones, 28 area-specific archery hunts, 43 additional hunts, 75 Private Lands Wildlife Habitat Enhancement and Management (PLM) Area Program hunts (PLM areas are licensed in May through September), and 10 fund-raising license tags. Hunter quotas are determined using annual deer herd survey data and deer population modeling techniques. Primary input to these models includes the results of annual deer herd surveys, herd objectives contained in approved deer herd management plans, and both hunting and non-hunting mortality. Because final hunter quotas cannot be established until late March when over-winter fawn survival is determined, the Commission is provided with a range of proposed hunting tag quotas. Upon completion of spring herd composition surveys, consultation with the Interstate Deer Committee and final population modeling, the Department will determine and recommend to the Commission final hunting tag quotas.

The Proposed Project represents management options (elements) within a particular hunt zone that will achieve a desired kill (DK) from the herd(s). DK refers to a harvest strategy that provides for a harvest of animals with a safety margin to protect against over harvesting the herd(s). This safety margin is usually in the form of reduced tag quotas and/or seasons. Alternative 2 represents management options (elements) within a particular hunt zone that will achieve a high kill (HK) from the herd(s). Alternative 3 represents management options (elements) within a particular hunt zone that will produce a relatively small harvest.

The Commission may select a combination of elements within the Proposed Project and Alternatives 2 and 3 for any particular zone because the effects of a combined project will fall within the analysis of the High kill project (Alternative 2) and the Low kill project (Alternative 3). The Commission may also select a reduced (in terms of kill) project or no-change (no project) option for any element within the Proposed Project and Alternatives 2 and 3 because the effects of such an action would fall somewhere within the analysis provided.

SUMMARY OF IMPACTS AND MITIGATION

Table 1. Impact Summary

Alternative	Significant Impact	Nature of Impact	Mitigation Available	Nature of Mitigation
Proposed Project	No	None	N/A	N/A
1. No Change	No	None	N/A	N/A
2. High Kill	No	None	N/A	N/A
3. Low Kill	No	None	N/A	N/A

The removal of individual animals through hunting, together with other natural mortality, from any of the deer herds, should not significantly reduce herd size over the annual cycle. The proposed action is expected to result in maintaining the herd ratio objectives around the approved management plan objectives. The production and survival of young animals within each herd should replace the animals removed by hunting. Therefore, the proposed action of harvesting deer by hunting should not have a significant adverse impact on either local populations or the statewide population of deer beyond the annual cycle.

Mitigation

The project has been designed to limit pain and suffering by the specification of prescribed methods of take. These method restrictions are designed to make the hunting equipment highly lethal to the target animal. Methods for taking deer are regulated during the general season under the provisions of Sections 353 and 354, Title 14, California Code of Regulations.

AREAS OF CONTROVERSY

A public scoping session regarding the preparation of environmental documents for hunting big game species was held on October 11, 2006 at the Wildlife Branch office located at 1812 Ninth Street, Sacramento. At that meeting, the use of lead ammunition to take big game animals in California (primarily within the range of the California condor) and the impact of mountain lion predation on the deer population were identified as areas of controversy.

ISSUES TO BE RESOLVED

Issues to be resolved relate to the decisions regarding how to provide public hunting of deer as an element of deer management. Specific issues to be resolved include the establishment of specific hunt areas, season dates, bag and possession limits, hunter quotas, special conditions and methods of take. Additionally, the issue of whether to adopt the proposed project or an alternative needs to be resolved.

FUNCTIONAL EQUIVALENCY

CEQA review of the proposed project will be conducted in accordance with the Commission's certified regulatory program (CRP) approved by the Secretary for the California Resources Agency pursuant to Public Resources Code section 21080.5 (See generally Cal. Code Regs., tit. 14, §§ 781.5, and 15251, subd. (b).). The California Environmental Quality Act (CEQA) requires all public agencies in the State to evaluate the environmental impacts of projects they approve, including regulations, which may have a potential to significantly affect the environment. The Department has prepared this Environmental Document (ED), which is the functional equivalent of an Environmental Impact Report, on behalf of the Commission in compliance with this requirement. The ED provides the Commission, other agencies, and the general public with an objective assessment of the potential effects.

CHAPTER 2 – THE PROPOSED ACTION

Each alternative and the Proposed Project was analyzed using KILLVARY, a computer simulation model developed to estimate deer population size and analyze the effects of various harvest strategies on deer populations. Inputs to run the model include herd composition data (Appendix 4) and prior year harvest (Appendix 5). The results for the Proposed Project and Alternatives 2 and 3 are described for each hunting zone (Appendix 3) and are accompanied by a table (Appendix 4) to aid the reader in understanding the possible effects of the hunting alternatives. Specifically, the effects of the alternative on total kill, the proportion of bucks in the herd (buck ratio) and the population size are presented. Thus, each alternative receives an equal level of consideration and analysis.

The specific process for developing the elements of the Proposed Project and Alternatives 2 and 3 for each of the zones is depicted in Figures 1 and 2. The KILLVARY Model produces a number of bucks and does that can be harvested to meet the goal/criteria for each element of the Proposed Project and Alternatives 2 and 3. In addition, a harvest buffer is developed and evaluated for each alternative by hunt zone. The harvest buffer is an additional number of deer (unallocated) that could be harvested within the hunt zone that would not have a significant adverse effect on the deer population. Additionally, the number of bucks and does expected to be killed on PLMs and by archery only hunters are subtracted from the harvest allocation (Figure 2). The remaining number of bucks and does are then allocated to the hunts listed under each alternative based on the desired harvest and on past and expected hunter caused mortality rates for each hunt. New hunt tag quotas are based on estimated hunter caused mortality rates of similar existing hunts either in the same or similar zone.

Figure 1. Alternative Evaluation Process

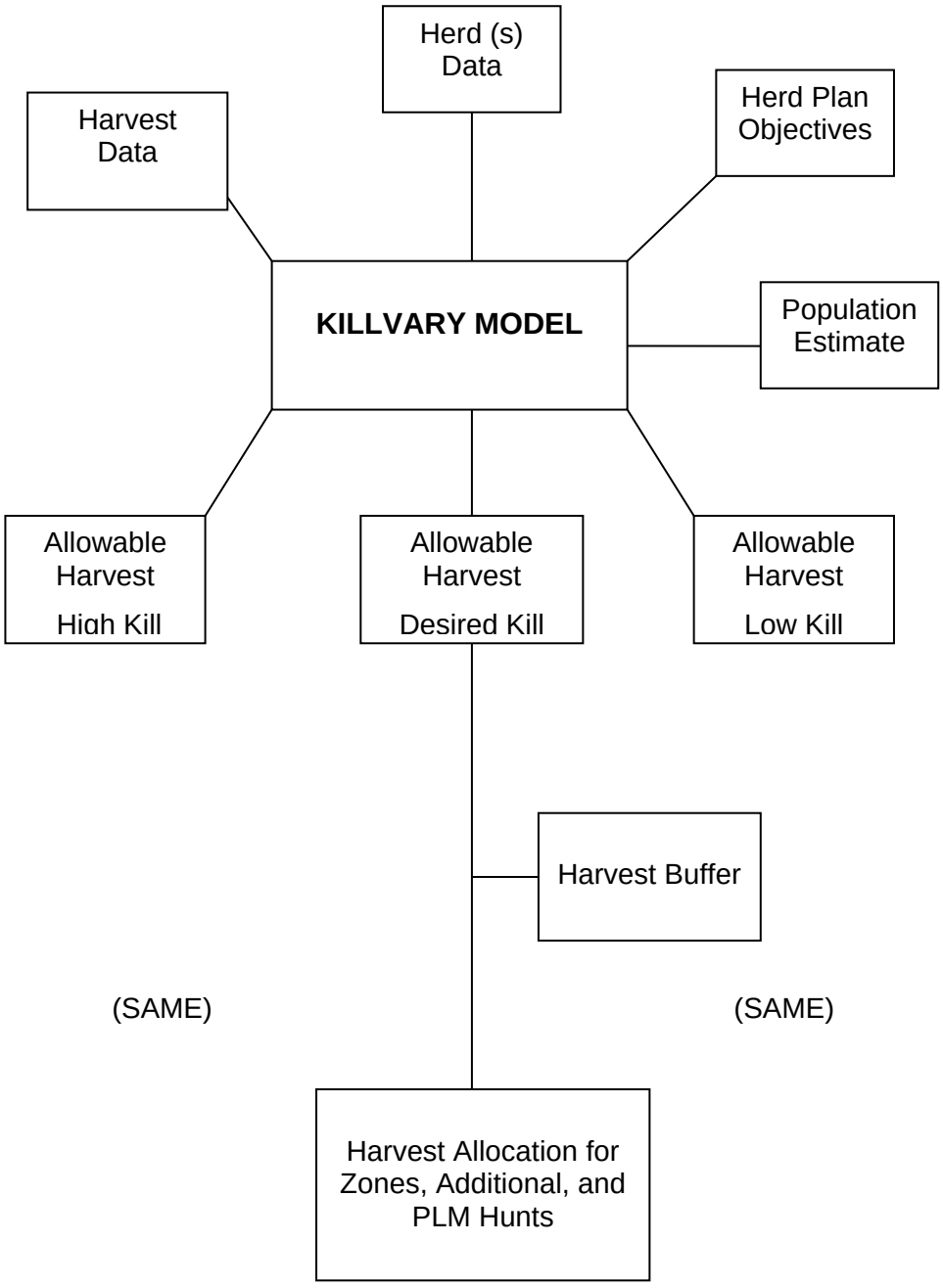
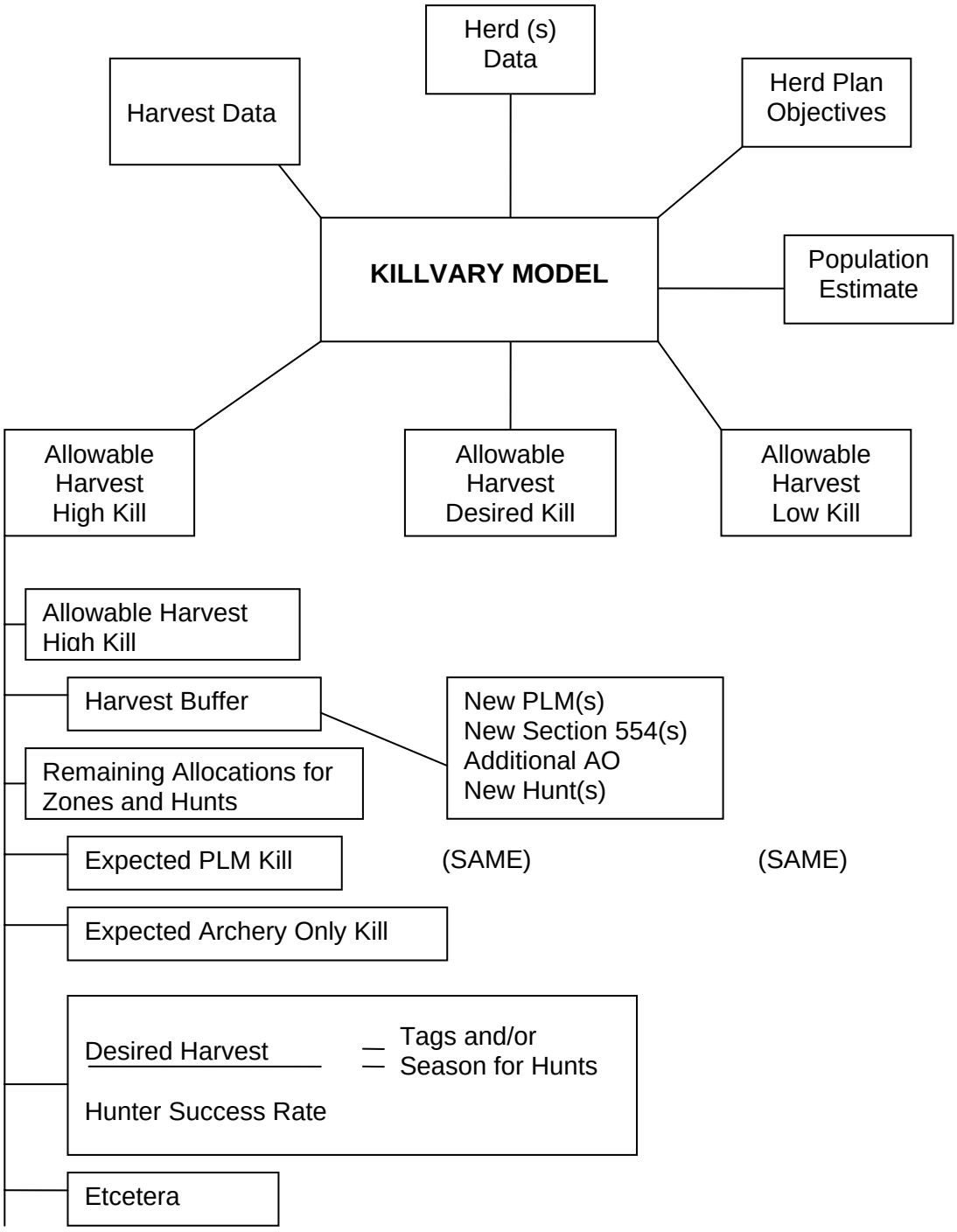


Figure 2. Tag and Season Allocation Process



This process results in the tag range and/or hunt season listed for each of the hunts under the Proposed Project and Alternatives 2 and 3.

The harvest buffer allocation is to allow for small adjustments in tag quotas or hunts, new PLMs, new Section 554 areas, and new hunts that might be proposed by the public during the Commission meetings. The buffers have been developed such that whether or not any part of the buffers are eventually allocated, the hunts will have no significant adverse effect on the deer resource or the ability of the project to achieve its goals.

Section 360(a) – A, B, C, and D Zone Hunts

1. Number of Tags

Existing regulations provide for the number of hunting tags for the A, B, C, and D zones. The proposal changes the number of tags for all existing zones to a series of ranges (See Appendix 1).

The proposal provides a range of tag numbers for each zone from which a final number will be determined, based on the post-winter status of each deer herd. These ranges are necessary, as the final number of tags cannot be determined until spring herd data are collected in March/April.

In early spring, surveys of deer herds are conducted to determine the proportion of fawns that have survived the winter. This information is used in conjunction with the prior year harvest and fall herd composition data to estimate overall herd size, sex and age ratios, and the predicted number of bucks available next season. The number of bucks and does needs to be estimated prior to the hunting season to determine how many surplus bucks will exist over and above the number required to maintain the desired buck ratio objectives stated in the approved deer herd management plans.

The actual tag numbers for each affected zone will be selected and authorized by the Fish and Game Commission from the range of values provided by this proposal. The number of tags is intended to allow the appropriate level of hunting opportunity and harvest of bucks in the population, while achieving or maintaining the buck ratios at, or near, objective levels set forth in the approved deer herd management plans. These final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts. However, under circumstances where severe winter conditions adversely effect herd recruitment and over-winter adult survival, final tag quotas may fall below the proposed tag range

Section 360(b) – X Zone Hunts

1. Number of Tags

Existing regulations provide for the number of hunting tags for the X zones. The proposal changes the number of tags for all existing zones to a series of ranges (See Appendix 1).

The proposal provides a range of tag numbers for each zone from which a final number will be determined, based on the post-winter status of each deer herd. These ranges are necessary, as the final number of tags cannot be determined until spring herd data are collected in March/April.

In early spring, surveys of deer herds are conducted to determine the proportion of fawns that have survived the winter. This information is used in conjunction with the prior year harvest and fall herd composition data to estimate overall herd size, sex and age ratios, and the predicted number of bucks available next season. The number of bucks and does needs to be estimated prior to the hunting season to determine how many surplus bucks will exist over and above the number required to maintain the desired buck ratio objectives stated in the approved deer herd management plans.

The actual tag numbers for each affected zone will be selected and authorized by the Fish and Game Commission from the range of values provided by this proposal. The number of tags is intended to allow the appropriate level of hunting opportunity and harvest of bucks in the population, while achieving or maintaining the buck ratios at, or near, objective levels set forth in the approved deer herd management plans. These final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts. However, under circumstances where severe winter conditions adversely effect herd recruitment and over-winter adult survival, final tag quotas may fall below the proposed tag range.

<u>Section 360(c and d) – Additional Hunts</u>

1. Number of Tags

Existing regulations provide for the number of hunting tags in the Additional Hunts. The proposal changes the number of tags for all existing hunts to a series of ranges (See Appendix 1).

The proposal provides a range of tag numbers for each hunt from which a final number will be determined, based on the post-winter status of each deer herd. These ranges are necessary, as the final number of tags cannot be determined until spring herd data are collected in March/April.

In early spring, surveys of deer herds are conducted to determine the proportion of fawns that have survived the winter. This information is used in conjunction with the prior year harvest and fall herd composition data to estimate overall herd size, sex and age ratios,

and the predicted number of bucks available next season. The number of bucks and does needs to be estimated prior to the hunting season to determine how many surplus bucks will exist over and above the number required to maintain the desired buck ratio objectives stated in the approved deer herd management plans.

The actual tag numbers for each affected hunt will be selected and authorized by the Fish and Game Commission from the range of values provided by this proposal. The number of tags is intended to allow the appropriate level of hunting opportunity and harvest of bucks in the population, while achieving or maintaining the buck ratios at, or near, objective levels set forth in the approved deer herd management plans. These final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts. However, under circumstances where severe winter conditions adversely effect herd recruitment and over-winter adult survival, final tag quotas may fall below the proposed tag range.

2. Modify Season for Additional Hunt G-8

Existing regulations for Additional Hunt G-8 (Fort Hunter Liggett Antlerless Deer Hunt) provide for hunting on Saturdays, Sundays, and the Columbus Day holiday only beginning the first Saturday in October and extending for two consecutive weekends. The Base has specifically requested the season be modified to begin on the Thursday preceding the Columbus Day weekend and run for five consecutive days to accommodate Base operations and other hunt opportunities.

The proposal would modify the season by consolidating a hunt season consisting of two weekends and a holiday into a five consecutive day season in order to accommodate other hunts and Base operations. No loss of hunter opportunity would result from this action and the proposal is consistent with existing deer herd management plan recommendations.

3. Modify Season and Special Conditions for Additional Hunt G-10

Existing regulations for Additional Hunt G-10 (Camp Pendleton Either-Sex Deer Hunt) provide for hunting on Saturdays, Sundays, Columbus and Veteran's Day, and the day after Thanksgiving, beginning the third Saturday in September and continuing through the Thanksgiving Day weekend. Certain federal holidays occur on weekdays when the Base is normally closed and additional hunter opportunity has been lost. The Base has specifically requested: the season be lengthened by adding two weeks to the beginning of the season; one week to the end of the season; include all holidays and the day after Thanksgiving, in order to provide additional hunter opportunity. In addition, the Base has requested that additional weekdays be included at the discretion of the Commanding Officer for those days when military operations have been suspended or reduced.

The proposal would modify the season to begin on the first Saturday in September and extend through the first Sunday in December; specifically include all holidays; and allow the Commanding Officer discretion, with Department concurrence, to provide additional hunt days on weekdays during the season should military operations be suspended. Special conditions are also adjusted to account for the additional three weeks added to the season. These actions would provide an increase in hunter opportunity as requested by the Base, while maintaining consistency with existing deer herd management plan recommendations.

4. Modify Season for Additional Hunt J-10

Existing regulations for Additional Hunt J-10 (Fort Hunter Liggett Junior Either-Sex Deer Hunt) provide for hunting on Saturdays, Sundays, and the Columbus Day holiday only beginning the first Saturday in October and extending for two consecutive weekends. The Base has specifically requested the season be modified by adding two days to the beginning of the season in order to provide additional junior hunting opportunity.

The proposal would modify the season by adding two days to the beginning of the season (Thursday and Friday). These actions would result in increased hunter opportunity, and are consistent with existing deer herd management plan recommendations.

Section 361 – Archery Deer Hunting

1. Number of Tags

Existing regulations provide for the number of hunting tags in the Additional Hunts. The proposal changes the number of tags for all existing hunts to a series of ranges (See Appendix 1).

The proposal provides a range of tag numbers for each hunt from which a final number will be determined, based on the post-winter status of each deer herd. These ranges are necessary, as the final number of tags cannot be determined until spring herd data are collected in March/April.

In early spring, surveys of deer herds are conducted to determine the proportion of fawns that have survived the winter. This information is used in conjunction with the prior year harvest and fall herd composition data to estimate overall herd size, sex and age ratios, and the predicted number of bucks available next season. The number of bucks and does needs to be estimated prior to the hunting season to determine how many surplus bucks will exist over and above the number required to maintain the desired buck ratio objectives stated in the approved deer herd management plans.

The actual tag numbers for each affected hunt will be selected and authorized by the Fish and Game Commission from the range of values provided by this proposal. The number of tags is intended to allow the appropriate level of hunting opportunity and harvest of bucks in the population, while achieving or maintaining the buck ratios at, or near, objective levels set forth in the approved deer herd management plans. These final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts. However, under circumstances where severe winter conditions adversely effect herd recruitment and over-winter adult survival, final tag quotas may fall below the proposed tag range.

2. Establish New Area-Specific Archery Hunt A-33

Existing regulations provide deer hunting area descriptions, seasons, bag and possession limits, and number of tags for Zone A. The zone currently provides limited late season archery deer hunting opportunities in the zone, Hunt A-32 (Ventura/Los Angeles Late Season Archery Either-Sex Deer Hunt). In an effort to increase opportunity for archery method hunters, provide a higher expectation of success, and meet public demand for increased hunter opportunity while meeting approved deer herd plan objectives, the proposal would establish a new late season archery hunt opportunity in Zone A on the Fort Hunter Liggett Military Base.

The proposal creates a new Area-Specific Archery Hunt, A-33 (Fort Hunter Liggett Late Season Archery Either-Sex Deer Hunt). The area would include that portion of Monterey County lying within the exterior boundaries of the Hunter Liggett Military Reservation, except as restricted by the Commanding Officer. The season would be open on Saturdays, Sundays and holidays only beginning the first Saturday in October and continuing through the Veteran's Day holiday in November, except if rescheduled by the Base Commander between the season opener and December 31 with Department concurrence. The bag and possession limit would be one, either-sex deer with a recommended tag quota range of 20-100 tags to be split between military only personnel, distributed by the Base; and the general public, distributed through Department drawing. Special conditions would include a tag refund exchange policy in case of hunt cancellation by the Commanding Officer. This proposal would meet an expressed public demand for increased late season and archery hunting opportunity, maintain appropriate harvest levels within the Hunter Liggett Military Reservation and Zone A deer herds, and be consistent with existing deer herd management plan recommendations.

The actual tag numbers for each affected hunt will be selected and authorized by the Fish and Game Commission from the range of values provided by this proposal. The number of tags is intended to allow the appropriate level of hunting opportunity and harvest of bucks in the population, while achieving or maintaining the buck ratios at, or near, objective levels set forth in the approved deer herd management plans. These

final values for the license tag numbers will be based upon findings from the annual harvest and herd composition counts. However, under circumstances where severe winter conditions adversely effect herd recruitment and over-winter adult survival, final tag quotas may fall below the proposed tag range.

BACKGROUND AND EXISTING CONDITION

Background

Deer management in California is guided by State law and policies of the Commission and the Department. The goals of deer management are to encourage the conservation, restoration, maintenance and utilization of California's wild deer populations. Deer herd management plans were developed to: (1) assure that conservation of deer is in accordance with maintaining sufficient deer populations and habitat to provide for the beneficial use and enjoyment of wildlife by all citizens of the State; (2) perpetuate deer for their intrinsic and ecological values, as well as for their direct benefits to man; and (3) provide for aesthetic, educational and nonappropriative uses of deer. The objectives of the plans are to restore and maintain healthy deer herds in the wild state and to provide for high-quality and diversified use of deer in California.

As specified in the Fish and Game Code (sections 450-460), deer are managed on a unit basis, where a unit consists of an individual deer herd or group of similar herds. Individual deer herd management objectives are contained in 80 plans, which were prepared by the Department in conjunction with land management agencies, private landowners and the general public. The actions recommended in the herd plans include programs to: obtain information needed about deer; maintain and increase the quality of deer habitat statewide, including the identification, maintenance and management of critical deer habitat; reduce natural mortalities; decrease the illegal taking of deer through modern law enforcement; and provide for both hunting and nonhunting uses of deer, consistent with the inherent productivity of individual deer herds.

The project discussed in this document is deer hunting, a portion of the utilization element of each deer herd management plan. Deer hunting is conducted via a "management by objectives" approach. As such, the deer population in each management unit is monitored, and the status is compared to objectives for each unit. When the status of the deer in each unit changes from the objective, recommendations are made to the Commission to modify the deer hunting regulations for that unit. Deer hunting strategies in individual units are commonly changed by modifying the timing or length of the hunting season, modifying the number of hunters, changing the method of take, changing the type of deer (buck, antlerless or both) to be harvested or by adding or removing an additional hunt to a portion of the unit. The best management strategy for hunting in a given unit is dictated by the current status of the deer in the unit, the deer

herd management plan objectives, Department field biologist recommendations, local conditions and public input.

In 1977, legislation (Assembly Bill 1521, Chapter 839) was introduced by Assemblyman Perino which became the backbone of modern deer management in California. The laws, sections 450 through 460, Fish and Game Code, specify the policy of the Legislature, define general deer hunting, provide direction to the Department about managing deer, specify the content of the annual report to the Legislature and direct the Department regarding hunting regulations.

Section 450 declares that it is the policy of the Legislature to encourage the conservation, restoration, maintenance and utilization of California's wild deer populations. Such conservation shall be in accordance with the principles of wildlife resources conservation set forth in Section 1801, Fish and Game Code, and in accordance with the objectives and elements stated in *A Plan for California Deer* (California Department of Fish and Game, 1976). The objectives stated in *A Plan for California Deer* are to restore and maintain healthy deer herds in the wild state and to provide for high-quality and diversified use of deer in California. The objective of the proposed project, therefore, is to implement the Plan's direction to provide high quality and diversified use of deer through public deer hunting.

Section 451 defines the "general deer hunting season" as the annual season for the area in question, as set by the Commission under its general regulatory powers, or as set by statute, for the taking of male deer.

Section 452 directs the Department to designate deer herd management units and a manager for each unit. The units are to be single deer herds or groups of deer herds having similar management and habitat requirements and characteristics. Boundaries of such units need not follow county boundary lines.

Sections 453 through 455 direct the Department to develop plans for deer herd management units. The objectives of such plans shall be the restoration and maintenance of healthy deer herds in the wild state and to provide for high-quality and diversified use of deer in California. The management plans are to contain programs to: obtain information needed about deer; maintain and increase the quality of deer habitat statewide, including the identification, maintenance and management of critical deer habitat; reduce natural mortalities; decrease the illegal taking of deer through modern law enforcement; and provide for both hunting and non-hunting uses of deer, consistent with the basic individual deer herd management unit capabilities. Specifically, the plans discuss the past history of each deer herd and document existing information for each herd. Current problems are listed, and solutions are identified as recommended actions in each of seven elements of deer management: (1) inventory and investigation; (2) habitat; (3) mortality; (4) utilization; (5) law enforcement; (6) communication of

information; and (7) review and update. The plans are to be reviewed annually and shall be the basis for Department's recommendations to the Commission.

Section 456 directs the Department to produce a biennial report to the Legislature and to the Commission on the progress that is being made toward the restoration and maintenance of California's deer herds. Details of the content of the report are discussed in this Chapter under "Reports to the Legislature and Fish and Game Commission". Additionally, the Department shall not recommend to the Commission any deer management program or any modification of the Commission's deer hunting regulations unless they are consistent with deer herd management plans.

Sections 457 through 459 direct the Department to notify the Commission and specified county boards of supervisors of its intent to recommend the taking of antlerless and either-sex deer prior to the Commission's regulation-setting process. Boards of supervisors of 37 of the 58 counties have the authority to modify or veto any Department recommendations for harvesting antlerless and/or either-sex deer, based upon testimony presented at a hearing of the board and the submission of a resolution by the board to the Commission.

Section 460 requires the Department to notify the Commission prior to its regulation-setting process of deer herd units to be placed under a general season and whether any antlerless deer should be taken. If the Department believes that current hunter numbers would adversely affect the deer herd, impair the hunting experience or endanger the public safety, the Department shall also recommend restrictions on hunter numbers. The Department shall inform the Commission of the condition of each deer herd unit, and the Commission shall make the information known to the public.

In addition to sections 450 through 460, other State laws provide for management of wildlife, including deer, on private and military lands for control of depredation due to deer, increased access to the public, and protection and enhancement of habitats.

Sections 3400 through 3408 of the Fish and Game Code provide for the management of fish and wildlife on private lands, and Section 3409 of the Fish and Game Code requires the Department to report every three years to the Speaker of the Assembly, the Chairman of the Senate Committee on Rules, and the chairmen of the policy committees of each house on the participants of the PLM Program, the wildlife management activities undertaken, the wildlife species managed and the harvest data.

Statutes similar to those for management of fish and wildlife on private lands are in sections 3450 through 3453 of the Fish and Game Code for management on military lands.

Section 4181.5 of the Fish and Game Code provides for the taking of deer by a landowner with property which is damaged or in immediate danger of being damaged. This Section directs the Department to issue a permit for taking depredating deer when evidence indicates that damage or the threat of damage has occurred. In lieu of these permits, with the consent of the landowner, the Commission may issue permits to licensed hunters to take deer to stop the damage or threatened damage to private property (Section 4188, Fish and Game Code).

Section 4334 of the Fish and Game Code provides authority for the Fish and Game Commission to direct the Department to authorize the sale of not more than ten fund-raising deer license tags. Since the 1996 deer hunting season, the Fish and Game Commission has directed the Department to authorize the sale of ten fund-raising deer license tags annually. These tags were offered for sale by nonprofit organizations selected by the Department through the Invitation For Bid process. Pursuant to Section 4334, all funds derived from the sale of these tags are continuously appropriated for use by the Deer Herd Management Plan Implementation Program. These funds will augment, not supplement, any other funds appropriated by the Department to implement this program.

Section 4370 of the Fish and Game code requires that an archery season be authorized in each zone with a general open season. The season for each area shall be as the Commission prescribes, except that a minimum interposing interval of three days immediately preceding the general open season must occur.

Existing Conditions

1. Zone A

A. General Season: The season in Zone A-South Unit 110 and Zone A-North Unit 160 shall open on the second Saturday in August and extend for 44 consecutive days.
B. Archery Season: The archery deer season in Zone A-South Unit 110 and Zone A-North Unit 160 shall open on the second Saturday in July and extend for 23 consecutive days.
C. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
D. Number of Tags: 65,000. Zone A tags are valid in Zone A-South Unit 110 and Zone A-North Unit 160.
E. Legal boundary description of the project area:

Shall include all of Zone A-South Unit 110 and Zone A-North Unit 160 (see subsections 360(a)(1)(A)1. through 2.).

1. South Unit 110. In those portions of Alameda, Contra Costa, Fresno, Kern, Kings,

Los Angeles, Monterey, San Benito, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Stanislaus and Ventura counties within a line beginning at the intersection of Highway 99 and the San Joaquin-Sacramento county line at Dry Creek; south on Highway 99 to Highway 166 in Kern County; west on Highway 166 to Highway 33; south on Highway 33 to Sespe Creek; east and south along Sespe Creek to Highway 126; east on Highway 126 to Interstate 5; south on Interstate 5 and 405 to Interstate 10; west on Interstate 10 to the Pacific Ocean; north on the Pacific Ocean coastline to the San Mateo-San Francisco county line; east on the San Mateo-San Francisco county line to the Alameda county line; north on the Alameda-San Francisco county line to the Contra Costa-San Francisco county line: northwest on Contra Costa-San Francisco county line to the Contra Costa-Marin county line; northeast on the Contra Costa-Marin county line to the Contra Costa-Solano county line in San Pablo Bay; east on the Contra Costa-Solano county line and the Sacramento River to the confluence of the San Joaquin River and Sacramento-Contra Costa county line; east on the Sacramento-Contra Costa county line and San Joaquin River to the confluence of the Mokelumne River and San Joaquin-Sacramento county line; northeast on the San Joaquin-Sacramento county line and Mokelumne River to the confluence of Dry Creek; east on the San Joaquin-Sacramento county line and Dry Creek to the point of beginning at Highway 99.

2. North Unit 160. In those portions of Colusa, Glenn, Lake, Marin, Mendocino, Napa, Sacramento, Solano, Sonoma and Yolo within a line beginning at the junction of the mouth of Hardy Creek (Mendocino County) and the Pacific Ocean; east along Hardy Creek to Highway 1; north along Highway 1 to Highway 101; south along Highway 101 to Commercial Avenue in the town of Willits; east on Commercial Avenue to the Hearst-Willits Road (County Road 306); north and east on the Hearst-Willits Road to the Main Eel River; southeast on the Main Eel River to Lake Pillsbury at Scott Dam; southeast along the west shore of Lake Pillsbury and the Rice Fork of the Eel River to Forest Service Road M-10; east on Forest Service Road M-10 to Forest Service Road 17N16; east on Forest Service Road 17N16 to Forest Service Road M-10; east on Forest Service Road M-10 to Letts Valley-Fouts Spring Road; east on the Letts Valley-Fouts Spring Road to the Elk Creek-Stonyford Road (County Road 306); north on the Elk Creek-Stonyford Road to the Glenn-Colusa county line; east along the Glenn-Colusa County line to Interstate 5; Interstate 5 south to Highway 99 in the City of Sacramento; Highway 99 south to the Sacramento/San Joaquin County line at Dry Creek, west along the Sacramento/San Joaquin County line and Dry Creek to the confluence with the Mokelumne River, southwest on the Sacramento/San Joaquin County line and Mokelumne River to the confluence with the San Joaquin River and Sacramento/Contra Costa County line, west on the Sacramento/Contra Costa County line and San Joaquin River to the confluence of the Sacramento River and Solano/Contra Costa County line, west on the Sacramento River and Solano/Contra Costa County line to the Marin County line in San Pablo Bay, southwest on the Marin/Contra Costa and Marin/San Francisco county lines to the North Peninsula shoreline near the Golden Gate Bridge,

west on the shoreline to the Pacific Ocean coastline, northwest on the Pacific Ocean coastline to the point of beginning.

Deer Herds: Adelaida, Avenal, Clear Lake, Mendocino, Monticello, Mount Diablo, Mount Hamilton, Pacheco-Merced, Pacheco-Stanislaus, Pozo, San Benito, Santa Barbara, Santa Cruz, Santa Lucia, Santa Rosa, Shandon.

2. B Zones (includes zones B-1, B-2, B-3, B-4, B-5, and B-6)

a. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
b. Number of Tags: 55,000

A. Zone B-1

a. General Season: The season shall open on the third Saturday in September and extend for 37 consecutive days.
b. Archery Season: The season shall open on the third Saturday in August and extend for 23 consecutive days.
c. Legal boundary description of the project area:

In the County of Del Norte and those portions of Glenn, Humboldt, Lake, Mendocino, Siskiyou and Trinity counties within a line: Beginning at the California-Oregon state line and the Pacific Ocean; east along the state line to the point where Cook-Green Pass Road (Forest Service Road 48N20) intersects the California-Oregon state line; south on the Cook-Green Pass Road to Highway 96 near Seiad Valley; west and south along Highway 96 to Highway 299 at Willow Creek; southeast along Highway 299 to the South Fork of the Trinity River; southeast along the South Fork of the Trinity River to the boundary of the Yolla Bolly-Middle Eel Wilderness Area; southwest along the boundary of the Yolla Bolly-Middle Eel Wilderness Area to the Four Corners Rock-Washington Rock Trail; south and east on the Four Corners Rock-Washington Rock Trail to the North Fork of Middle Fork Eel River; south on the North Fork of Middle Fork Eel River to Middle Fork Eel River; east on Middle Fork Eel River to confluence with Balm of Gilead Creek; north and east on Balm of Gilead Creek to confluence with Minnie Creek; east and south on Minnie Creek to Soldier Ridge Trail; north on Soldier Ridge Trail to Summit Trail; south on Summit Trail to Green Springs Trail head at Pacific Crest Road (U.S. Forest Service Road M-2); south on the Mendocino Pass Road to the intersection of Forest Highway 7; west on Forest Highway 7 to the Middle Fork of the Eel River near Eel River Work Center; southwest on the Middle Fork of the Eel River to the Black Butte River; southeast along the Black Butte River to the Glenn-Mendocino County line; south along the Glenn-Mendocino and Lake-Mendocino county lines to the northern boundary of State Game Refuge 2-A; east and south along the northern and eastern boundaries of State Game Refuge 2-A to the Glenn-Lake County line near Sheetiron Mountain; south along the Glenn-Lake and Colusa-Lake county lines to Forest Service Road

17N16; west on Forest Service Road 17N16 to Forest Service Road M-10; west on Forest Service Road M-10 to the Rice Fork of the Eel River; northwest along the Rice Fork of the Eel River and the shore of Lake Pillsbury to the Main Eel River at Scott Dam; west and north along the Main Eel River to the Hearst-Willits Road; southwest on the Hearst-Willits Road to Commercial Avenue; west on Commercial Avenue to Highway 101; north on Highway 101 to Highway 1 at Leggett; west on Highway 1 to its intersection with the South Fork of the Eel River; north and west along the South Fork of the Eel River to the main Eel River; west and north along the main Eel River to mouth of the Eel River and north along the Pacific coastline to the point of beginning.

Deer Herds: Clear Lake, Mad River, Mendocino, Redwood Creek, Ruth, Smith River

B. Zone B-2

a. General Season: The season shall open on the third Saturday in September and extend for 37 consecutive days.
b. Archery Season: The season shall open on the third Saturday in August and extend for 23 consecutive days.
c. Legal boundary description of the project area:

In those portions of Humboldt, Shasta, Siskiyou, Tehama, and Trinity counties within a line beginning at the intersection of Interstate 5 and Highway 299 in Redding; west on Highway 299 to the Bully Choop Mountain Road at the Shasta-Trinity County line and Buckhorn Summit; south on the Bully Choop Mountain Road to a point where this road leaves the Shasta-Trinity County line at Mud Springs; southwest along the Shasta-Trinity County line to the Browns Creek-Harrison Gulch Road; south on the Browns Creek-Harrison Gulch Road to Highway 36; east on Highway 36 (200 yards) to Forest Service Arterial Road 41; south on Forest Service Arterial Road 41 to Stuart Gap at the Tehama-Trinity County line; south on the Tehama-Trinity County line to the north boundary of the Yolla Bolly-Middle Eel Wilderness Area; west and south on the Yolla Bolly-Middle Eel Wilderness boundary to the South Fork of the Trinity River; north and west along the South Fork of the Trinity River to Highway 299; west and north on Highway 299 to Highway 96 at Willow Creek; north on Highway 96 to the Cecilville-Salmon River Road (Forest Service Road 93) at Somes Bar; east along the Cecilville-Salmon River Road to Highway 3 at Callahan; east along Highway 3 to the Gazelle-Callahan Road (Forest Service Road 1219); east along the Gazelle-Callahan Road to Highway 99; north along Highway 99 to Louie Road; east along Louie Road to Interstate 5; south along Interstate 5 to the point of beginning.

Deer Herds: Happy Camp, Hayfork, Klamath, Redwood Creek, Weaverville

C. Zone B-3

a. General Season: The season shall open on the third Saturday in September and extend for 37 consecutive days.
b. Archery Season: The season shall open on the third Saturday in August and extend for 23 consecutive days.
c. Legal boundary description of the project area:

In those portions of Colusa, Glenn, Lake, Mendocino, and Tehama counties within a line beginning at the intersection of Interstate 5 and Black Butte Reservoir Road; south on Interstate 5 to the Glenn-Colusa County line; west along the Glenn-Colusa County line to the Elk Creek-Stonyford Road (County Road 306); south on the Elk Creek-Stonyford Road to the Letts Valley-Fouts Spring Road; west on the Letts Valley-Fouts Spring Road through Fouts Spring to Forest Service Road M-10; west on Forest Service Road M-10 to the Colusa-Lake County line; north along the Colusa-Lake and Glenn-Lake county lines to the eastern boundary of State Game Refuge 2-A, near Sheetiron Mountain; north and west along the eastern and northern boundaries of State Game Refuge 2-A to the Lake-Mendocino County line; north on the Lake-Mendocino and Glenn-Mendocino County lines to the Black Butte River; northwest along the Black Butte River to the Middle Fork of the Eel River; east and north along the Middle Fork of the Eel River to Forest Highway 7 near the Eel River Work Center; east on Forest Highway 7 to the Low Gap-Government Flat Road; north on the Low Gap-Government Flat Road to the Round Valley-Paskenta Road at Government Flat; east on the Round Valley-Paskenta Road to the Black Butte Lake-Newville Road; south and east on the Black Butte Lake-Newville Road to Interstate 5 at the point of beginning.

Deer Herds: Alder Springs, Capay/East Park, Clear Lake, Mendocino, Yolla Bolly

D. Zone B-4

a. General Season: The season shall open on the fourth Saturday in August and extend for 37 consecutive days.
b. Archery Season: The season shall open on the fourth Saturday in July and extend for 23 consecutive days.
c. Legal boundary description of the project area:

In those portions of Mendocino and Humboldt counties within a line beginning at the mouth of Hardy Creek and the Pacific Ocean; north along the Pacific coastline to the mouth of the Eel River; east and south along the main Eel River to the South Fork of the Eel River; south along the South Fork of the Eel River to State Highway 1 at Leggett; west on State Highway 1 to Hardy Creek; west along Hardy Creek to the point of beginning.

Deer Herd: Mattole River

E. Zone B-5

a. General Season: The season shall open on the third Saturday in September and extend for 37 consecutive days.
b. Archery Season: The season shall open on the third Saturday in August and extend for 23 consecutive days.
c. Legal boundary description of the project area follows:

In those portions of Glenn, Mendocino, Shasta, Tehama, and Trinity counties within a line beginning at the intersection of Highway 299 and Interstate 5 in Redding; south along Interstate 5 to the Black Butte Lake-Newville Road near Orland; west and north on the Black Butte Lake-Newville Road to the Round Valley-Paskenta Road; west on the Round Valley-Paskenta Road to the Pacific Crest Road (U.S. Forest Service Road M-2) near Government Flat; north on the Pacific Crest Road to the Summit Trailhead at Green Springs; north along Summit Trail to Soldier Ridge Trail; south and west along Soldier Ridge Trail to Minnie Creek; north and west on Minnie Creek to Balm of Gilead Creek; west on Balm of Gilead Creek to the Middle Fork of the Eel River; west on the Middle Fork of the Eel River to the North Fork of the Middle Fork of the Eel River; north on the North Fork of the Middle Fork of the Eel River to the Four Corners Rock-Washington Rock Trail; north and west on the Four Corners Rock-Washington Rock Trail to the boundary of the Yolla Bolly-Middle Eel Wilderness Area; north along the boundary of the Yolla Bolly-Middle Eel Wilderness Area to the Tehama-Trinity County line; north on the Tehama-Trinity County line to Forest Service Arterial Road 41 at Stuart Gap; north on Forest Service Arterial Road 41 to Highway 36; west on Highway 36 (200 yards) to the Browns Creek-Harrison Gulch Road; north on the Browns Creek-Harrison Gulch Road to the Shasta-Trinity County line; northeast along the Shasta-Trinity County line to Mud Springs, where the Bully Choop Mountain Road joins the Shasta-Trinity County line; north on the Bully Choop Mountain Road to Highway 299 at Buckhorn Summit and the Shasta-Trinity County line; east on Highway 299 to Interstate 5 in Redding.

Deer Herds: Capay/East Park, Mendocino, Ruth, Yolla Bolly

F. Zone B-6

a. General Season: The season shall open on the third Saturday in September and extend for 30 consecutive days.
b. Archery Season: The season shall open on the third Saturday in August and extend for 23 consecutive days.
c. Legal boundary description of the project area:

In that portion of Siskiyou County within a line beginning at the California-Oregon state line and its intersection with Interstate 5; south on Interstate 5 to Louie Road near

Gazelle; west on Louie Road to Highway 99; south on Highway 99 to the Gazelle-Callahan Road at Gazelle; west on the Gazelle-Callahan Road to Highway 3; west on Highway 3 to the Cecilville-Salmon River Road (Forest Service Road 93) at Callahan; west on the Cecilville-Salmon River Road to Highway 96 at Somes Bar; north on Highway 96 to the Cook-Green Pass Road at Seiad Valley; north on the Cook-Green Pass Road to the California-Oregon state line; east along the California-Oregon state line to Interstate 5.

Deer Herds: Happy Camp, Klamath

3. C Zones (includes zones C-1, C-2, C-3, and C-4)

a. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
b. Number of Tags: 9,025

A. Zone C-1

a. General Season: The season in Zone C-1 shall open on the third Saturday in September and extend for 30 consecutive days.
b. Legal boundary description of the project area:

In that portion of Siskiyou County within a line beginning at the California-Oregon state line and its intersection with Interstate 5; south on Interstate 5 to Highway 97 at Weed; north and east on Highway 97 to the intersection with the California-Oregon state line; west on the California-Oregon state line to the point of beginning.

Deer Herds: McCloud Flats, Klamath

B. Zone C-2

a. General Season: The season in Zone C-2 shall open on the third Saturday in September and extend for 37 consecutive days.
b. Legal boundary description of the project area::

In those portions of Shasta and Siskiyou counties within a line beginning at the junction of Interstate 5 and Highway 89 south of the town of Mt. Shasta; east and south on Highway 89 to the Pit River at Lake Britton; west and south along the Pit River to Interstate 5 at Shasta Lake; north on Interstate 5 to the point of beginning.

Deer Herd: McCloud Flats

C. Zone C-3

a. General Season: The season in Zone C-3 shall open on the third Saturday in September and extend for 37 consecutive days.
b. Legal boundary description of the project area:

In that portion of Shasta County within a line beginning at the intersection of Cottonwood Creek and Interstate 5 at Cottonwood; north on Interstate 5 to the Pit River at Shasta Lake; east and north on the Pit River to Highway 89 at Lake Britton; south on Highway 89 to Highway 44 at Old Station; south and west on Highway 44 to the North Fork of Battle Creek; southwest on the North Fork of Battle Creek to Battle Creek; west on Battle Creek to the Sacramento River; north on the Sacramento River to the mouth of Cottonwood Creek; west on Cottonwood Creek to the point of beginning.

Deer Herd: Cow Creek

D. Zone C-4

a. General Season: The season in Zone C-4 shall open on the third Saturday in September and extend for 16 consecutive days.
b. Legal boundary description of the project area:

In those portions of Butte, Glenn, Lassen, Plumas, Shasta, and Tehama counties within a line beginning at the junction of Interstate 5 and Cottonwood Creek at Cottonwood; east on Cottonwood Creek to the Sacramento River; south on the Sacramento River to Battle Creek; east on Battle Creek to the North Fork of Battle Creek; northeast on the North Fork of Battle Creek to Highway 44; east on Highway 44 to Highway 89 at the north entrance of Lassen Volcanic National Park; north and east on Highway 89 and 44 to the junction of Highway 44 at Old Station; south and east on Highway 44 to Highway 36 west of Susanville; west on Highway 36 to Highway 147 near Westwood; south on Highway 147 to Highway 89; south on Highway 89 to Highway 70; southwest on Highway 70 to Highway 162 at Oroville; west on Highway 162 to Interstate 5; north on Interstate 5 to Cottonwood Creek to the point of beginning.

Deer Herds: East Tehama, Mother Lode

4. D-3-5 Zone

a. General Season: The season in Zones D-3, D-4, and D-5 shall open on the fourth Saturday in September and extend for 37 consecutive days.
b. Archery Season: The archery season shall open on the third Saturday in August and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.

d. Number of Tags: 33,000
e. Legal boundary description of the project area is as follows:

Zone D-3

In those portions of Butte, Colusa, Glenn, Nevada, Placer, Plumas, Sierra, Sutter, and Yuba counties within a line beginning at the junction of Interstate 5 and Highway 162 at Willows; east on Highway 162 to Highway 70 at Oroville; northeast on Highway 70 to Highway 89; south on Highway 89 to the new Gold Lake Road (near Graeagle); south on the new Gold Lake Road to Highway 49 at Bassetts; east on Highway 49 to Yuba Pass; south on the Yuba Pass-Webber Lake Road (main haul road) through Bonta Saddle to the Jackson Meadows Highway (Fiberboard Road); west on the Jackson Meadows Highway for two miles to the White Rock Lake Road; south on the White Rock Lake Road to the new road to White Rock Lake (below Bear Valley); south and east on the new White Rock Lake Road to the Pacific Crest Trail (one mile west of White Rock Lake in Section 21, T18N, R14E, M.D.B.M.); south and east on the Pacific Crest Trail to Interstate 80 near the Castle Peak-Boreal Ridge Summit; west on Interstate 80 to Highway 20; west on Highway 20 to the Bear River in Bear Valley; west along the Bear River to Highway 65 near Wheatland; north on Highway 65 to Highway 70; north on Highway 70 to Highway 20 in Marysville; west on Highway 20 to Interstate 5 at Williams; north on Interstate 5 to the point of beginning.

Deer Herds: Blue Canyon, Bucks Mountain/Mooretown, Downieville/Nevada City, Mother Lode

Zone D-4

In those portions of Colusa, Nevada, Placer, Sacramento, Sutter, Yolo and Yuba counties within a line beginning at the junction of Interstate 5 and Highway 20 at Williams; east on Highway 20 to Highway 70 in Marysville; south on Highway 70 to Highway 65; south on Highway 65 to the Bear River (south of Wheatland); east along the Bear River to Highway 20; east on Highway 20 to Interstate 80; east on Interstate 80 to the Pacific Crest Trail near the Castle Peak-Boreal Ridge Summit; south on the Pacific Crest Trail to Forest Route 03 at Barker Pass; east and north along Forest Route 03 to Blackwood Canyon Road; east along Blackwood Canyon Road to Highway 89 at Lake Tahoe near Idlewild; south on Highway 89 to Blackwood Creek; east on Blackwood Creek to the Lake Tahoe shoreline; south along the shore of Lake Tahoe to the mouth of Miller Creek and the common boundary between the Eldorado and Tahoe National Forests; west along Miller Creek to the Rubicon River; west along the Rubicon River through Hell Hole Reservoir to the Middle Fork of the American River; west along the Middle Fork of the American River to the American River; west along the American River to Interstate 5; north on Interstate 5 to the point of beginning.

Deer Herds: Blue Canyon, Mother Lode, Nevada City

Zone D-5

In the counties of Amador and Calaveras and those portions of Alpine, El Dorado, Placer, Sacramento, San Joaquin, Stanislaus and Tuolumne counties within a line beginning at the junction of Interstate 5 and the American River in Sacramento; east along the American River to the Middle Fork of the American River; northeast along the Middle Fork of the American River to the Rubicon River; east along the Rubicon River through Hell Hole Reservoir to its confluence with Miller Creek; east along Miller Creek to its junction with the new (marked) USFS Pacific Crest Trail; north on the Pacific Crest Trail one-quarter mile to a junction with the McKinney-Rubicon Springs Road (Miller Lake Road); east along the McKinney-Rubicon Springs Road to McKinney Creek (NE 1/4, section 23, T14N, R16E, M.D.B.M.); east along McKinney Creek to the west shoreline of Lake Tahoe near Chambers Lodge; south along the shore of Lake Tahoe to the California-Nevada state line; southeast along the California-Nevada state line to Highway 50; southwest on Highway 50 to the Pacific Crest Trail at Echo Summit; south along the Pacific Crest Trail to the township line between Townships 7 and 8 North near Wolf Creek Pass; due west on that township line to the road connecting Lower and Upper Highland Lakes at Lower Highland Lake; west along that road to Highland Creek; southwest along Highland Creek to the North Fork of the Stanislaus River; west along the North Fork of the Stanislaus River to the Stanislaus River; west along the Stanislaus River to Highway 99; north along Highway 99 to Interstate 80; west on Interstate 80 to Interstate 5; north on Interstate 5 to the point of beginning.

Deer Herds: Carson River, Grizzly Flat, Mother Lode, Pacific, Railroad Flat, Salt Springs

5. Zone D-6

a. General Season: The season in Zone D-6 shall open on the third Saturday in September and extend for 44 consecutive days.
b. Archery Season: The archery season shall open on the third Saturday in August and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 10,000
e. Legal boundary description of the project area:

In those portions of Alpine, Madera, Mariposa, Merced, Stanislaus and Tuolumne counties within a line beginning at the intersection of Highway 99 and the Stanislaus River at Ripon; east along the Stanislaus River and following the North Fork of the Stanislaus River to Highland Creek; east up Highland Creek to the road connecting

Lower and Upper Highland Lakes at Upper Highland Lake; east along that road to the township line between Townships 7 and 8 North; east on that township line to the Sierra crest near Wolf Creek Pass; south along the Sierra crest to the Yosemite National Park boundary near Rodger Peak; along the eastern Yosemite National Park boundary to Highway 41; south along Highway 41 to the Madera-Mariposa County line south of Westfall Station; along the Madera-Mariposa and the Madera-Merced county lines to Highway 99; north along Highway 99 to the point of beginning.

Deer Herds: Mother Lode, Stanislaus, Tuolumne, Yosemite

6. Zone D-7

a. General Season: The season in Zone D-7 shall open on the third Saturday in September and extend for 44 consecutive days.
b. Archery Season: The archery season shall open on the third Saturday in August and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 9,000
e. Legal boundary description of the project area:

In those portions of Fresno, Madera, Mariposa and Tulare counties within a line beginning at the intersection of Highway 99 and the Madera-Merced County line; northeast along the Madera-Merced and Madera-Mariposa county lines to Highway 41 south of Westfall Station; north along Highway 41 to Yosemite National Park boundary; east along the park boundary to the Mono-Madera County line near Rodger Peak; south along the Inyo National Forest boundary (crest of the Ritter Range) to the junction of the Inyo National Forest boundary and Ashley Creek; east to Ashley Lake; northeast along Ashley Creek to the junction of King Creek; southeast along King Creek to its junction with the middle fork of the San Joaquin River; south and west along the middle fork of the San Joaquin River to the junction of the Inyo National Forest boundary; east along Fish Creek to its confluence with Deer Creek; north and east along Deer Creek to the upper crossing of the Deer Creek trail; north and east along the Deer Creek trail to the Inyo National Forest Boundary (the Sierra Crest); south along the Sierra crest and the Inyo National Forest boundary to Bishop Pass; west along the Dusy Basin Trail to the Middle Fork of the Kings River; southwest and downstream along the Middle Fork of the Kings River to the junction of the Middle Fork and South Fork of the Kings River; southwest along the Kings River through Pine Flat Reservoir, Piedra and Reedley to Highway 99; north along Highway 99 to the point of beginning.

Deer Herds: Huntington, North Kings, Oakhurst, San Joaquin, South Sierra Foothill

7. Zone D-8

a. General Season: The season in Zone D-8 shall open on the fourth Saturday in September and extend for 30 consecutive days.
b. Archery Season: The archery season shall open on the third Saturday in August and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 8,000
e. Legal boundary description of the project area:

In those portions of Fresno, Kern and Tulare counties within a line beginning at the intersection of Highway 99 and the Kings River; upstream and northeast along the Kings River through Reedley, Piedra and Pine Flat Reservoir to the junction of the Middle and South Forks of the Kings River; northeast along the Middle Fork Kings River to the Dusy Basin Trail; east along this trail to the Kings Canyon National Park boundary at Bishop Pass; south along the Kings Canyon and Sequoia National Park boundaries to the Main Kern River; southeast along the Main Kern River and the common boundary between the Inyo and Sequoia National Forests to the end of the Chimney Meadow-Blackrock Station Road (Forest Road 21S03) near Blackrock Mountain; southeast along the Chimney Meadow-Blackrock Station Road through Troy Meadows to the South Fork of the Kern River; south along the South Fork of the Kern River to the Doyle Ranch Road; south along the Doyle Ranch Road to Highway 178 in the town of Onyx; southwest along Highway 178 to Highway 99 at Bakersfield; north along Highway 99 to the point of beginning.

Deer Herds: Greenhorn, Hume, Kaweah, Kern River, South Sierra Foothill and Tule River.

8. Zone D-9

a. General Season: The season in Zone D-9 shall open on the fourth Saturday in September and extend for 30 consecutive days.
b. Archery Season: The archery season shall open on the third Saturday in August and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 2,000
e. The legal boundary description of the project area is as follows:

In that portion of Kern County within a line beginning at the intersection of Highways 99 and 178; northeast along Highway 178 along Lake Isabella and through Walker Pass to Highway 14; southwest along Highway 14 to Highway 58; northwest along Highway 58 to Highway 99; north along Highway 99 to the point of beginning.

Deer Herd: Piute Deer Herd

9. Zone D-10

a. General Season: The season in Zone D-10 shall open on the fourth Saturday in September and extend for 30 consecutive days.
b. Archery Season: The archery season shall open on the third Saturday in August and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 700
e. Legal boundary description of the project area:

In those portions of Kern and Los Angeles counties within a line beginning at the intersection of Highways 99 and 58; southeast along Highway 58 to Highway 14; south along Highway 14 to Highway 138; west along Highway 138 to Interstate 5; north on Interstate 5 to Highway 99; north on Highway 99 to the point of beginning.

Deer Herd: Tejon

10. Zone D-11

a. General Season: The season in Zone D-11 shall open on the second Saturday in October and extend for 30 consecutive days.
b. Archery Season: The archery season shall open on the first Saturday in September and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 5,500
e. Special Conditions: Hunters that possess a D-11 deer tag may also hunt in zones D-13 and D-15 as described in subsections 360(a)(12)(A)(B)(C) and 360(a)(14)(A)(B)(C), respectively.
f. Legal boundary description of the project area is as follows:

Those portions of Los Angeles and San Bernardino counties, within a line beginning at the intersection of Interstate 5 and Highway 138, south of Gorman; east on Highway 138 to Highway 14; south on Highway 14 to Palmdale and Highway 138; east on Highways 138 and 18 to Interstate 15; south on interstates 15 and 15E to Interstate 10; west on Interstate 10 to Interstate 405; north on Interstates 405 and 5 to the point of beginning.

Deer Herd: Los Angeles

11. Zone D-12

a. General Season: The season in Zone D-12 shall open on the first Saturday in November and extend for 23 consecutive days.
b. Archery Season: The archery season shall open on the first Saturday in October and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 950
e. The legal boundary description of the project area is as follows:

Those portions of Imperial, Riverside and San Bernardino counties within a line beginning at Highway 62 and the Twentynine Palms-Amboy Road in Twentynine Palms; east along Highway 62 to Highway 95 at Vidal Junction; north on Highway 95 to Interstate 40; east on Interstate 40 to the California-Arizona state line; south along this state line to the U.S.-Mexican border; west along the U.S.-Mexican border to Highway 111 in Calexico; north on Highway 111 to Interstate 10; north and west on Interstate 10 to Highway 62; north and east on Highway 62 to the point of beginning.

Deer Herd: Burro

12. Zone D-13

a. General Season: The season in Zone D-13 shall open on the second Saturday in October and extend for 30 consecutive days.
b. Archery Season: The archery season shall open on the first Saturday in September and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 4,000
e. Special Conditions: Hunters that possess a D-13 deer tag may also hunt in zones D-11 and D-15 as described in subsections 360(a)(10)(A)(B)(C) and 360(a)(14)(A)(B)(C), respectively.
f. Legal boundary description of the project area:

In those portions of Kern, Los Angeles, San Luis Obispo, Santa Barbara, and Ventura counties within a line beginning at the intersection of Highways 99 and 166 at Mettler; south on Highway 99 and Interstate 5 to Highway 126; west on Highway 126 to the crossing of Sespe Creek; north and then west along Sespe Creek to Highway 33; north on Highway 33 to Highway 166; north and east on Highway 166 to the point of beginning.

Deer Herds: Mount Pinos, Santa Barbara/Ventura

13. Zone D-14

a. General Season: The season in Zone D-14 shall open on the second Saturday in October and extend for 30 consecutive days.
b. Archery Season: The archery season shall open on the first Saturday in September and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 3,000
e. Legal boundary description of the project area:

In those portions of Riverside and San Bernardino counties within a line beginning at the junction of Interstates 10 and 15E; northwest on Interstates 15E and 15 through Cajon Pass to Bear Valley Cutoff Road; east on Bear Valley Cutoff Road to Highway 18; east along Highway 18 to Highway 247; southeast on Highway 247 to Highway 62; southwest on Highway 62 to Interstate 10; west on Interstate 10 to the point of beginning.

Deer Herd: San Bernardino Mountains

14. Zone D-15

a. General Season: The season in Zone D-15 shall open on the second Saturday in October and extend for 30 consecutive days.
b. Archery Season: The archery season shall open on the first Saturday in September and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 1,500
e. Special Conditions: Hunters that possess a D-15 deer tag may also hunt in zones D-11 and D-13 as described in subsections 360(a)(10)(A)(B)(C) and 360(a)(12)(A)(B)(C), respectively.
f. The legal boundary description of the project area is as follows:

Including Santa Catalina Island, those portions of Los Angeles, Orange, Riverside, San Bernardino and San Diego counties within a line beginning at the Pacific Ocean and Interstate 10 in Santa Monica; east on Interstate 10 to Highway 79 at Beaumont; south on Highway 79 to Hemet; south on County Road R-3 through Sage to Highway 79; west on Highway 79 to Interstate 15; south on Interstate 15 to Highway 76; west on Highway 76 to the Pacific Ocean; north along the shoreline to the point of beginning.

Deer Herd: Santa Ana Mountains

15. Zone D-16

a. General Season: The season in Zone D-16 shall open on the fourth Saturday in October and extend for 30 consecutive days.
b. Archery Season: The archery season shall open on the first Saturday in September and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 3,000
e. Legal boundary description of the project area:

Those portions of Riverside, Imperial and San Diego counties within the line beginning at the Pacific Ocean and Highway 76; east on Highway 76 to Interstate 15; north on Interstate 15 to Highway 79; east on Highway 79 to the San Diego-Riverside County line; east along the San Diego-Riverside County line to the Anza-Borrego State Park boundary; south along the Anza-Borrego State Park boundary to Highway 78; east on Highway 78 to Highway 111; south on Highway 111 to the U.S.-Mexican border; west along the U.S.-Mexican border to the Pacific Ocean; north along the shoreline to the point of beginning.

Deer Herds: San Diego, San Jacinto/Santa Rosa Mountains

16. Zone D-17

a. General Season: The season in Zone D-17 shall open on the second Saturday in October and extend for 23 consecutive days.
b. Archery Season: The archery season shall open on the first Saturday in September and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 500
e. Legal boundary description of the project area:

Those portions of Inyo, Kern, Los Angeles and San Bernardino counties within a line beginning at Highway 395 and the Kern-Inyo County line; east along the Kern-Inyo County line to the San Bernardino-Inyo County line; east along the San Bernardino-Inyo County line to Highway 127; north along Highway 127 to the California-Nevada state line; south along the California-Nevada state line to the California-Arizona state line; south along the California-Arizona state line to Interstate 40; Interstate 40 north to Needles; Highway 95 south to Highway 62; west on Highway 62 to Highway 247; northwest on Highway 247 to Highway 18; west on Highway 18 to Bear Valley Cutoff Road; west on Bear Valley Cutoff Road to Interstate 15; north on Interstate 15 to

Highway 18; west on Highways 18 and 138 to Highway 14; north on Highways 14 and 395 to the point of beginning.

Deer Herd: Eastern Mojave Desert

17. Zone D-19

a. General Season: The season in Zone D-19 shall open on the first Saturday in October and extend for 30 consecutive days.
b. Archery Season: The archery season shall open on the first Saturday in September and extend for 23 consecutive days.
c. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
d. Number of Tags: 1,500
e. Legal boundary description of the project area:

Those portions of Imperial, Riverside and San Diego counties within a line beginning at the junction of Interstate 10 and Highway 79; south on Highway 79 to Hemet; south on County Road R-3 to Highway 79; south on Highway 79 to the Riverside-San Diego County line; east on the Riverside-San Diego County line to the Anza-Borrego State Park boundary; south on the Anza-Borrego State Park boundary to Highway 78; east on Highway 78 to Highway 111; north on Highway 111 to the junction of Interstate 10 in Indio; west on Interstate 10 to the point of beginning.

Deer Herd: San Jacinto/Santa Rosa Mountains

18. Zone X-1

a. General Season: The season in Zone X-1 shall open on the first Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 2,325
d. Legal boundary description of the project area:

In those portions of Lassen, Modoc, Shasta and Siskiyou counties within a line beginning at the California-Oregon state line and its intersection with Highway 139; south on Highway 139 to the Lookout-Hackamore Road; south on the Lookout-Hackamore Road to Highway 299; west on Highway 299 to the Pit River near Bieber; south and west on the Pit River to Highway 89 at Lake Britton; northwest on Highway 89 to Interstate 5 at Mt. Shasta; north on Interstate 5 to the junction of Highway 97 at Weed; north and east on Highway 97 to the California-Oregon state line; east on the California-Oregon state line to the point of beginning.

Deer Herd: McCloud Flats

19. Zone X-2

a. General Season: The season in Zone X-2 shall open on the first Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 180
d. Legal boundary description of the project area:

In those portions of Modoc and Siskiyou counties within a line beginning at the intersection of Highway 139 and the California-Oregon state line near Tulelake; east along the California-Oregon state line to the eastern shoreline of Goose Lake; southwest along the eastern shoreline of Goose Lake to Westside Road (Modoc County 48); southeast along the Westside Road to Highway 395 in Davis Creek; south along Highway 395 to Highway 299 in Alturas; west along Highway 299 to Highway 139 near Canby; northwest along Highway 139 to the Oregon-California state line and the point of beginning.

Deer Herd: Devil's Garden/Interstate

20. Zone X-3a

a. General Season: The season in Zone X-3a shall open on the first Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 295
d. Legal boundary description of the project area:

In those portions of Lassen and Modoc counties within a line beginning at the intersection of the Lookout-Hackamore Road and Highway 139; southeast on Highway 139 to Highway 299; east on Highway 299 to Highway 395 in Alturas; south on Highway 395 to the Termo-Grasshopper Road (Lassen County 513); west on the Termo-Grasshopper Road to Highway 139; south on Highway 139 to the Cleghorn Road (Lassen County 521); west and north on the Cleghorn Road to Lassen County Road 519 near Coulthurst Flat; west on Lassen County Road 519 to U.S. Forest Service Designated Through Route 22 near Gooch Mountain; west and north on U.S. Forest Service Designated Through Route 22 to the Little Valley Road (Lassen County 404); north on the Little Valley Road to the Western Pacific Railroad; northeast on the Western Pacific Railroad to Horse Creek; northwest on Horse Creek to the Pit River;

north on the Pit River to Highway 299 at Bieber; northeast on Highway 299 to the Bieber-Lookout-Hackamore Road; north along the Bieber-Lookout-Hackamore Road to the point of beginning.

Deer Herds: Adin, West Lassen

21. Zone X-3b

a. General Season: The season in Zone X-3b shall open on the first Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 840
d. Legal boundary description of the project area:

In those portions of Lassen and Modoc counties within a line beginning at the east shoreline of Goose Lake and the California-Oregon state line; east along this state line to the California-Nevada state line; south along the California-Nevada state line to the Clarks Valley-Red Rock-Tuledad Road (Lassen County Roads 512, 510 and 506); west along the Tuledad Red Rock-Clarks Valley Road to Highway 395 at Madeline; north on Highway 395 to Westside Road (Modoc County 48) in Davis Creek; west and north along Westside Road to the south shoreline of Goose Lake; east and north along the south and east shoreline of Goose Lake to the point of beginning.

Deer Herd: Warner Mountains

22. Zone X-4

a. General Season: The season in Zone X-4 shall open on the first Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 435
d. Legal boundary description of the project area:

In those portions of Lassen and Shasta counties within a line beginning at the junction of highways 89 and 44 at Old Station; north on Highway 89 to the intersection with the Pit River at Lake Britton; east and south on the Pit River to Horse Creek; southeast on Horse Creek to the Burlington Northern Railroad; southwest on the Burlington Northern Railroad to the Little Valley Road (Lassen County 404); south on the Little Valley Road to U.S. Forest Service Designated Through Route 22; south and east on U.S. Forest Service Designated Through Route 22 to Lassen County 519 near Gooch Mountain; east on Lassen County 519 to Cleghorn Road (Lassen County 521) near Coulthurst

Flat; east on Cleghorn Road to Highway 139; south on Highway 139 to its crossing of Willow Creek in the Willow Creek Valley; south (downstream) on Willow Creek to its crossing of Conservation Center Road (Lassen County A-27); west on Conservation Center Road to Highway 36; northwest on Highway 36 to the intersection with Highway 44; north and west on Highway 44 to the point of beginning.

Deer Herds: Cow Creek, West Lassen, East Lassen

23. Zone X-5a

a. General Season: The season shall open on the first Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 70
d. Legal boundary description of the project area:

In that portion of Lassen County within a line beginning at the junction of Highway 395 and Conservation Center Road (Lassen County A-27) in the town of Litchfield; west on Conservation Center Road to its crossing of Willow Creek; northwest (upstream) on Willow Creek to its crossing of Highway 139 in the Willow Creek Valley; north along Highway 139 to the Termo-Grasshopper Road; east on the Termo-Grasshopper Road to Highway 395; south along Highway 395 to the point of beginning.

Deer Herd: East Lassen

24. Zone X-5b

a. General Season: The season shall open on the first Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 155
d. Legal boundary description of the project area:

That portion of Lassen County lying within the following line: Beginning at the junction of Highway 395 and the Clarks Valley-Red Rock-Tuledad Road (Lassen County Roads 506, 510 and 512); east on the Clarks Valley-Red Rock-Tuledad Road to the California-Nevada state line; south on the California-Nevada state line to the Pyramid Lake Road (Lassen County 320); west on the Pyramid Lake Road to Highway 395; north on Highway 395 to the point of beginning.

Deer Herd: East Lassen

25. Zone X-6a

a. General Season: The season in Zone X-6a shall open on the first Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 325
d. Legal boundary description of the project area:

In those portions of Lassen and Plumas counties within a line beginning at the junction of Highway 147 and Highway 36 near Westwood; east on Highway 36 to Conservation Center Road at Susanville (County Road A-27); east on Conservation Center Road to Highway 395 at the town of Litchfield; east on Highway 395 to the Wendel-Pyramid Lake Road (County Road 320); east on the Wendel-Pyramid Lake Road to the Nevada-California state line; south on the Nevada-California state line to the UP-WP railroad line near Herlong; west on the UP-WP railroad line to the Herlong Access Road (County Road A-25) at Herlong; west on the Herlong Access Road to Highway 395; north on Highway 395 to County Road 336 at Milford; southwest on County Road 336 to U.S. Forest Service Road 26N16 near the Plumas-Lassen County line; west on Forest Service Road 26N16 to Forest Service Road 28N03 at Doyle Crossing; west on Forest Service Road 28N03 to Forest Service Road 29N43 near Antelope Lake; south on Forest Service Road 29N43 to County Road 111 at Flournoy Bridge; south on County Road 111 to Forest Service Road 24N08; south on Forest Service Road 24N08 to County Road 112 at Lake Davis; south on County Road 112 to Highway 70; west on Highway 70 to the Highway 89 junction at Blairsden; west on Highway 89/70 to the Greenville “Y” west of Quincy; northwest on Highway 89 to Highway 147 at Canyon Dam; north on Highway 147 to the point of beginning.

Deer Herds: Doyle, Sloat

26. Zone X-6b

a. General Season: The season in Zone X-6b shall open on the first Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 415
d. Legal boundary description of the project area:

In those portions of Lassen and Plumas counties within a line beginning at the junction of County Road 336 and Highway 395 at Milford; south on Highway 395 to the junction of Highway 395 and the Herlong Access Road (County Road A-25); east on the Herlong

Access Road to its junction with the UP-WP railroad line at Herlong; east on the UP-WP railroad line to the Nevada-California state line; south on the Nevada-California state line to the junction of the Nevada-California state line and Highway 395 at Bordertown; northwest on Highway 395 to its junction with Highway 70; west on Highway 70 to its junction with County Road 112; north on County Road 112 to its junction with U.S. Forest Service Road 24N08 at Lake Davis; north on Forest Service Road 24N08 to its junction with County Road 111; northwest on County Road 111 to its junction with Forest Service Road 29N43 at Flournoy Bridge; north on Forest Service Road 29N43 to Forest Service Road 28N03 near Antelope Lake; southeast on Forest Service Road 28N03 to Forest Service Road 26N16 at Doyle Crossing; east on Forest Service Road 26N16 to County Road 336 near the Plumas-Lassen county line; north on County Road 336 to the point of beginning.

Deer Herd: Doyle

27. Zone X-7a

a. General Season: The season in Zone X-7a shall open on the first Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 220
d. Legal boundary description of the project area:

In those portions of Lassen, Nevada, Plumas and Sierra counties lying within a line beginning at the junction of Highway 395 and the California-Nevada state line at Bordertown; south along the Long Valley Road (County Road S570) to its intersection with the Henness Pass Road (County Road S860); west on Henness Pass Road over Summit 2 to the intersection with County Road S450 (near the Davies Creek Campground at Stampede Reservoir); west on County Road S450 (the Henness Pass Road) through Kyburz Flat to its intersection with Highway 89; south on Highway 89 to its intersection with Interstate 80 at Truckee; west on Interstate 80 to the Pacific Crest Trail near the Castle Peak-Boreal Ridge Summit; north on the Pacific Crest Trail to the new road to White Rock Lake (one mile west of White Rock Lake in Section 21, T18N, R14E, M.D.B.M.); north on the new White Rock Lake Road below Bear Valley to the White Rock Lake Road; north on the White Rock Lake Road to the Jackson Meadows Highway (Fiberboard Road); east two miles on the Jackson Meadows Highway to the Yuba Pass Road at Webber Lake; north on the Yuba Pass Road (main haul road) through Bonta Saddle to Highway 49 at Yuba Pass; west on Highway 49 to the new Gold Lake Road at Bassetts; north on the new Gold Lake Road to Highway 89 near Graeagle; north on Highway 89 to Highway 70; east on Highway 70 to Highway 395 at Hallelujah Junction; south on Highway 395 to the point of beginning.

Deer Herd: Loyalton/Truckee

28. Zone X-7b

a. General Season: The season in Zone X-7b shall open on the first Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 100
d. Legal boundary description of the project area:

In those portions of Nevada, Placer and Sierra counties lying within a line beginning at the junction of Highway 395 and the California-Nevada state line at Bordertown; south along the California-Nevada state line to the shore of Lake Tahoe; west and south along the shore of Lake Tahoe to the mouth of Blackwood Creek near Idlewild; west on Blackwood Creek to Highway 89; north on Highway 89 to Blackwood Canyon Road; Blackwood Canyon Road near Idlewild; west along Blackwood Canyon Road to Forest Route 03; west and south along Forest Route 03 to the Pacific Crest Trail at Barker Pass; north on the Pacific Crest Trail to its intersection with Interstate 80 near the Castle Peak-Boreal Ridge Summit; east on Interstate 80 to its intersection with Highway 89 at Truckee; north on Highway 89 to County Road S450 (the Henness Pass Road, a.k.a. the Kyburz Flat Road); east on County Road S450 to its intersection with County Road S860 (continuation of Henness Pass Road) near the Davies Creek Campground at Stampede Reservoir; east on County Road S860, over Summit 2 to the junction with County Road S570 (the Long Valley Road); north on County Road S570 to Bordertown at the point of beginning.

Deer Herd: Loyalton/Truckee

29. Zone X-8

a. General Season: The season in Zone X-8 shall open on the fourth Saturday in September and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 300
d. Legal boundary description of the project area:

In those portions of Alpine and El Dorado counties within a line beginning at the junction of the California-Nevada state line and Highway 50; southeast along the California-Nevada state line to the Indian Springs Road, south to the Alpine-Mono County line; south along the Alpine-Mono county line to the Sierra crest; northwest along the Sierra crest to the intersection with the Pacific Crest Trail near Wolf Creek Pass; northwest

along the Pacific Crest Trail to Highway 50 at Echo Summit; northeast on Highway 50 to the point of beginning.

Deer Herd: Carson River

30. Zone X-9a

a. General Season: The season in Zone X-9a shall open on the third Saturday in September and extend for 24 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351 (a), Title 14, CCR) or better, per tag.
c. Number of Tags: 750
d. Legal boundary description of the project area:

In those portions of Fresno, Inyo, Madera and Mono counties within a line beginning at the intersection of Highway 6 and the California-Nevada state line; south along Highway 6 to its junction with Highway 395; south along Highway 395 to its junction with Highway 168; west and south along Highway 168 to the North Lake Road turnoff; west along the North Lake Road and the Piute Pass Trail to the Sierra Crest (Inyo National Forest Boundary); north along the Inyo National Forest Boundary to the Deer Creek Trail; south and west along the Deer Creek Trail to the upper crossing of Deer Creek; west and south along Deer Creek to its confluence with Fish Creek; west along Fish Creek to its confluence with the middle fork of the San Joaquin River; north along the middle fork of the San Joaquin River to the junction of King Creek; west along King Creek to the junction of Ashley Creek; west along Ashley Creek to Ashley Lake; continue west along Ashley Creek to the junction of the Inyo National Forest boundary; north along the Inyo National Forest Boundary (the crest of the Ritter Range) to the Mono-Tuolumne county line; north on the Mono-Tuolumne County line to the Virginia Lakes Trail (Entry Trail D-11); east along Virginia Lakes Trail to Virginia Lakes Road; east along Virginia Lakes Road to Highway 395; south along Highway 395 to Highway 167; east on Highway 167 to the California-Nevada state line; southeast on the California-Nevada state line to the point of beginning.

Deer Herds: Casa Diablo, Sherwin Grade, Buttermilk

31. Zone X-9b

a. General Season: The season in Zone X-9b shall open on the third Saturday in September and extend for 24 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 325
d. Legal boundary description of the project area:

That portion of Inyo County within a line beginning at the intersection of Highway 395 and Cottonwood Creek; northwest along Cottonwood Creek to the Horseshoe Meadow Road; south along the Horseshoe Meadow Road to the Cottonwood Pass Trail; west along the Cottonwood Pass Trail through Horseshoe Meadow to the Inyo-Tulare County line at Cottonwood Pass; north on the Inyo-Tulare and the Inyo-Fresno county lines to the Piute Pass Trail; east along the Piute Pass Trail to the North Lake Road; east and south on the North Lake Road to Highway 168; north and east on Highway 168 to Highway 395; south on Highway 395 to the point of beginning.

Deer Herds: Goodale

32. Zone X-9c

a. General Season: The season in Zone X-9c shall open on the third Saturday in October and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 325
d. Legal boundary description of the project area is as follows:

In those portions of Inyo and Mono counties within a line beginning at Highway 395 and the Kern-Inyo County line; north along Highway 395 to Highway 6; north on Highway 6 to the California-Nevada state line; southeast along the California-Nevada state line to Highway 127; south along Highway 127 to the Inyo-San Bernardino County line; west along the Inyo-San Bernardino County line to the Kern-Inyo County line; west along the Kern-Inyo County line to the point of beginning.

Deer Herd: Inyo/White Mountains

33. Zone X-10

a. General Season: The season in Zone X-10 shall open on the last Saturday in September and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 400
d. Legal boundary description of the project area:

In those portions of Kern, Tulare and Inyo counties within a line beginning at the intersection of Highway 178 and the Doyle Ranch Road in the town of Onyx; north along the Doyle Ranch Road to the South Fork of the Kern River; north along the South Fork of the Kern River to the Chimney Meadow-Blackrock Station Road (Forest Road

21S03); northwest along the Chimney Meadow-Blackrock Station Road through Troy Meadows to the road's end at the Inyo and Sequoia National Forest boundary near Blackrock Mountain; northwest along the Inyo and Sequoia National Forest boundary to the main Kern River; northwest along the main Kern River to the Sequoia National Park boundary; northeast along the Sequoia National Park boundary to the Inyo-Tulare County line; southeast along the Inyo-Tulare County line to the Cottonwood Pass Trail at Cottonwood Pass; east along the Cottonwood Pass Trail through Horseshoe Meadow to the Horseshoe Meadow Road; north along the Horseshoe Meadow Road to Cottonwood Creek; southeast along Cottonwood Creek to Highway 395; south along Highway 395 to Highway 14; south along Highway 14 to Highway 178; north and west along Highway 178 to the point of beginning.

Deer Herd: Monache

34. Zone X-12

a. General Season: The season in Zone X-12 shall open on the third Saturday in September and extend for 24 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 805
d. Legal boundary description of the project area:

That portion of Mono County within a line beginning at the junction of the California-Nevada state line and Highway 167 (Pole Line Road); west on Highway 167 to Highway 395; north on Highway 395 to Virginia Lakes Road; west on Virginia Lakes Road to the Virginia Lakes Trail (Entry Trail D11); northwest on the Virginia Lakes Trail to the Mono-Tuolumne County line; north along the Mono-Tuolumne County line to the Mono-Alpine County line; northeast along the Mono-Alpine County line to the Indian Springs Road; northeast on Indian Springs Road to the California-Nevada state line; southeast on the California-Nevada state line to the point of beginning.

Deer Herds: East Walker, West Walker, Mono Lake

AREA-SPECIFIC ARCHERY HUNTS

Archery Hunting With Area-specific Archery Tags. Deer may be taken only with archery equipment specified in Section 354, only during the archery seasons as follows:

35. A-1 (C Zones Archery Only Hunt)

a. Season:

1. Zone C-1. The archery season for Zone C-1 shall open on the third Saturday in August and extend for 16 consecutive days.
2. Zone C-2. The archery season for Zone C-2 shall open on the third Saturday in August and extend for 23 consecutive days.
3. Zone C-3. The archery season for Zone C-3 shall open on the third Saturday in August and extend for 23 consecutive days.
4. Zone C-4. The archery season for Zone C-4 shall open on the third Saturday in August and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 2,045. A-1 (C Zones Archery Only Hunt) tags are valid in Zones C-1, C-2, C-3, and C-4 only during the archery season as specified above in subsections 361(b)(1)(B)1 through 4.
d. Legal boundary description of the project area:

Shall include all of Zones C-1, C-2, C-3, and C-4 as described in subsections 360(a)(3)(A)1. through 4.

Deer Herds: See Zones C-1 through C-4.

36. A-3 Hunt (Zone X-1 Archery Hunt)

a. Season: The archery season for hunt A-3 (Zone X-1 Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 265
d. Legal boundary description of the project area:

See Zone X-1.

Deer Herds: See Zone X-1.

37. A-4 Hunt (Zone X-2 Archery Hunt)

a. Season: The archery season for hunt A-4 (Zone X-2 Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 10
d. Legal boundary description of the project area:

See Zone X-2.

Deer Herds: See Zone X-2.

38. A-5 Hunt (Zone X-3a Archery Hunt)

a. Season: The archery season for hunt A-5 (Zone X-3a Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 35
d. Legal boundary description of the project area:

See Zone X-3a.

Deer Herds: See Zone X-3a.

39. A-6 Hunt (Zone X-3b Archery Hunt)

a. Season: The archery season for hunt A-6 (Zone X-3b Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 90
d. Legal boundary description of the project area:

See Zone X-3b.

Deer Herds: See Zone X-3b.

40. A-7 Hunt (Zone X-4 Archery Hunt)

a. Season: The archery season for hunt A-7 (Zone X-4 Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 105
d. Legal boundary description of the project area:

See Zone X-4.

Deer Herds: See Zone X-4.

41. A-8 Hunt (Zone X-5a Archery Hunt)

a. Season: The archery season for hunt A-8 (Zone X-5a Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 20
d. Legal boundary description of the project area:

See Zone X-5a.

Deer Herds: See Zone X-5a.

42. A-9 Hunt (Zone X-5b Archery Hunt)

a. Season: The archery season for hunt A-9 (Zone X-5b Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 5
d. Legal boundary description of the project area:

See Zone X-5b.

Deer Herds: See Zone X-5b.

43. A-11 Hunt (Zone X-6a Archery Hunt)

a. Season: The archery season for hunt A-11 (Zone X-6a Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 55
d. Legal boundary description of the project area:

See Zone X-6a.

Deer Herds: See Zone X-6a.

44. A-12 Hunt (Zone X-6b Archery Hunt)

a. Season: The archery season for hunt A-12 (Zone X-6b Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 175
d. Legal boundary description of the project area:

See Zone X-6b.

Deer Herds: See Zone X-6b.

45. A-13 Hunt (Zone X-7a Archery Hunt)

a. Season: The archery season for hunt A-13 (Zone X-7a Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 30
d. Legal boundary description of the project area:

See Zone X-7a.

Deer Herds: See Zone X-7a.

46. A-14 Hunt (Zone X-7b Archery Hunt)

a. Season: The archery season for hunt A-14 (Zone X-7b Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 20
d. Legal boundary description of the project area:

See Zone X-7b.

Deer Herds: See Zone X-7b.

47. A-15 Hunt (Zone X-8 Archery Hunt)

a. Season: The archery season for hunt A-15 (Zone X-8 Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 25
d. Legal boundary description of the project area:

See Zone X-8.

Deer Herds: See Zone X-8.

48. A-16 Hunt (Zone X-9a Archery Hunt)

a. Season: The archery season for hunt A-16 (Zone X-9a Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 130
d. Legal boundary description of the project area:

See Zone X9a.

Deer Herds: See Zone X-9a.

49. A-17 Hunt (Zone X-9b Archery Hunt)

a. Season: The archery season for hunt A-17 (Zone X-9b Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 300
d. Legal boundary description of the project area:

See Zone X-9b.

Deer Herds: See Zone X-9b.

50. A-18 Hunt (Zone X-9c Archery Hunt)

a. Season: The archery season for hunt A-18 (Zone X-9c Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 350
d. Legal boundary description of the project area:

See Zone X9c.

Deer Herds: See Zone X-9c.

51. A-19 Hunt (Zone X-10 Archery Hunt)

a. Season: The archery season for hunt A-19 (Zone X-10 Archery Hunt) shall open on the third Saturday in August and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 120
d. Legal boundary description of the project area:

See Zone X-10.

Deer Herds: See Zone X-10.

52. A-20 Hunt (Zone X-12 Archery Hunt)

a. Season: The archery season for hunt A-20 (Zone X-12 Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 115
d. Legal boundary description of the project area:

See Zone X-12.

Deer Herds: See Zone X-12.

53. A-21 Hunt

a. Season: The season for hunt A-21 (Anderson Flat Archery Buck Hunt) shall open on the second Saturday in November and extend for 14 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 25
d. Legal boundary description of the project area:

In that portion of hunt Zone D-6 in Mariposa and Tuolumne counties lying within a line beginning at the intersection of Highway 140 and Bull Creek Road at Briceburg; north on Bull Creek Road (U.S. Forest Service Road 2S05) to Greeley Hill Road; west on Greeley Hill Road to Smith Station Road (County Route J20); north on Smith Station Road to Highway 120 (near Burch Meadow); east on Highway 120 to the Yosemite National Park Boundary (near Big Oak-Flat Ranger Station); southeast along the Yosemite National Park Boundary to Highway 140; west on Highway 140 to the

Yosemite National Park Boundary; northwest along the Yosemite National Park Boundary to Highway 140 (at Redbud Campground); west on Highway 140 to the point of beginning.

Deer Herd: Yosemite

54. A-22 Hunt

a. Season: The season for hunt A-22 (San Diego Archery Either-Sex Deer Hunt) shall open on the first Saturday in September and extend for 44 consecutive days, and reopen on the third Saturday in November and extend through December 31.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 1,000
d. Legal boundary description of the project area:

That portion of San Diego County within Zone D-16 (see subsection 360(a)(15)(A)).

Deer Herd: San Diego

55. A-24 Hunt

a. Season: The season for hunt A-24 (Monterey Archery Either-Sex Deer Hunt) shall open on the second Saturday in October and extend for 30 consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 100
d. Legal boundary description of the project area:

All of Monterey County, except Fort Ord Military Reservation.

Deer Herd: Santa Lucia

56. A-25 Hunt

a. Season: The season for hunt A-25 (Lake Sonoma Either-Sex Deer Hunt) is for Saturdays, Sundays and Mondays only, beginning on the first Saturday in October and extending for 24 consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 35
d. Special Conditions:
1. The use of dogs is prohibited.

2. Boats are required for all areas west of Cherry Creek (some 2/3 0f the hunt area). Only cartop boats are allowed to launch from the Yorty Creek access.
e. Legal boundary description of the project area:

That portion of Sonoma County within the boundaries of the Lake Sonoma Area, U.S. Army Corps of Engineers (COE) property described as follows: Beginning at the intersection of Hot Springs Road and the COE boundary; east and south along the boundary line to the intersection with Brush Creek; west along the north bank of Brush Creek (shoreline) to the Dry Creek arm of Lake Sonoma; south along the shoreline of Dry Creek arm; to Smittle Creek; north along the COE property line to Dry Creek; east along the COE boundary across Cherry Creek, Skunk Creek, and Yorty Creek to the point of beginning.

Deer Herd: Santa Rosa

57. A-26 Hunt

a. Season: The season for hunt A-26 (Bass Hill Archery Buck Deer Hunt) shall open on the third Saturday in November and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 30
d. Legal boundary description of the project area:

That portion of Lassen County within the area described as Zone X-6a (see subsection 360(b)(8)(A)).

Deer Herd: Doyle

58. A-27 Hunt

a. Season: The season for hunt A-27 (Devil's Garden Archery Buck Hunt) shall open on the fourth Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 10
d. Legal boundary description of the project area:

That portion of Modoc County within a line beginning at the intersection of the Malin Road (Modoc County 114) and the California/Oregon state line; east along the state line to the Crowder Flat Road; south along the Crowder Flat Road to the Blue Mountain Road (Modoc County 136); west on the Blue Mountain Road to the Blue Mountain-Mowitz Butte-Ambrose Road; south on the Blue Mountain-Mowitz Butte-Ambrose Road

to Highway 139; north on Highway 139 to the Malin Road; north on the Malin Road to the point of beginning.

Deer Herds: Devil's Garden/Interstate

59. A-30 Hunt

a. Season: The season for hunt A-30 (Covelo Archery Buck Hunt) shall open on the second Saturday of November and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 40
d. Legal boundary description of the project area:

That portion of Mendocino County within a line beginning at the intersection of Highway 101 and the Humboldt-Mendocino county line; east along the Humboldt-Mendocino county line to the Trinity-Mendocino county line; east along the Trinity-Mendocino county line to the Mendocino-Tehama county line; south on the Mendocino-Tehama county line to the Mendocino-Glenn county line; south on the Mendocino-Glenn county line to the Mendocino-Lake county line; west and south on the Mendocino-Lake county line to the Main Eel River; west and north on the Main Eel River to the Hearst-Willits Road; southwest on the Hearst-Willits Road to Commercial Avenue; west on Commercial Avenue to Highway 101; north on Highway 101 to the point of beginning.

Deer Herd: Mendocino

60. A-31 Hunt

a. Season: The season for hunt A-31 (Los Angeles Archery Either-Sex Deer Hunt) shall open on the fourth Saturday in September and extend through December 31.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 1,500
d. Legal boundary description of the project area:

That portion of Los Angeles County within Zone D-11 (see subsection 360(a)(10)(A)).

Deer Herd: Los Angeles

61. A-32 Hunt

a. Season: The season for hunt A-32 (Ventura/Los Angeles Late Season Archery Either-Sex Deer Hunt) shall open on the second Saturday in November and extend for 23 consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 250
d. Legal boundary description of the project area:

In those portions of Los Angeles and Ventura counties within the area described as the A Zone (see subsection 360(a)(1)(A)).

Deer Herd: Santa Barbara

GENERAL ARCHERY ONLY TAG HUNTS

62. Archery Hunting with Archery Only Tags

a. Season: The archery season and general seasons are provided in subsection 361(a) above and in subsections 360(a) and (c).
b. Bag and Possession Limit: All bag and possession limits per zone are the same as those described in subsections 360(a) and (c).
c. Number of Tags: Number of Archery Only Tags Permitted. A person may obtain an archery only tag using a one-deer tag application and a second archery only tag using a second deer tag application.
d. Special Conditions: Deer may be taken only with archery equipment specified in Section 354, during the archery seasons and general seasons. Archers not in possession of an archery only tag may hunt only in the zone, zones, or areas for which they have a general tag or an area-specific archery tag. (Refer to subsection 361(c)(2) for zones in which archery only tags are valid).
e. Legal boundary description of the project area:

Zones in Which Archery Only Tags are Valid. An archery only tag is valid for hunt G-10, and during the archery season and general season in all zones except C-1 through C-4 and X-1 through X-12.

Deer Herds: See Zones A, B-1 through B-6, D-3 through D-19

ADDITIONAL HUNTS

63. G-1 Hunt

a. Season: The season for additional hunt G-1 (Late Season Buck Hunt for Zone C-4) shall open on the fourth Saturday in October and extend for 9 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 2,850
d. Legal boundary description of the project area:

Those portions of Butte, Glenn, Lassen, Plumas, Shasta, and Tehama counties within the area described as Zone C-4 (see subsection 360(a)(3)(A)4.).

Deer Herds: East Tehama, Mother Lode

64. G-3 Hunt

a. Season: The season for additional hunt G-3 (Goodale Buck Hunt) shall open on the first Saturday in December and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 35
d. Legal boundary description of the project area is as follows:

In that portion of Inyo County within a line beginning at the intersection of Highway 395 and Lone Pine Creek; west along Lone Pine Creek to the Inyo-Tulare County line; northwest along the Inyo-Tulare and Inyo-Fresno county lines to Taboose Creek; east along Taboose Creek to Highway 395; south along Highway 395 to the point of beginning.

Deer Herd: Goodale

65. G-6 Hunt

a. Season: The season for additional hunt G-6 (Kern River Deer Herd Buck Hunt) shall open on the first Saturday in December and extend for nine consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 50
d. Legal boundary description of the project area:

In those portions of Kern and Tulare counties lying within a line beginning at the intersection of County Road 521 and County Road 495 at Kernville; south on County Road 495 to the intersection of Highway 155 at Wofford Heights; west on Highway 155 to the intersection of U.S. Forest Service Road 24S15 at Greenhorn Summit; north on U.S. Forest Service Road 24S15 to the intersection of U.S. Forest Service Road 23S16

(near Portuguese Pass); northeast on U.S. Forest Service Road 23S16 to County Road SM50; west on County Road SM50 to the intersection of the Western Divide Highway (County Road SM107); north on County Road SM107 to the junction of U.S. Forest Service Road 21S50 (near Quaking Aspen Campground); north on U.S. Forest Service Road 21S50 to the junction of U.S. Forest Service Road 20S79; northeast on U.S. Forest Service Road 20S79 to the junction of U.S. Forest Service Road 20S53; northeast on U.S. Forest Service Road 20S53 to the Golden Trout Wilderness boundary (at Lewis Camp Trail Head); east on the Golden Trout Wilderness Boundary to Rattlesnake Creek; southeast on Rattlesnake Creek to U.S. Forest Service Road 22S05; south on U.S. Forest Service Road 22S05 to the Dome Land Wilderness Boundary; southwest on the Dome Land Wilderness Boundary to the intersection of the South Fork of the Kern River; south along the South Fork of the Kern River to the intersection of County Road 521; west on County Road 521 to the point of beginning.

Deer Herd: Kern River

66. G-7 Hunt

a. Season: The season for additional hunt G-7 (Beale Either-Sex Deer Hunt) shall open on the third Saturday in August and extend for 79 consecutive days, except if rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 20 (military only)
d. Special Conditions:
1. Only shotguns with single slugs or muzzleloading rifles, crossbows, and archery equipment as specified in sections 353 and 354 may be used.
2. In the event the Commanding Officer cancels the hunt, G-7 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.
e. Legal boundary description of the project area:

That portion of Yuba County lying within the exterior boundaries of Beale Air Force Base.

Deer Herd: Mother Lode

67. G-8 Hunt

a. Season: The season for additional hunt G-8 (Fort Hunter Liggett Antlerless Deer Hunt) shall be open Saturdays, Sundays, and the Columbus Day holiday only beginning the first Saturday in October and extend for two consecutive weekends, except if

rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.
b. Bag and Possession Limit: One antlerless deer (see subsection 351(b), Title 14, CCR) per tag.
c. Number of Tags: 20 (10 military and 10 general public)
d. Special Conditions: In the event the Commanding Officer cancels the hunt, G-8 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.
e. Legal boundary description of the project area:

That portion of Monterey County lying within the exterior boundaries of the Hunter Liggett Military Reservation, except as restricted by the Commanding Officer.

Deer Herd: Santa Lucia

68. G-9 Hunt

a. Season: The season for additional hunt G-9 (Camp Roberts Antlerless Deer Hunt) shall open the last Monday in August and extend for 8 consecutive days, except if
b. rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.
c. Bag and Possession Limit: One antlerless deer (see subsection 351(b), Title 14, CCR) per tag.
d. Number of Tags: 30 (15 military and 15 general public)
e. Special Conditions: In the event the Commanding Officer cancels the hunt, G-9 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.
f. Legal boundary description of the project area:

That portion of San Luis Obispo County lying within the exterior boundaries of Camp Roberts, except as restricted by the Commanding Officer.

Deer Herd: Adelaida

69. G-10 Hunt

a. Season: The season for additional hunt G-10 (Camp Pendleton Either-Sex Deer Hunt) shall be open on Saturdays, Sundays, the Columbus and Veterans Day Holidays and the day after Thanksgiving only beginning the third Saturday in September and extend through the Sunday following the Thanksgiving Day holiday, except if rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.

b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 300 (military only)
d. Special Conditions:
1. Only archery equipment is permitted during the first four weekends of the season.
2. Hunting with firearms is permitted beginning on the fifth weekend through the end of season.
3. A permit fee and method of take registration with the Base are required.
4. In the event the Commanding Officer cancels the hunt, G-10 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.
e, Legal boundary description of the project area:

That portion of San Diego County lying within the exterior boundaries of the U.S. Marine Corps Base, Camp Joseph Pendleton.

Deer Herd: Santa Ana Mountains

70. G-11 Hunt

a. Season: The season for additional hunt G-11 (Vandenberg Either-Sex Deer Hunt) shall open on the last Monday in August and extend through December 31.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 500 (military and Department of Defense employees only)
d. Special Conditions: In the event the Commanding Officer cancels the hunt, G-11 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.
e. Legal boundary description of the project area:

That portion of Santa Barbara County lying within the exterior boundaries of Vandenberg Air Force Base.

Deer Herd: Santa Barbara

71. G-12 Hunt

a. Season: The season for additional hunt G-12 (Gray Lodge Shotgun Either-Sex Deer Hunt) shall open on the third Saturday in September and extend for nine consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.

c. Number of Tags: 30
d. Special Conditions: Only shotguns and ammunition, as specified in Section 353, Title 14, CCR, may be used.
e. Legal boundary description of the project area:

Those portions of Butte and Sutter counties within the exterior boundaries of the Gray Lodge State Wildlife Area.

Deer Herd: Mother Lode

72. G-13 Hunt

a. Season: The season for additional hunt G-13 (San Diego Antlerless Deer Hunt) shall open on the fourth Saturday in October and extend for 23 consecutive days.
b. Bag and Possession Limit: One antlerless deer (see subsection 351(b), Title 14, CCR) per tag.
c. Number of Tags: 300
d. Legal boundary description of the project area:

That portion of San Diego County within Zone D-16 (see subsection 360(a)(15)(A)).

Deer Herd: San Diego

73. G-19 Hunt

a. Season: The season for additional hunt G-19 (Sutter-Yuba Wildlife Areas Either-Sex Deer Hunt) shall open on the fourth Saturday in September and extend through December 31.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 25
d. Special Conditions: Only archery equipment and crossbows (as specified in Section 354) and shotguns and ammunition (as specified in Section 353) may be used.
e. Legal boundary description of the project area:

Those portions of Yuba and Sutter counties within the exterior boundaries of: (1) the Feather River Wildlife Area, and (2) the Sutter Bypass Wildlife Area (as defined in Section 550, Title 14, CCR).

Deer Herd: Mother Lode

74. G-21 Hunt

a. Season: The season for additional hunt G-21 (Ventana Wilderness Buck Hunt) shall open on the second Saturday in November and extend for 23 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14 CCR) or better, per tag.
c. Number of Tags: 25
d. Legal boundary description of the project area:

That portion of Monterey County and the Los Padres National Forest within the exterior boundaries of the Ventana Wilderness Area.

Deer Herd: Santa Lucia

75. G-37 Hunt

a. Season: The season for additional hunt G-37 (Anderson Flat Buck Hunt) shall open on the fourth Saturday in November and extend for nine consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 25
d. Legal boundary description of the project area:

In that portion of hunt Zone D-6 in Mariposa and Tuolumne counties lying within a line beginning at the intersection of Highway 140 and Bull Creek Road at Briceburg; north on Bull Creek Road (U.S. Forest Service Road 2S05) to Greeley Hill Road; west on Greeley Hill Road to Smith Station Road (County Route J20); north on Smith Station Road to Highway 120 (near Burch Meadow); east on Highway 120 to the Yosemite National Park Boundary (near Big Oak-Flat Ranger Station); southeast along the Yosemite National Park Boundary to Highway 140; west on Highway 140 to the Yosemite National Park Boundary; northwest along the Yosemite National Park Boundary to Highway 140 (at Redbud Campground); west on Highway 140 to the point of beginning.

Deer Herd: Yosemite

76. G-38 Hunt

a. Season: The season for additional hunt G-38 (X-10 Late Season Buck Hunt) shall open on the third Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 300
d. Legal boundary description of the project area:

In those portions of Kern, Tulare and Inyo counties within a line beginning at the intersection of Highway 178 and the Doyle Ranch Road in the town of Onyx; north along the Doyle Ranch Road to the South Fork of the Kern River; north along the South Fork of the Kern River to the Chimney Meadow-Blackrock Station Road (Forest Road 21S03); northwest along the Chimney Meadow-Blackrock Station Road through Troy Meadows to the road's end at the Inyo and Sequoia National Forest boundary near Blackrock Mountain; northwest along the Inyo and Sequoia National Forest boundary to the main Kern River; northwest along the main Kern River to the Sequoia National Park boundary; northeast along the Sequoia National Park boundary to the Inyo-Tulare County line; southeast along the Inyo-Tulare County line to the Cottonwood Pass Trail at Cottonwood Pass; east along the Cottonwood Pass Trail through Horseshoe Meadow to the Horseshoe Meadow Road; north along the Horseshoe Meadow Road to Cottonwood Creek; southeast along Cottonwood Creek to Highway 395; south along Highway 395 to Highway 14; south along Highway 14 to Highway 178; north and west along Highway 178 to the point of beginning.

Deer Herd: Monache

77. G-39 Hunt

a. Season: The season for additional hunt G-39 (Round Valley Late Season Buck Hunt) shall open on the fourth Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 5
d. Legal boundary description of the project area:

In that portion of Inyo and Mono counties within a line beginning at the intersection of U.S. Highway 395 and California Highway 168; west and south along Highway 168 to the North Lake Road turnoff; west along the North Lake Road and the Piute Pass Trail to the Inyo-Fresno county line; north along the Inyo-Fresno county line to the Mono-Fresno county line; north along the Mono-Fresno and Mono-Madera county lines to the junction of the Mono-Madera county line and California Highway 203 at Minaret Summit; southeast along Highway 203 to its junction with Highway 395; south along Highway 395 to the point of beginning.

Deer Herd: Buttermilk, Sherwin Grade

78. M-3 Hunt

a. Season: The season for additional hunt M-3 (Doyle Muzzleloading Rifle Buck Hunt) shall open on the third Saturday in November and extend for nine consecutive days.

b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 20
d. Special Conditions: Only muzzleloading rifles as specified in Section 353, Title 14, CCR, may be used.
e. Legal boundary description of the project area:

That portion of Lassen County within the area described as X-6b (see subsection 360(b)(9)(A)).

Deer Herd: Doyle

79. M-4 Hunt

a. Season: The season for additional hunt M-4 (Horse Lake Muzzleloading Rifle Buck Hunt) shall open on the fourth Saturday in October and extend for nine consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 5
d. Special Conditions: Only muzzleloading rifles as specified in Section 353, Title 14, CCR, may be used.
e. Legal boundary description of the project area:

That portion of Lassen County within the area described as X-5a (see subsection 360(b)(6)(A)).

Deer Herd: East Lassen

80. M-5 Hunt

a. Season: The season for additional hunt M-5 (East Lassen Muzzleloading Rifle Buck Hunt) shall open on the fourth Saturday in October and extend for nine consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 15
d. Special Conditions: Only muzzleloading rifles as specified in Section 353, Title 14, CCR, may be used.
e. Legal boundary description of the project area:

That portion of Lassen County within the area described as Zone X-5b (see subsection 360(b)(7)(A).

Deer Herd: East Lassen

81. M-6 Hunt

a. Season: The season for additional hunt M-6 (San Diego Muzzleloading Rifle Either-Sex Deer Hunt) shall open on the third Saturday in December and extend through December 31.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 80
d. Special Conditions: Only muzzleloading rifles as specified in Section 353, Title 14, CCR, may be used.
e. Legal boundary description of the project area:

That portion of San Diego County within Zone D-16 (see subsection 360(a)(15)(A)).

Deer Herd: San Diego

82. M-7 Hunt

a. Season: The season for additional hunt M-7 (Ventura Muzzleloading Rifle Either-Sex Deer Hunt) shall open on the last Saturday in November and extend for 16 consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 150
d. Special Conditions: Only muzzleloading rifles as specified in Section 353, Title 14, CCR, may be used.
e. Legal boundary description of the project area:

All of Ventura County.

Deer Herd: Santa Barbara

83. M-8 Hunt

a. Season: The season for additional hunt M-8 (Bass Hill Muzzleloading Rifle Buck Deer Hunt) shall open on the fourth Saturday in October and extend for nine consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 20

d. Special Conditions: Only muzzleloading rifles as specified in Section 353, Title 14, CCR, may be used.
e. Legal boundary description of the project area:

That portion of Lassen County within the area described as Zone X-6a (see subsection 360(b)(8)(A)).

Deer Herd: Doyle

84. M-9 Hunt

a. Season: The season for additional hunt M-9 (Devil's Garden Muzzleloading Rifle Buck Hunt) shall open on the fourth Saturday in October and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 15
d. Special Conditions: Only muzzleloading rifles as specified in Section 353 may be used.
e. Legal boundary description of the project area:

That portion of Modoc County within a line beginning at the intersection of the Malin Road (Modoc County 114) and the California/Oregon state line; east along the state line to the Crowder Flat Road; south along the Crowder Flat Road to the Blue Mountain Road (Modoc County 136); west on the Blue Mountain Road to the Blue Mountain-Moitz Butte-Ambrose Road; south on the Blue Mountain-Mowitz Butte-Ambrose Road to Highway 139; north on Highway 139 to the Malin Road; north on the Malin Road to the point of beginning.

Deer Herd: Devil's Garden/Interstate

85 M-11 Hunt

a. Season: The season for additional hunt M-11 (Northwestern California Muzzleloading Rifle Buck Hunt) shall open on the second Saturday in November and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 20
d. Special Conditions: Only muzzleloading rifles as specified in Section 353 may be used.
e. Legal boundary description of the project area:

Those portions of Del Norte, Glenn, Humboldt, Lake, Mendocino, Siskiyou, and Trinity counties within the area described as Zone B-1 (see subsection 360(a)(2)(A)1).

Deer Herd: Mendocino, Clear Lake, Mad River, Redwood Creek, Ruth, Smith River

86. MA-1 Hunt

a. Season: The season for additional hunt MA-1 (San Luis Obispo Muzzleloading Rifle/Archery Either-Sex Deer Hunt) shall open the last Saturday in November and extend for 16 consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 150
d. Special Conditions: Only archery equipment as specified in Section 354 or muzzleloading rifles as specified in Section 353 may be used.
e. Legal boundary description of the project area:

That portion of San Luis Obispo County lying within the Los Padres National Forest.

Deer Herds: Adelaida, Pozo

87. MA-3 Hunt

a. Season: The season for additional hunt MA-3 (Santa Barbara Muzzleloading Rifle/Archery Buck Hunt) shall open on the last Saturday in November and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 150
d. Special Conditions: Only muzzleloading rifles as specified in Section 353 and archery equipment as specified in Section354 may be used.
e. Legal boundary description of the project area:

All of Santa Barbara County.

Deer Herd: Santa Barbara

88. J-1 Hunt

a. Season: The season for additional hunt J-1 (Lake Sonoma Junior Either-sex Deer Hunt) shall open on the first Saturday in November and extend for two consecutive days.

b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 25
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
3. Tagholders shall attend an orientation meeting the day before the opening day of the season.
4. The use of dogs is prohibited.
5. Boats are required for all areas west of Cherry Creek (some 2/3 of the hunt area). Only cartop boats are allowed to launch from the Yorty Creek access.
e. Legal boundary description of the project area:

That portion of Sonoma County within the boundaries of the Lake Sonoma Area, U.S. Army Corps of Engineers (COE) property described as follows: Beginning at the intersection of Hot Springs Road and the COE boundary; east and south along the boundary line to the intersection with Brush Creek; west along the north bank of Brush Creek (shoreline) to the Dry Creek arm of Lake Sonoma; south along the shoreline of the Dry Creek arm to Smittle Creek; north along the COE property line to Dry Creek; east along the COE boundary across Cherry Creek, Skunk Creek, and Yorty Creek to the point of beginning.

Deer Herd: Santa Rosa

89. J-3 Hunt

a. Season: The season for additional hunt J-3 (Tehama Wildlife Area Junior Buck Hunt) shall begin on the last Saturday in November and extend for two consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 15
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
3. Tagholders shall attend an orientation meeting the day before the opening day of the season.
e. Legal boundary description of the project area:

That portion of Tehama County within the boundaries of the Tehama Wildlife Area.

Deer Herd: Tehama

90. J-4 Hunt

a. Season: The season for additional hunt J-4 (Shasta-Trinity Junior Buck Hunt) shall open on the fourth Saturday in November and extend for nine consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 15
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

In those portions of Shasta and Trinity counties beginning at the junction of Highway 3 and Highway 299 in Weaverville; north on Highway 3 to the East Side Road at the north end of Trinity Lake; east on the East Side Road to Dog Creek Road; east on Dog Creek Road to Interstate 5 at Vollmers; south on Interstate 5 to Shasta Lake; south along the west shore of Shasta Lake to Shasta Dam; south along Shasta Dam along the Sacramento River to Keswick Dam Road; west on Keswick Dam Road to Rock Creek Road; south on Rock Creek Road to Highway 299; west on Highway 299 to the point of beginning.

Deer Herd: Weaverville

91. J-7 Hunt

a. Season: The season for additional hunt J-7 (Carson River Junior Either-Sex Deer Hunt) shall open on the first Saturday following the closure of the X-8 general season (see subsection 360(b)(12)(B), Title 14, CCR) and extend for nine consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 15
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

That portion of Alpine County within the area described as Zone X-8 (see subsection 360(b)(12)(A)).

Deer Herd: Carson River

92. J-8 Hunt

a. Season: The season for additional hunt J-8 (Daugherty Hill Wildlife Area Junior Either-Sex Deer Hunt) shall open on the first Saturday in December and extend through December 31.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 15
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
3. Tag holders shall attend an orientation meeting the day before the opening day of the season.
e. Legal boundary description of the project area:

That portion of Yuba County within the exterior boundaries of the Daugherty Hill Wildlife Area (as defined in Section 550, Title 14, CCR).

Deer Herd: Mooretown

93. J-9 Hunt

a. Season: The season for additional hunt J-9 (Little Dry Creek Junior Shotgun Either-Sex Deer Hunt) shall open on the third Saturday in September and extending for 9 consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 5
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
3. Tag holders shall attend an orientation meeting the day before the opening day of the season.
4. Only shotguns and ammunition as specified in Section 353 may be used.
e. Legal boundary description of the project area:

That portion of Butte County within the exterior boundaries of the Little Dry Creek Unit Upper Butt Basin Wildlife Area (as defined in Section 550, Title 14, CCR).

Deer Herd: Mother Lode

94. J-10 Hunt

a. Season: The season for additional hunt J-10 (Fort Hunter Liggett Junior Either-Sex Deer Hunt) shall be open Saturdays, Sundays, and the Columbus Day holiday only beginning the first Saturday in October and extend for two consecutive weekends, except if rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 60 (10 military and 50 general public)
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
3. Tagholders shall attend an orientation meeting the day before the opening day of the season.
4. In the event the Commanding Officer cancels the hunt, J-10 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.
e. Legal boundary description of the project area:

That portion of Monterey County lying within the exterior boundaries of the Fort Hunter Liggett Military Reservation, except as restricted by the Commanding Officer.

Deer Herd: Santa Lucia

95. J-11 Hunt

a. Season: The season for additional hunt J-11 (San Bernardino Junior Either-Sex Deer Hunt) shall open on the third Saturday in November and extend for 9 consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 40
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

In those portions of D-14 (as described in subsection 360(a)(13)(A)) within San Bernardino County.

Deer Herd: San Bernardino Mountains

96. J-12 Hunt

a. Season: The season for additional hunt J-12 (Round Valley Junior Buck Hunt) shall open on the first Saturday in December and extend for 16 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 10
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

In that portion of Inyo and Mono counties within a line beginning at the intersection of U.S. Highway 395 and California Highway 168; west and south along Highway 168 to the North Lake Road turnoff; west along the North Lake Road and the Piute Pass Trail to the Inyo-Fresno county line; north along the Inyo-Fresno county line to the Mono-Fresno county line; north along the Mono-Fresno and Mono-Madera county lines to the junction of the Mono-Madera county line and California Highway 203 at Minaret Summit; southeast along Highway 203 to its junction with Highway 395; south along Highway 395 to the point of beginning.

Deer Herd: Buttermilk, Sherwin Grade

97. J-13 Hunt

a. Season: The season for additional hunt J-13 (Los Angeles Junior Either-Sex Deer Hunt) shall open on the third Saturday in November and extend for 9 consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 40
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

In that portion of Los Angeles County within Zone D-11 (see subsection 360(a)(10)(A)).

Deer Herd: Los Angeles

98. J-14 Hunt

a. Season: The season for additional hunt J-14 (Riverside Junior Either-Sex Deer Hunt) shall open on the third Saturday in November and extend for 9 consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c), Title 14, CCR) per tag.
c. Number of Tags: 30
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

In that portion of Riverside County within Zone D-19 (see subsection 360(a)(17)(A)).

Deer Herd: San Jacinto/Santa Rosa Mountains

99. J-15 Hunt

a. Season: The season for additional hunt J-15 (Anderson Flat Junior Buck Hunt) shall open on the fourth Saturday in November and extend for 9 consecutive days.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 10
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

In that portion of hunt Zone D-6 in Mariposa and Tuolumne counties lying within a line beginning at the intersection of Highway 140 and Bull Creek Road at Briceburg; north on Bull Creek Road (U.S. Forest Service Road 2S05) to Greeley Hill Road; west on Greeley Hill Road to Smith Station Road (County Route J20); north on Smith Station Road to Highway 120 (near Burch Meadow); east on Highway 120 to the Yosemite National Park Boundary (near Big Oak-Flat Ranger Station); southeast along the Yosemite National Park Boundary to Highway 140; west on Highway 140 to the Yosemite National Park Boundary; northwest along the Yosemite National Park Boundary to Highway 140 (at Redbud Campground); west on Highway 140 to the point of beginning.

Deer Herds: Stanislaus, Tuolumne, Yosemite

100. J-16 Hunt

a. Season: The season for additional hunt J-16 (Bucks Mountain-Blue Canyon Junior Either-Sex Deer Hunt) shall be concurrent with the zone D-3 general season as defined in subsection 360(a)(4)(B).
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.
c. Number of Tags: 75
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

Excluding Glenn County, in those portions of Butte, Colusa, Nevada, Placer, Plumas, Sierra, Sutter and Yuba Counties within the area described as zone D-3 (see subsection 360(a)(4)(A)1).

Deer Herds: Blue Canyon, Bucks Mountain/Mooretown, Downieville/Nevada City, Mother Lode

101. J-17 Hunt

a. Season: The season for additional hunt J-17 (Zone D-4 Junior Either-Sex Deer Hunt) shall be concurrent with the zone D-4 general season as defined in subsection 360(a)(4)(B).
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.
c. Number of Tags: 25.
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

In those portions of Colusa, Nevada, Placer, Sacramento, Sutter, Yolo and Yuba Counties within the area described as zone D-4 (see subsection 360(a)(4)(A)2).

Deer Herds: Blue Canyon, Mother Lode, Nevada City

102. J-18 Hunt

a. Season: The season for additional hunt J-18 (Pacific-Railroad Flat Junior Either-Sex Deer Hunt) shall be concurrent with the zone D-5 general season as defined in subsection 360(a)(4)(B).
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.
c. Number of Tags: 75.
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

Excluding Tuolumne County, in those portions of Alpine, Amador, Calaveras, El Dorado, Placer, Sacramento, San Joaquin, and Stanislaus counties within the area described as zone D-5 (see subsection 360(a)(4)(A)3).

Deer Herds: Carson River, Grizzly Flat, Mother Lode, Pacific, Railroad Flat, Salt Springs

103. J-19 Hunt

a. Season: The season for additional hunt J-19 (Zone X-7a Junior Either-Sex Deer Hunt) shall be concurrent with the zone X-7a general season as defined in subsection 360(b)(10)(B).
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.
c. Number of Tags: 25
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

In those portions of Lassen, Nevada, Plumas and Sierra Counties within the area described as zone X-7a (see subsection 360(b)(10)(A)).

Deer Herds: Loyalton/Truckee

104. J-20 Hunt

a. Season: The season for additional hunt J-20 (Zone X-7b Junior Either-Sex Deer Hunt) shall be concurrent with the zone X-7b general season as described in subsection 360(b)(11)(B).
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.
c. Number of Tags: 20.
d. Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

In those portions of Nevada, Placer and Sierra Counties within the area described as zone X-7b (see subsection 360(b)(11)(A)).

Deer Herds: Loyalton/Truckee

105. J-21 Hunt

a. Season: The season for additional hunt J-21 (East Tehama Junior Either-Sex Deer Hunt) shall open on the third Saturday in September and extend for 44 consecutive days.
b. Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.
c. Number of Tags: 50
d. Special Conditions:
1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
e. Legal boundary description of the project area:

In that portion of Tehama County within the area described as zone C-4 (see subsection 360(a)(3)(A)4.).

Deer Herds: East Tehama

FUND-RAISING HUNTS

106. Golden Opportunity Fund-raising Tag

a. Season: Golden Opportunity tags shall be valid beginning on the second Saturday in July and extend through December 31.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 5
d. Special Conditions:
1. The holder of a Golden Opportunity tag may take deer using all methods authorized as described in sections 353 and 354, Title 14, CCR.
2. Fund-raising license tagholders who receive a deer tag pursuant to Section 708(a)(2), Title 14, CCR, shall be allowed to exchange that tag under the provisions of subsection 708(a)(2)(F), Title 14, CCR. Tagholders shall not be entitled to obtain more than two (2) deer tags as described in subsection 708(a)(2), Title 14, CCR.

3. Tagholders shall report to the Regional Patrol Chief at the appropriate Department of Fish and Game Regional Headquarters prior to hunting to inform law enforcement officials of the time and area they intend to hunt.
e. Legal boundary description of the project area:

Golden Opportunity tags shall be valid statewide on lands legally open for deer hunting.

107. Open Zone Fund-raising Tag

a. Season: Open Zone tags shall be valid during the authorized seasons described for the general deer zones, additional deer hunts and area-specific archery hunts in subsections 360(a), (b), (c) and subsections 361(a) and (b), Title 14, CCR.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, per tag.
c. Number of Tags: 5
d. Special Conditions:
1. The holder of an Open Zone tag shall meet any special conditions and take deer using the method of take authorized for the general deer zone, additional deer hunt, or area-specific archery hunt as described in subsections 360(a), (b), (c) and subsections 361(a) and (b), Title 14, CCR.
2. Fund-raising license tagholders who receive a deer tag pursuant to Section 708(a)(2), Title 14, CCR, shall be allowed to exchange that tag under the provisions of Section 708(a)(2)(F), Title 14, CCR. Tagholders shall not be entitled to obtain more than two (2) deer tags as described in subsection 708(a)(2), Title 14, CCR.
3. Tagholders shall report to the Regional Patrol Chief at the appropriate Department of Fish and Game Regional Headquarters prior to hunting to inform law enforcement officials of the time and area they intend to hunt.
e. Legal boundary description of the project area:

Open Zone tags shall be valid in the general deer zones, additional deer hunts, and area-specific archery hunts as described in subsections 360(a), (b), (c) and subsections 361(a) and (b), Title 14, CCR.

108. Cooperative Deer Hunting Area hunts (Section 554, Title 14, CCR).

In 2006, a total of 182 tags were issued through the Section 554 - Cooperative Deer Hunting Area Program.

a. Season: Section 554 - Cooperative Deer Hunting Area seasons correspond to the general season for the X zone in which they are issued.
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better per tag.
c. Number of Tags: Buck Tags: 0-1,000
d. Special Conditions:
1. Section 554 - Cooperative Deer Hunting Area may consist of private land under the control of one or more owners, at least 640 acres in size, within, or adjacent to 5,000

acres of critical deer habitat in deer quota zones (see Section 360) which require public drawing for the distribution of deer tags (see Section 708).
2. Applicants for Section 554 - Cooperative Deer Hunting Area permits shall be the owner of said land.
3. No individual may submit more than one Section 554 - Cooperative Deer Hunting Area application or deer tag application per deer season, nor may there be more than two cooperative deer hunting area applicants for a given parcel of land.
4. To obtain a Section 554 - Cooperative Deer Hunting Area deer tag, applicants must submit a 2007 First Deer Tag Application for exchange with their area application.
5. Deer tags issued pursuant to a Section 554 - Cooperative Deer Hunting Area permit are valid only during the season for the deer zone specified and may only be used on private lands specified in the landowner's application.
e. Legal boundary description of the project area:

Private lands, properly posted, as identified within the approved Section 554 - Cooperative Deer Hunting Area application.

109. Private Lands Wildlife Habitat Enhancement and Management (PLM) Area Program hunts (Section 601, Title 14, CCR).

In 2006, 90 PLMs encompassing 895,640 acres statewide were licensed in the program. Seventy-five of these areas included deer hunting as part of their management program.

a. Season: PLM seasons vary depending upon the location of the area, the number of deer to be harvested, and the length of time the area has been in the program (no variation from the general season for the zone in which the PLM is located is permitted during a PLM's initial year).
b. Bag and Possession Limit: One buck, forked horn (see subsection 351(a), Title 14, CCR) or better, or one antlerless deer (see subsection 351(b), Title 14, CCR) per tag. Buck, antlerless, and either-sex deer tags are options for PLM areas.
c. Number of Tags: Buck Tags: 100-1,200
Antlerless Tags: 100-1,200
Either-Sex Tags: 100-1,200
d. Special Conditions:
1. In order to purchase a PLM tag, hunters must exchange a valid 2007 California deer tag application, or a valid, unfilled 2007 California deer tag with the PLM area they wish to hunt.
2. No person shall take more than one buck deer in the X zones, as defined in subsection 360(b).
e. Legal boundary description of the project areas:

Private lands, properly posted, as identified within the individual PLM management plans.

Policy Considerations

The Legislature formulates laws and policies regulating the management of fish and wildlife in California. The general wildlife conservation policy of the State is to encourage the conservation and maintenance of wildlife resources under the jurisdiction and influence of the State (Section 1801, Fish and Game Code). The policy includes several objectives, as follows:

1. To provide for the beneficial use and enjoyment of wildlife by all citizens of the State;
2. To perpetuate all species of wildlife for their intrinsic and ecological values, as well as for their direct benefits to man;
3. To provide for aesthetic, educational, and non-appropriative uses of the various wildlife species;
4. To maintain diversified recreational uses of wildlife, including hunting, as proper uses of certain designated species of wildlife, subject to regulations consistent with the maintenance of healthy, viable wildlife resources, the public safety, and a quality outdoor experience;
5. To provide for economic contributions to the citizens of the State through the recognition that wildlife is a renewable resource of the land by which economic return can accrue to the citizens of the State, individually and collectively, through regulated management. Such management shall be consistent with the maintenance of healthy and thriving wildlife resources and the public ownership status of the wildlife resource;
6. To alleviate economic losses or public health and safety problems caused by wildlife; and
7. To maintain sufficient populations of all species of wildlife and the habitat necessary to achieve the above-stated objectives.

The Legislature has delegated authority to regulate the take and possession of wildlife to the commission, whose members are appointed by the Governor. With respect to deer, the Legislature has established the State's policy regarding hunting in Sections 450 - 460 of the Fish and Game Code, which provides that the department shall recommend to the commission those deer herd units to be placed under a general deer hunting season; include the number, if any, of antlerless deer that should be taken in deer herd units; and recommend the establishment of any hunter-restricted quota units, if needed. Additionally, Section 4334 of the Fish and Game Code specifies that the Department shall authorize not more than 10 deer tags for the purpose of raising funds for programs and projects to benefit deer. These fund-raising tags are not subject to the fees prescribed by Section 4332. All funds derived from the sale of these tags are appropriated to the department to be used for the Deer Herd Management Plan Implementation Program.

Potential for Significant Effects

Table 2 describes the modifications from the 2006 deer hunting regulations the Department is proposing to incorporate in the 2007 deer hunting regulations. One (1) new hunt and modifications to three (3) existing hunts are proposed. Modifications from the 2006 deer hunting season consist of 175 additional tags and an additional twenty-three hunt days.

Table 2 – Current Regulations and Proposed Modifications

Zone/Hunt	Current 2006 Tag Quota	Current 2006 Season	Proposed 2007 Tag Quota	Proposed 2007 Season	Proposed Change In Tag Quota	Proposed Change In Season Length
G-8 (Fort Hunter Liggett Antlerless Deer Hunt)	**10 Military 10 Public**	**Two Weekends and 1 Holiday (5 Hunt Days)**	**10 Military 10 Public**	**Five Consecutive Hunt Days**	**No Change**	**No Change**
G-10 (Camp Pendleton Either-sex Deer Hunt)	**300 Military Only**	**Weekends & holidays beginning 3rd Saturday in Sept. through Thanksgiving Day weekend**	**400 Military Only**	**Weekends & holidays beginning 1st Saturday in Sept through 1st weekend in Dec**	**100 Tag Increase**	**Seven (7) Additional Hunt Days (Three Additional Weekends, Holidays)**
J-10 (Fort Hunter Liggett Either-Sex Deer Hunt)	**10 Military 50 Public**	**Two Weekends and 1 Holiday (5 Hunt Days)**	**10 Military 75 Public**	**Two weekends, 1 Holiday & Thurs/Fri preceding weekend #1 (7 Hunt Days)**	**25 Public Tag Increase**	**Two (2) Additional Hunt Days**
A-33 (Fort Hunter Liggett Late Season Archery Either-Sex Deer Hunt	**N/A (New Hunt Proposal)**	**N/A**	**25 Military 25 Public**	**Weekends & Holidays beginning 1st Sat. in Oct. through Veteran's Day Holiday**	**25 Military, 25 Public Tag Increase**	**Fourteen (14) Additional Hunt Days**

Table 3 describes the impacts these modifications will have on the twenty-one (21) factors examined in each of the prior sixteen (16) environmental documents (1989 through 2004 – Department files) certified by the Fish and Game Commission regarding deer hunting. The modifications proposed are to increase hunter opportunity on the military installations specified, and the tag quota's and season (timing and length) have been established to have no effect on the State's deer population.

Table 3 – Impacts of Proposed Regulation Modification

EFFECTS	FACTORS ANALYZED	NEW OR MODIFIED DEER HUNTS			
		G-8 (Fort Hunter Liggett Antlerless Deer Hunt)	G-10 (Camp Pendleton Either-Sex Deer Hunt)	J-10 (Fort Hunter Liggett Antlerless Deer Hunt)	A-33 (Fort Hunter Liggett Late Season Archery Either-Sex Deer Hunt)
EFFECTS OF	Hunting on Individual Deer Herds or Groups of Herds	Not Significant	Not Significant	Not Significant	Not Significant
	Hunting on Condition and Sex Ratios of Deer	Not Significant	Not Significant	Not Significant	Not Significant
	Hunting on Genetics of California Deer	Not Significant	Not Significant	Not Significant	Not Significant
	Hunting on Social Structure of California Deer	Not Significant	Not Significant	Not Significant	Not Significant
	Hunting on Natural Mortality	Not Significant	Not Significant	Not Significant	Not Significant
	Off-Highway Vehicles and other Human Disturbance	Not Significant	Not Significant	Not Significant	Not Significant
	The use of Dogs	Not Significant	Not Significant	Not Significant	Not Significant
	Cooperative Deer Hunt Area Program (Section 554)	Not Significant	Not Significant	Not Significant	Not Significant
	Private Lands Wildlife Habitat Enhancement and Management Area Program (PLM; Section 601)	Not Significant	Not Significant	Not Significant	Not Significant
	Depredation Take	Not Significant	Not Significant	Not Significant	Not Significant
	Changes in Hunting Regulations by Adjoining States	Not Significant	Not Significant	Not Significant	Not Significant
	Cumulative Impacts	Not Significant	Not Significant	Not Significant	Not Significant
EFFECTS ON	Predators and Scavengers	Not Significant	Not Significant	Not Significant	Not Significant
	Listed Species	Not Significant	Not Significant	Not Significant	Not Significant
	Other Recreational Opportunities	Not Significant	Not Significant	Not Significant	Not Significant
	Economics	Not Significant	Not Significant	Not Significant	Not Significant
	Public Safety	Not Significant	Not Significant	Not Significant	Not Significant
	Welfare of the Individual Animal	Not Significant	Not Significant	Not Significant	Not Significant
CUMULATIVE IMPACTS	Growth Inducing Impacts of Proposed Action	Not Significant	Not Significant	Not Significant	Not Significant
	Short-term uses and Long-term Productivity	Not Significant	Not Significant	Not Significant	Not Significant
	Significant Irreversible Environmental Changes	Not Significant	Not Significant	Not Significant	Not Significant

Sport hunting is a controversial issue. A segment of the public has contended that the loss of a single animal by hunting is a significant impact by virtue of the mortality of the individual. Because the activity of hunting deer will result in the death of individual animals, specific safeguards are included in the proposed action. These safeguards include limited quotas, specified seasons, bag and possession limits, authorized lethal methods, and herd monitoring, which should result in removing deer at a level that is consistent with individual herd performance. Therefore, the proposed actions have been designed to avoid significant adverse effects on the environment.

The removal of individual animals through hunting, together with other natural mortality, from any of the deer herds, should not significantly reduce herd size over the annual cycle. The proposed action is expected to result in maintaining the herd ratio objectives around the approved management plan objectives. The production and survival of young animals within each herd should replace the animals removed by hunting. Therefore, the proposed action of harvesting deer by hunting should not have a significant adverse impact on either local populations or the statewide population of deer beyond the annual cycle.

CHAPTER 3 - ALTERNATIVES

No Project

Other than annual tag quota modifications proposed in response to herd productivity, implementation of the No Project alternative would result in no change from the 2006 deer hunting regulations described in the "Existing Condition" section of Chapter 2.

Alternative 2 - High Kill

Alternative 2 represents management options (elements) within a particular hunt zone that will achieve a high kill (HK) from the herd(s). HK refers to a harvest strategy that maximizes the number of animals that can be harvested from a population, commensurate with the goals and objectives stated in the herd plans, for at least the next year. A potential problem with a HK management strategy is the risk of overharvesting. If, under a HK program, an overharvest occurred, more conservative management strategies would have to be implemented the following year to correct the situation.

Appendix 2 contains specific zone and hunt HK alternatives; Appendix 3 contains results of the population modeling analysis for the HK alternative.

Alternative 3 - Low Kill

Alternative 3 represents management options (elements) within a particular hunt zone that will produce a relatively small harvest. This low kill (LK) is a harvest strategy that provides hunting opportunities at reduced levels from those proposed under either HK or desired kill (DK) strategies.

Appendix 2 contains specific zone and hunt LK alternatives; Appendix 3 contains results of the population modeling analysis for the LK alternative.

CHAPTER 4 – RESPONSES TO COMMENTS REGARDING THE PROPOSED PROJECT

In accordance with CEQA, public input and agency consultation were encouraged during the environmental review process. A Notice of Preparation was provided to the State Clearinghouse, land management agencies having a key role in deer management, and all individuals and organizations which expressed an interest in deer management. No comments were received as a result of the Notice of Preparation circulation.

The Department prepared a draft environmental document (DED) regarding deer hunting (sections 360, 361, 554, and 601, Title 14, CCR). The DED was made available for public review on February 3, 2007. It was mailed to 57 libraries as well as 20 individuals and organizations who expressed interest in this issue. Additionally, notice of availability of the DED for public review was provided to the State Clearinghouse, which provided notice of availability to interested organizations, including all county governments in California. The DED was also made available on the Department's website, and in the Department's regional and satellite offices. During the 45-day notice period the draft environmental document was available for public review and one e-mail comment was received regarding the document.

The draft environmental document examined a variety of alternatives. The proposed project was recommended by the Department because it provided the public with the widest range of recreational opportunities related to deer populations, either statewide or locally. Every effort was made to avoid a biased analysis of issues. In general, the Department attempted to make the draft environmental document understandable to the public and to objectively summarize a large amount of technical information.

The following is the comment and the Department's response.

Comment from Mr. David J. Valle

Comment: "Double the proposed tag range allocation for Hunt J16 from 10-75 tags to 20-150 tags in Alternative 1. And if spring census data for this zone is supportive, increase the tag allocation to the upper portion of this new range (100-150 tags issued)."

Response: The A, B, and D zone complexes are managed to maximize the hunter's opportunity to go hunting without any overall impact to the population size. This is accomplished by maintaining high tag quota's and adjusting them accordingly based on an index of hunter success, fall composition counts, and population trends. Population data which indicates an increase in any one year is not a trend and must be analyzed in conjunction with the other factors identified to justify any tag increases in these zones.

The harvest buffer is established to account for unpredictable mortality factors such as favorable hunting weather (early weather causes deer to be more susceptible to hunting loss) disease, accidental death (including road kill), and wounding/crippling loss. Although the harvest buffer on occasion may be utilized to account for higher than predicted mortality (due to hunting and/or the other factors identified above) it should not be relied upon for permanent increases in tag quotas. Reducing the harvest buffer increases the chances for over-shooting the population.

The Department agrees it is important to provide junior hunting opportunity. Juniors are currently able to receive tags to hunt the general season in all of these zones in addition to J16. Increasing the number of tags available for this hunt would cause decreases in bucks available to other general season hunters in opposition to the management strategy for this zone. The Department appreciates the Plumas Fish and Game Commissioners assurances that any approval necessary from the Plumas County Board of Supervisors will be received. However, since this is an either-sex hunt increasing the number of tags available to the level suggested will likely result in an increase in bucks taken that may lead to a reduction in general hunter opportunity.

E-MAIL RECEIVED FROM DAVID VALLE

From: David Valle
To: <wildlifestrategy@dfg.ca.gov>
Date: 3/6/2007 10:59:06 PM
Subject: Public Comment on Proposed Envir Doc for Deer Hunting

Date: March 6, 2007

To: California Department of Fish and Game, Wildlife Branch
California Department of Fish and Game Commission

The following are my comments on the proposed Environmental Document for California Deer Hunting (Feb 3 2007):

1. Double the proposed tag range allocation for Hunt J16 from 10 - 75 tags to 20 - 150 tags in Alternative 1. And if spring census data for this zone is supportive, increase the tag allocation to the upper portion of this new range (100 - 150 tags issued).

Justification/Comments:

a. Preseason population estimates (See Appendix 4-1) for 2007 are up by ~300 animals. Using the kill percentage from 2006 for J16 hunters of ~ 19% as a guide (Appendix 5), doubling the take will have an insignificant impact on the herd population, but offer a significant (100% opportunity improvement) increase in the participation of Junior Hunters in this zone.

b. Referring to Appendix 3-12, there is a substantial Buffer Population of does and bucks to support an increased tag allocation.

c. If approval of the county board of supervisors is required to increase tag allocation, I am confident as a member of the Plumas County Fish and Game Commission that such approval will be granted in Plumas County.

Please seriously consider my request to increase the tag allocation for Hunt J16. The more opportunity we offer the youth hunters, the more likely they will develop an affinity for wildlife and become the stewards that we desperately need for California wildlife.

Please confirm your receipt of my comments.

Respectfully,

David J. Valle
Portola High School Teacher
Plumas County Fish & Game Commissioner
Portola, CA 96122

APPENDIX 1

REGULATORY LANGUAGE FOR PROPOSED PROJECT

Appendix 1 contains the proposed project regulatory language for Sections 360 and 361, Title 14, California Code of Regulations. Recommended changes are provided in strikeout/underline format and highlighted.

§ 360. Deer.

Except as otherwise provided in this Title 14, deer may be taken only as follows:

(a) A, B, C, and D Zone Hunts.

(1) Zone A.

(A) Area: Shall include all of Zone A-South Unit 110 and Zone A-North Unit 160 (see subsections 360(a)(1)(A)1. through 2.).

1. South Unit 110. In those portions of Alameda, Contra Costa, Fresno, Kern, Kings, Los Angeles, Monterey, San Benito, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Stanislaus and Ventura counties within a line beginning at the intersection of Highway 99 and the San Joaquin-Sacramento county line at Dry Creek; south on Highway 99 to Highway 166 in Kern County; west on Highway 166 to Highway 33; south on Highway 33 to Sespe Creek; east and south along Sespe Creek to Highway 126; east on Highway 126 to Interstate 5; south on Interstate 5 and 405 to Interstate 10; west on Interstate 10 to the Pacific Ocean; north on the Pacific Ocean coastline to the San Mateo-San Francisco county line; east on the San Mateo-San Francisco county line to the Alameda county line; north on the Alameda-San Francisco county line to the Contra Costa-San Francisco county line; northwest on Contra Costa-San Francisco county line to the Contra Costa-Marin county line; northeast on the Contra Costa-Marin county line to the Contra Costa-Solano county line in San Pablo Bay; east on the Contra Costa-Solano county line and the Sacramento River to the confluence of the San Joaquin River and Sacramento-Contra Costa county line; east on the Sacramento-Contra Costa county line and San Joaquin River to the confluence of the Mokelumne River and San Joaquin-Sacramento county line; northeast on the San Joaquin-Sacramento county line and Mokelumne River to the confluence of Dry Creek; east on the San Joaquin-Sacramento county line and Dry Creek to the point of beginning at Highway 99.

2. North Unit 160. In those portions of Colusa, Glenn, Lake, Marin, Mendocino, Napa, Sacramento, Solano, Sonoma and Yolo within a line beginning at the junction of the mouth of Hardy Creek (Mendocino County) and the Pacific Ocean; east along Hardy Creek to Highway 1; north along Highway 1 to Highway 101; south along Highway 101 to Commercial Avenue in the town of Willits; east on Commercial Avenue to the Hearst-Willits Road (County Road 306); north and east on the Hearst-Willits Road to the Main Eel River; southeast on the Main Eel River to Lake Pillsbury at Scott Dam; southeast along the west shore of Lake Pillsbury and the Rice Fork of the Eel River to Forest Service Road M-10; east on Forest Service Road M-10 to Forest Service Road 17N16; east on Forest Service Road 17N16 to Forest Service Road M-10; east on Forest Service Road M-10 to Letts Valley-Fouts Spring Road; east on the Letts Valley-Fouts Spring Road to the Elk Creek-Stonyford Road (County Road 306); north on the Elk Creek-Stonyford Road to the Glenn-Colusa county line; east along the Glenn-Colusa County line to Interstate 5; Interstate 5 south to Highway 99 in the City of Sacramento; Highway 99 south to the Sacramento/San Joaquin County line at Dry Creek, west along the Sacramento/San Joaquin County line and Dry Creek to the confluence with the Mokelumne River, southwest on the Sacramento/San Joaquin County line and Mokelumne River to the confluence with the San Joaquin River and Sacramento/Contra Costa County line, west on the Sacramento/Contra Costa County line and San Joaquin River to the confluence of the Sacramento River and Solano/Contra Costa County line, west on the Sacramento River and Solano/Contra Costa County line to the Marin County line in San Pablo Bay, southwest on the Marin/Contra Costa and Marin/San Francisco county lines to the North Peninsula shoreline near the Golden Gate Bridge, west on the shoreline to the Pacific Ocean coastline, northwest on the Pacific Ocean coastline to the point of beginning.

(B) Season: The season in Zone A-South Unit 110 and Zone A-North Unit 160 shall open on the second Saturday in August and extend for 44 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~65,000~~30,000-65,000. Zone A tags are valid in Zone A-South Unit 110 and Zone A-North Unit 160.

(2) Zone B.

(A) Area: Shall include all of Zones B-1, B-2, B-3, B-4, B-5 and B-6 (see subsections 360(a)(2)(A) 1-6).

1. Zone B-1.

In the County of Del Norte and those portions of Glenn, Humboldt, Lake, Mendocino, Siskiyou and Trinity counties within a line: Beginning at the California-Oregon state line and the Pacific Ocean; east along the state line to the point where Cook-Green Pass Road (Forest Service Road 48N20) intersects the California-Oregon state line; south on the Cook-Green Pass Road to Highway 96 near Seiad Valley; west and south along Highway 96 to Highway 299 at Willow Creek; southeast along Highway 299 to the South Fork of the Trinity River; southeast along the South Fork of the Trinity River to the boundary of the Yolla Bolly-Middle Eel Wilderness Area; southwest along the boundary of the Yolla Bolly-Middle Eel Wilderness Area to the Four Corners Rock-Washington Rock Trail; south and east on the Four Corners Rock-Washington Rock Trail to the North Fork of Middle Fork Eel River; south on the North Fork of Middle Fork Eel River to Middle Fork Eel River; east on Middle Fork Eel River to confluence with Balm of Gilead Creek; north and east on Balm of Gilead Creek to confluence with Minnie Creek; east and south on Minnie Creek to Soldier Ridge Trail; north on Soldier Ridge Trail to Summit Trail; south on Summit Trail to Green Springs Trail head at Pacific Crest Road (U.S. Forest Service Road M-2); south on the Mendocino Pass Road to the intersection of Forest Highway 7; west on Forest Highway 7 to the Middle Fork of the Eel River near Eel River Work Center; southwest on the Middle Fork of the Eel River to the Black Butte River; Black Butte River to the Glenn-Mendocino county line; south along the Glenn-Mendocino and Lake-Mendocino county lines to the northern boundary of State Game Refuge 2-A; east and south along the northern and eastern boundaries of State Game Refuge 2-A to the Glenn-Lake near Sheetiron Mountain; south along the Glenn-Lake and Colusa-Lake county lines to Forest Service Road 17N16; west on Forest Service Road 17N16 to Forest Service Road M-10; west on Forest Service Road M-10 to the Rice Fork of the Eel River; northwest along the Rice Fork of the Eel River and the shore of Lake Pillsbury to the Main Eel River at Scott Dam; west and north along the Main Eel River to the Hearst-Willits Road; southwest on the Hearst-Willits Road to Commercial Avenue; west on Commercial Avenue to Highway 101; north on Highway 101 to Highway 1 at Leggett; west on Highway 1 to its intersection with the South Fork of the Eel River; north and west along the South Fork of the Eel River to the main Eel River; west and north along the main Eel River to mouth of the Eel River and north along the Pacific coastline to the point of beginning.

2. Zone B-2.

In those portions of Humboldt, Shasta, Siskiyou, Tehama, and Trinity counties within a line beginning at the intersection of Interstate 5 and Highway 299 in Redding; west on Highway 299 to the Bully Choop Mountain Road at the Shasta-Trinity county line and Buckhorn Summit; south on the Bully Choop Mountain Road to a point where this road leaves the Shasta-Trinity county line at Mud Springs; southwest along the Shasta-Trinity county line to the Browns Creek-Harrison Gulch Road; south on the Browns Creek-Harrison Gulch Road to Highway 36; east on Highway 36 (200 yards) to Forest Service Arterial Road 41; south on Forest Service Arterial Road 41 to Stuart Gap at the Tehama-Trinity county line; south on the Tehama-Trinity county line to the north boundary of the Yolla Bolly-Middle Eel Wilderness Area; west and south on the Yolla Bolly-Middle Eel Wilderness boundary to the South Fork of the Trinity River; north and west along the South Fork of the Trinity River to Highway 299; west and north on Highway 299 to Highway 96 at Willow Creek; north on Highway 96 to the Cecilville-Salmon River Road (Forest Service Road 93) at Somes Bar; east along the Cecilville-Salmon River Road to Highway 3 at Callahan; east along Highway 3 to the Gazelle-Callahan Road (Forest Service Road 1219); east along the Gazelle-Callahan Road to Highway 99; north along Highway 99 to Louie Road; east along Louie Road to Interstate 5; south along Interstate 5 to the point of beginning.

3. Zone B-3.

In those portions of Colusa, Glenn, Lake, Mendocino, and Tehama counties within a line beginning at the intersection of Interstate 5 and Black Butte Reservoir Road; south on Interstate 5 to the Glenn-Colusa county line; west along the Glenn-Colusa county line to the Elk Creek-Stonyford Road (County Road 306); south on the Elk Creek-Stonyford Road to the Letts Valley-Fouts Spring Road; west on the Letts Valley-Fouts Spring Road through Fouts Spring to Forest Service Road M-10; west on Forest Service Road M-10 to the Colusa-Lake county line; north along the Colusa-Lake and Glenn-Lake county lines to the eastern boundary of State Game Refuge 2-A, near Sheetiron Mountain; north and west along the eastern and northern boundaries of State Game Refuge 2-A to the Lake-Mendocino county line; north on the Lake-Mendocino and Glenn-Mendocino county lines to the Black Butte River; northwest along the Black Butte River to the Middle Fork of the Eel River; east and north along the Middle Fork of the Eel River to Forest Highway 7 near the Eel River Work Center; east on Forest Highway 7 to the Low Gap-Government Flat Road; north on the Low Gap-Government Flat Road to the Round Valley-Paskenta

Road at Government Flat; east on the Round Valley-Paskenta Road to the Black Butte Lake-Newville Road; south and east on the Black Butte Lake-Newville Road to Interstate 5 at the point of beginning.

4. Zone B-4.

In those portions of Mendocino and Humboldt counties within a line beginning at the mouth of Hardy Creek and the Pacific Ocean; north along the Pacific coastline to the mouth of the Eel River; east and south along the main Eel River to the South Fork of the Eel River; south along the South Fork of the Eel River to state Highway 1 at Leggett; west on state Highway 1 to Hardy Creek; west along Hardy Creek to the point of beginning.

5. Zone B-5.

In those portions of Glenn, Mendocino, Shasta, Tehama and Trinity counties within a line beginning at the intersection of Highway 299 and Interstate 5 in Redding; south along Interstate 5 to the Black Butte Lake- Newville Road near Orland; west and north on the Black Butte Lake-Newville Road to the Round Valley-Paskenta Road; west on the Round Valley-Paskenta Road to the Pacific Crest Road (U.S. Forest Service Road M-2) near Government Flat; north on the Pacific Crest Road to the Summit Trailhead at Green Springs; north along Summit Trail to Soldier Ridge Trail; south and west along Soldier Ridge Trail to Minnie Creek; north and west on Minnie Creek to Balm of Gilead Creek; west on Balm of Gilead Creek to the Middle Fork of the Eel River; west on the Middle Fork of the Eel River to the North Fork of the Middle Fork of the Eel River; north on the North Fork of the Middle Fork of the Eel River to the Four Corners Rock-Washington Rock Trail; north and west on the Four Corners Rock-Washington Rock Trail to the boundary of the Yolla Bolly-Middle Eel Wilderness Area; north along the boundary of the Yolla Bolly-Middle Eel Wilderness Area to the Tehama-Trinity county line; north on the Tehama-Trinity county line to Forest Service Arterial Road 41 at Stuart Gap; north on Forest Service Arterial Road 41 to Highway 36; west on Highway 36 (200 yards) to the Browns Creek-Harrison Gulch Road; north on the Browns Creek-Harrison Gulch Road to the Shasta-Trinity county line; northeast along the Shasta-Trinity county line to Mud Springs, where the Bully Choop Mountain Road joins the Shasta-Trinity county line; north on the Bully Choop Mountain Road to Highway 299 at Buckhorn Summit and the Shasta-Trinity county line; east on HIghway 299 to Interstate 5 in Redding.

6. Zone B-6.

In that portion of Siskiyou County within a line beginning at the California-Oregon state line and its intersection with Interstate 5; south on Interstate 5 to Louie Road near Gazelle; west on Louie Road to Highway 99; south on Highway 99 to the Gazelle-Callahan Road at Gazelle; west on the Gazelle-Callahan Road to Highway 3; west on Highway 3 to the Cecilville-Salmon River Road (Forest Service Road 93) at Callahan; west on the Cecilville-Salmon River Road to Highway 96 at Somes Bar; north on Highway 96 to the Cook-Green Pass Road at Seiad Valley; north on the Cook-Green Pass Road to the California-Oregon state line; east along the California-Oregon state line to Interstate 5.

(B) Season: The seasons for the B Zone shall be those specified for the areas described as B-1, B-2, B-3, B-4, B-5 and B-6 (see subsections 360(a)(2)(B)1-6).

1. Zone B-1.

The season in Zone B-1 shall open on the third Saturday in September and extend for 37 consecutive days.

2. Zone B-2.

The season in Zone B-2 shall open on the third Saturday in September and extend for 37 consecutive days.

3. Zone B-3.

The season in Zone B-3 shall open on the third Saturday in September and extend for 37 consecutive days.

4. Zone B-4.

The season in Zone B-4 shall open on the fourth Saturday in August and extend for 37 consecutive days.

5. Zone B-5.

The season in Zone B-5 shall open on the third Saturday in September and extend for 37 consecutive days.

6. Zone B-6.

The season in Zone B-6 shall open on the third Saturday in September and extend for 30 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~55,500~~35,000-65,000. Zone B tags are valid in Zones B-1, B-2, B-3, B-4, B-5 and B-6

(3) Zone C.

(A) Area: Shall include all of Zones C-1, C-2, C-3, and C-4 (see subsections 360(a)(3)(A)1. through 4.).

1. Zone C-1.

In that portion of Siskiyou County within a line beginning at the California-Oregon state line and its intersection with Interstate 5; south on Interstate 5 to Highway 97 at Weed; north and east on Highway 97 to the intersection with the California-Oregon state line; west on the California-Oregon state line to the point of beginning.

2. Zone C-2.

In those portions of Shasta and Siskiyou counties within a line beginning at the junction of Interstate 5 and Highway 89 south of the town of Mt. Shasta; east and south on Highway 89 to the Pit River at Lake Britton; west and south along the Pit River to Interstate 5 at Shasta Lake; north on Interstate 5 to the point of beginning.

3. Zone C-3.

In that portion of Shasta County within a line beginning at the intersection of Cottonwood Creek and Interstate 5 at Cottonwood; north on Interstate 5 to the Pit River at Shasta Lake; east and north on the Pit River to Highway 89 at Lake Britton; south on Highway 89 to Highway 44 at Old Station; south and west on Highway 44 to the North Fork of Battle Creek; southwest on the North Fork of Battle Creek to Battle Creek; west on Battle Creek to the Sacramento River; north on the Sacramento River to the mouth of Cottonwood Creek; west on Cottonwood Creek to the point of beginning.

4. Zone C-4.

In those portions of Butte, Glenn, Lassen, Plumas, Shasta, and Tehama counties within a line beginning at the junction of Interstate 5 and Cottonwood Creek at Cottonwood; east on Cottonwood Creek to the Sacramento River; south on the Sacramento River to Battle Creek; east on Battle Creek to the North Fork of Battle Creek; northeast on the North Fork of Battle Creek to Highway 44; east on Highway 44 to Highway 89 at the north entrance of Lassen Volcanic National Park; north and east on Highway 89 and 44 to the junction of Highway 44 at Old Station; south and east on Highway 44 to Highway 36 west of Susanville; west on Highway 36 to Highway 147 near Westwood; south on Highway 147 to Highway 89; south on Highway 89 to Highway 70; southwest on Highway 70 to Highway 162 at Oroville; west on Highway 162 to Interstate 5; north on Interstate 5 to Cottonwood Creek to the point of beginning.

(B) Season: The seasons for the C Zone shall be those specified for the areas described as C-1, C-2, C-3, and C-4 (see subsections 360(a)(3)(B)1. through 4.).

1. Zone C-1.

The season in Zone C-1 shall open on the third Saturday in September and extend for 30 consecutive days.

2. Zone C-2.

The season in Zone C-2 shall open on the third Saturday in September and extend for 37 consecutive days.

3. Zone C-3.

The season in Zone C-3 shall open on the third Saturday in September and extend for 37 consecutive days.

4. Zone C-4.

The season in Zone C-4 shall open on the third Saturday in September and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~9,025~~5,000-15,000. Zone C tags are valid in Zones C-1, C-2, C-3, and C-4during the general season only as described above in subsections 360(a)(3)(B)1. through 4.

(4) Zone D-3-5.

(A) Area: Shall include all of zones D-3, D-4, and D-5 (see subsections 360(a)(4)(A)1. through 3.).

1. Zone D-3.

In those portions of Butte, Colusa, Glenn, Nevada, Placer, Plumas, Sierra, Sutter and Yuba counties within a line beginning at the junction of Interstate 5 and Highway 162 at Willows; east on Highway 162 to Highway 70 at Oroville; northeast on Highway 70 to Highway 89; south on Highway 89 to

the new Gold Lake Road (near Graeagle); south on the new Gold Lake Road to Highway 49 at Bassetts; east on Highway 49 to Yuba Pass; south on the Yuba Pass-Webber Lake Road (main haul road) through Bonta Saddle to the Jackson Meadows Highway (Fiberboard Road); west on the Jackson Meadows Highway for two miles to the White Rock Lake Road; south on the White Rock Lake Road to the new road to White Rock Lake (below Bear Valley); south and east on the new White Rock Lake Road to the Pacific Crest Trail (one mile west of White Rock Lake in section 21, T18N, R14E, M.D.B.M.); south and east on the Pacific Crest Trail to Interstate 80 near the Castle Peak-Boreal Ridge Summit; west on Interstate 80 to Highway 20; west on Highway 20 to the Bear River in Bear Valley; west along the Bear River to Highway 65 near Wheatland; north on Highway 65 to Highway 70; north on Highway 70 to Highway 20 in Marysville; west on Highway 20 to Interstate 5 at Williams; north on Interstate 5 to the point of beginning.

2. Zone D-4.

In those portions of Colusa, Nevada, Placer, Sacramento, Sutter, Yolo and Yuba counties within a line beginning at the junction of Interstate 5 and Highway 20 at Williams; east on Highway 20 to Highway 70 in Marysville; south on Highway 70 to Highway 65; south on Highway 65 to the Bear River (south of Wheatland); east along the Bear River to Highway 20; east on Highway 20 to Interstate 80; east on Interstate 80 to the Pacific Crest Trail near the Castle Peak-Boreal Ridge Summit; south on the Pacific Crest Trail toForest Route 03 at Barker Pass; east and north along Forest Route 03 to Blackwood Canyon Road; east along Blackwood Canyon Road to Highway 89 at Lake Tahoe near Idlewild; south on Highway 89 to Blackwood Creek; east on Blackwood Creek to the Lake Tahoe shoreline; south along the shore of Lake Tahoe to the mouth of Miller Creek and the common boundary between the Eldorado and Tahoe National Forests; west along Miller Creek to the Rubicon River; west along the Rubicon River through Hell Hole Reservoir to the Middle Fork of the American River; west along the Middle Fork of the American River to the American River; west along the American River to Interstate 5; north on Interstate 5 to the point of beginning.

3. Zone D-5.

In the counties of Amador and Calaveras and those portions of Alpine, El Dorado, Placer, Sacramento, San Joaquin, Stanislaus and Tuolumne counties within a line beginning at the junction of Interstate 5 and the American River in Sacramento; east along the American River to the Middle Fork of the American River; northeast along the Middle Fork of the American River to the Rubicon River; east along the Rubicon River through Hell Hole Reservoir to its confluence with Miller Creek; east along Miller Creek to its junction with the new (marked) USFS Pacific Crest Trail; north on the Pacific Crest Trail one-quarter mile to a junction with the McKinney-Rubicon Springs Road (Miller Lake Road); east along the McKinney-Rubicon Springs Road to McKinney Creek (NE 1/4, section 23, T14N, R16E, M.D.B.M.); east along McKinney Creek to the west shoreline of Lake Tahoe near Chambers Lodge; south along the shore of Lake Tahoe to the California-Nevada state line; southeast along the California-Nevada state line to Highway 50; southwest on Highway 50 to the Pacific Crest Trail at Echo Summit; south along the Pacific Crest Trail to the township line between Townships 7 and 8 North near Wolf Creek Pass; due west on that township line to the road connecting Lower and Upper Highland Lakes at Lower Highland Lake; west along that road to Highland Creek; southwest along Highland Creek to the North Fork of the Stanislaus River; west along the North Fork of the Stanislaus River to the Stanislaus River; west along the Stanislaus River to Highway 99; north along Highway 99 to Interstate 80; west on Interstate 80 to Interstate 5; north on Interstate 5 to the point of beginning.

(B) Season: The season for zones for D-3 through D-5 shall open on the fourth Saturday in September and extend for 37 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~33,000~~30,000-40,000. The Zone D-3-5 tag is valid in zones D-3, D-4, and D-5.

(5) Zone D-6.

(A) Area: In those portions of Alpine, Madera, Mariposa, Merced, Stanislaus and Tuolumne counties within a line beginning at the intersection of Highway 99 and the Stanislaus River at Ripon; east along the Stanislaus River and following the North Fork of the Stanislaus River to Highland Creek; east up Highland Creek to the road connecting Lower and Upper Highland Lakes at Upper Highland Lake; east along that road to the township line between Townships 7 and 8 North; east on that township line to the Sierra crest near Wolf Creek Pass; south along the Sierra crest to the Yosemite National Park boundary near Rodger Peak; along the eastern Yosemite National Park boundary to Highway 41; south along Highway 41 to the Madera-Mariposa county line south of Westfall Station; along the Madera-

Mariposa and the Madera-Merced county lines to Highway 99; north along Highway 99 to the point of beginning.

(B) Season: The season in Zone D-6 shall open on the third Saturday in September and extend for 44 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~10,000~~6,000-16,000.

(6) Zone D-7.

(A) Area: In those portions of Fresno, Madera, Mariposa and Tulare counties within a line beginning at the intersection of Highway 99 and the Madera-Merced county line; northeast along the Madera-Merced and Madera-Mariposa county lines to Highway 41 south of Westfall Station; north along Highway 41 to Yosemite National Park boundary; east along the park boundary to the Mono-Madera county line near Rodger Peak; south along the Inyo National Forest boundary (crest of the Ritter Range) to the junction of the Inyo National Forest boundary and Ashley Creek; east to Ashley Lake; northeast along Ashley Creek to the junction of King Creek; southeast along King Creek to its junction with the middle fork of the San Joaquin River; south and west along the middle fork of the San Joaquin River to the junction of the Inyo National Forest boundary; east along Fish Creek to its confluence with Deer Creek; north and east along Deer Creek to the upper crossing of the Deer Creek trail; north and east along the Deer Creek trail to the Inyo National Forest Boundary (the Sierra Crest); south along the Sierra crest and the Inyo National Forest boundary to Bishop Pass; west along the Dusy Basin Trail to the Middle Fork of the Kings River; southwest and downstream along the Middle Fork of the Kings River to the junction of the Middle Fork and South Fork of the Kings River; southwest along the Kings River through Pine Flat Reservoir, Piedra and Reedley to Highway 99; north along Highway 99 to the point of beginning.

(B) Season: The season in Zone D-7 shall open on the third Saturday in September and extend for 44 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~9,000~~4,000-10,000.

(7) Zone D-8.

(A) Area: In those portions of Fresno, Kern and Tulare counties within a line beginning at the intersection of Highway 99 and the Kings River; upstream and northeast along the Kings River through Reedley, Piedra and Pine Flat Reservoir to the junction of the Middle and South Forks of the Kings River; northeast along the Middle Fork Kings River to the Dusy Basin Trail; east along this trail to the Kings Canyon National Park boundary at Bishop Pass; south along the Kings Canyon and Sequoia National Park boundaries to the Main Kern River; southeast along the Main Kern River and the common boundary between the Inyo and Sequoia National Forests to the end of the Chimney Meadow-Blackrock Station Road (Forest Road 21S03) near Blackrock Mountain; southeast along the Chimney Meadow-Blackrock Station Road through Troy Meadows to the South Fork of the Kern River; south along the South Fork of the Kern River to the Doyle Ranch Road; south along the Doyle Ranch Road to Highway 178 in the town of Onyx; southwest along Highway 178 to Highway 99 at Bakersfield; north along Highway 99 to the point of beginning.

(B) Season: The season in Zone D-8 shall open on the fourth Saturday in September and extend for 30 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~8,000~~5,000-10,000.

(8) Zone D-9.

(A) Area: In that portion of Kern County within a line beginning at the intersection of Highways 99 and 178; northeast along Highway 178 along Lake Isabella and through Walker Pass to Highway 14; southwest along Highway 14 to Highway 58; northwest along Highway 58 to Highway 99; north along Highway 99 to the point of beginning.

(B) Season: The season in Zone D-9 shall open on the fourth Saturday in September and extend for 30 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~2,000~~1,000-2,500.

(9) Zone D-10.

(A) Area: In those portions of Kern and Los Angeles counties within a line beginning at the intersection of Highways 99 and 58; southeast along Highway 58 to Highway 14; south along Highway 14

to Highway 138; west along Highway 138 to Interstate 5; north on Interstate 5 to Highway 99; north on Highway 99 to the point of beginning.

(B) Season: The season in Zone D-10 shall open on the fourth Saturday in September and extend for 30 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~700~~400-800.

(10) Zone D-11.

(A) Area: Those portions of Los Angeles and San Bernardino counties, within a line beginning at the intersection of Interstate 5 and Highway 138, south of Gorman; east on Highway 138 to Highway 14; south on Highway 14 to Palmdale and Highway 138; east on Highways 138 and 18 to Interstate 15; south on interstates 15 and 15E to Interstate 10; west on Interstate 10 to Interstate 405; north on Interstates 405 and 5 to the point of beginning.

(B) Season: The season in Zone D-11 shall open on the second Saturday in October and extend for 30 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~5,500~~2,500-6,000.

(E) Special Conditions: Hunters that possess a D-11 deer tag may also hunt in zones D-13 and D-15 as described in subsections 360(a)(12)(A), (B) and (C), and subsections 360(a)(14)(A), (B) and (C).

(11) Zone D-12.

(A) Area: Those portions of Imperial, Riverside and San Bernardino counties within a line beginning at Highway 62 and the Twentynine Palms-Amboy Road in Twentynine Palms; east along Highway 62 to Highway 95 at Vidal Junction; north on Highway 95 to Interstate 40; east on Interstate 40 to the California-Arizona state line; south along this state line to the U.S.-Mexican border; west along the U.S.-Mexican border to Highway 111 in Calexico; north on Highway 111 to Interstate 10; north and west on Interstate 10 to Highway 62; north and east on Highway 62 to the point of beginning.

(B) Season: The season in Zone D-12 shall open on the first Saturday in November and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~950~~100-1,500.

(12) Zone D-13.

(A) Area: In those portions of Kern, Los Angeles, San Luis Obispo, Santa Barbara, and Ventura counties within a line beginning at the intersection of Highways 99 and 166 at Mettler; south on Highway 99 and Interstate 5 to Highway 126; west on Highway 126 to the crossing of Sespe Creek; north and then west along Sespe Creek to Highway 33; north on Highway 33 to Highway 166; north and east on Highway 166 to the point of beginning.

(B) Season: The season in Zone D-13 shall open on the second Saturday in October and extend for 30 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~4,000~~2,000-5,000.

(E) Special Conditions: Hunters that possess a D-13 deer tag may also hunt in zones D-11 and D-15 as described in subsections 360(a)(10)(A), (B) and (C), and subsections 360(a)(14)(A), (B) and (C).

(13) Zone D-14.

(A) Area: In those portions of Riverside and San Bernardino counties within a line beginning at the junction of Interstates 10 and 15E; northwest on Interstates 15E and 15 through Cajon Pass to Bear Valley Cutoff Road; east on Bear Valley Cutoff Road to Highway 18; east along Highway 18 to Highway 247; southeast on Highway 247 to Highway 62; southwest on Highway 62 to Interstate 10; west on Interstate 10 to the point of beginning.

(B) Seasons: The season in Zone D-14 shall open on the second Saturday in October and extend for 30 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~3,000~~2,000-3,500.

(14) Zone D-15.

(A) Area: Including Santa Catalina Island, those portions of Los Angeles, Orange, Riverside, San Bernardino and San Diego counties within a line beginning at the Pacific Ocean and Interstate 10 in Santa Monica; east on Interstate 10 to Highway 79 at Beaumont; south on Highway 79 to Hemet; south on County Road R-3 through Sage to Highway 79; west on Highway 79 to Interstate 15; south on

Interstate 15 to Highway 76; west on Highway 76 to the Pacific Ocean; north along the shoreline to the point of beginning.

(B) Season: The season in Zone D-15 shall open on the second Saturday in October and extend for 30 consecutive days.

(C) Bag and Possession Limit: one buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~1,500~~500-2,000.

(E) Special Conditions: Hunters that possess a D-15 deer tag may also hunt in zones D-11 and D-13 as described in subsections 360(a)(10)(A), (B) and (C), and subsections 360(a)(12)(A), (B) and (C).

(15) Zone D-16.

(A) Area: Those portions of Imperial, Riverside and San Diego counties within the line beginning at the Pacific Ocean and Highway 76; east on Highway 76 to Interstate 15; north on Interstate 15 to Highway 79; east on Highway 79 to the San Diego-Riverside county line; east along the San Diego-Riverside county line to the Anza-Borrego State Park boundary; south along the Anza-Borrego State Park boundary to Highway 78; east on Highway 78 to Highway 111; south on Highway 111 to the U.S.-Mexican border; west along the U.S.-Mexican border to the Pacific Ocean; north along the shoreline to the point of beginning.

(B) Season: The season in Zone D-16 shall open on the fourth Saturday in October and extend for 30 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better per tag.

(D) Number of Tags: ~~3,000~~1,000-3,500.

(16) Zone D-17.

(A) Area: Those portions of Inyo, Kern, Los Angeles and San Bernardino counties within a line beginning at Highway 395 and the Kern-Inyo county line; east along the Kern-Inyo county line to the San Bernardino-Inyo county line; east along the San Bernardino-Inyo county line to Highway 127; north along Highway 127 to the California-Nevada state line; south along the California-Nevada state line to the California-Arizona state line; south along the California-Arizona state line to Interstate 40; Interstate 40 north to Needles; Highway 95 south to Highway 62; west on Highway 62 to Highway 247; northwest on Highway 247 to Highway 18; west on Highway 18 to Bear Valley Cutoff Road; west on Bear Valley Cutoff Road to Interstate 15; north on Interstate 15 to Highway 18; west on Highways 18 and 138 to Highway 14; north on Highways 14 and 395 to the point of beginning.

(B) Season: The season in Zone D-17 shall open on the second Saturday in October and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better per tag.

(D) Number of Tags: ~~500~~100-800.

(17) Zone D-19.

(A) Area: Those portions of Imperial, Riverside and San Diego counties within a line beginning at the junction of Interstate 10 and Highway 79; south on Highway 79 to Hemet; south on County Road R-3 to Highway 79; south on Highway 79 to the Riverside-San Diego county line; east on the Riverside-San Diego county line to the Anza-Borrego State Park boundary; south on the Anza-Borrego State Park boundary to Highway 78; east on Highway 78 to Highway 111; north on Highway 111 to the junction of Interstate 10 in Indio; west on Interstate 10 to the point of beginning.

(B) Season: The season in D-19 shall open the first Saturday in October and extend for 30 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~1,500~~500-2,000.

Note: Authority: Sections 200, 202, 203, 220, 460, 3452, 3453 and 4334, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 207, 458, 459, 460, 3452, 3453 and 4334, Fish and Game Code.

(b) X-Zone Hunts.

(1) Zone X-1.

(A) Area: In those portions of Lassen, Modoc, Shasta and Siskiyou counties within a line beginning at the California-Oregon state line and its intersection with Highway 139; south on Highway 139 to the Lookout-Hackamore Road; south on the Lookout-Hackamore Road to Highway 299; west on Highway 299 to the Pit River near Bieber; south and west on the Pit River to Highway 89 at Lake Britton; northwest on Highway 89 to Interstate 5 at Mt. Shasta; north on Interstate 5 to the junction of Highway 97 at Weed; north and east on Highway 97 to the California-Oregon state line; east on the California-Oregon state line to the point of beginning.

(B) Season: The season in Zone X-1 shall open on the first Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~2,325~~1,000-6,000.

(2) Zone X-2.

(A) Area: In those portions of Modoc and Siskiyou counties within a line beginning at the intersection of Highway 139 and the California-Oregon state line near Tulelake; east along the California-Oregon state line to the eastern shoreline of Goose Lake; southwest along the eastern shoreline of Goose Lake to Westside Road (Modoc County 48); southeast along the Westside Road to Highway 395 in Davis Creek; south along Highway 395 to Highway 299 in Alturas; west along Highway 299 to Highway 139 near Canby; northwest along Highway 139 to the Oregon-California state line and the point of beginning.

(B) Season: The season in Zone X-2 shall open on the first Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~180~~50-500.

(3) Zone X-3a.

(A) Area: In those portions of Lassen and Modoc counties within a line beginning at the intersection of the Lookout-Hackamore Road and Highway 139; southeast on Highway 139 to Highway 299; east on Highway 299 to Highway 395 in Alturas; south on Highway 395 to the Termo-Grasshopper Road (Lassen County 513); west on the Termo-Grasshopper Road to Highway 139; south on Highway 139 to the Cleghorn Road (Lassen County 521); west and north on the Cleghorn Road to Lassen County Road 519 near Coulthurst Flat; west on Lassen County Road 519 to U.S. Forest Service Designated Through Route 22 near Gooch Mountain; west and north on U.S. Forest Service Designated Through Route 22 to the Little Valley Road (Lassen County 404); north on the Little Valley Road to the Western Pacific Railroad; northeast on the Western Pacific Railroad to Horse Creek; northwest on Horse Creek to the Pit River; north on the Pit River to Highway 299 at Bieber; northeast on Highway 299 to the Bieber-Lookout-Hackamore Road; north along the Bieber-Lookout-Hackamore Road to the point of beginning.

(B) Season: The season in Zone X-3a shall open on the first Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~295~~100-1,200.

(4) Zone X-3b.

(A) Area: In those portions of Lassen and Modoc counties within a line beginning at the east shoreline of Goose Lake and the California-Oregon state line; east along this state line to the California-Nevada state line; south along the California-Nevada state line to the Clarks Valley-Red Rock-Tuledad Road (Lassen County Roads 512, 510 and 506); west along the Tuledad Red Rock- Clarks Valley Road to Highway 395 at Madeline; north on Highway 395 to Westside Road (Modoc County 48) in Davis Creek; west and north along Westside Road to the south shoreline of Goose Lake; east and north along the south and east shoreline of Goose Lake to the point of beginning.

(B) Season: The season in Zone X-3b shall open on the first Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~840~~200-3,000.

(5) Zone X-4.

(A) Area: In those portions of Lassen and Shasta counties within a line beginning at the junction of Highways 89 and 44 at Old Station; north on Highway 89 to the intersection with the Pit River at Lake Britton; east and south on the Pit River to Horse Creek; southeast on Horse Creek to the Burlington Northern Railroad; southwest on the Burlington Northern Railroad to the Little Valley Road (Lassen County 404); south on the Little Valley Road to U.S. Forest Service Designated Through Route 22; south and east on U.S. Forest Service Designated Through Route 22 to Lassen County 519 near Gooch Mountain; east on Lassen County 519 to Cleghorn Road (Lassen County 521) near Coulthurst Flat; east on Cleghorn Road to Highway 139; south on Highway 139 to its crossing of Willow Creek in the Willow Creek Valley; south (downstream) on Willow Creek to its crossing of Conservation Center Road (Lassen County A-27); west on Conservation Center Road to Highway 36; northwest on Highway 36 to the intersection with Highway 44; north and west on Highway 44 to the point of beginning.

(B) Season: The season in Zone X-4 shall open on the first Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~435~~100-1,200.

(6) Zone X-5a.

(A) Area: In that portion of Lassen County within a line beginning at the junction of Highway 395 and Conservation Center Road (Lassen County A-27) in the town of Litchfield; west on Conservation Center Road to its crossing of Willow Creek; northwest (upstream) on Willow Creek to its crossing of Highway 139 in the Willow Creek Valley; north along Highway 139 to the Termo-Grasshopper Road; east on the Termo-Grasshopper Road to Highway 395; south along Highway 395 to the point of beginning.

(B) Season:

The season in Zone X-5a shall open on the first Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~70~~25-200.

(7) Zone X-5b.

(A) Area: That portion of Lassen County lying within the following line: Beginning at the junction of Highway 395 and the Clarks Valley-Red Rock-Tuledad Road (Lassen County Roads 506, 510 and 512); east on the Clarks Valley-Red Rock-Tuledad Road to the California-Nevada state line; south on the California-Nevada state line to the Pyramid Lake Road (Lassen County 320); west on the Pyramid Lake Road to Highway 395; north on Highway 395 to the point of beginning.

(B) Season:

The season in Zone X-5b shall open on the first Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~155~~50-500.

(8) Zone X-6a.

(A) Area: In those portions of Lassen and Plumas counties within a line beginning at the junction of Highway 147 and Highway 36 near Westwood; east on Highway 36 to Conservation Center Road at Susanville (County Road A-27); east on Conservation Center Road to Highway 395 at the town of Litchfield; east on Highway 395 to the Wendel-Pyramid Lake Road (County Road 320); east on the Wendel-Pyramid Lake Road to the Nevada-California state line; south on the Nevada-California state line to the UP-WP railroad line near Herlong; west on the UP-WP railroad line to the Herlong Access Road (County Road A- 25) at Herlong; west on the Herlong Access Road to Highway 395; north on Highway 395 to County Road 336 at Milford; southwest on County Road 336 to U.S. Forest Service Road 26N16 near the Plumas-Lassen county line; west on Forest Service Road 26N16 to Forest Service Road 28N03 at Doyle Crossing; west on Forest Services Road 28N03 to Forest Service Road 29N43 near Antelope Lake; south on Forest Service Road 29N43 to County Road 111 at Flournoy Bridge; south on County Road 111 to Forest Service Road 24N08; south on Forest Service Road 24N08 to County Road 112 at Lake Davis; south on County Road 112 to Highway 70; west on Highway 70 to the Highway 89 junction at Blairsden; west on Highway 89/70 to the Greenville Y west of Quincy; northwest on Highway 89 to Highway 147 at Canyon Dam; north on Highway 147 to the point of beginning.

(B) Seasons: The season in Zone X-6a shall open on the first Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~325~~100-1,200.

(9) Zone X-6b.

(A) Area: In those portions of Lassen and Plumas counties within a line beginning at the junction of County Road 336 and Highway 395 at Milford; south on Highway 395 to the junction of Highway 395 and the Herlong Access Road (County Road A-25); east on the Herlong Access Road to its junction with the UP-WP railroad line at Herlong; east on the UP-WP railroad line to the Nevada-California state line; south on the Nevada-California state line to the junction of the Nevada-California state line and Highway 395 at Bordertown; northwest on Highway 395 to its junction at Highway 70; west on Highway 70 to its junction with County Road 112; north on County Road 112 to its junction with U.S. Forest Service Road 24N08 at Lake Davis; north on Forest Service Road 24N08 to its junction with County Road 111; northwest on County Road 111 to its junction with Forest Service Road 29N43 at Flournoy Bridge; north on Forest Service Road 29N43 to Forest Service Road 28N03 near Antelope Lake; southeast on Forest Service Road 28N03 to Forest Service Road 26N16 at Doyle Crossing; east on Forest Service Road 26N16 to County Road 336 near the Plumas-Lassen county line; north on County Road 336 to the point of beginning.

(B) Season: The season in Zone X-6b shall open on the first Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~415~~100-1,200.

(10) Zone X-7a.

(A) Area: In those portions of Lassen, Nevada, Plumas and Sierra counties lying within a line beginning at the junction of Highway 395 and the California-Nevada state line at Bordertown; south along the Long Valley Road (County Road S570) to its intersection with the Henness Pass Road (County Road S860); west on Henness Pass Road over Summit 2 to the intersection with County Road S450 (near the Davies Creek Campground at Stampede Reservoir); west on County Road S450 (the Henness Pass Road) through Kyburz Flat to its intersection with Highway 89; south on Highway 89 to its intersection with Interstate 80 at Truckee; west on Interstate 80 to the Pacific Crest Trail near the Castle Peak- Boreal Ridge Summit; north on the Pacific Crest Trail to the new road to White Rock Lake (one mile west of White Rock Lake in section 21, T18N, R14E, M.D.B.M.); north on the new White Rock Lake Road below Bear Valley to the White Rock Lake Road; north on the White Rock Lake Road to the Jackson Meadows Highway (Fiberboard Road); east two miles on the Jackson Meadows Highway to the Yuba Pass Road at Webber Lake; north on the Yuba Pass Road (main haul road) through Bonta Saddle to Highway 49 at Yuba Pass; west on Highway 49 to the new Gold Lake Road at Bassetts; north on the new Gold Lake Road to Highway 89 near Graeagle; north on Highway 89 to Highway 70; east on Highway 70 to Highway 395 at Hallelujah Junction; south on Highway 395 to the point of beginning.

(B) Season: The season in Zone X-7a shall open on the first Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~220~~50-500.

(11) Zone X-7b.

(A) Area: In those portions of Nevada, Placer and Sierra counties lying within a line beginning at the junction of Highway 395 and the California-Nevada state line at Bordertown; south along the California-Nevada state line to the shore of Lake Tahoe; west and south along the shore of Lake Tahoe to the mouth ofBlackwood Creek near Idlewild; west on Blackwood Creek to Highway 89; north on Highway 89 to Blackwood Canyon Road; Blackwood Canyon Road near Idlewild; west along Blackwood Canyon Road to Forest Route 03; west and south along Forest Route 03 to the Pacific Crest Trail at Barker Pass; north on the Pacific Crest Trail to its intersection with Interstate 80 near the Castle Peak-Boreal Ridge Summit; east on Interstate 80 to its intersection with Highway 89 at Truckee; north on Highway 89 to County Road S450 (the Henness Pass Road, a.k.a. the Kyburz Flat Road); east on County Road S450 to its intersection with County Road S860 (continuation of Henness Pass Road) near the Davies Creek Campground at Stampede Reservoir; east on County Road S860, over Summit 2 to the junction with County Road S570 (the Long Valley Road); north on County Road S570 to Bordertown at the point of beginning.

(B) Season: The season in Zone X-7b shall open on the first Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~100~~25-200.

(12) Zone X-8.

(A) Area: In those portions of Alpine and El Dorado counties within a line beginning at the junction of the California-Nevada state line and Highway 50; southeast along the California-Nevada state line to the Indian Springs Road, south to the Alpine-Mono County line; south along the Alpine-Mono county line to the Sierra crest;northwest along the Sierra crest to the intersection with the Pacific Crest Trail near Wolf Creek Pass;northwest along the Pacific Crest Trail to Highway 50 at Echo Summit; northeast on Highway 50 to the point of beginning.

(B) Season: The season in Zone X-8 shall open on the fourth Saturday in September and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~300~~100-750.

(13) Zone X-9a.

(A) Area: In those portions of Fresno, Inyo, Madera and Mono counties within a line beginning at the intersection of Highway 6 and the California-Nevada state line; south along Highway 6 to its junction with Highway 395; south along Highway 395 to its junction with Highway 168; west and south along Highway 168 to the North Lake Road turnoff; west along the North Lake Road and the Piute Pass Trail to the Sierra Crest (Inyo National Forest Boundary); north along the Inyo National Forest Boundary to the Deer Creek Trail; south and west along the Deer Creek Trail to the upper crossing of Deer Creek; west and south along Deer Creek to its confluence with Fish Creek; west along Fish Creek to its confluence with the middle fork of the San Joaquin River; north along the middle fork of the San Joaquin River to the junction of King Creek; west along King Creek to the junction of Ashley Creek; west along Ashley Creek to Ashley Lake; continue west along Ashley Creek to the junction of the Inyo National Forest boundary; north along the Inyo National Forest Boundary (the crest of the Ritter Range) to the Mono-Madera county line; north along the Mono-Madera county line to Mono-Tuolumne county line; north on the Mono-Tuolumne county line to the Virginia Lakes Trail (Entry Trail D-11); east along Virginia Lakes Trail to Virginia Lakes Road; east along Virginia Lakes Road to Highway 395; south along Highway 395 to Highway 167; east on Highway 167 to the California-Nevada state line; southeast on the California-Nevada state line to the point of beginning.

(B) Season: The season in Zone X-9a shall open on the third Saturday in September and extend for 24 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~750~~100-1,200.

(14) Zone X-9b.

(A) Area: That portion of Inyo County within a line beginning at the intersection of Highway 395 and Cottonwood Creek; northwest along Cottonwood Creek to the Horseshoe Meadow Road; south along the Horseshoe Meadow Road to the Cottonwood Pass Trail; west along the Cottonwood Pass Trail through Horseshoe Meadow to the Inyo-Tulare county line at Cottonwood Pass; north on the Inyo-Tulare and the Inyo-Fresno county lines to the Piute Pass Trail; east along the Piute Pass Trail to the North Lake Road; east and south on the North Lake Road to Highway 168; north and east on Highway 168 to Highway 395; south on Highway 395 to the point of beginning.

(B) Season: The season in Zone X-9b shall open on the third Saturday in September and extend for 24 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~325~~100-600.

(15) Zone X-9c.

(A) Area: In those portions of Inyo and Mono counties within a line beginning at Highway 395 and the Kern-Inyo county line; north along Highway 395 to Highway 6; north on Highway 6 to the California-Nevada state line; southeast along the California-Nevada state line to Highway 127; south along Highway 127 to the Inyo-San Bernardino county line; west along the Inyo-San Bernardino county line to the Kern-Inyo county line; west along the Kern-Inyo county line to the point of beginning.

(B) Season: The season in Zone X-9c shall open on the third Saturday in October and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~325~~100-600.

(16) Zone X-10.

(A) Area: In those portions of Kern, Tulare and Inyo counties within a line beginning at the intersection of Highway 178 and the Doyle Ranch Road in the town of Onyx; north along the Doyle Ranch Road to the South Fork of the Kern River; north along the South Fork of the Kern River to the Chimney Meadow-Blackrock Station Road (Forest Road 21S03); northwest along the Chimney Meadow-Blackrock Station Road through Troy Meadows to the road's end at the Inyo and Sequoia National Forest boundary near Blackrock Mountain; northwest along the Inyo and Sequoia National Forest boundary to the main Kern River; northwest along the main Kern River to the Sequoia National Park boundary; northeast along the Sequoia National Park boundary to the Inyo-Tulare county line; southeast along the Inyo-Tulare county line to the Cottonwood Pass Trail at Cottonwood Pass; east along the Cottonwood Pass Trail through Horseshoe Meadow to the Horseshoe Meadow Road; north along the Horseshoe Meadow Road to Cottonwood Creek; southeast along Cottonwood Creek to Highway 395; south along Highway 395 to Highway 14; south along Highway 14 to Highway 178; north and west along Highway 178 to the point of beginning.

(B) Season:

The season in Zone X-10 shall open on the last Saturday in September and extend for 16 consecutive days.

(C) Bag and Possession Limit:

One buck, forked horn (See subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~400~~100-600.

(17) Zone X-12.

(A) Area: That portion of Mono County within a line beginning at the junction of the California-Nevada state line and Highway 167 (Pole Line Road); west on Highway 167 to Highway 395; north on Highway 395 to Virginia Lakes Road; west on Virginia Lakes Road to the Virginia Lakes Trail (Entry Trail D11); northwest on the Virginia Lakes Trail to the Mono-Tuolumne county line; north along the Mono-Tuolumne county line to the Mono-Alpine county line; northeast along the Mono-Alpine county line to Indian Springs Road; northeast on Indian Springs Road to the California-Nevada state line; southeast on the California-Nevada state line to the point of beginning.

(B) Season: The season in Zone X-12 shall open on the third Saturday in September and extend for 24 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351 (a)) or better, per tag.

(D) Number of Tags: ~~805~~100-1,200.

Note: Authority: Sections 200, 202, 203, 220, 460, 3452, 3453 and 4334, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 207, 458, 459, 460, 3452, 3453 and 4334, Fish and Game Code.

(c) Additional Hunts.

(1) G-1 (Late Season Buck Hunt for Zone C-4).

(A) Area: Those portions of Butte, Glenn, Lassen, Plumas, Shasta, and Tehama counties within the area described as Zone C-4 (see subsection 360(a)(3)(A)4.).

(B) Season: The season for additional hunt G-1 (Late Season Buck Hunt for Zone C-4) shall open on the fourth Saturday in October and extend for 9 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~2,850~~500-5,000.

(2) G-3 (Goodale Buck Hunt).

(A) Area: In that portion of Inyo County within a line beginning at the intersection of Highway 395 and Lone Pine Creek; west along Lone Pine Creek to the Inyo-Tulare county line; northwest along the Inyo-Tulare and Inyo-Fresno county lines to Taboose Creek; east along Taboose Creek to Highway 395; south along Highway 395 to the point of beginning.

(B) Season: The season for additional hunt G-3 (Goodale Buck Hunt) shall open on the first Saturday in December and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Permits: ~~35~~5-50.

(3) G-6 (Kern River Deer Herd Buck Hunt).

(A) Area: In those portions of Kern and Tulare counties lying within a line beginning at the intersection of County Road 521 and County Road 495 at Kernville; south on County Road 495 to the

intersection of Highway 155 at Wofford Heights; west on Highway 155 to the intersection of U.S. Forest Service Road 24S15 at Greenhorn Summit; north on U.S. Forest Service Road 24S15 to the intersection of U.S. Forest Service Road 23S16 (near Portuguese Pass); northeast on U.S. Forest Service Road 23S16 to County Road SM50; west on County Road SM50 to the intersection of the Western Divide Highway (County Road SM107); north on County Road SM107 to the junction of U.S. Forest Service Road 21S50 (near Quaking Aspen Campground); north on U.S. Forest Service Road 21S50 to the junction of U.S. Forest Service Road 20S79; northeast on U.S. Forest Service Road 20S79 to the junction of U.S. Forest Service Road 20S53; northeast on U.S. Forest Service Road 20S53 to the Golden Trout Wilderness boundary (at Lewis Camp Trail Head); east on the Golden Trout Wilderness Boundary to Rattlesnake Creek; southeast on Rattlesnake Creek to U.S. Forest Service Road 22S05; south on U.S. Forest Service Road 22S05 to the Dome Land Wilderness Boundary; southwest on the Dome Land Wilderness Boundary to the intersection of the South Fork of the Kern River; south along the South Fork of the Kern River to the intersection of County Road 521; west on County Road 521 to the point of beginning.

(B) Season: The season for additional hunt G-6 (Kern River Deer Herd Buck Hunt) shall open on the first Saturday in December and extend for 9 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~50~~25-100.

(4) G-7 (Beale Either-Sex Deer Hunt).

(A) Area: That portion of Yuba County lying within the exterior boundaries of Beale Air Force Base.

(B) Season: The season for additional hunt G-7 (Beale Either-Sex Deer Hunt) shall open on the third Saturday in August and extend for 79 consecutive days, except if rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: 20 (military only).

(E) Special Conditions:

1. Only shotguns with single slugs or muzzleloading rifles, crossbows, and archery equipment as specified in sections 353 and 354 may be used.

2. In the event the Commanding Officer cancels the hunt, G-7 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.

(5) G-8 (Fort Hunter Liggett Antlerless Deer Hunt).

(A) Area: That portion of Monterey County lying within the exterior boundaries of the Hunter Liggett Military Reservation, except as restricted by the Commanding Officer.

(B) Season: The season for additional hunt G-8 (Fort Hunter Liggett Antlerless Deer Hunt) shall ~~be~~ open ~~Saturdays, Sundays, and the Columbus Day holiday only beginning the first Saturday in October~~ on October 4 and extend for ~~two~~five consecutive ~~weekends~~days, except if rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.

(C) Bag and Possession Limit: One antlerless deer (see subsection 351(b)) per tag.

(D) Number of Tags: 20 (10 military and 10 general public).

(E) Special Conditions: In the event the Commanding Officer cancels the hunt, G-8 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.

(6) G-9 (Camp Roberts Antlerless Deer Hunt).

(A) Area: That portion of San Luis Obispo County lying within the exterior boundaries of Camp Roberts, except as restricted by the Commanding Officer.

(B) Season: The season for additional hunt G-9 (Camp Roberts Antlerless Deer Hunt) shall open the last Monday in August and extend for 8 consecutive days, except if rescheduled bythe Commanding Officer with Department concurrence between the season opener and December 31.

(C) Bag and Possession Limit: One antlerless deer (see subsection 351(b)) per tag.

(D) Number of Tags: 30 (15 military and 15 general public).

(E) Special Conditions: In the event the Commanding Officer cancels the hunt, G-9 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.

(7) G-10 (Camp Pendleton Either-Sex Deer Hunt).

(A) Area: That portion of San Diego County lying within the exterior boundaries of the U.S. Marine Corps Base, Camp Joseph Pendleton.

(B) Season: The season for additional hunt G-10 (Camp Pendleton Either-Sex Deer Hunt) shall be open on Saturdays, Sundays, ~~the Columbus and Veterans Day Holidays and the day after Thanksgiving only~~holidays and the day after Thanksgiving beginning the ~~third~~first Saturday in September and extend through the first Sunday in December.~~following the Thanksgiving Day holiday, except if rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.~~Season dates may be subject to further restriction, or additional hunt days scheduled with concurrence from the Department, between the season opener and December 31 by the Commanding Officer due to military operations.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~300~~400 (military only).

(E) Special Conditions:

1. Only archery equipment is permitted during the first ~~four~~six ~~weekends~~weeks of the season.

2. Hunting with firearms is permitted beginning on the ~~fifth~~seventh weekend through the end of season.

3. A permit fee and method of take registration with the Base ~~are~~may be required.

4. In the event the Commanding Officer cancels the hunt, G-10 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.

(8) G-11 (Vandenberg Either-Sex Deer Hunt).

(A) Area: That portion of Santa Barbara County lying within the exterior boundaries of Vandenberg Air Force Base.

(B) Season: The season for additional hunt G-11 (Vandenberg Either-Sex Deer Hunt) shall open on the last Monday in August and extend through December 31.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: 500 (military and Department of Defense employees only).

(E) Special Conditions: In the event the Commanding Officer cancels the hunt, G-11 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.

(9) G-12 (Gray Lodge Shotgun Either-Sex Deer Hunt).

(A) Area: Those portions of Butte and Sutter counties within the exterior boundaries of the Gray Lodge State Wildlife Area.

(B) Season: The season for additional hunt G-12 (Gray Lodge Shotgun Either-Sex Deer Hunt) shall open on the third Saturday in September and extend for nine consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~30~~10-50.

(E) Special Conditions: Only shotguns and ammunition as specified in Section 353 may be used.

(10) G-13 (San Diego Antlerless Deer Hunt).

(A) Area: That portion of San Diego County within Zone D-16 (see subsection 360(a)(15)(A)).

(B) Season: The season for additional hunt G-13 (San Diego Antlerless Deer Hunt) shall open on the fourth Saturday in October and extend for 23 consecutive days.

(C) Bag and Possession Limit: One antlerless deer (see subsection 351(b)) per tag.

(D) Number of Tags: 50-300.

(11) G-19 (Sutter-Yuba Wildlife Areas Either-Sex Deer Hunt).

(A) Area: Those portions of Yuba and Sutter counties within the exterior boundaries of: (1) the Feather River Wildlife Area, and (2) the Sutter Bypass Wildlife Area (as defined in Section 550, Title 14, CCR).

(B) Season: The season for additional hunt G-19 (Sutter-Yuba Wildlife Areas Either-Sex Deer Hunt) shall open on the fourth Saturday in September and extend through December 31.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~25~~10-50.

(E) Special Conditions: Only archery equipment and crossbows (as specified in Section 354) and shotguns and ammunition (as specified in Section 353) may be used.

(12) G-21 (Ventana Wilderness Buck Hunt).

(A) Area: That portion of Monterey County and the Los Padres National Forest within the exterior boundaries of the Ventana Wilderness Area.

(B) Season: The season for additional hunt G-21 (Ventana Wilderness Buck Hunt) shall open on the second Saturday in November and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 25-100.

(13) G-37 (Anderson Flat Buck Hunt).

(A) Area: In that portion of hunt Zone D-6 in Mariposa and Tuolumne counties lying within a line beginning at the intersection of Highway 140 and Bull Creek Road at Briceburg; north on Bull Creek Road (U.S. Forest Service Road 2S05) to Greeley Hill Road; west on Greeley Hill Road to Smith Station Road (County Route J20); north on Smith Station Road to Highway 120 (near Burch Meadow); east on Highway 120 to the Yosemite National Park Boundary (near Big Oak-Flat Ranger Station); southeast along the Yosemite National Park Boundary to Highway 140; west on Highway 140 to the Yosemite National Park Boundary; northwest along the Yosemite National Park Boundary to Highway 140 (at Redbud Campground); west on Highway 140 to the point of beginning.

(B) Season: The season for additional hunt G-37 (Anderson Flat Buck Hunt) shall open on the fourth Saturday in November and extend for nine consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 25-50.

(14) G-38 (X-10 Late Season Buck Hunt).

(A) Area: In those portions of Kern, Tulare, and Inyo counties within a line beginning at the intersection of Highway 178 and the Doyle Ranch Road in the town of Onyx; north along the Doyle Ranch Road to the South Fork of the Kern River; north along the South Fork of the Kern River to the Chimney Meadow-Blackrock Station Road (Forest Road 21S03); northwest along the Chimney Meadow-Blackrock Station Road through Troy Meadows to the road's end at the Inyo and Sequoia National Forest boundary near Blackrock Mountain; northwest along the Inyo and Sequoia National Forest boundary to the main Kern River; northwest along the main Kern River to the Sequoia National Park boundary; northeast along the Sequoia National Park boundary to the Inyo-Tulare county line; southeast along the Inyo-Tulare county line to the Cottonwood Pass Trail at Cottonwood Pass; east along the Cottonwood Pass Trail through Horseshoe Meadow to the Horseshoe Meadow Road; north along the Horseshoe Meadow Road to Cottonwood Creek; southeast along Cottonwood Creek to Highway 395; south along Highway 395 to Highway 14; south along Highway 14 to Highway 178; north and west along Highway 178 to the point of beginning.

(B) Season: The season for additional hunt G-38 (X-10 Late Season Buck Hunt) shall open on the third Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 50-300.

(15) G-39 (Round Valley Late Season Buck Hunt).

(A) Area: In that portion of Inyo and Mono counties within a line beginning at the intersection of U.S. Highway 395 and California Highway 168; west and south along Highway 168 to the North Lake Road turnoff; west along the North Lake Road and the Piute Pass Trail to the Inyo-Fresno county line; north along the Inyo-Fresno county line to the Mono-Fresno county line; north along the Mono-Fresno and Mono-Madera county lines to the junction of the Mono-Madera county line and California Highway 203 at Minaret Summit; southeast along Highway 203 to its junction with Highway 395; south along Highway 395 to the point of beginning.

(B) Season: The season for additional hunt G-39 (Round Valley Late Season Buck Hunt) shall open on the fourth Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 5-150.

(16) M-3 (Doyle Muzzleloading Rifle Buck Hunt).

(A) Area: That portion of Lassen County within the area described as X-6b (see subsection 360(b)(9)(A)).

(B) Season: The season for additional hunt M-3 (Doyle Muzzleloading Rifle Buck Hunt) shall open on the third Saturday in November and extend for nine consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~20~~10-75.

(E) Special Conditions: Only muzzleloading rifles as specified in Section 353 may be used.

(17) M-4 (Horse Lake Muzzleloading Rifle Buck Hunt).

(A) Area: That portion of Lassen County within the area described as X5a (see subsection 360(b)(6)(A)).

(B) Season: The season for additional hunt M-4 (Horse Lake Muzzleloading Rifle Buck Hunt) shall open on the fourth Saturday in October and extend for nine consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 5-50.

(E) Special Conditions: Only muzzleloading rifles as specified in Section 353 may be used.

(18) M-5 (East Lassen Muzzleloading Rifle Buck Hunt).

(A) Area: That portion of Lassen County within the area described as X-5b (see subsection 360(b)(7)(A)).

(B) Season: The season for additional hunt M-5 (East Lassen Muzzleloading Rifle Buck Hunt) shall open on the fourth Saturday in October and extend for nine consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~15~~5-50.

(E) Special Conditions: Only muzzleloading rifles as specified in Section 353 may be used.

(19) M-6 (San Diego Muzzleloading Rifle Either-Sex Deer Hunt).

(A) Area: That portion of San Diego County within Zone D-16 (see subsection 360(a)(15)(A)).

(B) Season: The season for additional hunt M-6 (San Diego Muzzleloading Rifle Either-Sex Deer Hunt) shall open on the third Saturday in December and extend through December 31.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~80~~25-100.

(E) Special Conditions: Only muzzleloading rifles as specified in Section 353 may be used.

(20) M-7 (Ventura Muzzleloading Rifle Either-Sex Deer Hunt).

(A) Area: All of Ventura County.

(B) Season: The season for additional hunt M-7 (Ventura Muzzleloading Rifle Either-Sex Deer Hunt) shall open on the last Saturday in November and extend for 16 consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: 50-150.

(E) Special Conditions: Only muzzleloading rifles as specified in Section 353 may be used.

(21) M-8 (Bass Hill Muzzleloading Rifle Buck Hunt).

(A) Area: That portion of Lassen County within the area described as Zone X-6a (see subsection 360(b)(8)(A)).

(B) Season: The season for additional hunt M-8 (Bass Hill Muzzleloading Rifle Buck) shall open on the fourth Saturday in October and extend for 9 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~20~~5-50.

(E) Special Conditions: Only muzzleloading rifles as specified in Section 353 may be used.

(22) M-9 (Devil's Garden Muzzleloading Rifle Buck Hunt).

(A) Area: That portion of Modoc County within a line beginning at the intersection of the Malin Road (Modoc County 114) and the California/Oregon state line; east along the state line to the Crowder Flat Road; south along the Crowder Flat Road to the Blue Mountain Road (Modoc County 136); west on the Blue Mountain Road to the Blue Mountain-Mowitz Butte-Ambrose Road; south on the Blue Mountain-Mowitz Butte-Ambrose Road to Highway 139; north on Highway 139 to the Malin Road; north on the Malin Road to the point of beginning.

(B) Season: The season for additional hunt M-9 (Devil's Garden Muzzleloading Rifle Buck Hunt) shall open on the fourth Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~15~~5-100.

(E) Special Conditions: Only muzzleloading rifles as specified in Section 353 may be used.

(23) M-11 (Northwestern California Muzzleloading Rifle Buck Hunt).

(A) Area: Those portions of Del Norte, Glenn, Humbolt, Lake, Mendocino, Siskiyou, and Trinity counties within the area described as Zone B-1 (see subsection 360(a)(2)(A)1.

(B) Season: The season for additional hunt M-11 (Northwestern California Muzzleloading Rifle Buck Hunt) shall open on the second Saturday in November and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 20-200.

(E) Special Conditions: Only muzzleloading rifles as specified in Section 353 may be used.

(24) MA-1 (San Luis Obispo Muzzleloading Rifle/Archery Either-Sex Deer Hunt).

(A) Area: That portion of San Luis Obispo County lying within the Los Padres National Forest.

(B) Season: The season for additional hunt MA-1 (San Luis Obispo Muzzleloading Rifle/Archery Either-Sex Deer Hunt) shall open the last Saturday in November and extend for 16 consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: 20-150.

(E) Special Conditions: Only archery equipment as specified in Section 354 or muzzleloading rifles as specified in Section 353 may be used.

(25) MA-3 (Santa Barbara Muzzleloading Rifle/Archery Buck Hunt).

(A) Area: All of Santa Barbara County.

(B) Season: The season for additional hunt MA-3 (Santa Barbara Muzzleloading Rifle/Archery Buck Hunt) shall open on the last Saturday in November and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 20-150.

(E) Special Conditions: Only muzzleloading rifles as specified in Section 353 and archery equipment as specified in Section 354 may be used.

(26) J-1 (Lake Sonoma Junior Either-Sex Deer Hunt).

(A) Area: That portion of Sonoma County within the boundaries of the Lake Sonoma Area, U.S. Army Corps of Engineers (COE) property described as follows: Beginning at the intersection of Hot Springs Road and the COE boundary; east and south along the boundary line to the intersection with Brush Creek; west along the north bank of Brush Creek (shoreline) to the Dry Creek arm of Lake Sonoma; south along the shoreline of the Dry Creek arm to Smittle Creek; north along the COE property line to Dry Creek; east along the COE boundary across Cherry Creek, Skunk Creek, and Yorty Creek to the point of beginning.

(B) Season: The season for additional hunt J-1 (Lake Sonoma Junior Either-Sex Deer Hunt) shall open on the first Saturday in November and extend for two consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: 10-25.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
3. Tagholders shall attend an orientation meeting the day before the opening day of the season.
4. The use of dogs is prohibited.
5. Boats are required for all areas west of Cherry Creek (2/3 of the hunt area). Only cartop boats are allowed to launch from the Yorty Creek access.

(27) J-3 (Tehama Wildlife Area Junior Buck Hunt).

(A) Area: That portion of Tehama County within the boundaries of the Tehama Wildlife Area.

(B) Season: The season for additional hunt J-3 (Tehama Wildlife Area Junior Buck Hunt) shall open on the last Saturday in November and extend for 2 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 15-30.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).
2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.
3. Tagholders shall attend an orientation meeting the day before the opening day of the season.

(28) J-4 (Shasta-Trinity Junior Buck Hunt).

(A) Area: In those portions of Shasta and Trinity counties beginning at the junction of Highway 3 and Highway 299 in Weaverville; north on Highway 3 to the East Side Road at the north end of Trinity Lake; east on the East Side Road to Dog Creek Road; east on Dog Creek Road to Interstate 5 at Vollmers; south on Interstate 5 to Shasta Lake; south along the west shore of Shasta Lake to Shasta Dam; south along Shasta Dam along the Sacramento River to Keswick Dam Road; west on Keswick Dam Road to Rock Creek Road; south on Rock Creek Road to Highway 299; west on Highway 299 to the point of beginning.

(B) Season: The season for additional hunt J-4 (Shasta-Trinity Junior Buck Hunt) shall open on the fourth Saturday in November and extend for nine consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 15-50.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(29) J-7 (Carson River Junior Either-Sex Deer Hunt).

(A) Area: That portion of Alpine County within the area described as Zone X-8 (see subsection 360(b)(12)(A)).

(B) Season: The season for additional hunt J-7 (Carson River Junior Either-Sex Deer Hunt) shall open on the first Saturday following the closure of the X-8 general season (see subsection 360(b)(12)(B)) and extend for 9 consecutive days.

(C) Bag and Possession limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~15~~10-50.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(30) J-8 (Daugherty Hill Wildlife Area Junior Either-Sex Deer Hunt).

(A) Area: That portion of Yuba County within the exterior boundaries of the Daugherty Hill Wildlife Area (as defined in Section 550, Title 14, CCR).

(B) Season: The season for additional hunt J-8 (Daugherty Hill Wildlife Area Junior Either-Sex Deer Hunt) shall open on the first Saturday in December and extend through December 31.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~15~~10-20.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

3. Tagholders shall attend an orientation meeting the day before the opening day of the season.

(31) J-9 (Little Dry Creek Junior Shotgun Either-Sex Deer Hunt).

(A) Area: That portion of Butte County within the exterior boundaries of the Little Dry Creek Unit Upper Butte Basin Wildlife Area (as defined in Section 550).

(B) Season: The season for additional hunt J-9 (Little Dry Creek Junior Shotgun Either-Sex Deer Hunt) shall open on the third Saturday in September and extend for 9 consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)), per tag.

(D) Number of Tags: 5-10.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

3. Tagholders shall attend an orientation meeting the day before the opening day of the season.

4. Only shotguns and ammunition as specified in Section 353 may be used.

(32) J-10 (Fort Hunter Liggett Junior Either-Sex Deer Hunt).

(A) Area: That portion of Monterey County lying within the exterior boundaries of the Fort Hunter Liggett Military Reservation, except as restricted by the Commanding Officer.

(B) Season: The season for additional hunt J-10 (Fort Hunter Liggett Junior Either-Sex Deer Hunt) shall ~~be~~ open ~~Saturdays, Sundays, and the Columbus Day holiday only beginning the first Saturday in October~~onOctober 4 and extend for ~~two~~five consecutive ~~weekends~~days and reopen October 13 and extend for two consecutive days, except if rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~60~~85 (10 military and ~~50~~75 general public).

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

3. Tagholders shall attend an orientation meeting the day before the opening day of the season.

4. In the event the Commanding Officer cancels the hunt, J-10 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.

(33) J-11 (San Bernardino Junior Either-Sex Deer Hunt).

(A) Area: In those portions of Zone D-14 within San Bernardino County (see subsection 360(a)(13)(A).

(B) Season: The season for additional hunt J-11 (San Bernardino Junior Either-Sex Deer Hunt) shall open on the third Saturday in November and extend for 9 consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~40~~10-50.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(34) J-12 (Round Valley Junior Buck Hunt).

(A) Area: In that portion of Inyo and Mono counties within a line beginning at the intersection of U.S. Highway 395 and California Highway 168; west and south along Highway 168 to the North Lake Road turnoff; west along the North Lake Road and the Paiute Pass Trail to the Inyo-Fresno county line; north along the Inyo-Fresno county line to the Mono-Fresno county line; north along the Mono-Fresno and Mono-Madera county lines to the junction of the Mono-Madera county line and California Highway 203 at Minaret Summit; southeast along Highway 203 to its junction with Highway 395; south along Highway 395 to the point of beginning.

(B) Season: The season for additional hunt J-12 (Round Valley Junior Buck Hunt) shall open on the first Saturday in December and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 10-20.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(35) J-13 (Los Angeles Junior Either-Sex Deer Hunt).

(A) Area: In that portion of Los Angeles County within Zone D-11 (see subsection 360(a)(10)(A)).

(B) Season: The season for additional hunt J-13 (Los Angeles Junior Either-Sex Deer Hunt) shall open on the third Saturday in November and extend for 9 consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~40~~25-100.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(36) J-14 (Riverside Junior Either-Sex Deer Hunt).

(A) Area: In that portion of Riverside County within Zone D-19 (see subsection 360(a)(17)(A)).

(B) Season: The season for additional hunt J-14 (Riverside Junior Either-Sex Deer Hunt) shall open on the third Saturday in November and extend for 9 consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~30~~15-75.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(37) J-15 (Anderson Flat Junior Buck Hunt).

(A) Area: In that portion of Zone D-6 in Mariposa and Tuolumne counties lying within a line beginning at the intersection of Highway 140 and Bull Creek Road at Briceburg; north on Bull Creek Road (U.S. Forest Service Road 2S05) to Greeley Hill Road; west on Greeley Hill Road to Smith Station Road (County Route J20); north on Smith Station Road to Highway 120 (near Burch Meadow); east on Highway 120 to the Yosemite National Park Boundary (near Big Oak-Flat Ranger Station); southeast along the Yosemite National Park Boundary to Highway 140; west on Highway 140 to the Yosemite National Park Boundary; northwest along the Yosemite National Park Boundary to Highway 140 (at Redbud Campground); west on Highway 140 to the point of beginning.

(B) Season: The season for additional hunt J-15 (Anderson Flat Junior Buck Hunt) shall open on the fourth Saturday in November and extend for nine consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~10~~5-30.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(38) J-16 (Bucks Mountain-Nevada City Junior Either-Sex Deer Hunt).

(A) Area: Excluding Butte, Colusa and Glenn Counties, in those portions of Nevada, Placer, Plumas, Sierra, Sutter and Yuba Counties within the area described as zone D-3 (see subsection 360(a)(4)(A)1).

(B) Season: The season for additional hunt J-16 (Bucks Mountain-Nevada City Junior Either-Sex Deer Hunt) shall be concurrent with the zone D-3 general season as defined in subsection 360(a)(4)(B).

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: 10-75.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(39) J-17 (Blue Canyon Junior Either-Sex Deer Hunt).

(A) Area: Excluding Colusa County, in those portions of Nevada, Placer, Sacramento, Sutter, Yolo and Yuba Counties within the area described as zone D-4 (see subsection 360(a)(4)(A)2).

(B) Season: The season for additional hunt J-17 (Blue Canyon Junior Either-Sex Deer Hunt) shall be concurrent with the zone D-4 general season as defined in subsection 360(a)(4)(B).

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: 5-25.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(40) J-18 (Pacific-Grizzly Flat Junior Either-Sex Deer Hunt).

(A) Area: Excluding Amador, Calaveras and Tuolumne Counties, in those portions of Alpine, El Dorado, Placer, Sacramento, San Joaquin, and Stanislaus counties within the area described as zone D-5 (see subsection 360(a)(4)(A)3).

(B) Season: The season for additional hunt J-18 (Pacific-Grizzly Flat Junior Either-Sex Deer Hunt) shall be concurrent with the zone D-5 general season as defined in subsection 360(a)(4)(B).

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: 10-75.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(41) J-19 (Zone X-7a Junior Either-Sex Deer Hunt).

(A) Area: In those portions of Lassen, Nevada, Plumas and Sierra Counties within the area described as zone X-7a (see subsection 360(b)(10)(A)).

(B) Season: The season for additional hunt J-19 (Zone X-7a Junior Either-Sex Deer Hunt) shall be concurrent with the zone X-7a general season as defined in subsection 360(b)(10)(B).

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~25~~10-40.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(42) J-20 (Zone X-7b Junior Either-Sex Deer Hunt).

(A) Area: In those portions of Nevada, Placer and Sierra Counties within the area described as zone X-7b (see subsection 360(b)(11)(A)).

(B) Season: The season for additional hunt J-20 (Zone X-7b Junior Either-Sex Deer Hunt) shall be concurrent with the zone X-7b general season as described in subsection 360(b)(11)(B).

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: 5-20.

(E) Special Conditions:

1. Only junior license holders shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(43) J-21 (East Tehama Junior Either-Sex Deer Hunt).

(A) Area: In that portion of Tehama County within the area described as zone C-4 (see subsection 360(a)(3)(A)4.).

(B) Season: The season for additional hunt J-21 (East Tehama Junior Either-Sex Deer Hunt) shall open on the third Saturday in September and extend for 44 consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~50~~20-80.

(E) Special Conditions:

1. Only junior license holder shall apply (see subsection 708(a)(2)).

2. Tagholders shall be accompanied by an adult chaperon 18 years of age or older while hunting.

(44) Conditions for Special Hunts.

(A) When hunting on military reservations or private lands, hunters shall have in their possession a written permit signed by the landowner, which may specify where and when the permittee may hunt.

(B) When required, tagholders shall check in and check out of designated check stations.

(d) Fund-raising License Tags.

Fund-raising license tags (Golden Opportunity and Open Zone) for the taking of buck deer (as defined in subsection 351(a)) shall be offered for sale to raise funds for the management of deer through the Deer Herd Management Plan Implementation Program. Any resident or nonresident is eligible to purchase a fund-raising license tag. The sale price of a fund-raising license tag includes the fees for deer tag applications and for processing and issuing a hunting license. The purchaser shall be issued a hunting license and fund-raising license tag only after meeting the hunter education requirements for a hunting license.

(1) Golden Opportunity Tag.

(A) Area: Golden Opportunity tags shall be valid statewide.

(B) Season: Golden Opportunity tags shall be valid beginning on the second Saturday in July and extend through December 31.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 5.

(E) Special Conditions:

1. The holder of a Golden Opportunity tag may take deer using methods authorized in sections 353 and 354.

2. Fund-raising license tagholders who receive a deer tag pursuant to Section 708(a)(2) shall be allowed to exchange that tag under the provisions of subsection 708(a)(2)(F). Tagholders shall not be entitled to obtain more than two (2) deer tags as described in subsection 708(a)(2).

3. Tagholders shall report to the Regional Patrol Chief at the appropriate Department of Fish and Game Regional Headquarters prior to hunting as to the time and area they intend to hunt.

(2) Open Zone Tag.

(A) Area: Open Zone tags shall be valid in the areas as described in sections 360 and 361.

(B) Season: Open Zone tags shall be valid during the authorized seasons described in sections 360 and 361.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 5.

(E) Special Conditions:

1. The holder of an Open Zone tag shall meet any special conditions and take deer using the method of take described in sections 360 and 361.

2. Fund-raising license tagholders who receive a deer tag pursuant to Section 708(a)(2) shall be allowed to exchange that tag under the provisions of subsection 708(a)(2)(F). Tagholders shall not be entitled to obtain more than two (2) deer tags as described in subsection 708(a)(2).

3. Tagholders shall report to the Regional Patrol Chief at the appropriate Department of Fish and Game Regional Headquarters prior to hunting as to the time and area they intend to hunt.

Note: Authority: Sections 200, 202, 203, 220, 460, 3452, 3453 and 4334, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 207, 458, 459, 460, 3452, 3453 and 4334, Fish and Game Code.

§ 361. Archery Deer Hunting.

(a) Archery Hunting With General Deer Zone Tags. Deer may be taken during the archery season only with archery equipment specified in Section 354 as follows:

(1) Zone A.

(A) Area: As described in subsection 360(a)(1)(A)1. through 2.

(B) Season: The archery deer season in Zone A-South Unit 110 and Zone A-North Unit 160 shall open on the second Saturday in July and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(2) B Zones.

(A) Zones B-1 through B-3, B-5 and B-6.

1. Area: As described in subsection 360(a)(2)(A).

2. Season: The archery deer season in Zones B-1 through B-3, B-5 and B-6 shall open on the third Saturday in August and extend for 23 consecutive days.

3. Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(B) Zone B-4.

1. Area: As described in subsection 360(a)(2)(A)4.

2. Season: The archery deer season in Zone B-4 shall open on the fourth Saturday in July and extend for 23 consecutive days.

(3) C Zones (Note: see subsection 361(b) below for area-specific archery hunt A-1 (C Zones Archery Only Hunt)).

(4) D Zones.

(A) Zones D-3 through D-5.

1. Area: As described in subsection 360(a)(4)(A)1. through 3.

2. Season: The archery season in Zones D-3, D-4, and D-5 shall open on the third Saturday in August and extend for 23 days.

3. Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

4. Special Conditions: Hunters that possess a Zone D-3-5 tag may hunt in zones D-3, D-4, and D-5.

(B) Zones D-6 through D-10.

1. Area: As described in subsection 360(a)(5)(A) through (9)(A).

2. Season: The archery season in zones D-6 through D-10 shall open on the third Saturday in August and extend for 23 days.

3. Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(C) Zones D-11, D-13 and D-15.

1. Area: As described in subsection 360(a)(10)(A), (12)(A) and (14)(A), respectively.

2. Season: The archery season in Zones D-11, D-13 and D-15 shall open on the first Saturday in September and extend for 23 days.

3. Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

4. Special Conditions: Hunters that possess a D-11, D-13, or D-15 tag may hunt in any, or all three of those zones.

(D) Zone D-12.

1. Area: As described in subsection 360(a)(11)(A).

2. Season: The archery season in Zone D-12 shall open on the first Saturday in October and extend for 23 consecutive days.

3. Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(E) Zones D-14, D-16, D-17 and D-19.

1. Area: As described in subsection 360(a)(13)(A), (15)(A), (16)(A) and (17)(A), respectively.

2. Season: The archery season in zones D-14, D-16, D-17 and D-19 shall open on the first Saturday in September and extend for 23 consecutive days.

3. Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(b) Archery Hunting With Area-specific Archery Tags. Deer may be taken only with archery equipment specified in Section 354, only during the archery seasons as follows:

(1) A-1 (C Zones Archery Only Hunt).

(A) Area:Shall include all of Zones C-1, C-2, C-3, and C-4 as described in subsections 360(a)(3)(A)1 through 4.

(B) Season:

1. Zone C-1. The archery season for Zone C-1 shall open on the third Saturday in August and extend for 16 consecutive days.

2. Zone C-2. The archery season for Zone C-2 shall open on the third Saturday in August and extend for 23 consecutive days.

3. Zone C-3. The archery season for Zone C-3 shall open on the third Saturday in August and extend for 23 consecutive days.

4. Zone C-4. The archery season for Zone C-4 shall open on the third Saturday in August and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags:~~2,045~~150-3,000 A-1 (C Zones Archery Only Hunt) tags are valid in Zones C-1, C-2, C-3, and C-4 only during the archery season as specified above in subsections 361(b)(1)(B)1 through 4.

(2) A-3 (Zone X-1 Archery Hunt)

(A) Area: As described in subsection 360(b)(1)(A).

(B) Season: The archery season for hunt A-3 (Zone X-1 Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~265~~50-1,000.

(3) A-4 (Zone X-2 Archery Hunt)

(A) Area: As described in subsection 360(b)(2)(A).

(B) Season: The archery season for hunt A-4 (Zone X-2 Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~10~~5-100.

(4) A-5 (Zone X-3a Archery Hunt).

(A) Area: As described in subsection 360(b)(3)(A).

(B) Season: The archery season for hunt A-5 (Zone X-3a Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~35~~10-300.

(5) A-6 (Zone X-3b Archery Hunt).

(A) Area: As described in subsection 360(b)(4)(A).

(B) Season: The archery season for hunt A-6 (Zone X-3b Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~90~~25-400.

(6) A-7 (Zone X-4 Archery Hunt).

(A) Area: As described in subsection 360(b)(5)(A).

(B) Season: The archery season for hunt A-7 (Zone X-4 Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~105~~25-400.

(7) A-8 (Zone X-5a Archery Hunt).

(A) Area: As described in subsection 360(b)(6)(A).

(B) Season: The archery season for hunt A-8 (Zone X-5a Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~20~~15-100.

(8) A-9 (Zone X-5b Archery Hunt).

(A) Area: As described in subsection 360(b)(7)(A).

(B) Season: The archery season for hunt A-9 (Zone X-5b Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: 5-100.

(9) A-11 (Zone X-6a Archery Hunt).

(A) Area: As described in subsection 360(b)(8)(A).

(B) Season: The archery season for hunt A-11 (Zone X-6a Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~55~~10-200.

(10) A-12 (Zone X-6b Archery Hunt).

(A) Area: As described in subsection 360(b)(9)(A).

(B) Season: The archery season for hunt A-12 (Zone X-6b Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~175~~10-300.

(11) A-13 (Zone X-7a Archery Hunt).

(A) Area: As described in subsection 360(b)(10)(A).

(B) Season: The archery season for hunt A-13 (Zone X-7a Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~30~~10-200.

(12) A-14 (Zone X-7b Archery Hunt).

(A) Area: As described in subsection 360(b)(11)(A).

(B) Season: The archery season for hunt A-14 (Zone X-7b Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~20~~5-100.

(13) A-15 (Zone X-8 Archery Hunt).

(A) Area: As described in subsection 360(b)(12)(A).

(B) Season: The archery season for hunt A-15 (Zone X-8 Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~25~~5-100.

(14)A-16 (Zone X-9a Archery Hunt).

(A) Area: As described in subsection 360(b)(13)(A).

(B) Season: The archery season for hunt A-16 (Zone X-9a Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~130~~50-500.

(15)A-17 (Zone X-9b Archery Hunt).

(A) Area: As described in subsection 360(b)(14)(A).

(B) Season: The archery season for hunt A-17 (Zone X-9b Archery Hunt) shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~300~~50-500.

(16) A-18 (Zone X-9c Archery Hunt).

(A) Area: As described in subsection 360(b)(15)(A).

(B) Season: The archery season forhunt A-18 (Zone X-9cArchery Hunt)shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~350~~50-500.

(17) A-19 (Zone X-10 Archery Hunt).

(A) Area: As described in subsection 360(b)(16)(A).

(B) Season: The archery season forhunt A-19 (Zone X-10Archery Hunt)shall open on the third Saturday in August and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~120~~25-200.

(18) A-20 (Zone X-12 Archery Hunt).

(A) Area: As described in subsection 360(b)(17)(A).

(B) Season: The archery season forhunt A-20 (Zone X-12Archery Hunt)shall open on the third Saturday in August and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better per tag.

(D) Number of Tags: ~~115~~50-500.

(19) A-21 (Anderson Flat Archery Buck Hunt).

(A) Area: In that portion of hunt Zone D-6 in Mariposa and Tuolumne counties lying within a line beginning at the intersection of Highway 140 and Bull Creek Road at Briceburg; north on Bull Creek Road (U.S. Forest Service Road 2S05) to Greeley Hill Road; west on Greeley Hill Road to Smith Station Road (County Route J20); north on Smith Station Road to Highway 120 (near Burch Meadow); east on Highway 120 to the Yosemite National Park Boundary (near Big Oak-Flat Ranger Station); southeast along the Yosemite National Park Boundary to Highway 140; west on Highway 140 to the Yosemite National Park Boundary; northwest along the Yosemite National Park Boundary to Highway 140 (at Redbud Campground); west on Highway 140 to the point of beginning.

(B) Season: The season for hunt A-21 (Anderson Flat Archery Buck Hunt) shall open on the second Saturday in November and extend for 14 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 25-100.

(20) A-22 (San Diego Archery Either-Sex Deer Hunt).

(A) Area: That portion of San Diego County within Zone D-16 (see subsection 360(a)(15)(A)).

(B) Season: The season for hunt A-22 (San Diego Archery Either-Sex Deer Hunt) shall open on the first Saturday in September and extend for 44 consecutive days, and reopen on the third Saturday in November and extend through December 31.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~1,000~~200-1,500.

(21) A-24 (Monterey Archery Either-Sex Deer Hunt).

(A) Area: All of Monterey County, except Fort Ord Military Reservation.

(B) Season: The season for hunt A-24 (Monterey Archery Either-Sex Deer Hunt) shall open on the second Saturday in October and extend for 30 consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~100~~25-200.

(22)A-25 (Lake Sonoma Archery Either-Sex Deer Hunt).

(A) Area: That portion of Sonoma County within the boundaries of the Lake Sonoma Area, U.S. Army Corps of Engineers (COE) property described as follows: Beginning at the intersection of Hot Springs Road and the COE boundary; east and south along the boundary line to the intersection with Brush Creek; west along the north bank of Brush Creek (shoreline) to the Dry Creek arm of Lake Sonoma; south along the shoreline of the Dry Creek arm to Smittle Creek; north along the COE property line to Dry Creek; east along the COE boundary across Cherry Creek, Skunk Creek, and Yorty Creek to the point of beginning.

(B) Season: The season for hunt A-25 (Lake Sonoma Archery Either-Sex Deer Hunt) shall be open on Saturdays, Sundays and Mondays only, beginning on the first Saturday in October and extending for 24 consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: ~~35~~20-75.

(E) Special Conditions:

1. The use of dogs is prohibited.

2. Boats are required for all areas west of Cherry Creek (some 2/3 0f the hunt area). Only cartop boats are allowed to launch from the Yorty Creek access.

(23)A-26 (Bass Hill Archery Buck Hunt).

(A) Area: That portion of Lassen County within the area described as Zone X-6a (see subsection 360(b)(8)(A)).

(B) Season: The season for hunt A-26 (Bass Hill Archery Buck Hunt) shall open on the third Saturday in November and extend for 23 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~30~~10-100.

(24)A-27 (Devil's Garden Archery Buck Hunt).

(A) Area: That portion of Modoc County within a line beginning at the intersection of the Malin Road (Modoc County 114) and the California/Oregon state line; east along the state line to the Crowder Flat Road; south along the Crowder Flat Road to the Blue Mountain Road (Modoc County 136); west on the Blue Mountain Road to the Blue Mountain-Mowitz Butte-Ambrose Road; south on the Blue Mountain-Mowitz Butte-Ambrose Road to Highway 139; north on Highway 139 to the Malin Road; north on the Malin Road to the point of beginning.

(B) Season: The season for hunt A-27 (Devil's Garden Archery Buck Hunt) shall open on the fourth Saturday in October and extend for 16 consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~10~~5-75.

(25)A-30 (Covelo Archery Buck Hunt).

(A) Area: That portion of Mendocino County within a line beginning at the intersection of Highway 101 and the Humbolt-Mendocino county line; east along the Humbolt-Mendocino county line to the Trinity-Mendocino county line; east along Trinity-Mendocino county line to the Mendocino-Tehama county line; south on the Mendocino-Tehama county line to the Mendocino-Glenn county line; south on the Mendocino-Glenn county line to the Mendocino-Lake county line; west and south on the Mendocino-Lake county line to the Main Eel River; west and north on the Main Eel River to the Hearst-Willits Road; southwest on the Hearst-Willits Road to Commercial Avenue; west on Commercial Avenue to Highway 101; north on Highway 101 to the point of beginning.

(B) Season: The season for hunt A-30 (Covelo Archery Buck Hunt) shall open on the second Saturday in November and extend for sixteen consecutive days.

(C) Bag and Possession Limit: One buck, forked horn (see subsection 351(a)) or better, per tag.

(D) Number of Tags: ~~40~~20-100.

(26)A-31 (Los Angeles Archery Either-Sex Deer Hunt).

(A) Area: That portion of Los Angeles County within Zone D-11 (see subsection 360(a)(10)(A)).

(B) Season: The season for hunt A-31 (Los Angeles Archery Either-Sex Deer Hunt) shall open on the fourth Saturday in September and extend through December 31.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(b)) per tag.

(D) Number of Tags: ~~1,000~~200-1,500.

(27) A-32 (Ventura/Los Angeles Late Season Archery Either-Sex Deer Hunt).

(A) Area: In those portions of Los Angeles and Ventura counties within the area described as the A Zone (see subsection 360(a)(1)(A)).

(B) Season: The season for hunt A-32 (Ventura/Los Angeles Late Season Archery Either-Sex Deer Hunt) shall open on the second Saturday in November and extend for 23 consecutive days.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(~~b~~c)) per tag.

(D) Number of Tags: ~~250~~50-300.

(28) A-33 (Fort Hunter Liggett Late Season Archery Either-Sex Deer Hunt).

(A) Area: That portion of Monterey County lying within the exterior boundaries of the Hunter Liggett Military Reservation, except as restricted by the Commanding Officer.

(B) Season: The season for hunt A-33 (Fort Hunter Liggett Late Season Archery Either-Sex Deer Hunt) shall be open on Saturdays, Sundays and holidays only beginning the first Saturday in October and continuing through the Veteran's Day holiday, except if rescheduled by the Commanding Officer with Department concurrence between the season opener and December 31.

(C) Bag and Possession Limit: One either-sex deer (see subsection 351(c)) per tag.

(D) Number of Tags: 50 (25 military and 25 general public).

(E) Special Conditions: In the event the Commanding Officer cancels the hunt, A-33 tagholders will only have the option of exchanging the unused tag for any remaining deer tag or receiving a refund.

(c) Archery Hunting with Archery Only Tags. Deer may be taken only with archery equipment specified in Section 354, during the archery seasons and general seasons as follows:

(1) Number of Archery Only Tags Permitted. A person may obtain an archery only tag using a one-deer tag application and a second archery only tag using a second deer tag application.

(2) Zones in Which Archery Only Tags are Valid. An archery only tag is valid for hunt G-10, and during the archery season and general season in all zones except C-1 through C-4 and X-1 through X-12.

(3) Areas: As described in subsections 360(a) and (c).

(4) Seasons: The archery season and general seasons are provided in subsection 361(a) above and in subsections 360(a) and (c).

(5) Bag and Possession Limit: All bag and possession limits per zone are the same as those described in subsections 360(a) and (c).

(d) Hunting Area Limitations. Archers not in possession of an archery only tag may hunt only in the zone, zones, or areas for which they have a general tag or an area-specific archery tag. (Refer to subsection 361(c)(2) for zones in which archery only tags are valid).

(e) Crossbow Prohibition. Except as provided in subsection 354(j), crossbows may not be used during any archery season or during the general season when using an archery only tag.

Note: Authority cited: Sections 200, 202, 203, 220 and 4370, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 207 and 4370, Fish and Game Code.

APPENDIX 2

ZONE SPECIFIC HUNT ALTERNATIVE TABLES

Appendix tables 2-1 through 2-32 include zone specific hunt alternatives for the Proposed Project, High Kill Alternative 2, and Low Kill Alternative 3. In the case of Zones B-1 through B-6; C-1 through C-4; D-3 through D-5; and D-11, D-13 and D-15 they are combined. Each zone/hunt is described in detail in Appendix 1 as the Proposed Project. The overall effect of the Proposed Project, High Kill and Low Kill Alternatives are analyzed and presented in Appendix 3.

A ZONE HUNT ALTERNATIVES

Appendix 2-1
2007 A Zone Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone A	Tag range 30,000-65,000	Lengthen season to 51 consecutive days	Shorten season to 37 consecutive days
A-24	Tag range 25-200	Lengthen season to 37 consecutive days	Shorten season to 23 consecutive days
A-25	Tag range 20-75	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
A-32	Tag range 50-300	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
A-33	Tag quota 50 (25 military and 25 general public)	No change	No change
G-8	Tag quota 20 (10 military and 10 general public)	No change	No change
G-9	Tag quota 30 (15 military/ 15 general public)	No change	No change
G-11	Tag quota 500 (military and Department of Defense employees only)	No change	No change
G-21	Tag range 25-100	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
J-1	Tag range 10-25 (either-sex)	Lengthen season to 9 consecutive days	Modify bag to antlerless deer
J-10	Tag quota 85 (10 military and 75 general public)	No change	No change
MA-1	Tag range 20-150	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
MA-3	Tag range 20-150	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
PLMs	Tag range: 50-150 buck, 5-100 antlerless, 50-150 either-sex	Tag range: 151-300 buck, 101-300 antlerless, 151-300 either-sex	Tag range: 0-49 buck, 0-5 antlerless, 0-49 either-sex

B ZONE HUNT ALTERNATIVES

Appendix 2-2 2007 B Zones Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
B Zones	Tag range 35,000-65,000	Tag range 65,001-70,000	Tag range 25,000-34,999
Zone B-1	Season of 37 consecutive days	Lengthen season to 44 consecutive days	Shorten season to 30 consecutive days
Zone B-2	Season of 37 consecutive days	Lengthen season to 44 consecutive days	Shorten season to 30 consecutive days
Zone B-3	Season of 37 consecutive days	Lengthen season to 44 consecutive days	Shorten season to 30 consecutive days
Zone B-4	Season of 37 consecutive days	Lengthen season to 44 consecutive days	Shorten season to 30 consecutive days
Zone B-5	Season of 37 consecutive days	Lengthen season to 44 consecutive days	Shorten season to 30 consecutive days
Zone B-6	Season of 30 consecutive days	Lengthen season to 37 consecutive days	Shorten season to 23 consecutive days
A-30	Tag range 20-100	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
J-4	Tag range 15-50	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days
M-11	Tag range 20-200	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
PLMs	Tag range: 150-350 buck; 50-200 antlerless; 50-200 either-sex	Tag range: 351-500 buck; 201-300 antlerless, 201-300 either-sex	Tag range: 10-149 buck, 10-49 antlerless, 10-49 either-sex

C ZONE HUNT ALTERNATIVES

Appendix 2-3 2007 C Zones Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
C Zone	Tag range 5,000-15,000	Tag range 15,001-20,000	Tag range 2,000-4,999
Zone C-1	Season beginning third Saturday in September and extending for 30 consecutive days	Lengthen season to 37 consecutive days	Shorten season to 23 consecutive days
Zone C-2	Season beginning third Saturday in September and extending for 37 consecutive days	Lengthen season to 44 consecutive days	Shorten season to 30 consecutive days
Zone C-3	Season beginning third Saturday in September and extending for 37 consecutive days	Lengthen season to 44 consecutive days	Shorten season to 30 consecutive days
Zone C-4	Season beginning third Saturday in September and extending for 16 consecutive days	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
A-1	Tag range 150-3,000	Lengthen seasons in zones C-1 and C-4 to 23 consecutive days	Shorten seasons in zones C-1 through C-4 to 9 consecutive days
G-1	Tag range 500-5,000 and 9 consecutive day season	Lengthen season to 16 consecutive days	Move 9 consecutive day season two weeks earlier
J-3	Tag range 15-30	Lengthen season to 9 consecutive days	Tag range 5-14
J-21	Tag range 20-80	Move season beginning two weeks later	Move season beginning two weeks earlier
PLMs	Tag range 50-100 buck, 5-50 antlerless, 5-50 either-sex	Tag range 101-300 buck, 51-100 antlerless, 51-100 either-sex	Tag range 5-49 buck, 0-4 antlerless, 0-4 either-sex

D ZONE HUNT ALTERNATIVES

Appendix 2-4
2007 Zones D3, D-4 and D-5 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zones D-3, D-4, and D-5 Combined	Tag range 30,000-40,000	Tag range 40,001-45,000	Tag range 25,000-29,999
Zone D-3	Season beginning fourth Saturday in September and extending for 37 consecutive days	Lengthen season to 44 consecutive days	Shorten season to 23 consecutive days
Zone D-4	Season beginning fourth Saturday in September and extending for 37 consecutive days	Lengthen season to 44 consecutive days	Shorten season to 23 consecutive days
Zone D-5	Season beginning fourth Saturday in September and extending for 37 consecutive days	Lengthen season to 44 consecutive days	Shorten season to 23 consecutive days
Late Season Archery Hunt in Zone D-3	No hunt	Sixteen consecutive day season beginning the Saturday after the close of general season and tag range of 51-100 tags	Nine consecutive day season beginning the Saturday after the close of general season and tag range of 25-50 tags
Late Season Archery Hunt in Zone D-4	No hunt	Sixteen consecutive day season beginning the Saturday after the close of general season and tag range of 21-50 tags	Nine consecutive day season beginning the Saturday after the close of general season and tag range of 10-20 tags
Late Season Archery Hunt in Zone D-5	No hunt	Sixteen consecutive day season beginning the Saturday after the close of general season and tag range of 51-100 tags	Nine consecutive day season beginning the Saturday after the close of general season and tag range of 25-50 tags
G-7	20 military only tags	No change	No change
G-12	Tag range 10-50	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days

Appendix 2-4

2007 Zones D3, D-4 and D-5 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
G-19	Tag range 10-50	Tag range 66-100	Move season close date from December 31 to November 30
J-8	Tag range 10-20	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
J-9	Tag range 5-10	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days
J-16	Tag range 10-75 and season concurrent with 37 day general season	Season beginning first Saturday in November and extending 37 consecutive days	Season beginning fourth Saturday in September and extending 23 consecutive days
J-17	Tag range 5-25 and season concurrent with 37 day general season	Season beginning first Saturday in November and extending 37 consecutive days	Season beginning fourth Saturday in September and extending 23 consecutive days
J-18	Tag range 10-75 and season concurrent with 37 day general season	Season beginning first Saturday in November and extending 37 consecutive days	Season beginning fourth Saturday in September and extending 23 consecutive days
PLMs	Tag range: 10-100 buck, 50-200 antlerless, 25-100 either-sex	Tag range: 101-200 buck, 201-300 antlerless, 101-200 either-sex	Tag range: 0-9 buck, 0-49 antlerless, 0-24 either-sex

Appendix 2-5
2007 Zone D-6 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone D-6	Tag range 6,000-16,000	Lengthen season to 51 consecutive days	Shorten season to 37 consecutive days
A-21	Tag range 25-100	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
G-37	Tag range 25-50	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days
J-15	Tag range 5-30	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days

Appendix 2-6
2007 Zone D-7 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone D-7	Tag range 4,000-10,000	Lengthen season to 51 consecutive days	Shorten season to 37 consecutive days

Appendix 2-7
2007 Zone D-8 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone D-8	Tag range 5,000-10,000	Lengthen season to 37 consecutive days	Shorten season to 23 consecutive days
G-6	Tag range 25-100	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days

Appendix 2-8
2007 Zone D-9 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone D-9	Tag range 1,000-2,500	Lengthen season to 37 consecutive days	Shorten season to 23 consecutive days

Appendix 2-9
2007 Zone D-10 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone D-10	Tag range 400-800	Lengthen season to 37 consecutive days	Shorten season to 23 consecutive days
PLMs	Tag range: 100-300 buck, 50-200 antlerless, 100-200 either-sex	Tag range: 301-400 buck, 201-300 antlerless, 201-300 either-sex	Tag range: 10-99 buck, 10-49 antlerless, 10-99 either-sex

Appendix 2-10
2007 Zone D-11, D-13 and D-15 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
D-11	Tag range 2,500-6,000	Tag range 6,001-7,000	Tag range 1,500-2,499
D-13	Tag range 2,000-5,000	Tag range 5,001-6,000	Tag range 1,500-1,999
D-15	Tag range 500-2,000	Tag range 2,001-2,500	Tag range 100-499
D-11	Archery Season - First Saturday in September	Archery Season - Second Saturday in September	Archery Season -First Saturday in August
D-13	Archery Season - First Saturday in September	Archery Season - Second Saturday in September	Archery Season -First Saturday in August

Appendix 2-10
2007 Zone D-11, D-13 and D-15 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
D-15	Archery Season - First Saturday in September	Archery Season - Second Saturday in September	Archery Season -First Saturday in August
A-31	Tag range 200-1,500	Tag range 100-199	Tag range 1,501-2,500
G-10	Tag quota 400 military only	No change	No change
J-13	Tag range 25-100	Lengthen season to 15 consecutive days	Shorten season to 3 consecutive days
M-7	Tag range 50-150	Lengthen season to 23 consecutive days	Tag range 10-49
PLMs	Tag range: 50-100 buck, 50-200 antlerless, 50-300 either-sex	Tag range: 101-200 buck, 201-300 antlerless, 301-400 either-sex	Tag range: 10-49 buck, 10-49 antlerless, 10-49 either-sex

Appendix 2-11
2007 Zone D-12 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone D-12	Tag range 100-1,500	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days

Appendix 2-12
2007 Zone D-14 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone D-14	Tag range 2,000-3,500	Lengthen season to 37 consecutive days	Shorten season to 23 consecutive days
J-11	Tag range 10-50	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days
PLMs	Tag range 10-20 buck	Tag range 21-30 buck	Tag range 0-9 buck

Appendix 2-13
2007 Zone D-16 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone D-16	Tag range 1,000-3,500	Lengthen season to 37 consecutive days	Shorten season to 23 consecutive days
A-22	Tag range 200-1,500	Open the season on the last Saturday in August for 51 consecutive days	Eliminate second half of season
G-13	Tag range 50-300	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
M-6	Tag range 25-100	Open the season 2 weeks earlier on the first Saturday in December	Open season 1 week later on the fourth Saturday in December

Appendix 2-14
2007 Zone D-17 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone D-17	Tag range 100-800	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days

Appendix 2-15 2007 Zone D-19 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone D-19	Tag range 500-2,000	Lengthen season to 37 consecutive days	Shorten season to 23 consecutive days
J-14	Tag range 15-75	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days

X ZONE HUNT ALTERNATIVES

Appendix 2-16 2007 Zone X-1 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-1	Tag range 1,000-6,000	Move season opener 2 weeks later	Move season opener 2 weeks earlier
Section 554	Tag range 0-100		
A-3	Tag range 50-1,000	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
PLMs	Tag range 5-10 buck	Tag range 11-20 buck	Tag range 1-4 buck

Appendix 2-17 2007 Zone X-2 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-2	Tag range 50-500	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
Section 554	Tag range 0-20		
A-4	Tag range 5-100	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
A-27	Tag range 5-75	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
M-9	Tag range 5-100	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
PLMs	Tag range 5-10 buck	Tag range 11-20 buck	Tag range 1-4 buck

Appendix 2-18 2007 Zone X-3a Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-3a	Tag range 100-1,200	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
Section 554	Tag range 0-50		
A-5	Tag range 10-300	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
PLMs	Tag range: 10-50 buck, 10-100 antlerless	Tag range: 51-75 buck, 101-200 antlerless	Tag range: 1-9 buck, 1-9 antlerless

Appendix 2-19 2007 Zone X-3b Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-3b	Tag range 200-3,000	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
Section 554	Tag range 0-50		
A-6	Tag range 25-400	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
PLMs	Tag range: 10-50 buck, 10-100 antlerless, 10-100 either-sex	Tag range: 51-75 buck, 101-200 antlerless, 101-200 either-sex	Tag range: 1-9 buck, 1-9 antlerless, 1-9 either-sex

Appendix 2-20 2007 Zone X-4 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-4	Tag range 100-1,200	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
Section 554	Tag range 0-50		
A-7	Tag range 25-400	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
PLMs	Tag range 5-10 buck	Tag range 11-20 buck	Tag range 1-4 buck

Appendix 2-21 2007 Zone X-5a Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-5a	Tag range 25-200	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
Section 554	Tag range 0-20		
A-8	Tag range 15-100	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
M-4	Tag range 5-50	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days
PLMs	Tag range: 10-50 buck, 10-50 antlerless	Tag range: 51-75 buck, 51-200 antlerless	Tag range: 0-9 buck, 0-9 antlerless

Appendix 2-22
2007 Zone X-5b Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-5b	Tag range 50-500	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
Section 554	Tag range 0-20		
A-9	Tag range 5-100	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
M-5	Tag range 5-50	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days
PLMs	Tag range: 10-75 buck, 10-100 antlerless	Tag range: 76-100 buck, 101-200 antlerless	Tag range: 0-9 buck, 0-9 antlerless

Appendix 2-23
2007 Zone X-6a Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-6a	Tag range 100-1,200	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
Section 554	Tag range 0-25		
A-11	Tag range 10-200	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
A-26	Tag range 10-100	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
M-8	Tag range 5-50	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days

Appendix 2-24 2007 Zone X-6b Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-6b	Tag range 100-1,200	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
Section 554	Tag range 0-25		
A-12	Tag range 10-300	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
M-3	Tag range 10-75	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days

Appendix 2-25 2007 Zone X-7a Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-7a	Tag range 50-500	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
Section 554	Tag range 0-25		
A-13	Tag range 10-200	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
J-19	Tag range 10-40 and season concurrent with 16 day general season	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days

Appendix 2-26 2007 Zone X-7b Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-7b	Tag range 25-200	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
Section 554	Tag range 0-25		
A-14	Tag range 5-100	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
J-20	Tag range 5-20 and season concurrent with 16 day general season	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days

Appendix 2-27 2007 Zone X-8 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-8	Tag range 100-750	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
Section 554	Tag range 0-50		
A-15	Tag range 5-100	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
J-7	Tag range 10-50	Lengthen season to 16 consecutive days	Shorten season to 2 consecutive days

Appendix 2-28 2007 Zone X-9a Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-9a	Tag range 100-1,200	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
A-16	Tag range 50-500	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
G-39	Tag range 5-150 and 16 consecutive day season	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
J-12	Tag range 10-20	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days

Appendix 2-29 2007 Zone X-9b Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-9b	Tag range 100-600	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
A-17	Tag range 50-500	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
G-3	Tag range 5-50	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days

Appendix 2-30 2007 Zone X-9c Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives			
Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-9c	Tag range 100-600	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
A-18	Tag range 50-500	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days

Appendix 2-31
2007 Zone X-10 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-10	Tag range 100-600	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
A-19	Tag range 25-200	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days
G-38	Tag range 50-300	Lengthen season to 23 consecutive days	Shorten season to 9 consecutive days

Appendix 2-32
2007 Zone X-12 Hunt Alternatives for Proposed Project, High Kill and Low Kill Alternatives

Hunts	Proposed Project (Alternative 1)	High Kill (Alternative 2)	Low Kill (Alternative 3)
Zone X-12	Tag range 100-1,200	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days
A-20	Tag range 50-500	Lengthen season to 30 consecutive days	Shorten season to 16 consecutive days

APPENDIX 3

POPULATION ANALYSIS TABLES

Appendix tables 3-1 through 3-45 contain results of zone specific and statewide population modeling including: 2006 estimated population and harvest and 2007 estimated post-season buck and fawn ratios, population, hunter kill and harvest buffers for 2007 proposed project, and high and low kill alternatives.

Appendix 3-1
Zone A Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	121,660	9304	119	N/A	N/A
Proposed Project	26	52	110,580	9304	119	3052	216
Alternative 2 High Kill (HK)	24	50	110,580	10903	224	1453	111
Alternative 3 Low Kill (LK)	28	48	110,580	8431	28	3925	307

Appendix 3-2
Zone B-1 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	40260	3647	31	N/A	N/A
Proposed Project	22	60	37270	3647	31	714	23
Alternative 2 High Kill (HK)	20	58	37270	3965	40	396	14
Alternative 3 Low Kill (LK)	24	62	37270	3291	9	1070	45

Appendix 3-3
Zone B-2 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	38290	2972	0	N/A	N/A
Proposed Project	22	37	38910	2972	0	1981	1126
Alternative 2 High Kill (HK)	20	39	38910	3368	20	1585	1106
Alternative 3 Low Kill (LK)	24	36	38910	2526	0	2427	1126

Appendix 3-4
Zone B-3 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	8280	853	0	N/A	N/A
Proposed Project	22	46	9790	853	0	307	211
Alternative 2 High Kill (HK)	20	48	9790	951	0	209	211
Alternative 3 Low Kill (LK)	24	44	9790	731	0	429	211

Appendix 3-5
Zone B-4 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	6460	510	0	N/A	N/A
Proposed Project	24	52	5930	510	0	136	15
Alternative 2 High Kill (HK)	22	50	5930	581	0	65	15
Alternative 3 Low Kill (LK)	26	50	5930	445	0	201	15

Appendix 3-6
Zone B-5 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	12540	889	1	N/A	N/A
Proposed Project	39	48	14270	889	2	458	136
Alternative 2 High Kill (HK)	37	49	14270	1050	14	297	124
Alternative 3 Low Kill (LK)	41	44	14270	727	1	620	137

Appendix 3-7
Zone B-6 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	17110	1478	0	N/A	N/A
Proposed Project	21	53	15830	1478	0	241	8
Alternative 2 High Kill (HK)	19	50	15830	1667	0	52	8
Alternative 3 Low Kill (LK)	23	49	15830	1323	0	396	8

Appendix 3-8
Zone C-1 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	2550	389	0	N/A	N/A
Proposed Project	32	76	4360	389	0	133	11
Alternative 2 High Kill (HK)	30	75	4360	435	0	87	11
Alternative 3 Low Kill (LK)	34	72	4360	348	0	174	11

Appendix 3-9
Zone C-2 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	6520	229	0	N/A	N/A
Proposed Project	34	50	3140	229	0	188	61
Alternative 2 High Kill (HK)	32	53	3140	260	0	157	61
Alternative 3 Low Kill (LK)	36	49	3140	198	0	219	61

Appendix 3-10
Zone C-3 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	5870	473	0	N/A	N/A
Proposed Project	27	35	7110	473	2	626	405
Alternative 2 High Kill (HK)	25	37	7110	572	20	527	387
Alternative 3 Low Kill (LK)	29	32	7110	385	0	714	407

Appendix 3-11
Zone C-4 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	18850	1540	10	N/A	N/A
Proposed Project	36	44	23570	1540	10	1241	346
Alternative 2 High Kill (HK)	34	47	23570	1754	18	1027	338
Alternative 3 Low Kill (LK)	38	46	23570	1283	6	1498	350

Appendix 3-12
Zone D-3 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	13110	1079	31	N/A	N/A
Proposed Project	32	31	19650	1079	31	2518	1093
Alternative 2 High Kill (HK)	30	32	19650	1331	56	2266	1068
Alternative 3 Low Kill (LK)	34	31	19650	1295	11	2302	1113

Appendix 3-13
Zone D-4 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	2240	281	10	N/A	N/A
Proposed Project	32	31	4830	281	10	596	237
Alternative 2 High Kill (HK)	30	34	4830	333	19	544	228
Alternative 3 Low Kill (LK)	34	29	4830	219	3	658	244

Appendix 3-14
Zone D-5 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	22470	1379	17	N/A	N/A
Proposed Project	32	31	25110	1379	17	2758	1132
Alternative 2 High Kill (HK)	30	33	25110	1747	57	2390	1092
Alternative 3 Low Kill (LK)	34	28	25110	1057	4	3080	1145

Appendix 3-15
Zone D-6 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	17250	892	0	N/A	N/A
Proposed Project	36	38	15620	892	0	1189	413
Alternative 2 High Kill (HK)	34	40	15620	1130	0	951	413
Alternative 3 Low Kill (LK)	38	35	15620	714	0	1367	413

Appendix 3-16
Zone D-7 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	11760	673	0	N/A	N/A
Proposed Project	33	43	10330	673	0	1099	483
Alternative 2 High Kill (HK)	31	43	10330	815	0	957	483
Alternative 3 Low Kill (LK)	35	39	10330	567	0	1205	483

Appendix 3-17
Zone D-8 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	10520	748	0	N/A	N/A
Proposed Project	31	50	10080	748	0	343	50
Alternative 2 High Kill (HK)	29	50	10080	888	0	203	50
Alternative 3 Low Kill (LK)	33	46	10080	639	0	452	50

Appendix 3-18
Zone D-9 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	3150	301	0	N/A	N/A
Proposed Project	41	40	5570	301	0	790	113
Alternative 2 High Kill (HK)	39	42	5570	370	0	324	113
Alternative 3 Low Kill (LK)	43	37	5570	231	0	463	113

Appendix 3-19
Zone D-10 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	1820	184	26	N/A	N/A
Proposed Project	28	55	5570	184	26	59	22
Alternative 2 High Kill (HK)	26	55	5570	208	39	35	9
Alternative 3 Low Kill (LK)	30	52	5570	154	14	89	34

Appendix 3-20
Zone D-11 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	1840	458	36	N/A	N/A
Proposed Project	31	41	6440	458	36	394	136
Alternative 2 High Kill (HK)	29	45	6440	532	69	320	103
Alternative 3 Low Kill (LK)	33	39	6440	383	17	469	165

Appendix 3-21
Zone D-12 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	1070	137	0	N/A	N/A
Proposed Project	31	41	1940	137	0	118	41
Alternative 2 High Kill (HK)	29	44	1940	160	0	95	41
Alternative 3 Low Kill (LK)	33	40	1940	108	0	147	41

Appendix 3-22
Zone D-13 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	3490	274	14	N/A	N/A
Proposed Project	13	43	2740	274	14	69	50
Alternative 2 High Kill (HK)	11	46	2740	301	24	42	22
Alternative 3 Low Kill (LK)	15	40	2740	235	3	108	61

Appendix 3-23
Zone D-14 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	2560	278	3	N/A	N/A
Proposed Project	26	27	4960	278	3	516	303
Alternative 2 High Kill (HK)	24	29	4960	357	15	437	291
Alternative 3 Low Kill (LK)	28	24	4960	214	2	580	304

Appendix 3-24
Zone D-15 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	1270	296	206	N/A	N/A
Proposed Project	24	65	2290	296	206	57	34
Alternative 2 High Kill (HK)	22	65	2290	322	229	31	11
Alternative 3 Low Kill (LK)	26	60	2290	230	55	123	185

Appendix 3-25
Zone D-16 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	2410	384	102	N/A	N/A
Proposed Project	30	40	4910	384	102	424	221
Alternative 2 High Kill (HK)	28	55	4910	501	296	307	27
Alternative 3 Low Kill (LK)	32	35	4910	323	54	485	269

Appendix 3-26
Zone D-17 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	3740	158	0	N/A	N/A
Proposed Project	39	12	7000	158	0	807	450
Alternative 2 High Kill (HK)	37	14	7000	246	0	719	450
Alternative 3 Low Kill (LK)	41	11	7000	88	0	877	450

Appendix 3-27
Zone D-19 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	1840	144	4	N/A	N/A
Proposed Project	31	41	2080	144	4	165	51
Alternative 2 High Kill (HK)	29	44	2080	172	11	137	44
Alternative 3 Low Kill (LK)	33	39	2080	120	1	189	54

Appendix 3-28
Zone X-1 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	6560	661	0	N/A	N/A
Proposed Project	26	68	6960	661	0	155	16
Alternative 2 High Kill (HK)	24	65	6960	735	0	81	16
Alternative 3 Low Kill (LK)	28	64	6960	596	0	220	16

Appendix 3-29
Zone X-2 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	940	110	0	N/A	N/A
Proposed Project	12	54	1080	110	0	18	3
Alternative 2 High Kill (HK)	10	55	1080	121	0	7	3
Alternative 3 Low Kill (LK)	14	55	1080	102	0	26	3

Appendix 3-30
Zone X-3a Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	1930	239	1	N/A	N/A
Proposed Project	27	80	2410	239	1	53	29
Alternative 2 High Kill (HK)	25	80	2410	266	20	26	10
Alternative 3 Low Kill (LK)	29	80	2410	212	0	80	30

Appendix 3-31
Zone X-3b Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	4560	449	0	N/A	N/A
Proposed Project	31	63	5340	449	6	145	30
Alternative 2 High Kill (HK)	29	65	5340	505	24	89	12
Alternative 3 Low Kill (LK)	33	65	5340	386	0	208	36

Appendix 3-32
Zone X-4 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	1930	209	6	N/A	N/A
Proposed Project	20	63	2370	209	6	44	15
Alternative 2 High Kill (HK)	18	65	2370	226	11	27	10
Alternative 3 Low Kill (LK)	22	65	2370	188	1	65	20

Appendix 3-33
Zone X-5a Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	530	53	0	N/A	N/A
Proposed Project	38	76	660	53	0	18	3
Alternative 2 High Kill (HK)	36	75	660	60	0	11	3
Alternative 3 Low Kill (LK)	40	73	660	46	0	25	3

Appendix 3-34
Zone X-5b Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	990	116	0	N/A	N/A
Proposed Project	47	58	2020	116	4	69	14
Alternative 2 High Kill (HK)	45	55	2020	144	9	41	9
Alternative 3 Low Kill (LK)	49	54	2020	95	2	90	16

Appendix 3-35
Zone X-6a Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	2280	197	0	N/A	N/A
Proposed Project	11	50	2000	197	0	29	5
Alternative 2 High Kill (HK)	9	50	2000	215	0	11	5
Alternative 3 Low Kill (LK)	13	50	2000	174	0	52	5

Appendix 3-36
Zone X-6b Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	1310	115	0	N/A	N/A
Proposed Project	17	39	1350	115	0	88	40
Alternative 2 High Kill (HK)	15	40	1350	131	0	72	40
Alternative 3 Low Kill (LK)	19	36	1350	97	0	106	40

Appendix 3-37
Zone X-7a Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	1230	106	11	N/A	N/A
Proposed Project	22	50	1150	106	11	25	7
Alternative 2 High Kill (HK)	20	50	1150	118	13	13	5
Alternative 3 Low Kill (LK)	24	50	1150	89	4	42	14

Appendix 3-38
Zone X-7b Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	640	60	2	N/A	N/A
Proposed Project	27	35	860	60	2	73	32
Alternative 2 High Kill (HK)	25	41	860	72	15	61	19
Alternative 3 Low Kill (LK)	29	32	860	46	1	87	33

Appendix 3-39
Zone X-8 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	555	72	6	N/A	N/A
Proposed Project	23	48	810	72	6	27	11
Alternative 2 High Kill (HK)	21	50	810	82	13	17	4
Alternative 3 Low Kill (LK)	25	43	810	64	1	35	16

Appendix 3-40
Zone X-9a Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	3840	421	0	N/A	N/A
Proposed Project	25	36	5880	421	0	421	202
Alternative 2 High Kill (HK)	23	39	5880	505	0	337	202
Alternative 3 Low Kill (LK)	27	35	5880	354	0	488	202

Appendix 3-41
Zone X-9b Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	2850	181	0	N/A	N/A
Proposed Project	59	52	4660	181	0	169	10
Alternative 2 High Kill (HK)	57	50	4660	222	0	128	10
Alternative 3 Low Kill (LK)	60	50	4660	152	0	188	10

Appendix 3-42
Zone X-9c Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	630	88	0	N/A	N/A
Proposed Project	28	58	1030	88	0	36	10
Alternative 2 High Kill (HK)	26	59	1030	103	0	21	10
Alternative 3 Low Kill (LK)	30	55	1030	80	0	44	10

Appendix 3-43
Zone X-10 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	880	85	0	N/A	N/A
Proposed Project	32	54	1110	85	0	60	16
Alternative 2 High Kill (HK)	30	55	1110	97	0	48	16
Alternative 3 Low Kill (LK)	34	51	1110	72	0	73	16

Appendix 3-44
Zone X-12 Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	2030	270	0	N/A	N/A
Proposed Project	17	46	2860	270	0	94	32
Alternative 2 High Kill (HK)	15	48	2860	302	0	62	32
Alternative 3 Low Kill (LK)	19	44	2860	229	0	135	32

Appendix 3-45

Statewide Population Analysis – 2006 Estimated Population and Harvest and 2007 Estimated Post-Season Buck and Fawn Ratios, Population, Hunter Kill and Harvest Buffers for 2007 Proposed Project, and High and Low Kill Alternatives.

	Estimated Post-Season Ratios		Estimated Pre-Season Population	Estimated Hunter Kill		Harvest Buffer	
	Bucks	Fawns		Bucks	Does	Bucks	Does
2006	N/A	N/A	419840	33118	628	N/A	N/A
Proposed Project	30	46	438140	33118	628	17573	3880
Alternative 2 High Kill (HK)	28	48	438140	37173	676	13518	3832
Alternative 3 Low Kill (LK)	32	44	438140	27711	113	22980	4395

APPENDIX 4

2007 HARVEST AND POPULATION ESTIMATES

Appendix 4-1 provides a summary of the 2007 estimated hunter kill, area buck ratio objectives, 2006 post-season buck and fawn ratios, and 2007 population estimates (including three-year average) by zone or hunt.

Appendix 4-1

Summary of the 2007 Estimated Hunter Kill, Area Buck Ratio Objectives, 2006 Post-Season Buck and Fawn Ratios, and 2007 Population Estimates (including three-year average) by Zone or Hunt.

Area	Estimated 2007 Hunter Kill	Buck Ratio Objective	2006 Post-Season		Population Estimates	
			Fall Buck Ratio	Fall Fawn Ratio	Three-Year Average Population	Estimated 2007 Pre-Season Population
A	9060	30	26	52	143970	110580
B-1	3619	30	22	60	59300	37270
B-2	2927	30	22	37	41993	38910
B-3	842	30	22	46	12793	9790
B-4	504	30	24	52	7240	5930
B-5	882	30	39	48	12963	14270
B-6	1459	30	21	53	19470	15830
C-1	356	20	32	76	3370	4360
C-2	210	25	34	50	4630	3140
C-3	433	25	27	35	6620	7110
C-4	543	20	36	44	19170	23570
D-3	1068	25	32	31	16560	19650
D-4	282	30	32	31	3980	4830
D-5	1363	18	32	31	25637	25110
D-6	866	30	36	38	22637	15620
D-7	665	25	33	43	14503	10330
D-8	722	25	31	50	11867	10080
D-9	297	25	41	40	4313	5570
D-10	207	25	28	55	2633	5570
D-11	458	25	31	46	4153	6440
D-12	135	20	31	41	1307	1940
D-13	257	25	13	43	3210	2740
D-14	268	20	26	27	3453	4960
D-15	452	25	24	65	1720	2290
D-16	412	20	30	40	3265	4910
D-17	156	25	39	12	3710	7000
D-19	138	20	31	41	1787	2080
X-1	604	20	26	68	6833	6960
X-2	99	12	12	54	1080	1080
X-3a	225	15	27	80	2320	2410
X-3b	432	20	31	63	5003	5340
X-4	202	20	20	63	2350	2370
X-5a	47	25	38	76	637	660

Appendix 4-1

Summary of the 2007 Estimated Hunter Kill, Area Buck Ratio Objectives, 2006 Post-Season Buck and Fawn Ratios, and 2007 Population Estimates (including three-year average) by Zone or Hunt.

Area	Estimated 2007 Hunter Kill	Buck Ratio Objective	2006 Post-Season		Population Estimates	
			Fall Buck Ratio	Fall Fawn Ratio	Three-Year Average Population	Estimated 2007 Pre-Season Population
X-5b	114	25	47	58	1283	2020
X-6a	166	25	11	50	2527	2000
X-6b	87	25	17	39	1377	1350
X-7a	92	20	22	50	1220	1150
X-7b	33	20	27	35	703	860
X-8	62	25	23	48	752	810
X-9a	365	20	25	36	5907	5880
X-9b	159	20	59	52	3170	4660
X-9c	86	20	28	58	740	1030
X-10	67	25	32	54	1103	1110
X-12	252	20	17	46	2730	2860
A-1	213	Refer to Zones C-1, C-2, C-3 and C-4				
A-3	57	Refer to Zone X-1				
A-4	2	Refer to Zone X-2				
A-5	15	Refer to Zone X-3a				
A-6	23	Refer to Zone X-3b				
A-7	13	Refer to Zone X-4				
A-8	2	Refer to Zone X-5a				
A-9	2	Refer to Zone X-5b				
A-11	12	Refer to Zone X-6a				
A-12	15	Refer to Zone X-6b				
A-13	13	Refer to Zone X-7a				
A-14	18	Refer to Zone X-7b				
A-15	9	Refer to Zone X-8				
A-16	28	Refer to Zone X-9a				
A-17	2	Refer to Zone X-9b				
A-18	9	Refer to Zone X-9c				
A-19	2	Refer to Zone X-10				
A-20	18	Refer to Zone X-12				
A-21	3	Refer to Zone D-6				
A-22	35	Refer to Zone D-16				
A-24	14	Refer to Zone A				
A-25	10	Refer to Zone A				
A-26	11	Refer to Zone X-6a				

Appendix 4-1
Summary of the 2007 Estimated Hunter Kill, Area Buck Ratio Objectives, 2006 Post-Season Buck and Fawn Ratios, and 2007 Population Estimates (including three-year average) by Zone or Hunt.

Area	Estimated 2007 Hunter Kill	Buck Ratio Objective	2006 Post-Season		Population Estimates	
			Fall Buck Ratio	Fall Fawn Ratio	Three-Year Average Population	Estimated 2007 Pre-Season Population
A-27	2	Refer to Zone X-2				
A-30	9	Refer to Zone B-1				
A-31	25	Refer to Zone D-11				
A-32	2	Refer to Zone A				
A-33	20	Refer to Zone A				
G-1	585	Refer to Zone C-4				
G-3	20	Refer to Zone X-9b				
G-6	17	Refer to Zone D-8				
G-7	4	Refer to Zone D-3				
G-8	33	Refer to Zone A				
G-9	21	Refer to Zone A				
G-10	44	Refer to Zone D-15				
G-11	71	Refer to Zone A				
G-12	9	Refer to Zone D-3				
G-13	32	Refer to Zone D-16				
G-19	2	Refer to Zone D-4				
G-21	5	Refer to Zone A				
G-37	8	Refer to Zone D-6				
G-38	16	Refer to Zone X-10				
G-39	25	Refer to Zone X-9a				
M-3	13	Refer to Zone X-6b				
M-4	4	Refer to Zone X-5a				
M-5	4	Refer to Zone X-5b				
M-6	2	Refer to Zone D-16				
M-7	28	Refer to Zone D-13				
M-8	8	Refer to Zone X-6a				
M-9	7	Refer to Zone X-2				
M-11	4	Refer to Zone B-1				
MA-1	18	Refer to Zone A				
MA-3	18	Refer to Zone A				
J-1	9	Refer to Zone A				
J-3	5	Refer to Zone C-4				
J-4	8	Refer to Zone B-2				
J-7	7	Refer to Zone X-8				

Appendix 4-1
Summary of the 2007 Estimated Hunter Kill, Area Buck Ratio Objectives, 2006 Post-Season Buck and Fawn Ratios, and 2007 Population Estimates (including three-year average) by Zone or Hunt.

Area	Estimated 2007 Hunter Kill	Buck Ratio Objective	2006 Post-Season		Population Estimates	
			Fall Buck Ratio	Fall Fawn Ratio	Three-Year Average Population	Estimated 2007 Pre-Season Population
J-8	3	Refer to Zone D-3				
J-9	2	Refer to Zone D-3				
J-10	34	Refer to Zone A				
J-11	10	Refer to Zone D-14				
J-12	3	Refer to Zone X-9a				
J-13	5	Refer to Zone D-11				
J-14	8	Refer to Zone D-19				
J-15	4	Refer to Zone D-6				
J-16	24	Refer to Zone D-3				
J-17	3	Refer to Zone D-4				
J-18	16	Refer to Zone D-5				
J-19	11	Refer to Zone X-7a				
J-20	11	Refer to Zone X-7b				
J-21	20	Refer to Zone C-4				
* FRO	4	Valid in Any Zone or Hunt				
* FRG	5	Valid Statewide				
* AO	452	Valid in Zones A, B-1 through B-6, D-3 through D-19 and Hunt G-10				
*554	65	Valid to qualifying landowners in deer quota zones where tags are distributed by public drawing (Section 554, Title 14, CCR)				
* PLM	751	Valid to licensed Private Lands Management Areas (Section 601, Title 14, CCR)				

* Harvest with Fundraising Auction tags (Open Zone, FRO; Golden Opportunity, FRG); Archery Only tags (AO); Cooperative Deer Hunting Area Program tags (554); and Private Lands Management Program tags (PLM) are reported separate. However, for population modeling purposes, harvest with FRO, FRG, AO, 554 and PLM tags is included within the zone specific harvest and population analysis.

APPENDIX 5

2006 DEER HARVEST TABLES

Appendix table 5-1 includes the individual zone or hunt and statewide reported and estimated deer harvest by sex and percent hunter success. Appendix table 5-2 includes the individual Private Lands Management Areas (PLM) deer harvest by sex. Appendix tables 5-3 and 5-4 include the reported and estimated statewide deer harvest rolled-up by individual zone of kill for all statewide deer hunts and PLMs.

Appendix 5-1
Summary of 2006 Zone, Hunt and Statewide Reported and Estimated Deer Harvest and Hunter Success (a).

Zone or Hunt Number	2006 Tag Quota	2006 Tags Issued	REPORTED DEER KILL				ESTIMATED DEER KILL (b)			
			Does	Bucks	Total	Percent Hunter Success	Does	Bucks	Total	Percent Hunter Success
ZONE HUNTS										
AO Tags (c)	4616	4616	0	241	241	5.2%	0	452	452	9.8%
A	65000	33160	0	3136	3136	9.5%	0	7169	7169	21.6%
B Zone Tag	55500	39812	0	3848	3848	9.7%	0	8340	8340	20.9%
B-1	N/A	N/A	0	1340	1340	(d)	0	2872	2872	(d)
B-2	N/A	N/A	0	1145	1145	(d)	0	2429	2429	(d)
B-3	N/A	N/A	0	318	318	(d)	0	697	697	(d)
B-4	N/A	N/A	0	168	168	(d)	0	417	417	(d)
B-5	N/A	N/A	0	333	333	(d)	0	704	704	(d)
B-6	N/A	N/A	0	544	544	(d)	0	1221	1221	(d)
C Zone Tag	9025	9025	0	968	968	10.7%	0	1435	1435	15.9%
C-1	N/A	N/A	0	202	202	(d)	0	285	285	(d)
C-2	N/A	N/A	0	109	109	(d)	0	171	171	(d)
C-3	N/A	N/A	0	219	219	(d)	0	341	341	(d)
C-4	N/A	N/A	0	438	438	(d)	0	637	637	(d)
D3-5 Zone Tags	33000	28175	0	1460	1460	5.2%	0	2203	2203	7.8%
D-3	N/A	N/A	0	610	610	(d)	0	863	863	(d)
D-4	N/A	N/A	0	143	143	(d)	0	221	221	(d)
D-5	N/A	N/A	0	707	707	(d)	0	1119	1119	(d)
D-6	10000	10000	0	445	445	4.5%	0	673	673	6.7%
D-7	9000	9000	0	333	333	3.7%	0	522	522	5.8%
D-8	8000	7260	0	370	370	5.1%	0	576	576	7.9%
D-9	2000	2000	0	155	155	7.8%	0	237	237	11.9%
D-10	700	517	0	54	54	10.4%	0	64	64	12.3%
D-11	5500	4749	0	223	223	4.7%	0	344	344	7.2%
D-12	950	950	0	69	69	7.3%	0	112	112	11.8%
D-13	4000	3010	0	147	147	4.9%	0	216	216	7.2%
D-14	3000	2944	0	147	147	5.0%	0	227	227	7.7%
D-15	1500	395	0	43	43	10.9%	0	68	68	17.3%
D-16	3000	2401	0	185	185	7.7%	0	285	285	11.9%
D-17	500	500	0	89	89	17.8%	0	132	132	26.4%
D-19	1500	1268	0	77	77	6.1%	0	117	117	9.2%
X-1	2325	2325	0	364	364	15.7%	0	509	509	21.9%
X-2	180	180	0	72	72	40.0%	0	77	77	42.6%
X-3a	295	295	0	131	131	44.4%	0	178	178	60.4%
X-3b	840	840	0	248	248	29.5%	0	340	340	40.5%
X-4	435	435	0	128	128	29.4%	0	163	163	37.4%

Appendix 5-1
Summary of 2006 Zone, Hunt and Statewide Reported and Estimated Deer Harvest and Hunter Success (a).

Zone or Hunt Number	2006 Tag Quota	2006 Tags Issued	REPORTED DEER KILL				ESTIMATED DEER KILL (b)			
			Does	Bucks	Total	Percent Hunter Success	Does	Bucks	Total	Percent Hunter Success
X-5a	70	70	0	38	38	54.3%	0	38	38	54.3%
X-5b	155	155	0	75	75	48.4%	0	84	84	54.2%
X-6A	325	325	0	95	95	29.2%	0	131	131	40.3%
X-6b	415	415	0	64	64	15.4%	0	67	67	16.2%
X-7a	220	220	0	70	70	31.8%	0	83	83	37.8%
X-7b	100	100	0	32	32	32.0%	0	38	38	38.0%
X-8	300	300	0	37	37	12.3%	0	56	56	18.5%
X-9a	750	750	0	226	226	28.6%	0	312	312	39.5%
X-9b	325	325	0	77	77	23.7%	0	113	113	34.7%
X-9c	325	325	0	51	51	15.7%	0	65	65	20.0%
X-10	400	400	0	23	23	5.8%	0	33	33	8.3%
X-12	805	805	0	213	213	26.5%	0	213	213	26.5%
AREA-SPECIFIC ARCHERY HUNTS										
A-1	2045	2045	0	138	138	6.7%	0	203	203	10.0%
A-3	265	265	0	30	30	11.3%	0	42	42	15.8%
A-4	10	10	0	2	2	20.0%	0	2	2	21.3%
A-5	35	35	0	5	5	14.3%	0	7	7	19.4%
A-6	90	90	0	19	19	21.1%	0	26	26	29.0%
A-7	105	106	0	6	6	5.7%	0	8	8	7.3%
A-8	20	20	0	1	1	5.0%	0	1	1	5.0%
A-9	5	5	0	0	0	0.0%	0	0	0	0.0%
A-11	55	55	0	7	7	12.7%	0	10	10	17.6%
A-12	175	175	0	11	11	6.3%	0	12	12	6.6%
A-13	30	30	0	0	0	0.0%	0	0	0	0.0%
A-14	20	20	0	7	7	35.0%	0	8	8	41.6%
A-15	25	25	0	1	1	4.0%	0	2	2	6.0%
A-16	130	130	0	21	21	16.2%	0	29	29	22.3%
A-17	300	138	0	7	7	4.2%	0	10	10	6.1%
A-18	350	82	0	6	6	7.3%	0	8	8	9.3%
A-19	120	30	0	1	1	3.3%	0	1	1	4.8%
A-20	115	115	0	12	12	10.4%	0	12	12	10.4%
A-21	25	25	0	2	2	8.0%	0	3	3	12.1%
A-22	1000	741	16	15	31	4.2%	25	23	48	6.5%
A-24	100	100	8	4	12	12.0%	18	9	27	27.4%
A-25	35	35	0	7	7	20.0%	0	7	7	20.0%
A-26	30	30	0	10	10	33.3%	0	14	14	46.0%
A-27	10	10	0	1	1	10.0%	0	1	1	10.6%

Appendix 5-1
Summary of 2006 Zone, Hunt and Statewide Reported and Estimated Deer Harvest and Hunter Success (a).

Zone or Hunt Number	2006 Tag Quota	2006 Tags Issued	REPORTED DEER KILL				ESTIMATED DEER KILL (b)			
			Does	Bucks	Total	Percent Hunter Success	Does	Bucks	Total	Percent Hunter Success
A-30	40	40	0	9	9	22.5%	0	19	19	48.2%
A-31	100	957	18	15	33	3.4%	28	23	51	5.3%
A-32	250	78	0	0	0	0.0%	0	0	0	0.0%
ADDITIONAL HUNTS – GENERAL METHODS										
G-1	2850	2850	0	327	327	11.5%	0	475	475	16.7%
G-3	35	35	0	24	24	68.6%	0	24	24	68.6%
G-6	50	50	0	30	30	60.0%	0	30	30	60.0%
G-7	20	20	7	2	9	45.0%	7	2	9	45.0%
G-8	20	20	12	3	15	75.0%	12	3	15	75.0%
G-9	30	30	16	0	16	53.3%	16	0	16	53.3%
G-10	300	300	54	62	116	38.7%	54	62	116	38.7%
G-11	500	500	0	9	9	1.8%	0	9	9	1.8%
G-12	30	30	5	6	11	36.7%	5	6	11	36.7%
G-13	300	300	37	4	41	13.7%	57	6	63	21.1%
G-19	25	25	3	3	6	24.0%	5	5	9	37.1%
G-21	25	25	0	4	4	16.0%	0	9	9	36.6%
G-37	25	25	0	17	17	68.0%	0	17	17	68.0%
G-38	300	300	0	25	25	8.3%	0	36	36	12.0%
G-39	5	5	0	2	2	40.0%	0	2	2	40.0%
ADDITIONAL HUNTS – MUZZLELOADING RIFLE										
M-3	20	20	0	17	17	85.0%	0	18	18	89.5%
M-4	5	5	0	1	1	20.0%	0	1	1	20.0%
M-5	15	15	0	7	7	46.7%	0	8	8	52.3%
M-6	80	80	2	2	4	5.0%	3	3	6	7.7%
M-7	150	150	8	5	13	8.7%	12	7	19	12.7%
M-8	20	20	0	7	7	35.0%	0	10	10	48.3%
M-9	15	15	0	6	6	40.0%	0	6	6	42.6%
M-11	20	20	0	9	9	45.0%	0	9	9	45.0%
MA-1	150	150	10	4	14	9.3%	23	9	32	21.3%
MA-3	150	150	0	7	7	4.7%	0	16	16	10.7%
ADDITIONAL HUNTS – JUNIOR HUNTS										
J-1	25	25	2	3	5	20.0%	2	3	5	20.0%
J-3	15	15	0	4	4	26.7%	0	4	4	26.7%
J-4	15	15	0	12	12	80.0%	0	12	12	80.0%
J-7	15	15	5	2	7	46.7%	5	2	7	46.7%
J-8	15	15	2	0	2	13.3%	2	0	2	13.3%
J-9	5	5	0	0	0	0.0%	0	0	0	0.0%

Appendix 5-1
Summary of 2006 Zone, Hunt and Statewide Reported and Estimated Deer Harvest and Hunter Success (a).

Zone or Hunt Number	2006 Tag Quota	2006 Tags Issued	REPORTED DEER KILL				ESTIMATED DEER KILL (b)			
			Does	Bucks	Total	Percent Hunter Success	Does	Bucks	Total	Percent Hunter Success
J-10	60	60	14	27	41	68.3%	14	27	41	68.3%
J-11	40	40	1	2	3	7.5%	1	2	3	7.5%
J-12	10	10	0	7	7	70.0%	0	7	7	70.0%
J-13	40	40	2	3	5	12.5%	2	3	5	12.5%
J-14	30	30	3	3	6	20.0%	3	3	6	20.0%
J-15	10	10	0	6	6	60.0%	0	6	6	60.0%
J-16	75	75	12	2	14	18.7%	12	2	14	18.7%
J-17	25	25	3	0	3	12.0%	3	0	3	12.0%
J-18	75	75	14	1	15	20.0%	14	1	15	20.0%
J-19	25	25	9	5	14	56.0%	9	5	14	56.0%
J-20	20	20	2	4	6	30.0%	2	4	6	30.0%
J-21	50	50	8	11	19	38.0%	8	11	19	38.0%
FUNDRAISING LICENSE TAGS										
Golden Opportunity (c)	5	5	0	5	5	100.0%	0	5	5	100.0%
Open Zone (c)	5	5	0	4	4	80.0%	0	4	4	80.0%
STATEWIDE										
TOTAL	237141	179208	273	14955	15228	8.5%	341	27028	27369	15.3%

(a) Numbers based on deer tag returns as of 1/12/2007.
(b) Estimated kill numbers and totals may not agree with other tables due to rounding.
(c) Archery Only and Fundraising Tag kill is totaled separate and not included within each specific zone.
(d) Unable to calculate B, C and D3-5 zone success rates due to unknown individual zone effort.

Appendix 5-2
2006 Reported (Actual) Private Lands Management Area (PLM) deer kill.

Private Land Management Area Name (PLM)	Deer Zone	County	Doe Kill	Buck Kill	Total Kill
ABERNATHY RANCH	B-5	Shasta		3	3
BANGOR RANCH	D-3	Yuba		3	3
BAR B6 WILDLIFE MANAGEMENT AREA	A	Kern		1	1
BASIN VIEW	X-2	Modoc		5	5
BELL RANCH	C-4	Tehama		4	4
BIG BLUFF RANCH	B-5	Tehama		2	2
BIG MORONGO SPRINGS RANCH	D-14	San Bernardino			0
BLACK RANCH	C-3	Shasta			0
BUCKEYE RANCH	A	Solano		4	4
BURROWS RANCH	B-5	Tehama		2	2
CAMP 5 OUTFITTERS	A	Monterey			0
CAPISTRAN RANCH	B-1	Mendocino		4	4
CARLEY RANCH	B-1	Mendocino	1	2	3
CHIMNEY ROCK RANCH	A	San Luis Obispo	1	5	6
CHRISTENSEN RANCH	B-1	Mendocino		4	4
CLARKS VALLEY-RED ROCK RANCH	X-3b	Lassen		7	7
CLOUDS WARNER MOUNTAIN RANCH	X-3b	Modoc			0
COON CAMP SPRINGS	X-3a	Lassen		3	3
COON CREEK RANCH	A	Santa Clara		1	1
CORNING LAND AND CATTLE COMPANY	B-5	Tehama	1	8	9
DEFRANCESCO AND EATON RANCH	A	Merced		5	5
DEMERA RANCH	A	Lake		2	2
DIAMOND BACK RANCH	B-5	Tehama		3	3
EAGLE ROCK	A	Mendocino		2	2
EDEN VALLEY RANCH	B-1	Mendocino		12	12
FIVE DOT RANCH	X-3a	Lassen		3	3
FIVE DOT RANCH	X-5a	Lassen		2	2
FIVE DOT RANCH	X-4	Lassen		3	3
FOWLER RANCH	A	Lake	3	1	4
HATHAWAY OAK RUN RANCH	C-3	Shasta		12	12
HEAVEN'S GATE	B5	Tehama		1	1
ISLAND MOUNTAIN TRINITY RANCH	B-1	Mendocino			0
JS RANCH	C-3	Shasta		5	5
LITTLE DRY CREEK RANCH	C-4	Tehama			0
LLANO SECO	C-3	Butte		14	14
LONE RANCH	A	San Benito		2	2
LOOKOUT RANCH	X-1	Modoc			0
MARTIN RANCH	A	Mendocino		3	3
MASUT COVELO RANCH	B-1	Mendocino		13	13

Appendix 5-2
2006 Reported (Actual) Private Lands Management Area (PLM) deer kill.

Private Land Management Area Name (PLM)	Deer Zone	County	Doe Kill	Buck Kill	Total Kill
MASUT REDWOOD VALLEY RANCH	A	Mendocino		5	5
MEISSNER RANCH	B-2	Shasta		5	5
MENDIBOURE RANCH	X-5b	Lassen		1	1
MILLER-ERIKSON RANCH	B-1	Mendocino		6	6
PBM FARMS	C-1	Siskiyou		3	3
PINECREEK CATTLE CO MADELINE RANCH	X-3a	Lassen		3	3
PINE RANCH	A	Yolo		5	5
POCKET RANCH	A	Sonoma	2	4	6
POTTER VALLEY WMA	A	Mendocino	2	8	10
PRATHER RANCH	X-1	Siskiyou		6	6
R MOUNTAIN RANCH	B-1	Mendocino		3	3
RANCHO GARATE	X-5b	Lassen		4	4
RANCHO LA CUESTA	A	San Benito		2	2
ROARING RIVER RANCH	B-5	Shasta			0
ROBINSON CREEK RANCH	A	Mendocino		1	1
ROCK CREEK RANCH	C-4	Butte		15	15
ROOSTER COMB RANCH	A	Stanislaus		2	2
ROSENDAHL RANCH	X-3b	Modoc		1	1
SANTA CATALINA ISLAND	D-15	Los Angeles	118	117	235
SCHNEIDER RANCH	B-1	Mendocino		10	10
SEVEN SPRINGS RANCH	A	Mendocino		2	2
SHAMROCK RANCH	B-1	Mendocino	2	27	29
SILLER RANCH (PEARSON PROPERTY)	D-3	Yuba		2	2
SL RANCH	X-3a	Modoc		3	3
SNOWSTORM RANCH	X-5a	Lassen		2	2
SOUTH KNOB RANCH	X-3a	Lassen		2	2
SPANISH VALLEY RANCH	A	Napa	1	5	6
SPRING VALLEY RANCH	A	Mendocino		6	6
STEWART RANCH	B-1	Trinity	19	34	53
SUGARLOAF LAND AND CATTLE COMPANY	D-3	Yuba		4	4
SUMMER CAMP	B-1	Mendocino	5	35	40
TEJON RANCH	D-10	Kern	22	89	111
TRIPLE B RANCH	C-3	Shasta		3	3
WHITE CLOUD RESOURCES	B-1	Mendocino	1		1
WILLIAMS RANCH	B-5	Shasta		12	12
WORK RANCH	A	Monterey	3	2	5
2006 STATEWIDE PLM KILL:			**181**	**570**	**751**

FINAL
ENVIRONMENTAL DOCUMENT

Section 363, Title 14, California Code of Regulations

Regarding

Pronghorn Antelope Hunting

April 12, 2004

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

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CHAPTER 1. SUMMARY

State law (Section 207 of the Fish and Game Code) requires the Fish and Game Commission (Commission) to review mammal hunting regulations at least once every three years and the Department of Fish and Game (Department) to present recommendations for changes to the mammal hunting regulations to the Commission at a public meeting. However, during any year, the Commission may receive proposals from the Department for changes in mammal hunting regulations. If any major changes occur, the Department will issue a supplemental, amended, or subsequent document in order to present the issues to the Commission. Possible subject matters that may require an amendment include tag quotas based on biological population performance, emergency maintenance of resources, and for content clarity. Mammal hunting regulations adopted by the Commission provide for hunting pronghorn antelope *(Antilocapra americana)* in specific areas of the State [Section 363, Title 14, California Code of Regulations (CCR)]. The project discussed in this document (proposed project) involves pronghorn antelope hunting for 2004 (Section 331, Fish and Game Code, see Appendix 1).

Existing law (Section 3950, Fish and Game Code) designates pronghorn antelope as a game mammal in California. Section 331, Fish and Game Code, provides that the Commission may fix the area or areas, seasons and hours, bag and possession limit, sex, and total number of pronghorn antelope that may be taken pursuant to its regulations. Section 203.1, Fish and Game Code, requires the Commission to consider populations, habitat, food supplies, the welfare of individual animals, and other pertinent facts when establishing hunting regulations for pronghorn antelope.

PROPOSED PROJECT

The proposed project being considered is a proposal to continue regulated hunting as an element of pronghorn antelope management. Regulated pronghorn antelope hunting is proposed for northeastern and central California, including parts of Lassen, Modoc, Plumas, Shasta, Siskiyou, Kern, and Los Angeles counties (figures 1-6) during 2004. Objectives of the proposal are to maintain a viable and healthy statewide pronghorn antelope population and to provide biologically appropriate hunting opportunities.

Specifically, the proposed project provides a tag allocation range (Table 1) based on results from the 2003 annual winter survey, during which a minimum of 3,973 pronghorn was determined to inhabit northeastern California. Tag allocations in Table 1 describe three possible ranges for each zone. The conservative range will be recommended when the statewide pronghorn populations is less than 5,700 animals. The moderate range will be recommended at a statewide pronghorn populations level of 5700-6700 animals. The maximum range will be recommended when the statewide

FIGURE 1

Pronghorn 2 00 4 Hunt Zone 1 - Mount Do

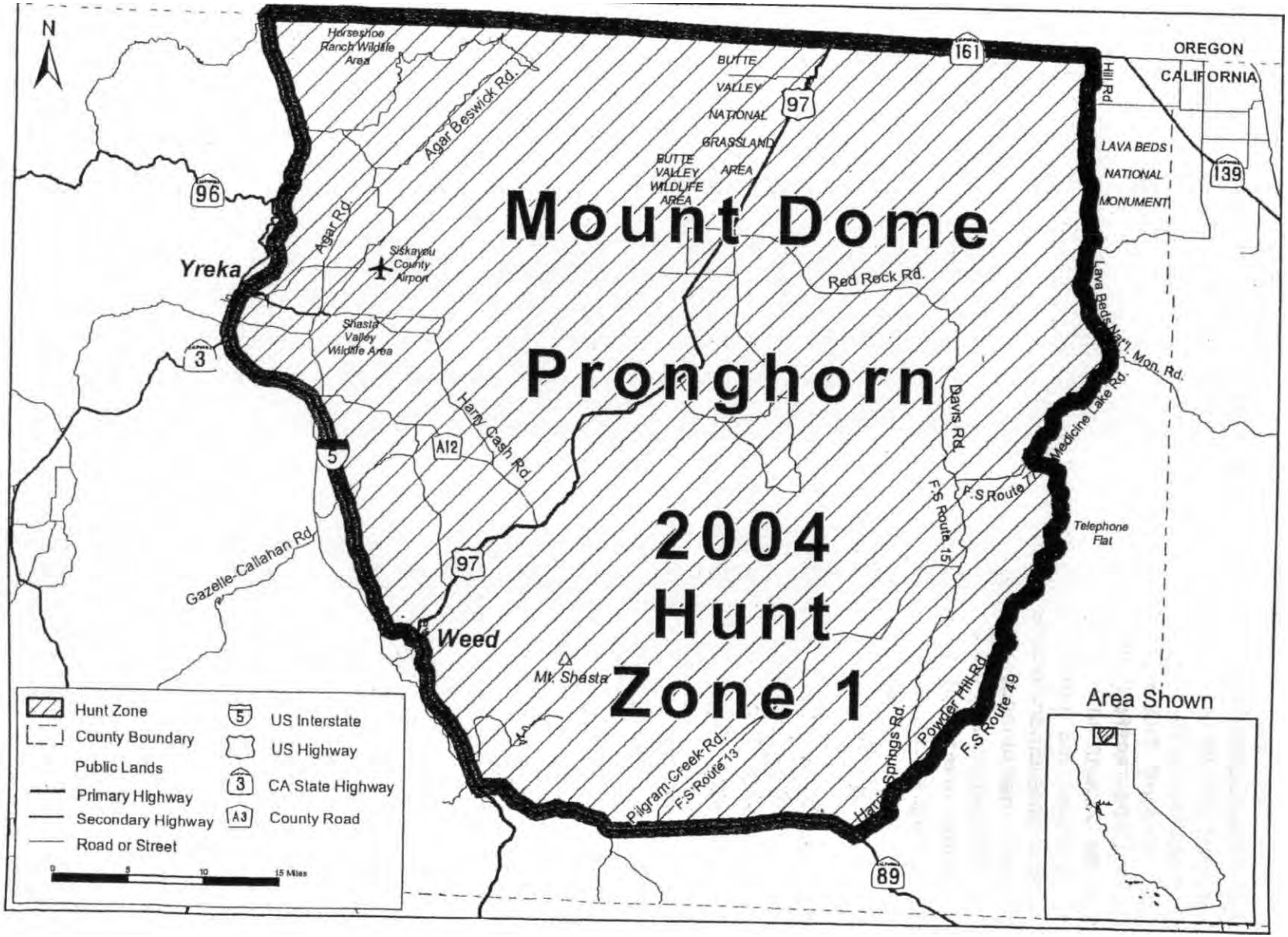
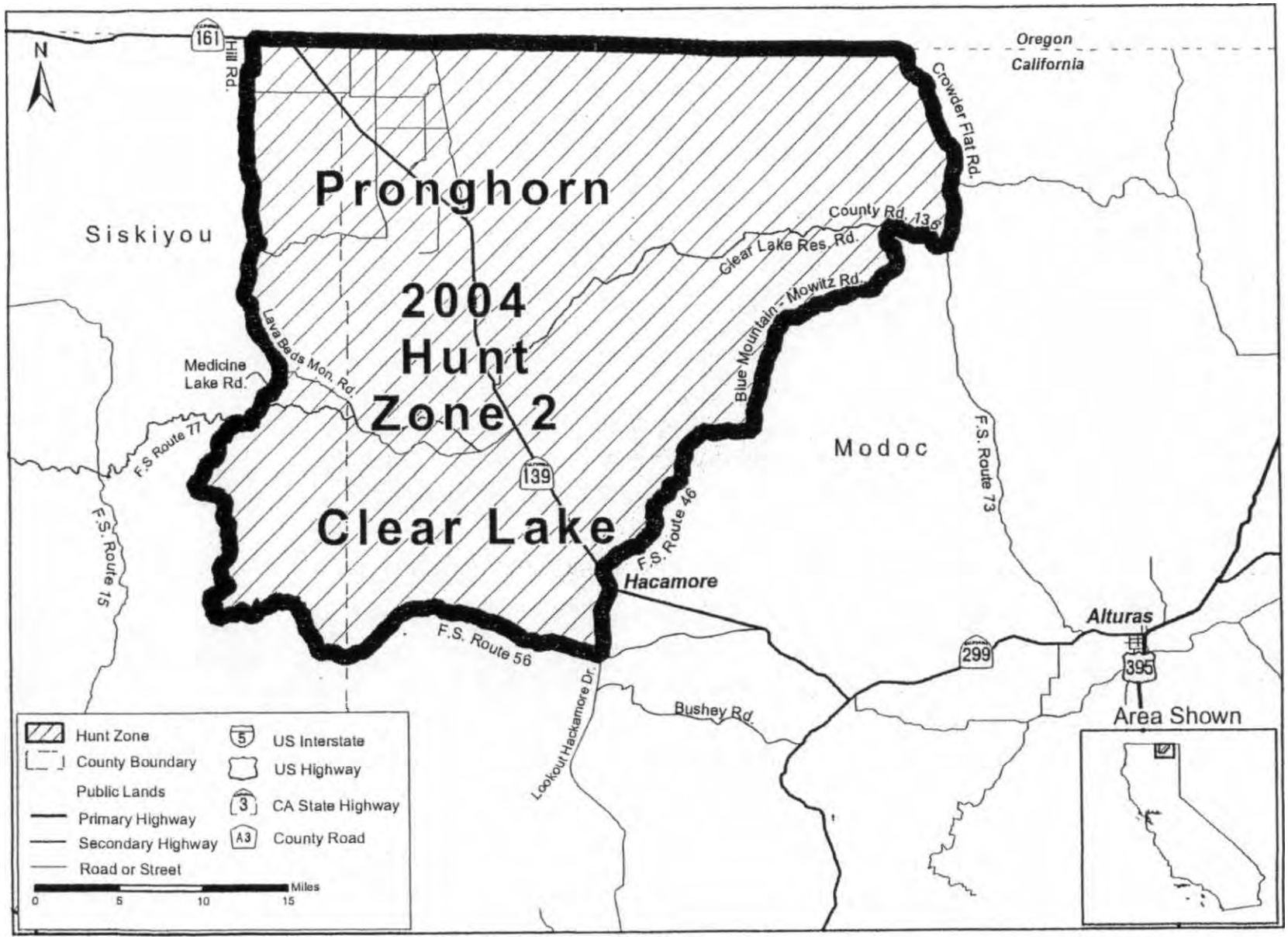


FIGURE 2

Pronghorn 2 004 Hunt Zone 2 - Clear Lake



j

FIGURE 3

Pronghorn 2004 Hunt Zone 3 - Likely Tables

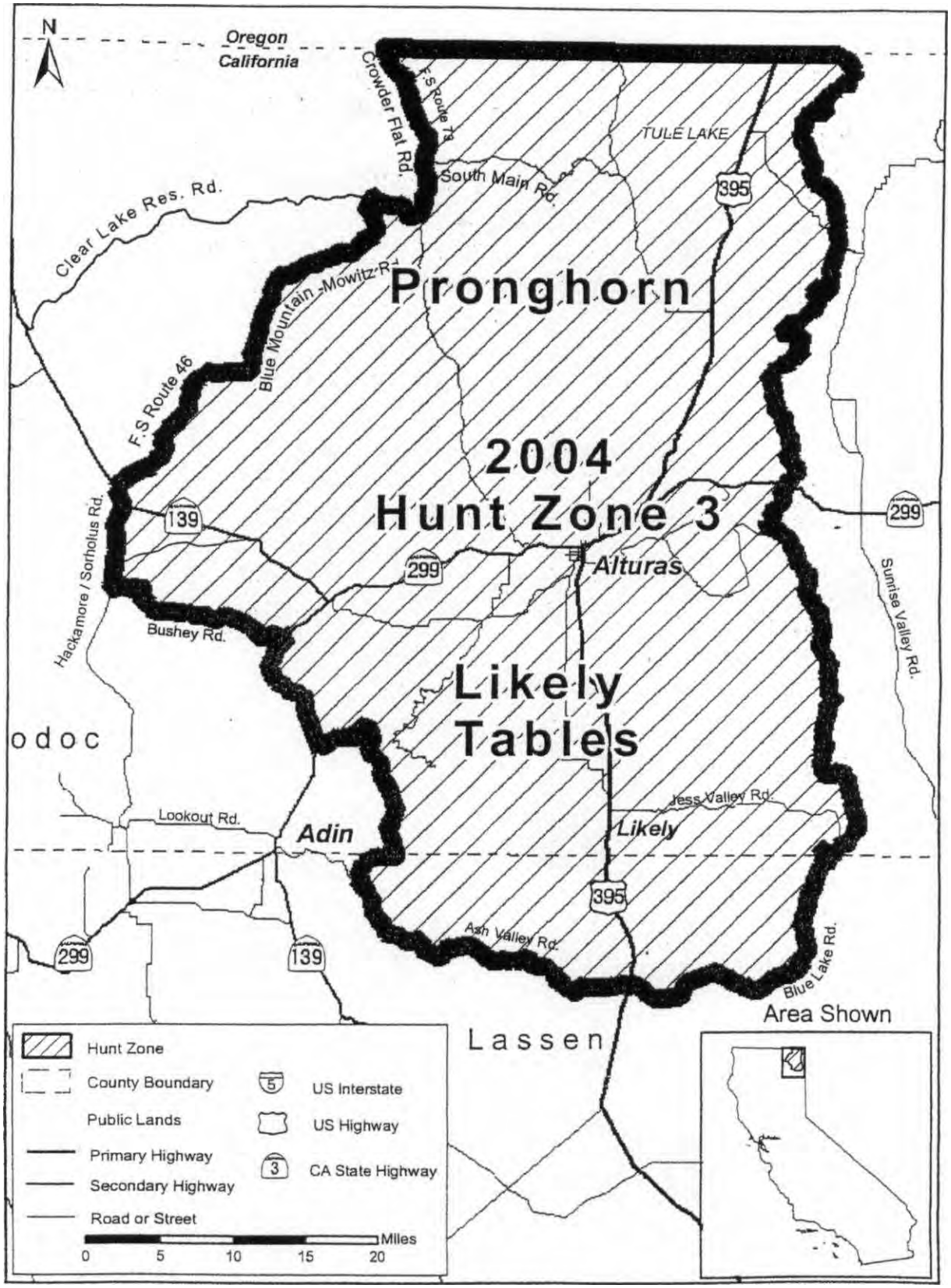


FIGURE 4

Pronghorn 2004 Hunt Zone 4 - Lassen

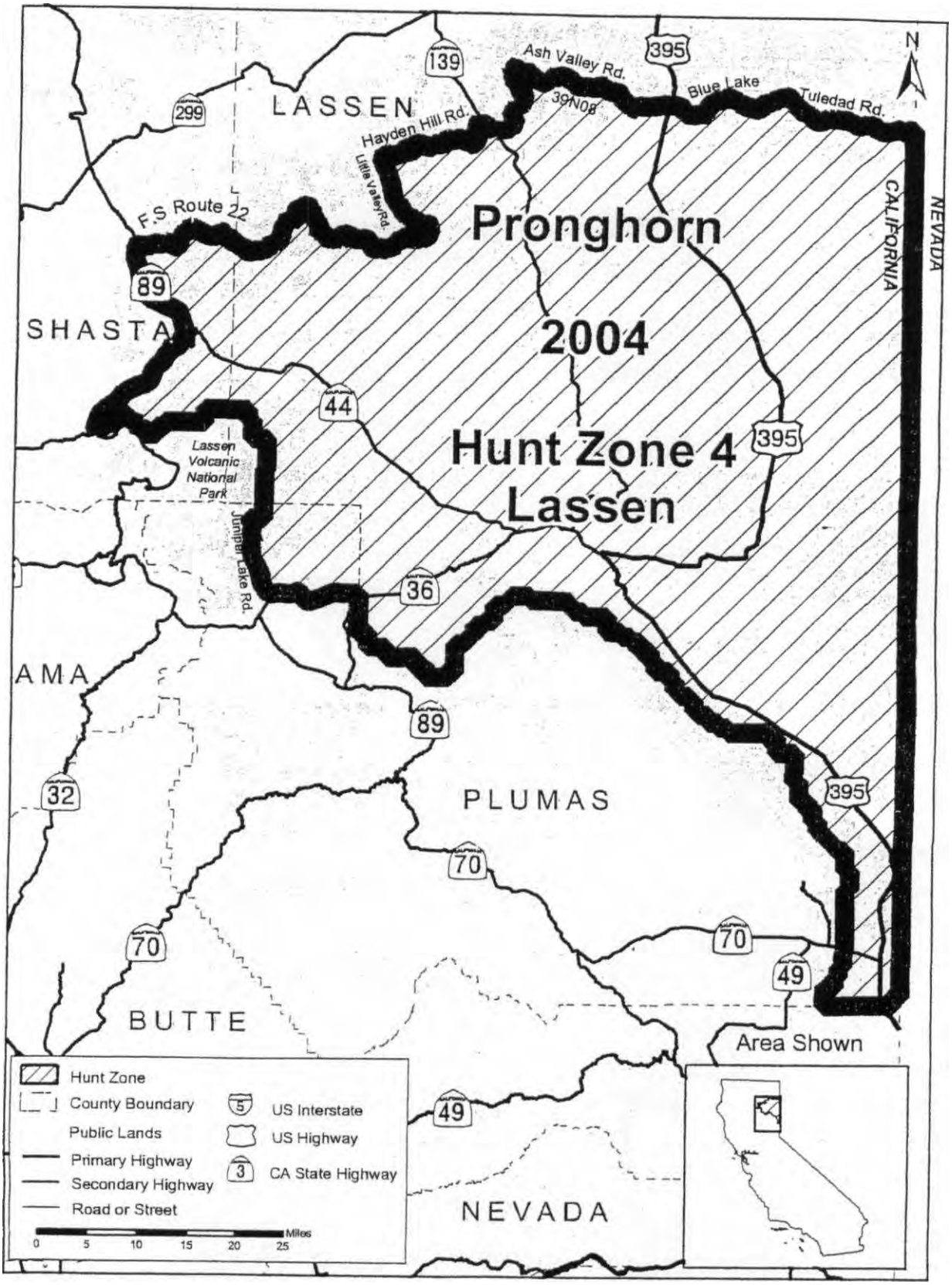


FIGURE 5

Pronghorn 2004 Hunt Zone 5 - Big Valley

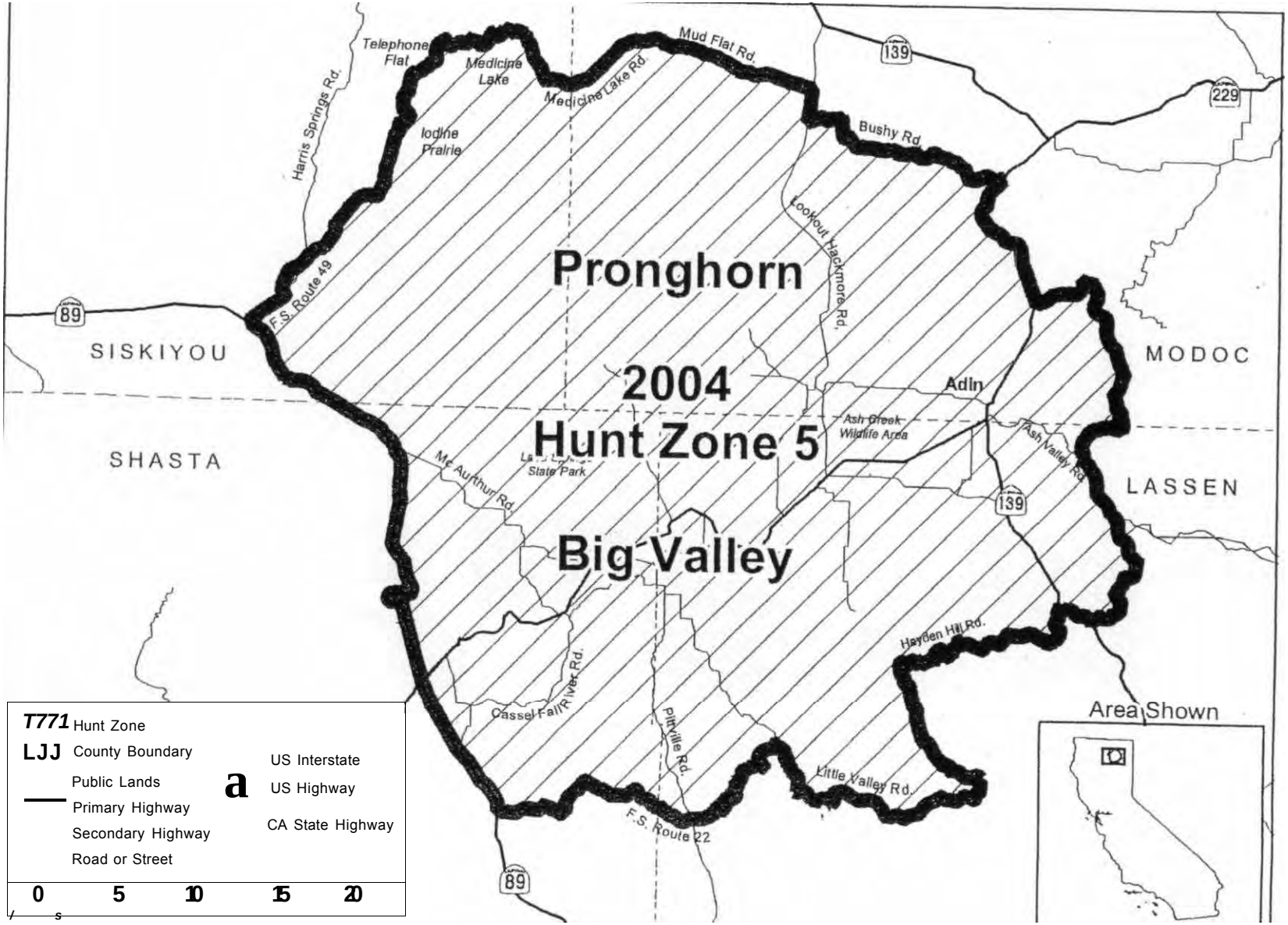


FIGURE 6

Pronghorn 2 00 4 Hunt Zone 6 - Surprise Valley

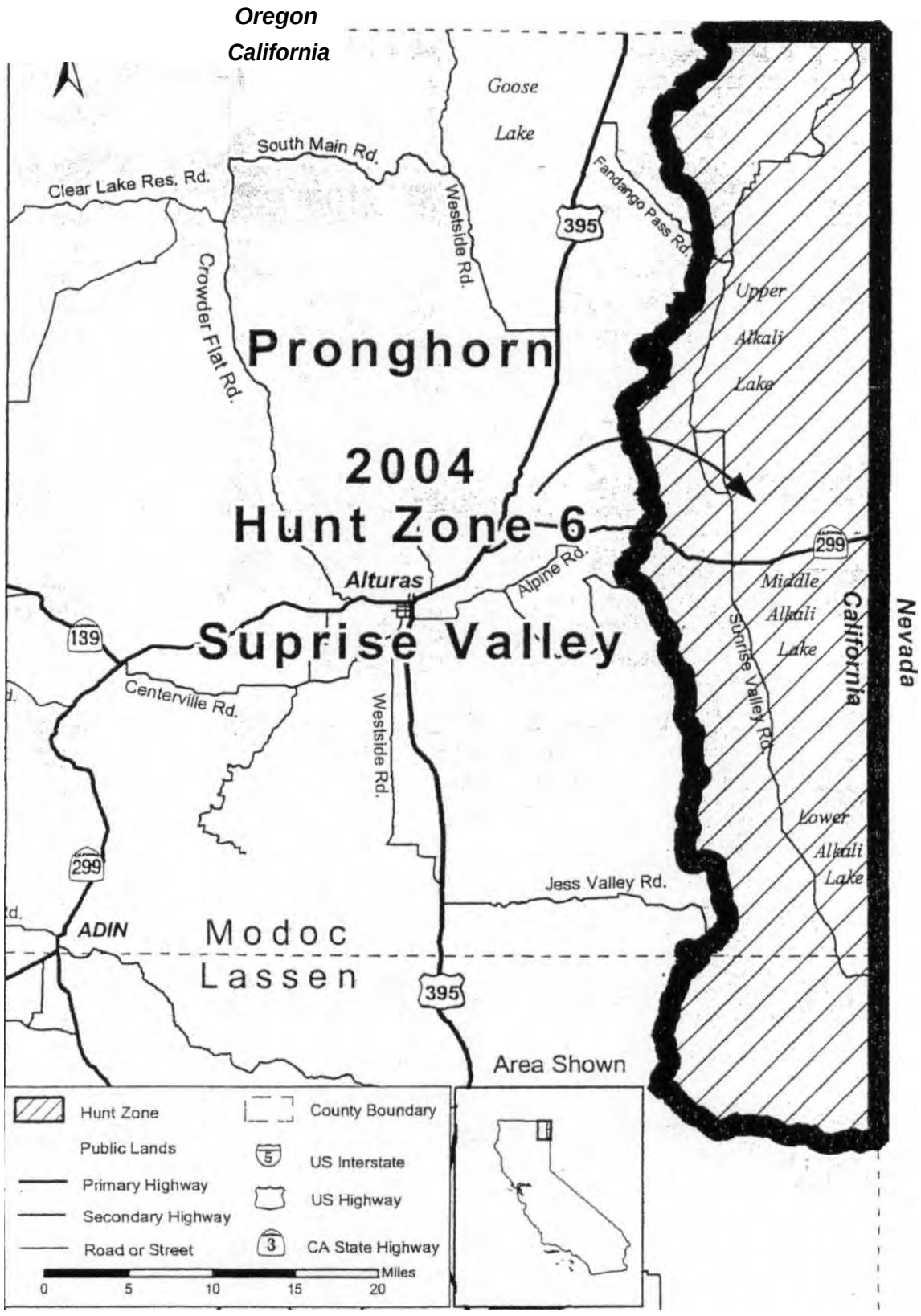
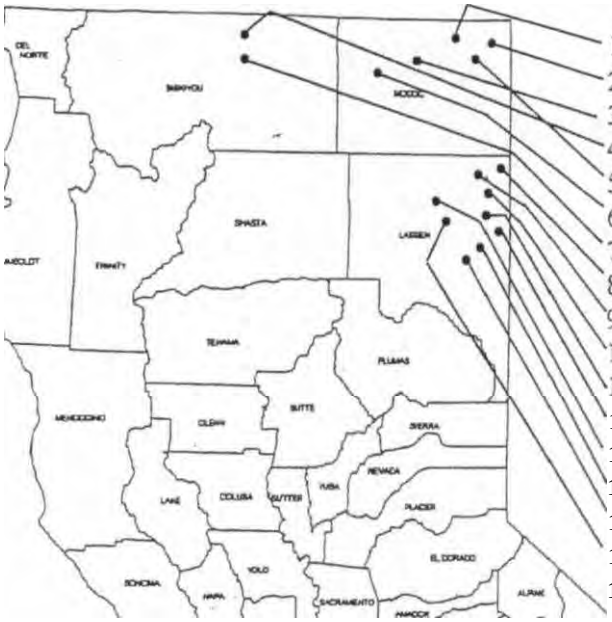
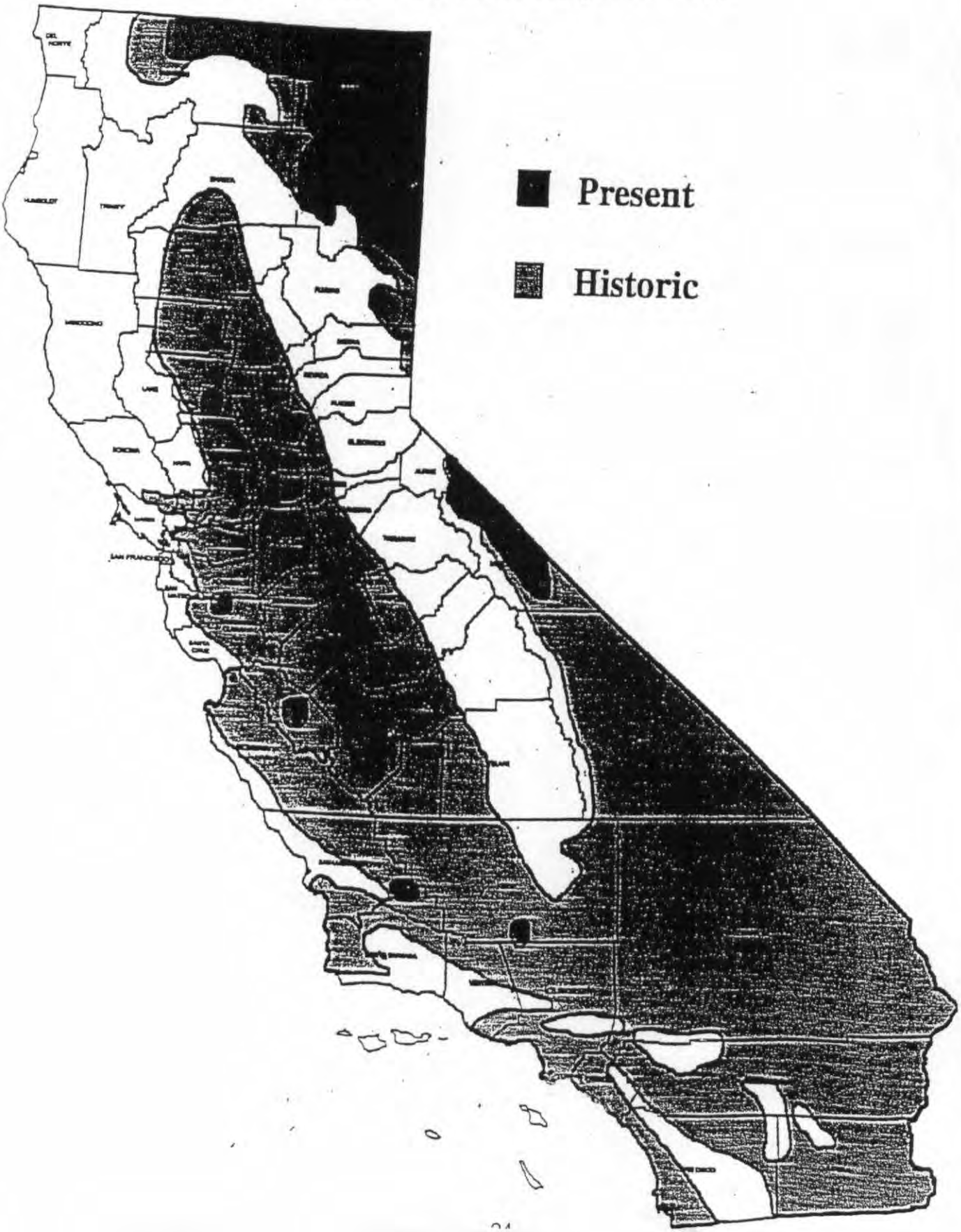


Figure 7
Pronghorn Antelope Private Lands Management Areas



1 Basin View Ranch
2 SL Ranch
3 Lookout Ranch
4 PBM Farms
5 Cloud's Willow Creek
6 Tom's Creek Ranch
7 Prather Ranch
8 Clarks Valley Red Rock Ranch
9 Ratliff Ranch
10 Mendiboure Ranch
11 Rancho Garate
12 Spanish Springs Ranch
13 Dillon Lakes
14 5 Dot Ranch, Horse Lake
15 5 Dot Ranch, Willow Creek
16 5 Dot Ranch, Avilla
17 Tejon Ranch

Figure 8
Historic and Present Distribution of Pronghorn Antelope



pronghorn population level exceeds 6700 animals. The proposed project is expected to involve tag quotas within the conservative range for each zone (Table 1). The Department recommends that the Commission adopt a final pronghorn tag quota for 2004 that is within the ranges identified in Table 1 and based on results of the 2004 winter survey (scheduled for late January 2004). The Department analyzed the proposed project and various alternatives and concluded that they will not have a significant adverse impact on the environment.

Based on recommendations from the Department, other agencies, and the public, the Commission may adopt mammal hunting regulations that include pronghorn antelope. In adopting regulations providing for pronghorn antelope hunting, the Commission would be acting pursuant to sections 203, 203.1, 207, 331, 3400-3409, and 3950, Fish and Game Code. The Commission's action would also be consistent with the wildlife conservation policy adopted by the Legislature (Section 1801, Fish and Game Code). The State's wildlife conservation policy contains an objective of providing regulated hunting of wildlife resources where such use is consistent with maintaining healthy and viable wildlife populations.

The Department is recommending that the Commission adopt regulations that provide for limited pronghorn antelope in California. The Department is recommending tag allocations within the ranges listed in Table 1 for each hunt area with the following seasons: archery-only, general, junior, and fund-raising hunts. Based on historic quotas from the past five years, the Department expects that tag quota for 2004 will fall within the conservative harvest range (proposed project).

The proposed project includes the renaming and resetting of boundaries for two junior hunts, and an addition of a third. Existing regulations specify boundaries, season dates, bag/possession limits and the quota for the Ash Creek Junior Pronghorn Antelope Hunt. To improve hunter opportunity and better manage pronghorn antelope, the proposal expands hunt boundaries and extends the season to coincide with boundaries and general season dates for Zone 5 - Big Valley. It renames the hunt as the Big Valley Junior Pronghorn Antelope Hunt. Existing regulations specify boundaries, season dates, bag/possession limits and the quota for Honey Lake Junior Pronghorn Antelope Hunt. To improve hunter opportunity and better manage pronghorn antelope, the proposal expands hunt boundaries and extends the season to coincide with boundaries and general season dates for Zone 4 - Lassen. Because the proposal expands hunt boundaries beyond the Honey Lake Wildlife Area, it renames the Hunt as the Lassen Junior Pronghorn Antelope hunt. Existing regulations make no provision for a Junior Pronghorn Antelope Hunt in Zone 6 - Surprise Valley. The proposal establishes the Surprise Valley Jr. Pronghorn Antelope hunt with boundaries and season dates that coincide with those for Zone 6 - Surprise Valley.

Additionally, up to 120 pronghorn antelope tags will be considered under the Private Lands Wildlife Habitat Enhancement and Management Area (PLM) Program (pursuant to sections 3400-3409, Fish and Game Code, and Section 601, Title 14,

CCR). The PLM quotas will be no more than 10 percent of the allowable harvest for 2004. The expected additional take has been considered in analyzing the effects of the proposed project (see chapters 3 and 4).

The resulting harvest for 2004 will likely be lower than the tag allocation (see Table 1), because hunter success historically has been less than 100 percent. Based on success rates from previous years, the Department expects that the actual harvest will range from 70-80 percent of the pronghorn antelope tag allocation for 2004 (1980-present, Department of Fish and Game data on file in the Wildlife and Inland Fisheries Division, Sacramento, California).

Maximum levels in Table 1 represent the maximum allowable harvest based on an estimated pronghorn antelope population above 6,700 within in the proposed project area. In recent years, post-hunt surveys occurred in the winter and fall and provided a minimum estimate from which to model the current year's tag allocation. It is anticipated that updated population data for 2004 will be available in February to provide the basis for a final tag allocation for 2004.

For northeastern California, the desired population management objective is to maintain a population of 5,600-7,000 pronghorn antelope. A post-hunt buck ratio of at least 24 bucks per 100 does is expected. Population objectives are determined based on the estimated carrying capacity of the available range, productivity of the population (number of fawns produced per 100 does), occurrence and severity of property damage problems, and general health and condition of the animals. The goal statewide is to maintain viable, healthy pronghorn antelope populations with a post-hunt objective ratio of at least 24 bucks per 100 does (see "Project Objectives" section). For PLM areas, an additional goal is to enhance private lands for diverse wildlife species.

The Department is also providing the Commission with a range of alternatives to the proposed project that could feasibly attain the basic objectives of the project. Alternative 1 (no change) would maintain quotas and seasons for each hunt zone without change. Alternative 2 (increased harvest) involves issuing approximately 50 percent more pronghorn antelope license tags than the proposed project. Alternative 3 (reduced harvest) involves issuing approximately 50 percent fewer pronghorn antelope license tags than the proposed project. Except for the junior hunts, this alternative would involve a buck-only harvest. Alternative 4 (increased archery) provides an increased level of archery-only hunting compared to the proposed project. This alternative would increase the archery-only pronghorn antelope tag allocation by approximately 10 percent and reduce the number of general season tags. Alternative 5 (no hunting) would prohibit pronghorn antelope hunting. This alternative would maintain other management activities, such as translocation, at their present level.

EFFECTS ON THE ENVIRONMENT

Table 2 summarizes Department findings that there are no significant long-term adverse impacts associated with the proposed project or any of the project alternatives.

Table 2. Impact Summary:
Proposed Project and Alternative for the 2003 Pronghorn Antelope Hunting Regulations

Alternative	Significant impact	Nature of Impact	Mitigation Available	Nature of Mitigation
No Change	No	None	N/A	N/A
Increased Harvest	No	None	N/A	N/A
Reduced Harvest (Bucks Only)	No	None	N/A	N/A
Increased Level of Archery-Only Hunting	No	None	N/A	N/A
No Hunting	No	None	N/A	N/A

PUBLIC INPUT AND AGENCY CONSULTATION

The California Environmental Quality Act (CEQA) encourages public input. One of the primary purposes of the environmental document review process is to obtain public comment, as well as to inform the public and decision makers. It is the intent of the Department to encourage public participation in this environmental review process.

Prior to preparing this environmental document, the Department developed a Notice of Preparation (NOP). In early December, 2003 the NOP was provided to the State Clearinghouse for distribution, as well as to land management agencies in California that have an interest, or play a key role, in pronghorn antelope management [including the U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), National Park Service (NPS), and U.S. Forest Service (USFS)]. This NOP was also provided to individuals and/or organizations which expressed an interest in pronghorn antelope management in the past. The NOP requested that any comments regarding the scope of the environmental document be submitted to the Department within 30 days of receipt of the NOP.

The Department has also encouraged public input into the environmental document by scheduling a scoping session to discuss documents prepared in support of mammal hunting and trapping regulations. This scoping session was held in Sacramento on December 11, 2003.

The Department prepared a draft environmental document (DED) regarding pronghorn antelope management (Section 363, Title 14, CCR). The DED was made available for public review on February 2, 2004. It was mailed to 20 individuals and organizations who expressed interest in this issue. The individuals and organizations which received the DED are listed in Appendix 2. Additionally, notice of availability of the DED for public review was provided to the State Clearinghouse, which provided notice of availability to over 880 organizations, including all county governments in California. Notice of availability was also published in 24 major California newspapers. Each of the 24 newspapers has a daily circulation exceeding 50,000. The DED was also made available in the Department's six regional offices and in the Department's Bishop, Eureka, Menlo Park, and San Diego satellite offices. During the 45-day notice period the draft environmental document was available for public review and no comments were received regarding the document. Also, a letter was received from Ms. Terry Roberts, Senior Planner, State Clearinghouse, noting that the Department had complied with the CEQA review requirements for the draft environmental document and that no State agency comments were received.

AREAS OF CONTROVERSY

The Department recognizes that hunting has become a controversial issue opposed by some members of the public because it results in the death of individual animals. On the other hand, hunting provides recreation and food for hunters, and serves as a component of wildlife management. This document addresses the range of public viewpoint (from no hunting to maximum hunting opportunity), as well as intermediate alternatives for managing pronghorn antelope. The areas of controversy that are considered include effects on threatened and endangered species, effects of drought and wildfires, effects of illegal take, effects on individual animals, method of take (e.g., archery equipment), and other factors (see Chapter 4).

ISSUES TO BE RESOLVED

As provided by existing law, the Commission is the decision-making body (lead agency) considering the proposed project, while the Department has responsibility for management activities, such as hunting, translocating pronghorn antelope to suitable historic range, and preparing management plans. It is expected that pronghorn antelope hunts would be considered by the Commission at least once every three years. The primary issue for the Commission to resolve is whether to change pronghorn antelope hunting regulations as an element of pronghorn management. If such changes are authorized, the Commission will specify the areas, seasons, methods of take, bag and possession limit, number of pronghorn antelope to be taken, and other appropriate special conditions.

As proposed, pronghorn antelope hunting (including PLM hunts) would not be independent of other management elements, including providing public viewing opportunities, translocation of animals, natural history study, and interpretive programs

related to pronghorn antelope. Also, hunting could be used in conjunction with translocation to maintain desired population objectives.

CONCLUSION

Adoption of the proposed project by the Commission will result in the death of individual animals. However, surviving individuals in a population may benefit from decreased competition for food and space. Specific safeguards included in the proposed action, such as a limited tag quota, a short season, a public bag limit of one, and close monitoring of the pronghorn antelope population with annual surveys and herd composition counts, should result in a conservative level of hunting mortality. Most significantly, the proposed levels of pronghorn antelope hunting are based on minimum population estimates, age and sex compositions, and pronghorn distribution within hunt zones or areas. Department pronghorn antelope surveys typically underestimate the actual number of animals within an area. Therefore, the proposed tag quotas are biologically conservative, and the removal of individual animals from selected herds (areas) that are considered large and healthy is not expected to significantly reduce population numbers. The proposed project is designed to maintain the herds within the project objectives discussed in this environmental document and the Northeastern California Pronghorn Antelope Management Plan (Department files, Sacramento, California).

Long-term data indicate that production and survival of young animals can replace the animals removed by hunting. The proposed hunting of pronghorn antelope involves a limited number of tags designated for specific areas of California (figures 1-6), and the removal of individual animals will have little influence on the statewide population. Tags will be allocated based on estimated population size, the distribution of pronghorn antelope in the proposed project area, expected hunter success, non-hunting mortality, and the estimated range carrying capacity. The proposed project, which could potentially remove a maximum number of animals as stated in Table 1, is not expected to have a significant adverse impact on either local or statewide populations of pronghorn antelope. The project is expected to only temporarily reduce the number of pronghorn antelope in the project area. The proposed project is consistent with pronghorn management objectives and will help maintain herds in balance with their habitat throughout the State, while providing recreational opportunities for hunters.

The Department's primary management objectives are to conserve and enhance pronghorn antelope and their habitat for the benefit and enjoyment of the people of California; and to maintain healthy, viable pronghorn antelope populations statewide. Pronghorn antelope management guidelines and objectives are discussed in detail in two documents: The Pronghorn Antelope in Northeastern California (Pyshora 1977) and the Northeastern California Pronghorn Antelope Management Plan (Department files, Sacramento, California). These documents were developed to provide management recommendations for pronghorn antelope in northeastern California and to update information on pronghorn antelope translocated to historic range.

CHAPTER 2. PROJECT DESCRIPTION

Management of pronghorn antelope in California is guided by State law, policies of the Commission, and the Department. The underlying goal of pronghorn antelope management is to encourage the conservation, restoration, maintenance, and utilization of the State's pronghorn antelope populations (Section 1801, Fish and Game Code). More specifically, long-term objectives for managing pronghorn antelope in California were developed by the Department (see "Project Objectives").

Discussed in this document is pronghorn antelope hunting. The Department has established specific objectives for population numbers (Northeastern California Pronghorn Management Plan, Department files, Sacramento, California). These objectives are determined based on carrying capacity of the available range, productivity of the population, occurrence and severity of property damage problems, and general health and condition of the animals. These factors were considered in developing the project objectives described in this chapter. Hunting is expected to help dampen the normal, and often large, fluctuations in pronghorn antelope populations that can occur as a result of environmental variation. Hunting is also used to reduce damage to private property, while providing recreational opportunity for some Californians.

PROPOSED PROJECT

The Department proposes to use public hunting to manage pronghorn antelope and provide recreational opportunities. The Department is recommending that the Commission adopt regulations that will provide for limited pronghorn antelope hunting in specific public hunt areas and up to 17 PLM's in California (figures 1-7). Tag quotas for 2004 are based on minimum population estimates, distribution within the proposed project area, mortality, average hunter success, and State law (Section 331, Fish and Game Code).

The proposed project continues hunting as an element of the Department's pronghorn antelope management program. The proposed project is intended to provide a valid recreational opportunity and serve as a mechanism to help maintain population numbers within established objectives or alternatively, to achieve established objectives. The proposed project implements sections 331 and 1801, Fish and Game Code (see Appendix 1 and Department files), as they apply to pronghorn antelope. Pronghorn antelope hunting will not be proposed if the Department determines that pronghorn antelope numbers have declined to a level which may not sustain a healthy and viable population. Regulated hunting is proposed in addition to other management activities that may provide non-consumptive uses of pronghorn antelope. As proposed, hunting is not expected to affect these activities.

The environmental document is intended to provide the Commission and the public with information necessary to evaluate the potential environmental impacts of pronghorn antelope hunting. Although the proposed project considers pronghorn antelope hunting, other aspects of pronghorn antelope management are important to consider. Therefore, this environmental document also addresses other aspects of pronghorn antelope management as they relate to the proposed project and alternatives.

PROJECT LOCATION

The proposed project is located in those portions of Modoc, Lassen, Siskiyou, Shasta, Plumas, and Los Angeles counties described as northeastern California pronghorn antelope hunting zones 1-6, and PLM areas (figures 1-7). The proposed project provides for public hunt areas as follows:

Zone 1: Mount Dome (Figure 1): That portion of Siskiyou County within a line beginning at the junction of Interstate 5 and the California-Oregon state line; east along the California-Oregon state line to the Ainsworth Corners-Lava Beds National Monument Road; south along the Ainsworth Corners-Lava Beds National Monument Road to the Mammoth Crater-Medicine Lake Road; southwest along the Mammoth Crater-Medicine Lake Road to the Medicine Lake-Telephone Flat Road; east and south along the Medicine Lake-Telephone Flat Road to the Telephone Flat-Bartle Road; southwest along the Telephone Flat-Bartle Road to Highway 89; west along Highway 89 to Interstate 5; north along Interstate 5 to the point of beginning.

The Mount Dome area contains 1,518,299 acres of land, of which about half is private and half is public. Primary land uses are livestock grazing and timber production. Development of irrigation has promoted more agricultural crops in this zone, primarily alfalfa and grain. These agricultural developments are highly sought out by pronghorn antelope and have mixed benefits. Pronghorn antelope use of crops as forage can improve the diet, but can also result in increasing the local population above carrying capacity of the native range. Only minor changes in land-use patterns are expected in the next 10 years because of the fairly stable agricultural economy in the project area.

Zone 2: Clear Lake (Figure 2): Those portions of Modoc and Siskiyou counties within a line beginning at the junction of the Lava Beds National Monument Road and the California-Oregon state line at Ainsworth Corners; east along the California-Oregon state line to the Crowder Flat Road; south along the Crowder Flat Road to Modoc County Road 73; south along Modoc County Road 73 to Modoc County Road 136; west along Modoc County Road 136 to the Blue Mountain-Mowitz Road; west and south along the Blue Mountain-Mowitz Road to the Deadhorse Flat-Badger Well Road; southwest along the Deadhorse Flat-Badger Well Road to the Badger Well-Browns Well Road; south along the Badger Well-Browns Well Road to the Sorholus Tank-Hackamore Road; southwest along the Sorholus Tank-Hackamore Road to Highway

139; southeast along Highway 139 to Modoc County Road 91; south along Modoc County Road 91 to the Mud Lake-Mud Springs Road; west along the Mud Lake-Mud Springs Road to the North Main Road; southwest along the North Main Road to the Long Bell-Iodine Prairie Road at Long Bell Forest Service Station; northwest along the Long Bell-Iodine Prairie Road to the Bartle-Telephone Flat Road; north along the Bartle-Telephone Flat Road to the Telephone Flat-Medicine Lake Road; north and west along the Telephone Flat-Medicine Lake Road to the Medicine Lake-Mammoth Crater Road; northeast along the Medicine Lake-Mammoth Crater Road to the Lava Beds National Monument-Ainsworth Corners Road; north along the Lava Beds National Monument-Ainsworth Corners Road to the point of beginning.

The Clear Lake zone contains 715,573 acres of land, of which about 86 percent is public and 14 percent is private. Grazing and farming are the primary uses on private land and, in some instances, can be beneficial to pronghorn antelope. In the past, the Clear Lake population has provided surplus pronghorn antelope for translocation. Future land-use practices likely will enhance conditions for pronghorn antelope because of increased agricultural production.

Zone 3: Likely Tables (Figure 3): Those portions of Modoc and Lassen counties within a line beginning at the junction of the Crowder Flat Road and the California-Oregon state line; east along the California-Oregon state line to the crest of the Warner Mountains; south along the crest of the Warner Mountains to the Summit Trail at Pepperdine Camp; south along the Summit Trail to the South Warner Road near Patterson Forest Service Station; west along the South Warner Road to the Long Valley-Clarks Valley Road; south along the Long Valley-Clarks Valley Road to the Clarks Valley-Madeline Road; west along the Clarks Valley-Madeline Road to Highway 395 at the town of Madeline; north along Highway 395 to the Madeline-Adin Road; northwest along the Madeline-Adin Road to the Hunsinger Draw-Sweagert Flat Road; east and north along the Hunsinger Draw-Sweagert Flat Road to the Sweagert Flat-Hunters Ridge Road; north and west along the Sweagert Flat-Hunters Ridge Road to Highway 299 near Lower Rush Creek Recreation Site; north along Highway 299 to the Canby Bridge-Cottonwood Flat Road; northwest along the Canby Bridge-Cottonwood Flat Road to the Cottonwood Flat-Happy Camp Road; northwest along the Cottonwood Flat-Happy Camp Road to Modoc County Road 91; north along Modoc County Road 91 to Highway 139; north along Highway 139 to the Hackamore-Sorholus Tank Road; northeast along the Hackamore-Sorholus Tank Road to the Browns Well-Badger Well Road; north along the Browns Well-Badger Well Road to the Badger Well-Deadhorse Flat Road; northeast and east along the Badger Well-Deadhorse Flat Road to the Mowitz-Blue Mountain Road; north and east along the Mowitz-Blue Mountain Road to Modoc County Road 136; east along Modoc County Road 136 to Modoc County Road 73; north along Modoc County Road 73 to the Crowder Flat Road; north along the Crowder Flat Road to the point of beginning.

The Likely Tables zone contains 1,453,692 acres of land, of which about 70 percent is public and 30 percent is private. Grazing and alfalfa production are primary agricultural uses. Urban expansion in the Alturas area has eliminated a few square miles of pronghorn antelope range, but with more than one million acres of public land, impacts of urbanization are not yet significant in the Likely Tables zone.

Zone 4: Lassen (Figure 4): Those portions of Lassen, Plumas, and Shasta counties within a line beginning at the junction of Highway 36 and the Juniper Lake Road in the town of Chester; north along the Juniper Lake Road to the Lassen National Park boundary; north and west along the Lassen National Park boundary to Highway 89; north along Highway 89 to U.S. Forest Service Road 22 near the Hat Creek Ranger Station; east along U.S. Forest Service Road 22 to U.S. Forest Service Road 35N06; east and north along U.S. Forest Service Road 35N06 to the State Game Refuge 1S boundary; northwest along the State Game Refuge 1S boundary to the Coyote Canyon-Dixie Valley Road; northwest along the Coyote Canyon-Dixie Valley Road to the Dixie Valley-Boyd Hill Road; northwest along the Dixie Valley-Boyd Hill Road to the Snag Hill-Hayden Hill Road; northeast and north along the Snag Hill-Hayden Hill Road to Highway 139; southeast on Highway 139 to the Willow Creek-Hunsinger Flat Road; northeast and northwest along the Willow Creek-Hunsinger Flat Road to the Adin-Madeline Road; southeast along the Adin-Madeline Road to Highway 395 at the town of Madeline; south along Highway 395 to the Madeline-Clarks Valley Road; east along the Madeline-Clarks Valley Road to the Clarks Valley-Tuledad Road; east and southeast along the Clarks Valley-Tuledad Road to the California-Nevada state line; south along the California-Nevada state line to the Lassen-Sierra County line; west along the Lassen-Sierra County line to the Lassen-Plumas County line; north and west along the Lassen-Plumas County line to Highway 36; west along Highway 36 to the point of beginning.

The Lassen zone contains 2,579,115 acres of land, of which about 60 percent is public and 40 percent is private. Primary land uses are farming and timber production. Pronghorn antelope in this area were severely reduced in number during the winter of 1951-52. The population subsequently recovered, but sharply declined again during the 1992-93 winter. High-quality summer forage, such as on agricultural lands, is not prevalent in this zone. Pronghorn antelope in this zone are more reliant on native range compared to animals in other zones. Because of this, their numbers are expected to vary more with changing environmental conditions.

Zone 5: Big Valley (Figure 5): Those portions of Modoc, Lassen, Shasta, and Siskiyou counties within a line beginning at the intersection of highways 299 and 89; north and northwest along Highway 89 to the Bartle-Telephone Flat Road; northeast along the Bartle-Telephone Flat Road to the Iodine Prairie-Long Bell Road; southeast along the Iodine Prairie-Long Bell Road to the North Main Road at Long Bell Forest Service Station; northeast along the North Main Road and the Mud Springs-Mud Lake Road to Modoc County Road 91; south along Modoc County Road 91 to the Happy Camp-Cottonwood Flat Road; southeast along the Happy Camp-Cottonwood Flat Road

to the Cottonwood Flat-Canby Bridge Road; southeast along the Cottonwood Flat-Canby Bridge Road to Highway 299; south along Highway 299 to the Hunters Ridge-Sweagert Flat Road near Lower Rush Creek Recreation Site; east and south along the Hunters Ridge-Sweagert Flat Road to the Sweagert Flat-Hunsinger Draw Road; south and west along the Sweagert Flat-Hunsinger Draw Road to the Adin-Madeline Road; southeast along the Adin-Madeline Road to the Hunsinger Flat-Willow Creek Road; southeast and southwest along the Hunsinger Flat-Willow Creek Road to Highway 139; northwest along Highway 139 to the Hayden Hill-Snag Hill Road; south and southwest along the Hayden Hill-Snag Hill Road to the Boyd Hill-Dixie Valley Road; southeast along the Boyd Hill-Dixie Valley Road to the Dixie Valley-Coyote Canyon Road; southeast along the Dixie Valley-Coyote Canyon Road to the State Game Refuge 1S boundary; southeast along the State Game Refuge 1S boundary to U.S. Forest Service Road 35N06; south and west along U.S. Forest Service Road 35N06 to U.S. Forest Service Road 22; west along U.S. Forest Service Road 22 to Highway 89 near the Hat Creek Ranger Station; north along Highway 89 to the point of beginning.

The Big Valley zone contains 1,145,627 acres of land, of which about 34 percent is public and 66 percent is private. Agricultural production is high. Alfalfa, grain, and irrigated crops are predominant and the potential to provide food for pronghorn antelope is artificially high, because much of the habitat has been altered by agricultural development. Pronghorn antelope numbers declined sharply in this zone as a result of the 1992-93 winter.

Zone 6: Surprise Valley (Figure 6): Those portions of Modoc and Lassen counties within a line beginning at the intersection of the crest of the Warner Mountains and the California-Oregon state line; east along the California-Oregon state line to the California-Nevada state line; south along the California-Nevada state line to the Tuledad-Clarks Valley Road; west and northwest along the Tuledad-Clarks Valley Road to the Clarks Valley-Long Valley Road; north on the Clarks Valley-Long Valley Road to the South Warner Road; east along the South Warner Road to the Summit Trail near Patterson Guard Station; north along the Summit Trail to the crest of the Warner Mountains at Pepperdine Camp; north along the crest of the Warner Mountains to the point of beginning.

The Surprise Valley zone contains 522,746 acres of land, of which about 85 percent is public and 15 percent is private. Livestock grazing and hay production are the primary uses of private land. Agricultural production is high with alfalfa, grain, and irrigated crops as the major farm operations. No significant changes to the environment are expected in the next several years.

Lassen Junior Pronghorn Antelope Hunt: The proposal expands hunt boundaries and extends the season to coincide with boundaries and general season dates for Zone 4 - Lassen (Figure 4). Because the proposal expands hunt boundaries beyond the Honey Lake Wildlife Area, it renames the hunt as the Lassen Junior Pronghorn Antelope Hunt.

Big Valley Junior Pronghorn Antelope Hunt: The proposal expands hunt boundaries and extends the season to coincide with boundaries and general season dates for Zone 5- Big Valley (Figure 5). It renames the Hunt as the Big Valley Junior Pronghorn Antelope Hunt.

Surprise Valley Junior Pronghorn Antelope Hunt: Boundaries and season dates coincide with those for Zone 6 - Surprise Valley (Figure 6). It is named Surprise Valley Junior Pronghorn Antelope Hunt.

Fund-Raising Hunt Area (figures 1-6): Those areas in northeastern California described as pronghorn antelope management zones 1-6 (as described in "Project Location").

The proposed project also provides for pronghorn antelope hunting under the PLM Program. During 2003, PLM hunts for pronghorn antelope occurred at the following ranches: Ratliff Ranch, Clarks Valley-Red Rock Ranch, 5 Dot Ranch (Horse Lake, Auila, and Willow Creek units), Mendiboure Ranch, Clouds Warner, Toms Creek, and Tejon Ranch (Figure 7). During 2004, the Department does not expect major changes to the PLM participants identified in Figure 7.

PROJECT OBJECTIVES

Objectives of the proposed project are to maintain a healthy pronghorn antelope population statewide and provide biologically appropriate public hunting opportunities. The Department desires to maintain a population of 5,600-7,000 animals in northeastern California, 300 animals within the Carrizo Plains area, and a minimum of 100 animals within the Tejon Ranch area.

Specifically, the Department is recommending that the Commission adopt hunting regulations related to pronghorn antelope that will provide for the following:

1. Allocating tags within the ranges identified in Table 1 for each of the six pronghorn antelope hunt zones in northeastern California (figures 1-6), the Big Valley, Lassen, and Surprise Valley Junior hunts (figures 4-6), and the fund raising hunt.

2. Establish pronghorn antelope hunting season dates as follows. For zones 1, 2, 5, and 6 in northeastern California, the general season shall consist of one period which shall open on the Saturday following the third Wednesday in August and extend for nine consecutive days. For zones 3 and 4, the general season shall consist of two periods, each extending for nine consecutive

days. Period 1 shall open on the Saturday following the third Wednesday in August, whereas period 2 shall open on the first Saturday in September. The season for archery-only tag holders in zones 1-6 shall open 14 days prior to the earliest general season period and extend for nine consecutive days. The junior pronghorn antelope season shall open on the Saturday following the third Wednesday in August and extend for nine consecutive days. Within the Honey Lake Wildlife Area, the Fleming and Dakin units shall only be open to junior hunters on Saturdays and Sundays during the season. The fund-raising hunt season shall open on the Saturday before the first Wednesday in August and continue for 51 consecutive days.

3. Provide a bag and possession limit of one pronghorn antelope per season for public hunts.

4. Establish methods of take for pronghorn antelope hunts. For archery-only pronghorn antelope license tags, only archery equipment as described in Section 354, Title 14, CCR may be used. For all other pronghorn antelope license tags, legal firearms and archery equipment, as described in sections 353 and 354, Title 14, CCR, may be used to take pronghorn antelope.

5. Establish a $7.00 nonrefundable application fee for all pronghorn antelope license tag applicants.

6. Establish a $99.75 pronghorn antelope license tag fee to be paid by successful applicants as required by sections 331 and 713 of the Fish and Game Code.

7. Establish procedures for distributing license tags by public drawing and fund-raising events. For the public drawing, applications must be received at the Department's License and Revenue Branch by 5:00 p.m. the first business day after June 1st. Successful applicants will be determined by random drawing within 10 days of the application deadline. Up to six tags will be sold as fund-raising tags pursuant to Section 331 of the Fish and Game Code.

8. Require both successful and unsuccessful tag holders to return pronghorn antelope tags to the Department within one week of the close of the season.

9. Define buck, doe, and either-sex pronghorn antelope for the purpose of the proposed regulation.

10. Provide up to 120 license tags statewide under the PLM Program. No more than 10 percent of the allowable harvest will be allotted to the PLM Program.

11. Establish other regulations and conditions pertaining to pronghorn antelope hunting as specified in sections 363 and 708, Title 14, CCR.

The Department's pronghorn antelope management strategies and population goals are based on the Northeastern California Pronghorn Antelope Management Plan (Department files, Sacramento, California). The primary objective of the Department's pronghorn antelope management program is to maintain a healthy, productive population.

Specific population goals have been determined by considering recent (since 1982) reproductive rates, herd composition ratios (fawns, bucks, and does), property damage problems (California Department of Fish and Game data and files, Wildlife Programs Branch, Redding and Sacramento, California), and trends in range condition and use as they determine availability and quality of forage and habitat. Population models were used to test population goals and develop harvest strategies for each zone and area (D.O. Smith, California Department of Fish and Game, Redding, California; D.R. Updike, California Department of Fish and Game, Sacramento, California). Harvest recommendations were based on estimated population size, distribution of pronghorn antelope in the project area, desired buck-to-doe ratio, hunting and non-hunting mortality, and the number of animals desired for translocation.

Hunting strategies are designed to achieve and maintain specific herd goals. The harvest strategy for northeastern California for 2004 is intended to allow the take of five to six percent of the population estimate based on the winter survey, and is intended to result in a post-hunt ratio of at least 24 bucks per 100 does. By cautiously working toward management goals, an annual assessment can be made regarding the overall effectiveness of managing pronghorn antelope in California. Desired buck-to-doe ratios in California are slightly higher than many other states. The most often prescribed buck-to-doe ratio goal for managing pronghorn in the western United States is 20 to 100, because it is considered a "biologically safe" post-harvest objective, leaving enough bucks to meet all breeding requirements (Salwasser 1980, Tsukamoto 1983).

The population models (ANTQUOTA and KILLVARY) used to predict effects of harvest strategies include non-hunting mortality factors. However, the Department would not recommend hunting in a given area if the population was not viable and healthy as determined by surveys. Any significant mortality factors occurring after the survey and prior to the proposed hunting season could be at least partially alleviated by the Commission with emergency action if necessary.

THE MANAGEMENT OF PRONGHORN ANTELOPE IN CALIFORNIA

Historical Perspective of Pronghorn Antelope Management

Pronghorn antelope are native to California and western North America. Accounts from journals and diaries of early explorers indicate that pronghorn antelope inhabited much of the grasslands, oak woodlands, and sagebrush-steppe vegetation communities in California. Figure 8 illustrates historic pronghorn antelope distribution in California.

The pronghorn antelope inhabiting northeastern California are believed to be of the subspecies *A. a. oregona* or *A. a. americana* (OGara 1978, Lee et al. 1994). Pronghorn antelope which historically inhabited the Central Valley were described as *A. a. americana* (Hall and Kelson 1959). Possibly two subspecies, Sonoran pronghorn antelope *(A. a. sonoriensis)* and Peninsular pronghorn antelope *{A.* a. *peninsularis),* inhabited southern California during pristine times (Stephens 1921, Arizona Game and Fish Department 1981).

Pronghorn antelope density in the San Joaquin Valley of central California was reported to be greater than in any area west of the Mississippi River (Hjersman 1958). Pronghorn antelope meat was the cheapest available in San Francisco prior to 1855, confirming the species abundance (Hjersman 1958). For a 20 year period following the 1848 discovery of gold, pronghorn antelope numbers statewide were drastically reduced due to market shooting, poaching, livestock competition, changes in land-use patterns, agriculture, and other disturbances brought by European settlers. In 1852, a law enacted by the California Legislature prohibited hunting pronghorn antelope for six months of the year (Chapter LXI, sections 1-4). However, with no enforcement, this law was ineffective. In 1883, pronghorn antelope, elk, and mountain sheep were afforded a further level of protection by the Legislature (Chapter XLIII, Section 626). But again, there was little enforcement.

By the early 1900s, pronghorn antelope numbers in California totaled only a few thousand. By 1923, there were less than 1,000 animals reported in seven areas of the State. By the mid 1940s, they were known to occur only in northeastern California, but their numbers had increased four-fold from levels reported in 1923. With the rapid recovery, complete protection of pronghorn antelope from hunting was repealed in 1941, thereby enabling limited hunting.

Figure 8
Historic and Present Distribution of Pronghorn Antelope

Current Management Activities (1942 through the Present)

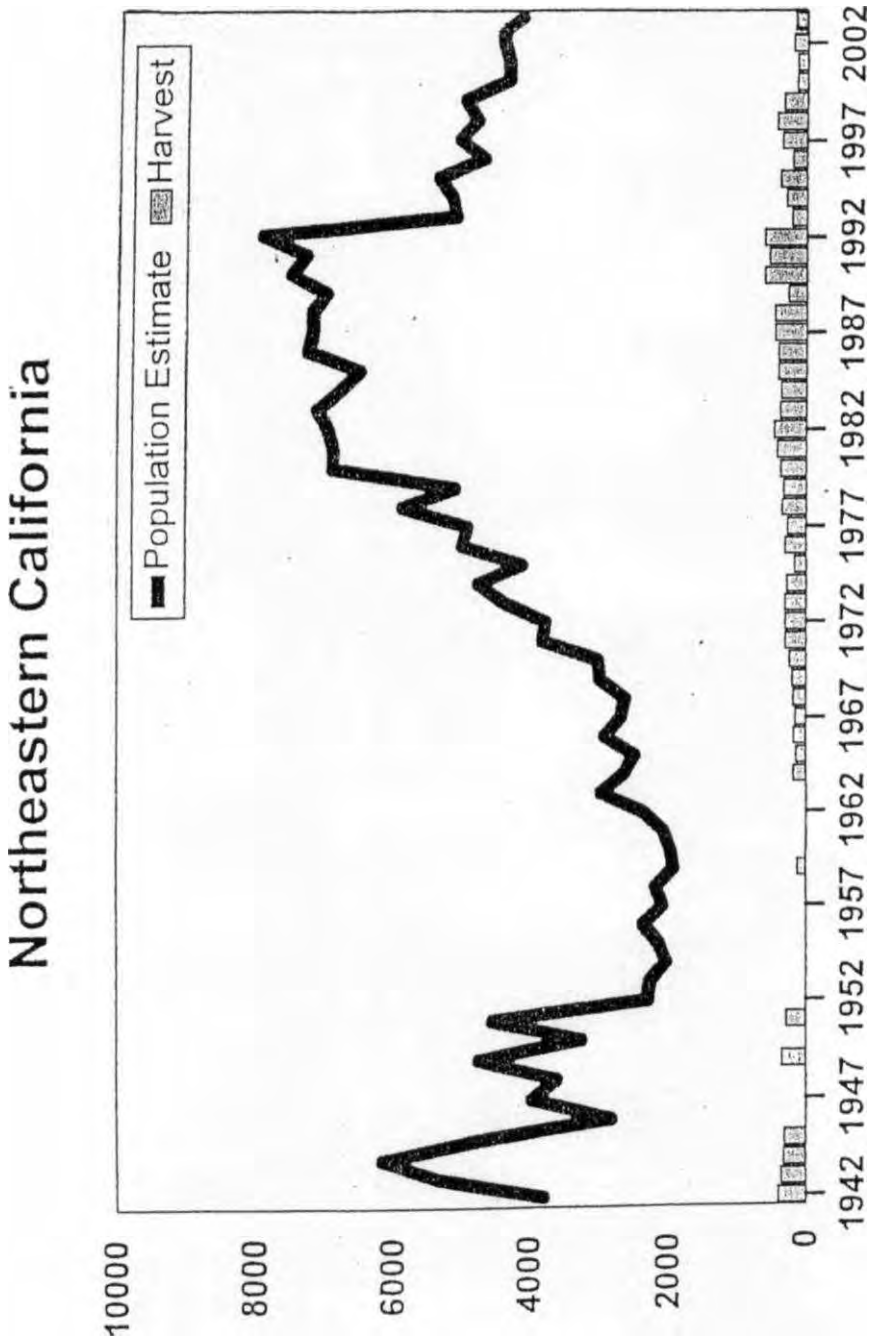
Pronghorn antelope hunts in northeastern California occurred sporadically from 1942-64 (Figure 9), and annually since 1964 (Table 3). Figure 9 shows the pronghorn antelope population trend in northeastern California from 1940-2003, based on annual surveys conducted by the Department. Population numbers declined to approximately 2,000 animals prior to 1960. After 1960, the statewide pronghorn antelope population gradually increased until 1992, when California supported more than 8,000 animals. Population numbers declined as a result of severe conditions in northeastern California during the 1992-93 winter. Although population numbers have not yet recovered to their 1992 levels, the current population is well above levels recorded during the 1950s.

Throughout the western states, pronghorn antelope numbers tend to steadily increase under favorable environmental conditions, with rapid declines under severe weather conditions (i.e., snow). Since the 1950s, the statewide population has more than doubled to approximately 5,500 animals (Department of Fish and Game, Sacramento, California).

Increased agricultural production (alfalfa and grain crops) and water development on public land have likely benefited pronghorn antelope in California by improving forage on private lands (Pyrah 1987). Conservation and law enforcement policies and increased attention toward pronghorn antelope management were possible factors that contributed to the population increase.

Translocation of pronghorn antelope to unoccupied historic range has been ongoing since the 1940s as funding was available and suitable sites were identified (Figure 8). In total, 1,092 pronghorn antelope have successfully been translocated to historic range since 1947 (Table 4). Pronghorn antelope have been reintroduced to seven areas of the State, including Colusa, San Luis Obispo, Mono, Kern, Los Angeles, Santa Clara, San Benito, and Monterey counties (Figure 8). Additional translocation projects are anticipated in the future, pending the availability of surplus animals. Translocation and hunting are the primary means of alleviating property damage problems, because California has no legal provision for issuing depredation permits to kill pronghorn antelope causing damage.

Figure 9
Northeastern California Pronghorn Antelope population numbers, 1942 to present. Population numbers are based on results of annual winter census using fixed-wing aircraft. Harvest numbers are based on tag returns.



Year	Total Harvest	General						Archery-Only	Fund-Raising Hunt	Big Valley Jr. Hunt	Lassen Jr. Hunt	Surprise Valley Jr. Hunt	Carrizo Hunt
		Mt. Dome	Clear Lake	Likely Tables	Lassen	Big Valley	Surprise Valley						
1964	183												
1965	141												
1966	179												
1967	156												
1968	189												
1969	204												
1970	241												
1971	303												
1972	301												
1973	305												
1974	284												
1975	170												
1976	306												
1977	271												
1978	352												
1979	329												
1980	390												
1981	450												
1982	497	99	71	167	74	51	18	17					
1983	448	48	69	155	94	40	26	16					
1984	439	72	65	192	18	51	14	17					
1985	415	60	82	95	110	32	11	21					
1986	505	33	148	131	103	49	18	23					
1987	552	65	158	141	104	53	12	19					
1988	538	78	98	160	109	46	8	29					
1989	303	9	65	148	23	16	24	18					
1990	717	72	70	240	246	49	40	27					
1991	753	76	74	229	244	61	38	31					
1992	1,167	107	114	353	402	107	41	35	8	8			
1993	195	17	19	55	57	14	13	6	4	5	5		
1994	270	25	24	83	84	23	11	10	4	1	5		
1995	371	34	36	125	119	23	10	13	4	3	4		
1996	188	17	18	58	57	8	8	5	2	5	5		5
1997	363	33	35	110	127	24	11	10	3	5	2		3
1998	297	20	19	114	104	12	12	9	3	0	2		2
1999	347	29	23	128	116	17	12	10	3	2	2		5
2000	156	4	11	57	56	9	10	3	1	1	2		2
2001	149	2	9	59	55	6	9	3	1	2	2		1
2002	205	5	10	81	81	5	10	8	2	1	2		
2003	191	5	11	76	73	6	10	4	2	2	2		

"Does not include PLM harvest (See Table 9 for PLM harvest).

Table 4. Pronghorn Antelope Translocation Projects
(modified from Pyshora 1988, Department of Fish and Game files)

Year	Number Trapped	Number Released	Release Site
1947	32	32	Mono County
1949-50	141	113	Mono County
1977	77	74	Mono County
1982	88	82	Mono and Lassen counties
1984	25	24	Mono County
1985	113	110	Mono and Kern counties
1987	125	120	San Luis Obispo and Kern counties
1988	269	261	San Luis Obispo and San Benito counties
1990	288	276	San Luis Obispo, San Benito, Santa Clara, Monterey, and Colusa counties.
TOTAL	1,158	1,092	

PRIVATE LANDS WILDLIFE HABITAT ENHANCEMENT AND MANAGEMENT AREA (PLM) PROGRAM

In addition to public pronghorn antelope hunting, the Commission authorizes pronghorn antelope hunting on PLM's. The PLM Program was authorized by the Legislature (sections 3400-3409, Fish and Game Code) to protect and improve wildlife habitat by encouraging private landowners to manage their property to benefit fish and wildlife. Economic incentives are provided to landowners through biologically sound yet flexible seasons for game species resulting in high-quality hunting opportunities which may be marketed by the landowner in the form of fee hunting or other forms of recreation. Section 601, Title 14, CCR, contains regulations adopted by the Commission and sections 3400-3409, Fish and Game Code, contain the statutes pertaining to the PLM Program.

The Program included 75 licensed properties during 2003, representing wildlife management and protection on about 850,000 acres of important privately owned wildlife habitat. In comparison, the Department owns and manages approximately 750,000 acres statewide. Thirteen licensed properties have participated in the PLM program and offered pronghorn antelope hunting opportunities during recent years

(Figure 7). In total, 12 pronghorn antelope tags were issued through the PLM program in 2003. The Department anticipates the addition of up to two new properties during 2004. Effects of the PLM harvest with regard to the proposed project are discussed in Chapter 4.

Landowners have always had the right to charge access fees for hunting, fishing, and other recreational activities on their property. The PLM Program allows the Commission to further authorize hunting season's specific to licensed PLM areas, pursuant to goals and objectives of the Northeastern California Pronghorn Antelope Management Plan and individual PLM management plans. In addition, hunters wishing to hunt a buck pronghorn antelope on a PLM area are not subject to the 10-year waiting period prescribed in Section 363, Title 14, CCR, after purchasing a buck pronghorn antelope license tag through the public hunting program. The total number of pronghorn antelope taken on PLM areas is set under conditions of each area license. However, individual hunters may obtain a tag for more than one PLM area.

Department staff evaluates habitat improvement proposals during the management plan review process prior to license approval. The Commission also reviews all management plans prior to final approval. Many of the larger improvements which have the potential for significant environmental modification, (e.g. controlled burns designed to benefit early successional stage species) are accomplished under State or Federal cost-sharing assistance programs. These programs often use environmental checklists to provide an environmental review for habitat improvement projects.

INTENDED USES OF THE ENVIRONMENTAL DOCUMENT

This environmental document has been prepared to assess potential impacts of hunting pronghorn antelope in California. The Department prepared the environmental document on behalf of the Commission in accordance with CEQA and the "CEQA Guidelines," consistent with the Commission's certified regulatory program (see Section 781.5, Title 14, CCR, Section 21080.5, Public Resources Code, and Section 15251 (b), CEQA Guidelines). The document is an informational item to aid the Commission in the decision-making process and to inform the public of potential effects of hunting pronghorn antelope. In this regard, the environmental document analyzes and describes the prospect of environmental impacts that might result from the Department's recommendation and alternatives to that proposal, including analysis of issues such as depredation, illegal kill habitat loss, the PLM Program, and other related environmental issues.

The Commission has approved public pronghorn antelope hunting in California annually since 1964, and, since 1990, has done so with the benefit of an environmental document prepared by the Department on its behalf, in accordance with CEQA. From a biological perspective, annual hunting is part of the existing conditions for the pronghorn

antelope population statewide. Against this backdrop, the Department is recommending, in particular, that the Commission adjust the tag quotas for some individual hunts in 2004, which will alter the total public tag quota compared to the level authorized in 2003. The Department is also recommending establishment of a new Junior Pronghorn Hunt (Surprise Valley), and modification of zones, season dates, and other conditions for existing junior Hunts. A more detailed discussion of the Department's recommendations for 2004 can be found in the Project Objectives section.

Finally, where appropriate, the environmental impact analysis that follows may refer to and incorporate by reference information contained in previous environmental documents. Any future recommendations to the Commission by the Department regarding pronghorn antelope hunting may also take the same approach. In addition, if substantial changes occur in the project itself, or if new information reveals new or substantially more severe environmental impacts than previously disclosed or analyzed, a subsequent environmental document or a supplement to a previously adopted environmental document will be prepared [see *Wildlife Alive v. Chickering* (1976) 18 Cal.3d 190; Section 21166, Public Resources Code].

THE FUNCTIONAL EQUIVALENT

CEQA requires public agencies in the State to evaluate environmental impacts of projects that they approve or carry out that may have a potential to significantly affect the environment. Most agencies satisfy this requirement by preparing an environmental impact report (EIR) or a mitigated negative declaration (ND). However, an alternative to the EIR/ND requirement has been created for State agencies whose activities include the protection of the environment within their regulatory programs. Under this alternative, State regulatory agencies may request certification of their regulatory programs from the Secretary for Resources, after which the agency may prepare a functionally equivalent environmental document in lieu of an EIR or ND (Section 21080.5, Public Resources Code; and Section 15251, CEQA Guidelines). The regulatory program of the Commission has been certified by the Secretary for Resources, and the Commission is eligible to submit this environmental document in lieu of an EIR or ND (Section 15252, CEQA Guidelines).

This environmental document contains a description and analysis of the proposed action, cumulative impacts, and alternatives to the proposed project. In addition, it contains a discussion of relevant policies of the Legislature and the Commission. These policies are contained in Section 781.5, Title 14, CCR. The environmental document presents information to allow a comparison of the potential environmental effects of various levels of hunting. Although an alternative may not achieve the proposed project's objectives, it is considered to provide the Commission and the public with additional information related to the options available. Both hunting and non-hunting alternatives are considered.

CHAPTER 3. ENVIRONMENTAL SETTING OF THE PROJECT

The Legislature formulates laws and policies regulating the management offish and wildlife in California. The general wildlife conservation policy of the State is to encourage the conservation and maintenance of wildlife resources under the jurisdiction and influence of the State (Section 1801, Fish and Game Code). The policy includes several objectives, as follows:

1. To provide for the beneficial use and enjoyment of wildlife by all citizens of the State;

2. To perpetuate all species of wildlife for their intrinsic and ecological values, as well as for their direct benefits to man;

3. To provide for aesthetic, educational, and non-appropriative uses of the various wildlife species;

4. To maintain diversified recreational uses of wildlife, including hunting, as proper uses of certain designated species of wildlife, subject to regulations consistent with the maintenance of healthy, viable wildlife resources, the public safety, and a quality outdoor experience;

5. To provide for economic contributions to the citizens of the State through the recognition that wildlife is a renewable resource of the land by which economic return can accrue to the citizens of the State, individually and collectively, through regulated management. Such management shall be consistent with the maintenance of healthy and thriving wildlife resources and the public ownership status of the wildlife resource;

6. To alleviate economic losses or public health and safety problems caused by wildlife; and

7. To maintain sufficient populations of all species of wildlife and the habitat necessary to achieve the above-stated objectives.

The Legislature has delegated authority to regulate the take and possession of wildlife to the Commission, whose members are appointed by the Governor. With respect to pronghorn antelope, the Legislature has established the State's policy regarding hunting in Section 331 of the Fish and Game Code (Appendix 1), which provides that the Commission may determine and fix areas, seasons and hours, bag and possession limits, and the number of pronghorn antelope that may be taken under rules and regulations of the Commission. Additionally, this section specifies that the Department shall authorize tags for the purpose of raising funds for programs and

projects to benefit pronghorn. These fund-raising tags are not subject to fee limitations presented in Section 331. A minimum of one tag and a maximum of one percent of the total pronghorn tag allocation may be designated as fund-raising tags.

The proposed hunt areas are located in northeastern and central California and consist of rural areas with small cities and towns (figures 1-6). The proposed hunt areas are within portions of Lassen, Modoc, Plumas, Shasta, Siskiyou, Kern, and Los Angeles counties; specific descriptions of these areas were provided in Chapter 2. The total size of the proposed project area is approximately 8,100,000 acres.

Cumulatively, land ownership within the proposed hunt areas is in a ratio about two to one public to private acreage, although this proportion varies within each zone (Chapter 2). Public land is administered primarily by the USFS and the BLM. Private land consists primarily of range and agricultural lands.

Pronghorn antelope habitat in northeastern California consists of Great Basin vegetation (Munz and Keck 1973, Barbour and Major 1977), with climate characterized by warm, dry summers and cold winters. These areas are often referred to as "cold deserts" because of the small amount of precipitation received and cold winters. Natural vegetation types inhabited by pronghorn antelope include sagebrush-scrub, sagebrush-grass, and pinyon-juniper communities. Agricultural habitats include annual pastures, and alfalfa and grain fields. Snow covers the ground for much of the winter, and pronghorn antelope migrate to areas with minimal accumulation during the fall.

The pronghorn antelope in central California primarily inhabit valley grasslands and surrounding arid scrub communities (mountain, mixed, and redshank chaparral; Joshua tree; alkali desert scrub) with hot dry summers and cool winters [Wildlife Habitat Relationships (WHR) System, Munz and Keck 1973, and Holland 1986]. Snow, water, and mud may persist during various seasons. As in northern California, the pronghorn antelope may move from areas with snow and water accumulation to areas with nutritious browse or green forage.

Livestock grazing, wildlife habitat, and recreation are primary land uses on public land throughout the proposed project area. About 75,000 acres of public land in the proposed project area are managed as State or Federal wildlife areas/refuges. Some pronghorn antelope inhabit these areas. On other private land in the project area, alfalfa and grain production are primary uses, with livestock grazing an important land-use practice as well. Irrigated crops (especially alfalfa) are very desirable to pronghorn antelope living in these communities, especially during summer for fawning cover and high-quality forage. Events such as drought, wildfires, and severe winters were natural components in the evolution of the State's pronghorn antelope in pristine times.

FACTORS AFFECTING PRONGHORN ANTELOPE HABITAT

Precipitation

California climate is Mediterranean, meaning that over the long term, the State receives the bulk of its precipitation during the cool fall and winter months; whereas warm spring and summer months are generally dry. In other words, California undergoes a "summer drought" each year. Extreme variation in precipitation occurs in the State on an annual basis (Table 5). For example, Northwest California receives a great deal of precipitation, while northeastern and southern parts of the State receive little precipitation. Additionally, topographic features, such as the Sierra Nevada range, influence climate by creating a rain shadow whereby most of the precipitation falls on the west side of the range, extrcting most of the moisture from clouds by the time they reach the east side of the range. The amount of precipitation falling on California is extremely variable on a geographic basis within a year and extremely variable in any one area among years.

Droughts are cyclic over the long term, and California's wildlife species and their habitats have evolved under conditions of periodic drought (Bakker 1972, Munz and Keck 1973, Oruduff 1974, Burcham 1975, Barbour and Majors 1977). According to data available since the late 1800s, California has been in several drought cycles lasting two to five years (Department of Water Resources data, Sacramento, California). Because of this natural variation in available water, vegetation communities have evolved and adapted to deal with the associated changes in soil moisture (Barbour and Majors 1977).

Precipitation and snowfall during the winter of 1992-93 broke the seven-year statewide drought (Department of Water Resources 1993). Northeastern California received near normal precipitation in 1989 and record snowfalls in 1993, whereas southern California received above average rainfall from 1991-93 and in 1995 (Department of Fish and Game files, Sacramento, California). Hence, pronghorn antelope may have been temporarily affected by drought during a portion of the most recent drought episode. However, the climatic conditions in recent years in the project area do not deviate from the normal historical occurrence of periods of drought and extreme precipitation/snowfall under which pronghorn antelope likely evolved (Department of Water Resources, Sacramento, California; Owenby and Ezzell 1992).

Table 5. California Statewide Precipitation - Percent of Normal[a]

Year	Percent	Year	Percent
1967	130	1986	132
1968	75	1987	63
1969	150	1988	80
1970	100	1989	80
1971	105	1990	70
1972	65	1991	76
1973	115	1992	86
1974	130	1993	141
1975	100	1994	65
1976	65	1995	165
1977	45	1996	125
1978	155	1997	174
1979	90	1998	175
1980	135	1999	95
1981	75	2000	98
1982	150	2001	74
1983	190	2002	79
1984	105	2003	111
1985	83		

a = Percentages are for water year ending September 30. For example, water year 1998 is from October 1, 1997 through September 30, 1998. Normal is based on a 50-year average between 1931 and 1981.

Vegetation communities in the project area are drought tolerant. However, this is not to say that prolonged drought will not affect plant species. Growth and vigor of forage species that pronghorn antelope rely on may be severely reduced during a drought, because annual plant seeds may not germinate without adequate moisture, and shrubs could have reduced growth as a water conserving strategy. Consequently, the quantity and quality of forage for herbivores would be reduced. Drought may also weaken plant resistance to disease, fungus, and insect damage. This would be considered part of a natural drought cycle.

In annual grassland vegetation communities (this applies to many areas of the Great Basin and valley grassland), the lack of fall germinating rains or minimal spring rains can preclude germination of annual seeds of forbs and grasses, which are important sources of forage, primarily during the fall, winter, and spring. Seeds of these species would continue to lie dormant in the soil until germinating conditions became suitable. The reduced quantity of vegetative cover due to prolonged drought in some areas could affect thermal and hiding cover important to pronghorn antelope.

Habitats in the project area are, to a large extent, managed and affected by humans. As related to drought and water availability, human management of pronghorn habitat has produced stability in water availability due in part to the development of various water sources, including wells, guzzlers and stock tanks, irrigation, reservoirs, and fire management. Currently, water is more available to pronghorn antelope, regardless of drought, than it would have been prior to settlement in the 1800s. There are no documented cases of pronghorn antelope being unable to obtain water due to drought.

Wildfire

Wildfire in California is extremely variable (Table 6). One aspect of prolonged drought that would affect pronghorn antelope habitat is an increased risk of wildfire due to extremely dry conditions. Prolonged drought affects the woody plant community, in terms of increased plant mortality and decreased moisture content, and may make them more susceptible to wildfire and succession by exotic annual grasses. Wildfires in these arid shrub communities generally convert shrubland to grassland (Pickford 1932). Wildfires may occur during summer months because of lightning strikes. Kindschy et al. (1982) indicated that wildfire can benefit pronghorn antelope by stimulating growth of desirable herbaceous vegetation. However, fires of an extensive size can result in less than desirable shrub cover and invasive growth of exotic annual grasses for several years (Pyrah 1987). Additionally, the reduction of tall shrub vegetation may create a more suitable environment by reducing thick cover, especially dense, decadent woody shrubs. Hence, wildfires can benefit pronghorn antelope by reducing thick shrub cover and stimulating growth of desired forage species. However, wildfires can be detrimental if large areas are burned and shrub cover is eliminated.

Wildfires have always been a natural phenomenon in California wildlife habitats. Consequently, the plant and animal communities are well adapted to the occurrence of fire, and many species far better in months and years following a burn (Shaw 1985, Peek 1986). Many plant species require fire to reproduce. As soon as the habitat regenerates after a fire, rabbits and squirrels will reoccupy it. These animals are some of the first to re-inhabit areas burned by wildlife.

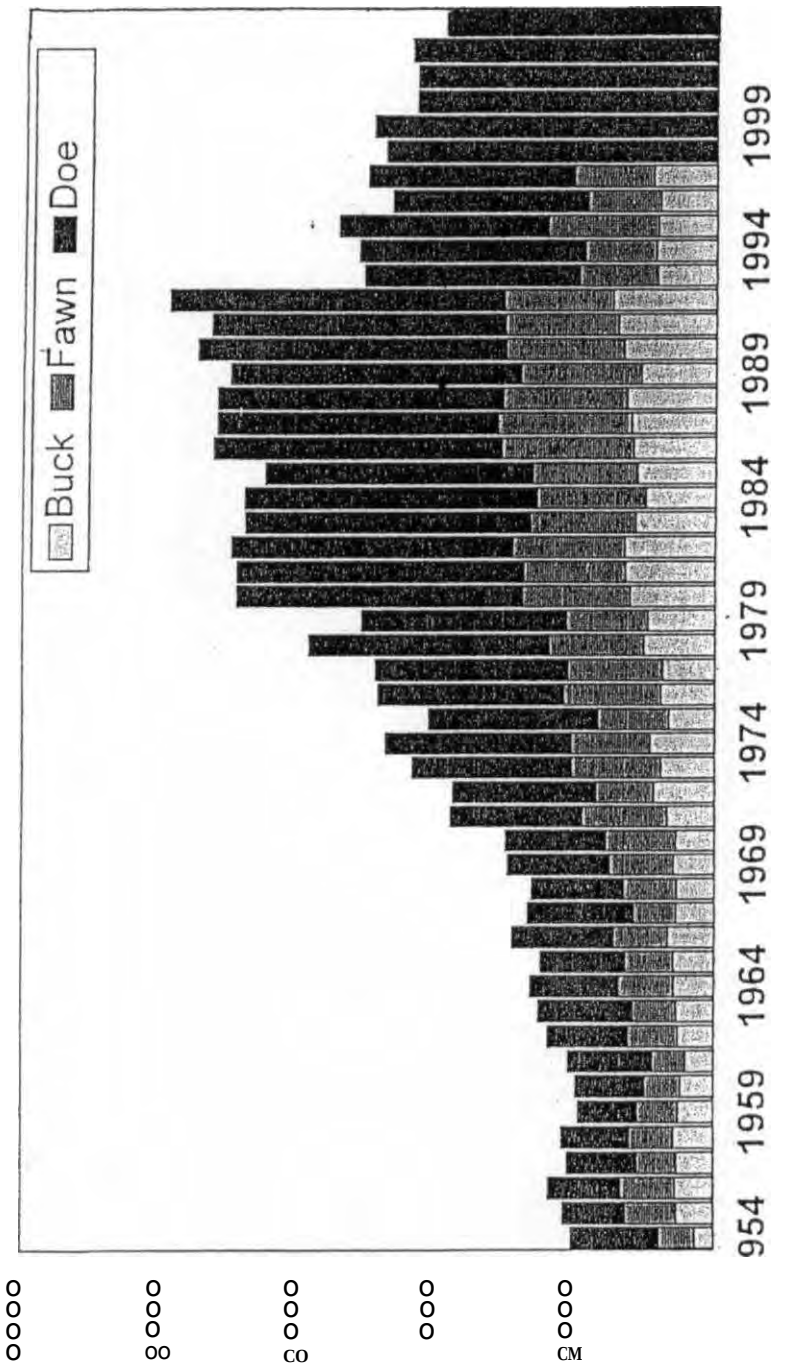
Even though certain individuals of a species may be killed on a local level, there is no evidence to indicate that fire has negative, long-term effects on resident small mammal populations (Johnsgard 1973). Although California experienced an unusually

Table 6. Acres of Wildfire in California - 1980 through 2003

Fire Season	Acres Burned
1982	160,000
1983	128,000
1984	251,000
1985	595,000
1986	119,000
1987	873,000
1988	345,000
1989	173,400
1990	365,200
1991	44,200
1992	282,745
1993	309,779
1994	526,219
1995	209, 815
1996	752,372
1997	283,885
1998	215,412
1999	499,425
2000	295,026
2001	372,506
2002	510,356
2003	*736,146

* Preliminary data.

Figure 10
Northeastern California Pronghorn Antelope Populations and
Estimated Herd Composition from Annual Surveys 1954 -Present



elevated fire season in 2003, the estimate of 736,146 acres accounts for less than one percent of California's acreage. The five-year average for 1998-02 is 378,545 acres burned (California Department of Forestry data).

Severe Winters

Severe winters and late winter snows can result in the death of pronghorn antelope. Pronghorn antelope may move to winter ranges earlier and stay longer during severe winters. Deep winter snows in 1951-52 and 1992-93 apparently adversely impacted pronghorn antelope survival in northeastern California. However, Pronghorn antelope can rapidly recover after such natural disasters (figures 9 and 10).

Subsequent to the severe winter of 1951-52, mild winters coincided with increasing pronghorn antelope numbers until record numbers were counted during 1992 (Figure 9). Pronghorn population levels are expected to increase again under favorable conditions.

The 1992-93 storms brought record snowfall to portions of the project area. Fortunately, many areas which comprise pronghorn antelope winter range were not severely impacted. The winter and summer surveys help the Department determine the severity of the winter kill. The proposed project considers the potential of other non-hunting mortality factors, including a winter kill factor in the ANTQUOTA and KILLVARY models which provide the proposed tag allocation.

Threatened and Endangered Species

The Commission has listed a number of plant and animals species as endangered or threatened. These species are listed in sections 670.2 and 670.5, Title 14, CCR. The California Natural Diversity Database (CNDDB), Rarefind, and the WHR guides were consulted to identify threatened and endangered plants and animals in or adjacent to the project area. Table 7 lists the Federal/State endangered, threatened, or fully protected plant and animal species in the project area. Negative impacts are not expected from the proposed project, because these plants and animals are dispersed or occur marginally, if at all, within pronghorn antelope habitat (CNDDB point locations). It is improbable that pronghorn antelope hunters would have a significant impact on these plant and animal populations (Table 7) because of the limited number of hunters and the short season length. Comparatively, livestock and urban and agricultural development may have a greater impact on some of these populations than either pronghorn antelope or hunters. Historically, there is no evidence that pronghorn antelope hunting will significantly affect these listed species.

Table 7. Federal/State Endangered, Threatened, or Fully Protected Plant and Animal Species in the Project Area

SE = State Endangered **FE = Federal Endangered**
ST = State Threatened **FT = Federal Threatened**

Common Name (Species Name)	**Status**	**/Habitat /Season in Project Area /Identified Threats**
Ashland Thistle *(Cirsium ciliolatum)*	SE	/Found in Cismontane Woodlands; produces from buried rhizome /Not in pronghorn habitat /Livestock grazing and agriculture.
Boggs Lake Hedge-Hyssop *(Gratiola heterosepala)*	SE	/Occurs in vernal pools and at Lake Margins /Present in project area primarily within protected sites /Agriculture, livestock grazing, and urban development.
Slender Orcutt Grass *(Orcuttia tenuis)*	SE, FT	/Occurs in bottom of vernal pools /Within project area but not in areas occupied by hunted pronghorn antelope /Agriculture, development, and "pool hydrology."
Yreka Phlox *(Phlox hirsuta)*	SE, FE	/Occurs in lower Montane Conifer Forest /Occurs beyond the periphery of the project area/Urban development and logging.
Bank Swallow *(Riparia riparia)*	ST	/Inhabits areas near rivers with sandy vertical banks /Seasonal migrant that leaves area generally before hunt season /Modification of river and streams system, especially by altering bank.
Bald Eagle *(Haliaeetus leocephalus)*	SE FE	/Inhabits Wetland and Forest habitats; nests in Mountainous Habitat /Seasonal migrant and resident, generally not present during time of proposed project/Development, agriculture, pesticides, timber harvest, nest disturbance, and shooting; laws provide that shooting is illegal.
Swainson's Hawk *(Buteo swainsoni)*	ST	/Inhabits Valley and Foothill Grasslands /Seasonal migrant, nests in project area and generally leaves before hunt season /Loss of habitat due to residential, commercial, and agricultural development and potentially poisoning of prey.
Greater Sandhill Crane *(Grus canadensis tabida)*	ST	/Inhabits Inland Wetlands; nests in Wet Meadows and Marshes /Seasonal migrants /Habitat destruction, disturbance, and predation and accidental take on breeding grounds.
American Peregrine Falcon *(Falco peregrinus anatum)*	SE	/Inhabits many habitats, especially over water; nests on cliff faces /Seasonal presence /Poisoning, egg collection, and nest disturbance/Federally de-listed in 1999.
Great Gray Owl *(Strix nebulosa)*	SE	/Inhabits Upper Montane Coniferous Forests /Within project area, but located at a higher elevation and utilizes a different habitat than pronghorn antelope /Habitat loss due to logging and lower prey density due to livestock grazing.

Table 7. Cont. Federal/State Endangered, Threatened, or Fully Protected Plant and Animal Species in the Project Area

SE = State Endangered **FE = Federal Endangered**

ST = State Threatened **FT = Federal Threatened**

Common Name (Species Name)	**Status**	**/Habitat /Season in Project Area /Identified Threats**
Willow Flycatcher *(Empidonax traillii)*	SE FE	/Inhabits extensive willow thickets (Riparian Scrub) /Seasonal migrant, inhabits periphery of project area during spring and summer for nesting /Loss of riparian habitat, livestock grazing, and nest parasitism by exotic birds.
Modoc Sucker *(Catostomus microps)*	SE FE	/Inhabits Pit River Drainage and tributary streams in Modoc Plateau /Present all year, utilizes a different habitat than would be impacted by proposed project; marginal use of project area /Endangered /Drought, predators, cattle grazing.
Shasta Crayfish *(Pacifastacus fortis)*	FT SE	/Inhabits Hat Creek, Fall River, Pit River Drainage /Present all year, utilizes different habitat than proposed project /Competition with other crayfish species.
Rough Sculpin *(Cottus asperhmus)*	ST	/Inhabits the Pit River Drainage (below Burney Falls), including Hat River and Fall River /All year, but different habitat use than project area /Cattle grazing causing siltation and bank erosion.
Lost River Sucker *(Diltistes luxatus)*	SE FE	/Klamath Drainage, and lakes and streams; spring spawn /Present all year, but utilizes different habitat than proposed project /Loss of spawning habitat, diversions, predation, and hybridization are threats to species.
Shortnose Sucker *(Chasmistes brevirostris)*	SE FE	/Inhabits the Klamath Drainage, lakes, and rivers /All year, spawn in streams in April and May; use a different habitat than proposed project /Water diversion and hybridization.
Sierra Nevada Red Fox *(Vulpes vulpes Necator)*	ST	/Northern California cascades east to northern Sierra Nevada and south along the Sierra Nevada to Tulare County/All year, generally at 5,000-7,000 foot elevation/Threats unknown.
California Condor *(Gymnogyps califomianus)*	SE FE	/Inhabits Chaparral, and Foothill and Valley Grasslands /Extant at this time; once present all year /Predation, poisoning, and development; current regulation does not allow the game entrails to be discarded or the non-target species to be shot; poisoning should not be a factor.
Tehachapi Slender Salamander *(Batrochoseps stebbinsi)*	ST	/Cismontane Woodland and Riparian /Inhabits periphery of project area all year, and not in area occupied by hunted pronghorn antelope /Loss of habitat.
Longhorn Fairy Shrimp *(Branchinecta longiantenna)*	FE	/Alkali Lakebed /present but aestivating/ land and water changes/

(Sources: California Department of Fish and Game, 2001; Zeiner, Laudenslayer, Mayer, and White1990; Tiber, 2001.)

Many species listed in Table 7 are seasonally active in portions of the project area before or after the proposed hunt season and would not be encountered by hunters (e.g., bald eagle, bank swallow, willow flycatcher, sandhill crane, Swainson's hawk, longhorn fairy shrimp, and peregrine falcon). Others have very restricted habitat requirements and are not expected to come in contact with either hunters or pronghorn antelope (e.g., Modoc sucker, shortnose sucker, Shasta crayfish, rough sculpin, slender salamander, great gray owl, Yreka phlox, slender Orcutt grass, Ashland thistle, and Boggs Lake hyssop). Although some species in Table 7 may be widely distributed throughout portions of the project area (e.g., bank swallow, Swainson's hawk), hunting is merely one of many recreational activities that is permitted to occur. To date, there are no documented instances of pronghorn antelope hunters adversely affecting these species.

The Department's analysis concludes that these listed species should not be affected by the proposed project. The proposed project occurs several months after the reproductive period for threatened and endangered species. Impacts on carrion eaters will be insignificant because of the low number of pronghorn antelope (relative to the total population and other food sources) available as a result of the project. Other food sources of carrion (e.g., livestock, lagomorphs, and rodents) will be more abundant due to agricultural development and water projects on these ranges.

The Pacific Coast snowy plover (federally listed) which occurs outside of the project area and the western snowy plover which occurs in the project area are recognized as separate populations of *Charadrius alexandrinus nivosus.* The western snowy plover is not a federally or State-listed species.

The western yellow-billed cuckoo *(Coccyzus americanus occidentalis),* California bighorn sheep (Ow's *canadensis californiana),* California wolverine *(Gulo gulo luteus),* tricolored blackbird *{Agelaius tricolor),* Shasta salamander *(Hydromantes shastae),* idewater goby *(Eucyclogobius newberryi),* and Tuctoria greenei *(Greene's tuctoria)* were listed as extirpated or occur outside the proposed project area. The Department's analysis concludes that these species will not experience adverse effects from the proposed project.

The Sierra Nevada red fox *(Vulpes vulpes necator)* and northern spotted owl *(Strix occidentalis caurina)* may occur in northeastern California within the proposed project area. However, it is unlikely that either of these species will be adversely affected by the proposed project.

CHAPTER 4. THE ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

Direct effects of the proposed project will be the death of individual pronghorn antelope and the presence of hunters distributed within the approximately 8,100,000 -acre project area during portions of a 51 day period beginning in early August. Hunters will not be in the field simultaneously, but will be distributed according to the specified hunt areas and seasons. Only pronghorn antelope in designated hunt areas in California will be affected by the proposed project. The proposed project will bring an influx of hunters into the project area and temporarily increase fuel consumption, dust from dirt roads, public services, and human use of the land.

The Department does not foresee significant adverse impacts resulting from the proposed project, based on the past history of pronghorn antelope hunting (Chapter 2), which has occurred annually since 1964. However, the Department has analyzed the anticipated environmental effects of the proposed project, which is contained herein. Significant adverse effects on the environment have not been identified as a result of the pronghorn antelope hunting that has historically occurred in California. Similar to an initial study (Section 15063, CEQA Guidelines), the hunting that occurred in past years provides a benchmark forjudging whether significant effects will occur. There is no substantial evidence that the project will have significant adverse effects on the environment.

METHODOLOGY

Natural Factors Influencing Pronghorn Antelope

The proposed removal of individual animals from the hunt area is expected to slightly (and only temporarily) reduce population size to help achieve/maintain herd goals. Pronghorn antelope population numbers are above the level that existed when annual hunting began in 1964 (see figures 9 and 10). The proposed hunt is designed to be a management component (along with other mortality factors and translocation) in achieving/maintaining population numbers within objective levels (Chapter 2). This will help assure that the population remains healthy and within limits supportable by the native range.

Data collected since the inception of pronghorn antelope hunting in 1942 suggest that hunting has not had an adverse effect on the pronghorn antelope population (figures 9 and 10). Regulated hunting may have slowed the rate of population increase overtime and helped avoid periodic, localized overpopulation of pronghorn antelope. Population survey data collected on pronghorn antelope are among the highest quality available for large mammal populations, because the species inhabits open range, enabling more accurate and complete herd composition counts (Allen and Samuelson 1987). An annual winter survey involves counting all pronghorn antelope within known wintering areas in the project areas. This can be expected to

result in a minimum population estimate, because some animals are missed. Until 1998, a annual summer herd composition survey was conducted to assess buck, doe, and fawn ratios and trends. After 1998, The Department has conducted summer composition surveys on a periodic basis (most recently in 2002). Data from winter and summer surveys have made it possible to accurately follow changes in pronghorn antelope numbers and to monitor the impacts of hunting and translocations.

THE IMPACT OF HUNTING ON THE PRONGHORN ANTELOPE POPULATION

Additive and Compensatory Mortality

"If hunting is a compensatory form of mortality then populations may be presumed to fluctuate in response to other factors and stocks are little affected by exploitation. However, if hunting is additive to other forms of mortality then it serves as a population depressant" (Peek 1986:286). "Compensatory mortality" describes hunting as only removing excess animals that would die of other mortality factors (e.g., severe winters) and thus compensates for these factors. "Additive mortality" describes hunting as killing animals in addition to the number that normally die of these other mortality factors.

Data indicate that removal of pronghorn antelope from a population, whether by natural- or human-caused factors, results in high fawn production in following years to compensate for animals removed, provided the level of hunting is below the potential to replace (Hess 1986, California Department of Fish and Game translocation and census data 1987-88, 1990-92). The mean age of the population can be expected to become younger as animals are removed from the population through hunting. With fewer adults in the population, proportionately more fawns are born and survive (e.g., Autenreith 1983).

Data from northeastern California for 1990 provide an excellent example of a compensatory population response to removal of individuals (by hunting and translocation). During 1990 approximately 1,000 pronghorn antelope were removed from northeastern California (288 animals were translocated to central California and 717 were killed by hunters), yet survey results (figures 9 and 10) indicate the population was reduced by only 200 animals the following January. It is acknowledged that many pronghorn antelope may not have been counted during the winter survey because of various factors, such as inclement weather (D. Thayer, Alturas, California, unpublished data). However, it is clear that this attempt to reduce population size using hunting and translocation had little effect on the population. Removal of approximately 1,000 pronghorn antelope during 1990 was compensated for by a population increase of approximately 800 pronghorn antelope during 1991 (figures 9 and 10). Examination of harvest, translocation, and population data suggests regulated hunting has not depressed the population consistent with the concept of additive mortality. No significant adverse impacts to the population are expected with the proposed level of hunting (e.g., Tsukamoto 1983, Pyrah 1987).

The ability of pronghorn antelope populations to remain stable or continue to increase under hunting pressure is an indication of their potential productivity when the population is kept below range carrying capacity (Figure 9). University of California researchers Salwasser and Shimamoto (1979) used a computer simulation approach to model effects of management strategies for pronghorn antelope populations in northeastern California and concluded that the population could stabilize at approximately 6,000 animals (based on the 1979 estimate of 5,872 animals) by harvesting 500 bucks and 290 does annually. Historically, the Department's harvest recommendation has involved harvesting both bucks and does to stabilize the population at a level that would not exceed range carrying capacity. It is anticipated that the proposed harvest will result in stabilization or a slight increase in population size measured in 2005. The proposed project should maintain herds at or near objectives described in the Northeastern California Pronghorn Antelope Management Plan and PLM plans (Department files, Sacramento, California).

Sex and Age Structure

Most western states establish objective ratios for sex composition of pronghorn antelope populations. The standard ratio is 20 bucks per 100 does in the presence of hunting to ensure that there are sufficient bucks to meet all the breeding requirements (Salwasser 1980, Tsukamoto 1983). It is expected that a post-hunt sex ratio for California of 24 bucks per 100 does, retains additional bucks for breeding, improves hunting and viewing opportunity, and ensures that age structure diversity is maintained. Historically, annual variation in observed sex ratios exists (Figure 11), but on a long term basis, observed sex ratios for California are well above the standard ratio of 20 bucks per 100 does that is established for most western states.

Average age of the pronghorn antelope harvest in California is summarized in Figure 12. The take of pronghorn antelope through hunting is likely to occur across the entire range of adult age classes. Existing data indicate that no one age class is preferred by hunters over another (California Department of Fish and Game check station data, Alturas office of California Department of Fish and Game). Logically then, even as older animals die, the age structure of the population will be stable. Production and survival of young animals within each herd will replace the animals removed by hunting, resulting in a population that does not fluctuate wildly as would normally occur from the influence of predators and variable weather. Research has shown density-dependent characteristics for summer fawn survival (Salwasser 1980, Hess 1986). For example, when pronghorn antelope populations are at or near range carrying capacity, the number of fawns produced decreases proportionately. This has occurred in

Figure 11
Fawn-to-Doe and Buck-to-Doe Ratios in Northeastern California (1953 to 1997)
(Optimal fawn ratio is 60:100 does, desired buck ratio is 24:100 does)

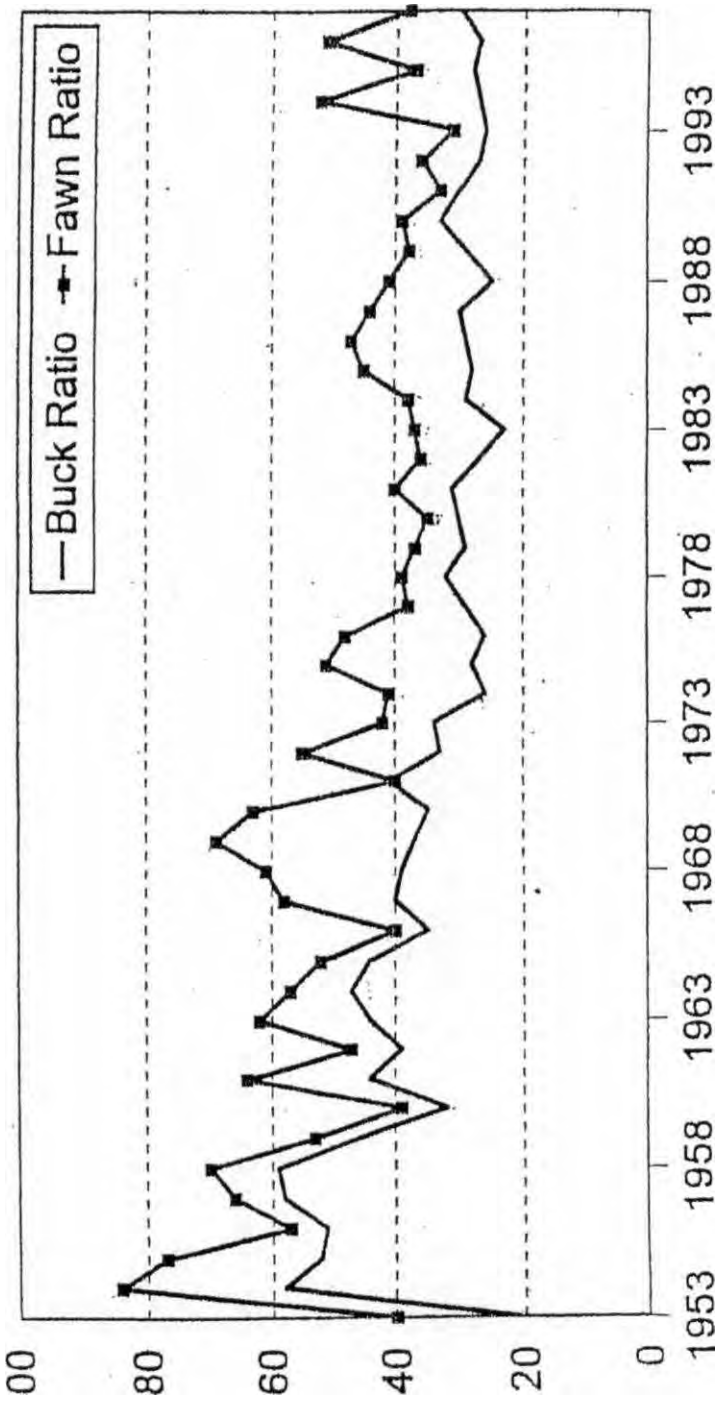
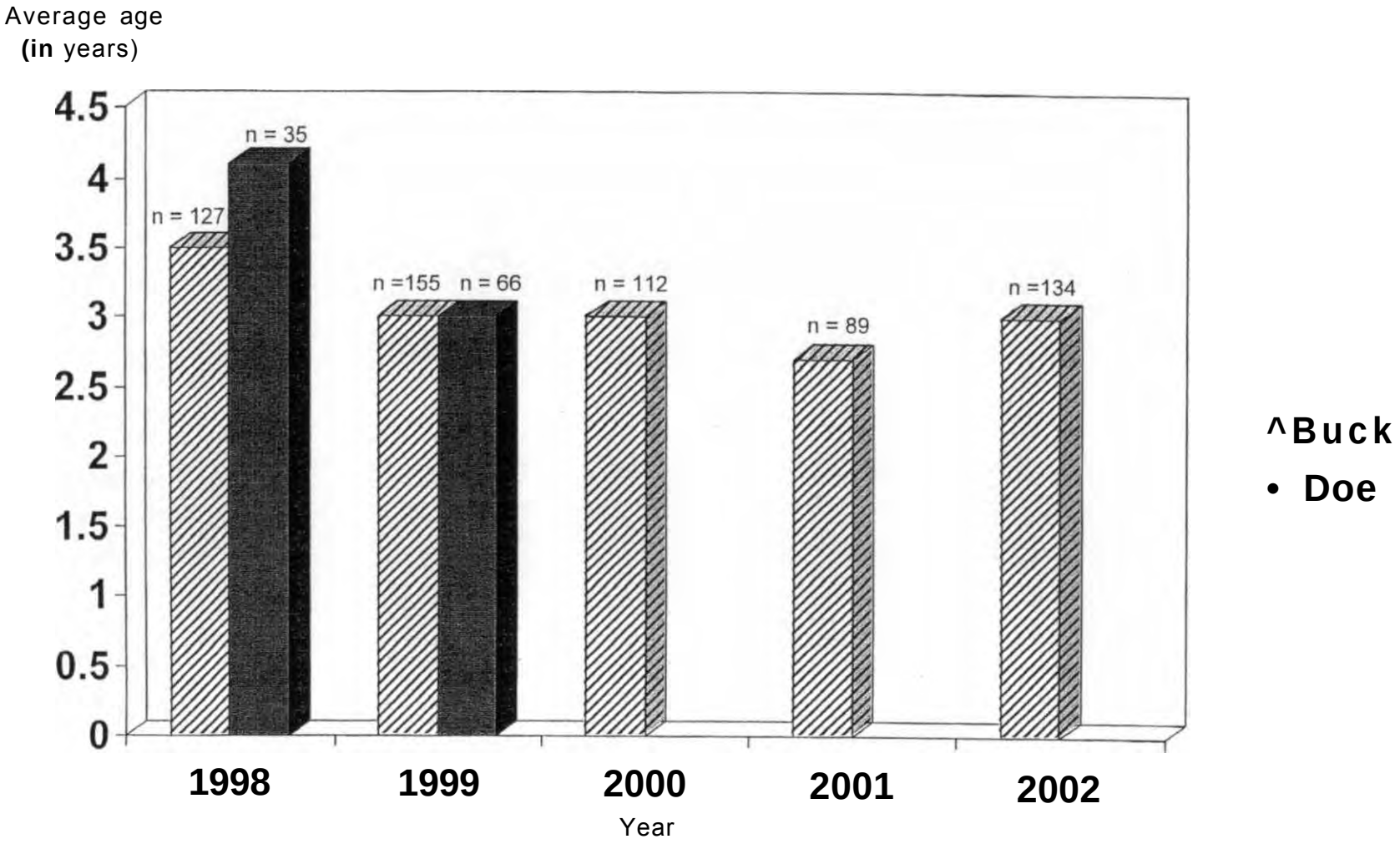
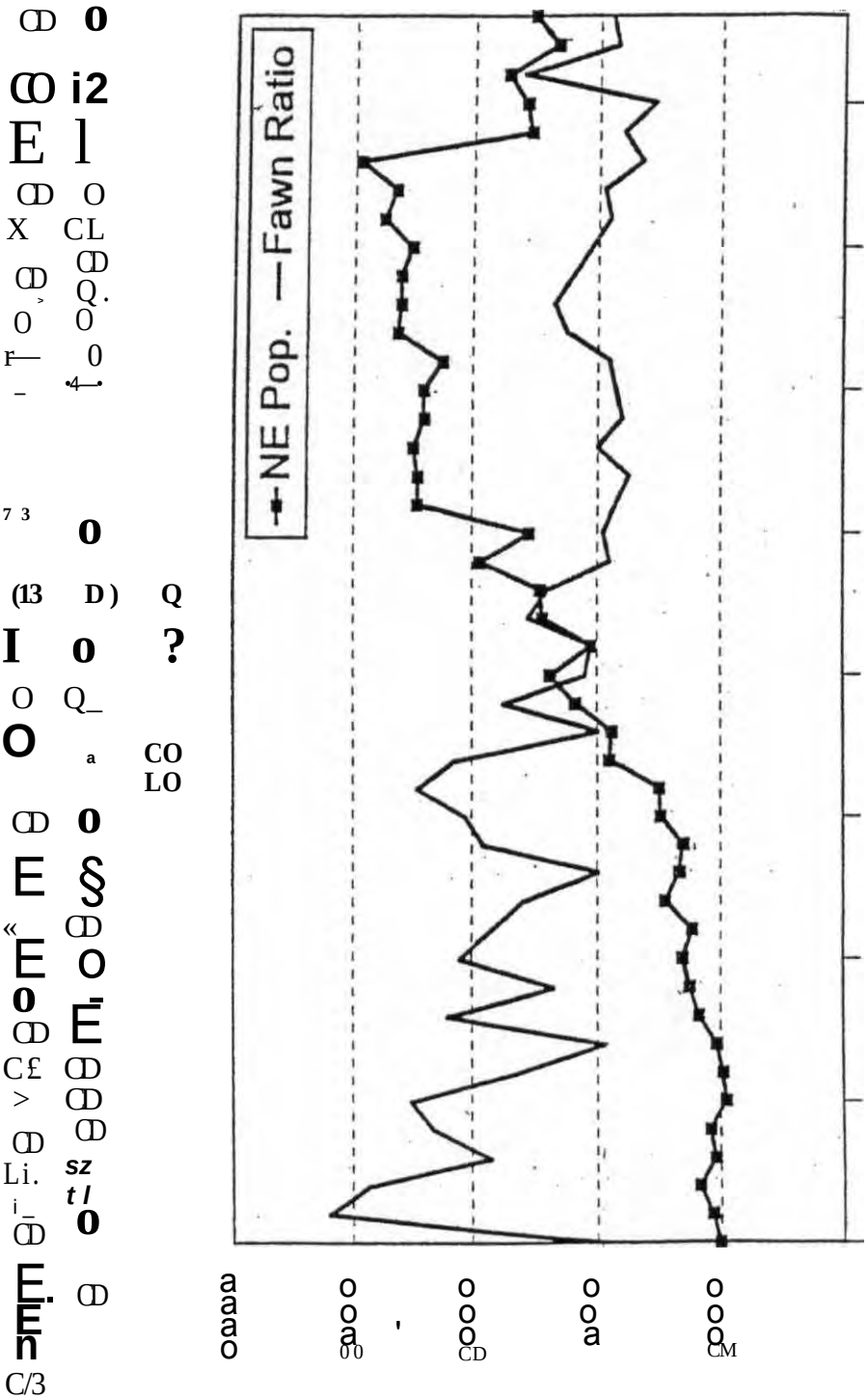


Figure 12. Average Age of Pronghorn Antelope Taken by Hunters in California Based on Analyses of Cementum Annuli.



n = Sample size of individual sexes
Note: No doe hunts authorized after 2000.

Figure 13
Summer Fawn Recruitment Correlated With Total Herd Size
in Northeastern California 1953 - 1997



northeastern California, as fawn production has generally been declining since the 1950s (Figure 13). When adult mortality is high, fawn survival has been shown to proportionately increase in the following year(s). Adult mortality was simulated by the removal of adult pronghorn antelope for translocation purposes in 1987, 1988 and 1990 (Table 4). Significant adult mortality actually occurred during the winter of 1992-93, and fawn recruitment subsequently increased (figures 11 and 13) (California Department of Fish and Game data at Wildlife Programs Branch, Sacramento; Hess 1986).

Agricultural development has decreased pronghorn antelope dependency on native range. Plant productivity and resultant animal carrying capacity can vary significantly from one year to the next on native range as a result of climatic conditions. Hunting pronghorn antelope in California is expected to temporarily reduce the statewide population by five to six percent (based on the proposed tag range in Table 1), which will have little influence on the statewide population (figures 9 and 10). In the past, California has harvested a small percentage of the estimated population annually (Table 8). Most western states harvest 10-25 percent of their entire population annually with no significant adverse effects (Table 8) (see published proceedings of the Biennial Pronghorn Antelope Workshop, Department of Fish and Game, Wildlife and Inland Fisheries Division, Sacramento, California). Since the turn of the century, pronghorn antelope have made a remarkable recovery in the western United States, in the presence of regulated hunting (Yoakum 1968).

From 1990-1992, the Department significantly increased the pronghorn antelope tag quota for northeastern California in an effort to reduce the pronghorn population from over 7,500 to within a range of 5,600-7,000. The population reduction was needed to reduce private property damage (there are no provisions for issuing depredation permits to take pronghorn antelope); and to avoid overpopulation resulting from mild weather conditions and artificially enhanced habitats (i.e. agricultural fields). Despite tag quotas that were more than twice the quotas of previous years (Table 3), the northeastern pronghorn antelope population did not decline until the 1992-1993 winter, when numbers declined significantly as a result of severe winter weather. Under favorable conditions, numbers are expected to again approach the desired range.

Natural Mortality

Some pronghorn antelope killed during the hunting season may have died within the year due to other factors. Therefore, to some extent, natural mortality should decline as hunting mortality increases. In an unhunted state, pronghorn antelope mortality is high for fawns and those over five years of age (Salwasser and Shimamoto 1979). Natural mortality of animals two to five years of age generally is low. Hunting does not significantly affect fawn mortality because fawns usually are not hunted. Hunting can cause slightly higher mortality in age classes above two years. The proposed project is not likely to affect the natural survival of the population as a whole, and the influence of hunting on natural mortality is not expected to be significant.

Table 8. Average Annual Pronghorn Antelope Harvest, 1983-88 for Western States

State	Percent Harvest
California	7.6
Colorado	15.0
Nevada	4.9
North Dakota	18.0
Oregon	12.1
South Dakota	23.0
Texas	2.8
Utah	11.0
Wyoming	25.0

** Harvest is expressed as a percentage of total state population. Low values for Nevada are due to the low human population applying for hunts, and values are low for Texas because the state is 98 percent private land and hunting is limited (data summarized from proceedings of the Biennial Pronghorn Antelope Workshop, on file at the Department of Fish and Game, Sacramento, California).*

Individual Pronghorn Antelope Zones

The proposed project provides buck and doe tag allocation ranges (Table 1) for archery-only, general season, junior hunt, and fund-raising pronghorn antelope tags. The proposed project also provides for hunting under the PLM Program (see chapters 2 and 4), however, specific quotas for each participant in the PLM Program will be authorized at a later time. For northeastern California, the proposed project involves a final buck tag quota for public zones that is intended to result in harvest of five to six percent of the pronghorn antelope population estimate based on 2004 winter survey results. Northeastern California doe tag quotas for 1998 and 1999 (100 tags in 1998, and 196 tags in 1999) allowed for collection of biological information related to the female portion of the population. However, when winter survey results indicate the northeastern California pronghorn antelope population is at a low level, the doe tag quota will be significantly reduced or eliminated (doe tags have not been issued since 1999). Conversely at a high level, the doe tag quota will be increased.

Based on hunter success rates from previous years, the harvest for 2004 is expected to be less than the number of tags issued. Hunter success rates, objective age and sex ratios, and distribution in each hunt area have been used in developing the proposed project, along with winter survey results for known non-hunting mortality factors (winter kill, losses due to vehicles, predation, illegal take, disease, etc).

For each zone in northeastern California, numbers of pronghorn antelope and proportions of bucks, does, and fawns have been counted during aerial surveys, which have occurred annually since the 1940s (figures 10,11 and 13; and Department of Fish and Game files, Wildlife Programs Branch, Sacramento, California). During winter aerial census, the Department has attempted to count every pronghorn antelope in the project area.

Aerial surveys provide one of the more reliable pronghorn antelope population estimators, provided standardized and consistent techniques are used (e.g. Tsukamoto 1983). In northeastern California, the same basic technique has been used since 1942.

Management decisions and proposed hunting quotas are based on the number of animals counted (Allen and Samuelson 1987). Population estimates based on these surveys represent minimum numbers in each zone. Because they are based on conservative population estimates, the tag quotas themselves tend to be conservative also (Table 1).

Results of the 1997 composition survey (completed prior to the hunting season) for northeastern California indicate a buck to doe ratio of 30 bucks per 100 does, based on a sample size of 1,948 animals classified. Winter survey data for 2004 (available in February) will be used with the model to determine final tag quotas for northeastern California. The allowable buck harvest for northeastern California should approach five to six percent of the population estimate resulting from the winter survey. The total PLM harvest in northeastern California will not be greater than 10 percent of the total allowable harvest for 2004. The proposed project is designed to harvest pronghorn antelope and meet population goals as established in the Northeastern Pronghorn Antelope Management Plan and the PLM management plans (see Chapter 2; also Department files, Sacramento, California). On a long-term basis, the harvest for northeastern California should result in a population of between 5,600-7,000 animals, with a post-hunt ratio of at least 24 bucks per 100 does. The Department expects that pronghorn antelope density within northeastern California will vary according to geographical location and habitat conditions. Tag quotas for each zone in northeastern California will be adjusted to correlate with pronghorn density.

Teion Ranch Private Lands Management Area

The Tejon Ranch herd contains approximately 100 animals. Surveys have been conducted annually since 1985. Surveys during the fall provide a minimum population estimate and composition data. The Department estimates that less than half of the population was observed during the most recent survey (Fall 2001) when observed buck:fawn:doe ratios were 42:16:100 based on a sample of 35 animals.

Buck- and fawn-to-doe ratios increased after the drought was broken by recent years of above average rainfall. The objective for this herd is to maintain at least 85 animals and a buck-to-doe ratio of 20 to 100. Using the KILLVARY model, the

Department has determined that the proposed harvest would allow for an annual population increase, in conjunction with an increasing carrying capacity (Department files, Sacramento, California). The proposal provides for a growing herd while removing surplus bucks. Based on the analysis of the impact of hunting on the pronghorn antelope population, the proposed project is not expected to have significant adverse impacts on the population.

EFFECTS OF CHANGES IN HUNTING REGULATIONS BY ADJOINING STATES

Very few non-residents choose California as a hunting destination. Regulations of adjoining states do not affect California because pronghorn hunting is restricted to California residents (except for fund-raising and PLM tags). In fact, the five-year average (1998-2002) for out-of-state license sales was merely 2.3% of total sales (Department files). Accordingly, the Department believes that any changes in hunting regulations by adjoining states would need to be drastic (e.g., closure of an entire season for a particular species) in order to produce a potentially significant increase in non-resident license sales and any associated potential increase in harvest. A survey of 2003 game laws for Oregon, Nevada, and Arizona revealed no major changes in large game mammal hunting regulations for these states. Consequently, the Department concludes the hunting regulations of adjoining states will have no significant impact on California's mammal populations.

IMPACTS ON THE GENE POOL

Pronghorn antelope in California are descendants from a remnant stock of approximately 1,000 animals that, in the early 1800s, numbered 500,000 or more. Throughout much of the western United States, pronghorn were similarly decimated (Yoakum 1968). Some research has been conducted on pronghorn antelope genetics, but the successful recovery experienced by the species since it was afforded protection suggests no significant genetic problems associated with the California antelope population. The hunting strategy generally distributes hunters across a wide geographic area. The California pronghorn antelope population is widely distributed. Much of it undergoes seasonal mixing on fall and winter range. The proposed level of hunting is not expected to adversely affect the genetic integrity of pronghorn antelope in California.

IMPACTS ON THE SOCIAL STRUCTURE

Research has shown that light hunting as proposed here does not cause pronghorn antelope to abandon their territories (Copeland and Autenreith 1982). Even under heavy hunting, fawn-to-doe ratios the following year can be as high, or higher than, respective ratios under light hunting, because breeding is spread among more of the males (Copeland and Autenreith 1982). When older age animals were killed as a result of hunting, Byers (1989) suggested that territoriality decreased because males did not defend territories until they were three years old. However, Byers (1989) also

reported that many fawns (especially males) were born in years immediately after high hunting harvests until sex ratios became similar to the observed ratio prior to the high harvests.

Under the proposed project, minor disruption of social groups may occur during the hunting season, but long-term adverse effects on the social structure are not expected. Harassment problems would be more severe during other times such as winter and the fawning season (Autenreith 1983, Yoakum and Ogara 1994). The proposed hunt seasons will occur outside the peak of the breeding season.

IMPACTS ON HABITAT

The removal of a maximum number (see Table 1) of pronghorn antelope during the proposed hunt season (given the expected hunter success rates) could result in a slight increase in availability of forage plants fed on specifically by pronghorn antelope. Generally, other wildlife species and livestock can be expected to consume palatable forage that would be made available by the loss of pronghorn antelope through hunting. Historically, the carrying capacity of pronghorn rangeland was reduced and transferred to livestock use. Native pronghorn habitats may remain stabilized or improve slightly with implementation of the proposed project. Pronghorn antelope damage to agricultural crops will likely decrease as a result of the proposed project.

The proposed project will result in the presence of hunters in the project area during the hunt seasons. The majority of pronghorn antelope range is public rangeland administered by the BLM and USFS, with livestock grazing as the primary use. These areas are open year-round to the public. Many pronghorn antelope hunters regard the proposed hunt as a premier event and have been very ethical and environmentally aware during their hunting experience. Based on previous observations of hunter use of these areas, hunting will not have significant adverse impacts on the habitat. Most of the proposed hunt areas currently are open to the public on a year-round basis for a variety of recreational uses, including hunting.

No lasting impacts are expected as a result of the proposed project. The post-hunt population size will be sufficient to maintain or improve herd health and habitat condition.

EFFECTS ON RECREATIONAL OPPORTUNITIES

Hunting Opportunities

The proposed project will continue to provide pronghorn antelope hunting opportunities in California. Opportunities to hunt pronghorn antelope should increase as the statewide pronghorn population increases. The opportunity to hunt pronghorn antelope is a popular one, with 8,000-14,000 applications being received each year. In recent years, about 75 percent of the successful applicants harvested a pronghorn

antelope. The proposed project will provide hunting opportunities consistent with sections 203.1, 207(d), and 331, Fish and Game Code, as well as the wildlife conservation policy in Section 1801, Fish and Game Code.

However, should the pronghorn antelope population decline suddenly, hunter opportunity may be temporarily reduced or eliminated. In the unlikely event of a significant decline that jeopardizes the future of pronghorn antelope in California, the Commission may take emergency action to curtail or eliminate pronghorn antelope hunting.

Non-Hunting Opportunities

Non-hunting uses of pronghorn antelope (i.e. viewing, photography, nature study) are not likely to be significantly affected by regulated pronghorn antelope hunting. Nor is the proposed project likely to impair the non-hunter's ability to enjoy the outdoors, the pronghorn antelope resource, or its habitat, because the non-hunter is not excluded from the project area. Also, the non-hunting user will have the opportunity to enjoy pronghorn antelope under non-hunting conditions in the project area for at least 10 months of the year and for the entire year in areas of the State where pronghorn antelope hunting is not proposed.

The proposed project should not significantly affect the non-hunting public, because the number of hunters in the field at any one time (established by quotas for each season and area) will result in very low hunter density in the limited areas open to hunting.

EFFECTS ON OTHER WILDLIFE AND PLANT SPECIES

The Commission has listed a number of plant and animal species as threatened or endangered (sections 670.2 and 670.5, Title 14, CCR; also see Table 7). Based on the following information, no significant effect on listed species or their habitat is expected from the proposed project.

Listed threatened and endangered plant species are largely absent from habitats occupied by pronghorn antelope in the project area (Chapter 3). Any browsing pressure that may occur on such plants would likely be temporarily reduced by the harvest of pronghorn antelope resulting from the proposed project. The proposed project is not expected to have measurable short- or long-term impacts on listed avian or mammalian species. Threatened and endangered animals and natural communities in the project area were considered in the evaluation of significant impacts. Historically, no conflicts have been identified involving pronghorn antelope hunting and listed (or other) species. Because of the short hunting season, the limited number of hunters in the field, the specific location and time of the hunts, and an optional pre-hunt orientation, it is unlikely that threatened or endangered plants and animals will be adversely impacted as a result of the proposed project.

The small number of pronghorn antelope taken will not remove a significant food supply for carnivores. The only significant predators of pronghorn are coyotes and, to a small degree, bobcats and golden eagles (Salwasser 1980). Proposed harvest strategies may benefit golden eagles and coyotes by increasing fawn production and availability (fawns are susceptible to predation by raptors while adults generally are not). Lead poisoning has been a chronic and significant cause of migratory bird (primarily waterfowl) mortality associated with hunting in some areas of North America. Birds ingest spent lead shotgun pellets and scavengers may ingest fragments of lead bullets in carcasses or gut piles (Fry 2003). The ingested lead is converted to soluble form, and absorbed into tissues, which can have lethal effects. Secondary poisoning of predatory birds can also occur when they feed on birds carrying lead pellets embedded in body tissues (Fry 2003). The USFWS has mandated the use of nontoxic shot for waterfowl hunting. The use of nontoxic bullets is not required for the hunting of pronghorn antelope. Zones 1-6 are not within condor range; however, the areas are with in the range of bald eagles. Since the hunts occur in August and September, the Department believes it will have no impact upon the bald eagles although hunters in the condor range are urged to use nontoxic bullets.

The dispersed hunting effort and resulting scattered bullet deposition over vast acreage make it unlikely that lead bullets would ever become concentrated enough to present any significant hazard to wildlife. Therefore, the Department does not believe that the use of lead bullets for hunting pronghorn antelope will result in any significant adverse environmental impacts.

Impacts on carrion eaters will be insignificant because of the low number of pronghorn antelope taken to provide a source of carrion on these ranges. Some forage overlap exists between pronghorn antelope and other herbivores, but the proposed project is not expected to affect this relationship. Impacts of livestock grazing greatly overshadow hunter impact in the proposed project area. The Department has analyzed potential adverse threats to endangered and threatened species and concluded there would be no significant effects from the proposed project on endangered or threatened species. Historically there have been no adverse affects on endangered or threatened species resulting from pronghorn antelope hunting.

EFFECTS ON ECONOMICS

The proposed project has the potential to result in minor beneficial economic impacts to small communities near the proposed hunt areas. Local effects may involve minor increases in economic activity, resulting from hunters purchasing goods and services from local merchants. This spending is likely to generate additional retail sales, income, and possibly short-term employment in businesses such as motels, restaurants, and retail stores. It is logical to assume that effects would be more substantial and measurable in small communities near hunt areas, such as Alturas and

Susanville, than they would be in large cities. However, the proposed project is not expected to result in significant physical change, either direct or indirect, which would produce significant negative environmental impacts.

Fiscal effects include direct public expenditures and revenue generation associated with the proposed project. The project will be administered by the State. Revenue will be generated by the fees from public applications ($7.00) and license tags ($99.75), the sale of PLM license tags ($150 for buck antelope), and fund-raising tags. In recent years, the Department has received an average of over 10,000 applications per year for pronghorn antelope license tags (1988-present data, Department of Fish and Game, Sacramento, California). Direct revenue from applications and license tags is expected to exceed $125,000 in 2004. Since 1992, the sale of 43 fund-raising license tags and 303 PLM license tags provided approximately $158,350 and $36,375, respectively. Revenue generated from the proposed project would be greater than the State's costs to administer the program. The revenues shall be expended for the management of pronghorn antelope (i.e. surveys, studies, translocations, etc.), enforcing Section 331, Fish and Game Code, and processing of hunting applications (Appendix 1).

Recreational use benefits measure the dollar value that hunters place on having the opportunity to hunt pronghorn antelope (Loomis et al. 1985). These benefits are equivalent to the dollar amount that hunters would be willing to pay for this activity over and above what they have to pay in expenses (license, application, and tag fees). Because the demand for pronghorn antelope tags exceeds the supply, most hunters in California will not have the opportunity to hunt pronghorn antelope. If provided the opportunity, however, the activity value to hunters would be measured as their collective or aggregate willingness to pay, less the cost required to participate. Although no specific data are available to measure the recreational use benefits associated with the proposed project, the existence of these benefits should be recognized. In Montana, for example, hunters spent an average of $114 per trip in 1985, or about $50 per day (Loomis and Cooper 1988). In Idaho, the net value to hunters for 90 permits was estimated at $265,000 (Loomis et al. 1985).

Although direct revenue to the state (from licenses, applications and tags) resulting from the proposal project appears insignificant, the cumulative economic effect of big game hunting nationwide is very significant. During 2001, trip and equipment expenditures for big game hunting nationwide totaled 10.1 billion dollars (United States Fish and Wildlife Service, 2002). Thus, the proposed project is a small part of a national recreational activity of great economic value.

EFFECTS ON PUBLIC SAFETY

Since 1978, the Department has received no reports of deaths and only one report of an injury related to hunting pronghorn antelope in California. This does not diminish the fact that people have died or been wounded while hunting other big game

animals, such as deer (Department of Fish and Game, Conservation Education and Enforcement Branch files). Data indicate, based on the total number of licensed hunters in California and the annual number of accidents, there is roughly a .0015-.00425 percent chance of being killed or wounded while hunting deer and a much lower chance of being killed or wounded while hunting pronghorn antelope. Additionally, Department records show that no non-hunting injuries or deaths have occurred as a result of pronghorn antelope hunting. As with any outdoor activity, there is always a risk of injury or death. However, the probability of being injured while hunting pronghorn antelope is extremely low. This good safety record is due, in part, to the requirement that all hunters must successfully pass a hunter safety education course prior to receiving a hunting license.

GROWTH-INDUCING IMPACTS

The proposed project is not likely to foster economic or human population growth in the area because of the short-term, transient nature of the project and its wide distribution in the area (see "Effects on Economics"). Rather, the project should provide a limited amount of economic benefit to local economies for services. This would be maintaining the level of impact as in previous years.

SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The proposed project allows for a limited pronghorn antelope harvest, intended to stabilize the population within levels identified by the Department's management objectives. The actual harvest will likely be less than the final tag quota because hunter success is expected to be less than 100 percent. This short-term use will remove individuals and reduce competition for forage, but will not reduce long-term productivity. Long-term productivity is maintained by reducing the herd to below habitat carrying capacity through regulated hunter harvest.

If the proposed project is delayed, overtime the pronghorn antelope population may increase and exceed management objectives. Delaying the proposed project could cause range deterioration, increase depredation problems and increase competition with livestock, feral horses, and deer. It is expected that fawn-to-doe ratios will decline if the proposed project is delayed for a significant time.

CUMULATIVE IMPACTS

Discussion of potential cumulative impacts is addressed for the project area as a whole. Plant communities within the project area are influenced by similar ecological factors (wildfire, precipitation, and drought). Land uses are similar throughout, and potential impacts generally are the same. Thus, any specific cumulative impacts which could occur in any one area are also expected for other areas under the same conditions. Cumulative effects discussed herein are effects of the proposed project in combination with other factors that affect pronghorn antelope and the environment.

Effects of Habitat Loss and Degradation

Negative effects of livestock grazing have decreased since the adoption of the Taylor Grazing Act for Federal land management agencies in the 1930s. Range livestock grazing has become less destructive since the 1930s because of more environmentally sound management. Pronghorn antelope populations have responded favorably to this change in management practices, and while pronghorn antelope numbers would likely increase with complete removal of livestock from the public range, that is not the Department's objective.

Changes in habitat are not expected to be significant in the project area during the next 10 years (Northeastern California Pronghorn Antelope Management Plan, Department files). About one-half to two-thirds of the pronghorn antelope range is public land administered by the BLM and USFS. The majority of pronghorn antelope habitat on public land consists of Great Basin sagebrush-scrub, Alkali desert scrub, Pinyon-juniper, and annual grassland vegetation communities. The Department, USFS, and BLM have habitat improvement and acquisition projects and plans in place. Land-use practices that could affect pronghorn antelope range, such as livestock grazing and vegetation conversion on public lands, are not expected to change significantly in the near future. The fact that most of the project area is publicly owned and managed by Federal agencies will help ensure that land-use changes are minimal.

On private land, increased alfalfa production would likely benefit pronghorn antelope, whereas residential development would have a negative effect. No major changes in private land-use patterns are expected in the near future. The long-term outlook for pronghorn antelope habitat on public land in California is stable to improving, as evidenced by the pronghorn antelope population trend and management priorities of the BLM and USFS. In conjunction with the proposed project, cumulative impacts of habitat degradation are not expected to have significant adverse impacts on pronghorn antelope populations. In combination with the proposed project, grazing by livestock and potential habitat changes will not likely have significant cumulative adverse effects. In fact the removal of individual animals as a result of the project may improve the pronghorn antelope habitat and decrease degradation in the project area.

Effects of Private Lands Wildlife Habitat Enhancement and Management Areas Program

The PLM Program was authorized by the Legislature to protect and improve wildlife habitat by encouraging landowners to manage their property to benefit fish and wildlife (sections 3400-3409, Fish and Game Code). The PLM Program is administered by the Commission (Section 601, Title 14, CCR). Economic incentives are provided to landowners through biologically sound, yet flexible, seasons for game species, resulting in high-quality hunting opportunities which may be marketed by the landowner in the form of fee hunting or other forms of outdoor recreation.

To become licensed for the PLM Program, a landowner must submit an application package, which includes a comprehensive management plan and a nonrefundable processing fee designed to meet all costs of program review. Department personnel review the package and management plan to ensure that proposed habitat enhancements benefit wildlife and harvest strategies comply with accepted goals for the management of the game species involved. After Department approval, the application package is heard by the Commission for final consideration and approval. Once approved, a license is valid for five years.

However, at the end of each calendar year, participants must submit an annual renewal package which includes a report of the completed habitat management activities and the number of animals harvested during the previous year. In addition, Department staff conducts annual inspections of each PLM to determine compliance with regulations and completion of required habitat improvements specified in the management plan and annual report. The Department and the Commission evaluate the renewal package and the compliance inspection report. The Commission then provides final approval and authorizes PLM hunting license tags for the next year.

Habitat Modification

Management plans developed by each participant in the PLM Program contain habitat enhancement goals and objectives to be accomplished over the term of the five-year license. Habitat projects outlined in such plans are directed toward improving habitat for game and non-game species alike. The ultimate goal of these habitat improvement practices is to enhance or stabilize (under adverse ecological conditions) wildlife populations on the area.

The PLM program has been successful as an incentive for landowners to protect or improve wildlife. Habitat improvements implemented on licensed areas include controlled burns, reduced or deferred grazing, water source improvement, planting of forage or cover crops, construction of brush piles as escape cover for smaller species, and development of wetlands, marshes and riparian areas. Such habitat improvements directly benefit numerous non-game wildlife species. Numerous pronghorn antelope habitat improvements have been accomplished, as evidenced by the results of the yearly PLM habitat inspections conducted by the Department (Department of Fish and Game, Wildlife Programs Branch, Sacramento, California).

Harvest Discussion

Some members of the public do not readily accept fee hunting as an appropriate use of wildlife resources and are concerned that fee hunting and special season privileges are provided to landowners to the detriment of the State's wildlife resources. Harvests from both the PLM Program and public hunts are included in the Department's analysis of the effects of harvest on the project areas.

Table 9 lists pronghorn antelope tag allocations and harvests under the PLM and Public hunting programs. Since 1990, approximately five percent of California's pronghorn antelope tags have been allocated to the PLM Program. Within a given year, the PLM tag allocation in northeastern California may not exceed 10 percent of the total allowable harvest for public hunts. The PLM pronghorn antelope tag allocation and harvest is small compared to the total California pronghorn antelope tag allocation and harvest.

Based on the number of pronghorn antelope harvested on PLM's and the licensees' management plans and habitat improvements, no negative cumulative effects are attributed to the PLM harvest. Moreover, the PLM harvest was considered by the Department when evaluating the effects of the proposed project and alternatives in chapters 4 and 5, respectively.

Table 9. Pronghorn Antelope Tag Authorization and Harvest on Private Lands Wildlife Habitat Enhancement and Management Areas and Public Hunts, 1990 through 2003

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
PLM Tags	27	40	70	25	32	40	25	41	30	23	15	11	12	12
PLM Reported Harvest	15	26	47	23	26	28	17	30	20	16	14	10	10	6
PLM Hunter Success %	56	65	67	92	84	70	68	73	67	70	93	91	83	50
Public Tags	915	905	1,578	259	368	533	226	493	454	559	199	192	275	250
Public Reported Harvest	717	753	1,167	195	270	371	188	363	297	347	156	149	205	191
Public Hunter Success%	78	83	72	75	73	69	83	74	65	62	78	78	74	76

The limited PLM harvest, together with the habitat improvement and maintenance activities conducted on each area, suggests that there have been no negative cumulative effects on pronghorn antelope populations. Rather, habitat improvements accomplished specifically for pronghorn antelope and other species have had a positive net effect. Based on its analysis, the Department has determined that the PLM Program, as part of the proposed project, will not have a significant adverse cumulative effect on pronghorn antelope populations.

Effects of Drought

Regions of California periodically receive less than normal precipitation or snowfall (i.e. undergo drought periods). These drought cycles are eventually broken, and in intervening years, record snow and precipitation levels can be recorded. Hence, pronghorn antelope may be periodically and temporarily affected by drought. This does not deviate from the normal historical occurrence of drought. With the pronghorn antelope's proximity to agricultural development and water development on public land in the project area, adverse effects of drought on pronghorn antelope populations have been minimized. Severe changes in agricultural use can occur in an area as a result of drought, which may subsequently affect pronghorn antelope. However, the possibility of drought impairing an established pronghorn antelope population from maintaining itself in a healthy, viable condition is unlikely.

If drought has significant adverse effects on pronghorn antelope, these will be shown by poor condition and decreased survival of individuals, declining production and survival of young and declining population numbers. Such trends can occur periodically with some populations. But, there are no data to indicate that drought has significantly impacted pronghorn antelope in the project area.

Effects of Wildfires

There is a possibility that, under prolonged drought, fire could become more prevalent in the project area. However, it is also possible that fire would become less prevalent in pronghorn antelope habitat if drought inhibits growth of annual plant species. Annual plants serve as the fine fuels which are necessary to carry a fire through sagebrush range. Impacts of wildfire may be positive or negative for pronghorn antelope. While they may derive forage benefits from the conversion of shrubland to grassland as a result of fire, if the fire is too large in area, the reduction in low shrub cover (for hiding fawns or winter feed) can be detrimental.

In 1999 there were numerous wildfires caused by lightning within the project area during the hunting season. Although these wildfires and the resulting suppression actions may have disrupted hunting activities, the pronghorn antelope population was not adversely affected.

Based on a review of historical records from agencies such as the BLM, USFS, and California Department of Forestry and Fire Protection, the possibility of wildfires impairing the statewide pronghorn antelope population from maintaining itself in a healthy, viable condition is unlikely. The Department has excellent long term population data for pronghorn in northeastern California (Figure 9), which document population growth since the 1940s and are strongly indicative that events such as wildfires, severe winters and drought have not had long term adverse effects on pronghorn antelope. No significant effects of fire in concert with hunting are expected to affect the pronghorn antelope population.

Effects of Disease

Historical data indicate that pronghorn antelope are remarkably free of disease (Department of Fish and Game, Wildlife Investigations Lab data, Rancho Cordova, California). The Department routinely collects blood samples from captured pronghorn antelope. During the past 20 years, the Department has analyzed pronghorn antelope blood samples to systematically determine the prevalence of disease and to assess the general health of the State's pronghorn antelope resource.

Currently, some members of the public are concerned about the importance of chronic wasting disease (CWD) to wildlife. CWD has been detected in cervids (primarily deer) from several other states, but to date, has not been detected in California. It appears that the potential for pronghorn antelope in California to be affected by CWD is minimal, at present.

There are no data available to indicate a potential for pronghorn antelope in the project area to be significantly impacted by a major disease outbreak. The proposed hunts were developed using information collected over a very long time frame (1942-present.) The information was collected from herds that were experiencing mortality from the limited impacts of disease and other non hunting factors. Disease, in conjunction with the mortalities associated with hunting and other factors does not adversely impact pronghorn antelope (Salwasser 1980, Autenreith 1983, Department of Fish and Game, Wildlife Investigations Lab, Rancho Cordova, California).

Effects of Illegal Harvest

Illegal take of pronghorn antelope is low and is considered to have no significant impact on the population (Lt. Mike Wolters, Alturas, California, unpublished data, January 1996). The Department's field patrol officers only issue a few citations each year for the illegal take or possession of a pronghorn antelope (see Table 10).

Table 11 shows the number of warden and lieutenant positions in 2003 listed by selected Fish and Game divisions/regions. The project area is within regions 1, 4, and 5. The wardens and lieutenants are usually assigned to particular areas and duties, but may be assigned to cover special projects, including aerial and ground surveillance during hunt periods. Numbers in Table 11 represent decrease in enforcement staff over the prior year, due primarily to budgetary reductions. However, this reduction is not expected to have a significant impact on enforcement procedures. Although the number of Department enforcement personnel may have declined from levels of previous years, the overall numbers of hunters in the field has declined concomitantly, as shown by the decline in license sales. Pronghorn antelope hunting occurs primarily in Region 1, where the reduction in enforcement personnel is minimal. Therefore, the project is not likely to have a significant effect on large game mammal populations when combined with the effects of poaching and fewer wardens in the field.

Table 10. Citations Involving Hunting Pronghorn or Illegal Take of Pronghorn

Year	Citations
1991	1
1992	4
1993	0
1994	3
1995	2
1996	0
1997	0
1998	0
1999	1
2000	5
2001	1
2002	0
2003	0

(Department of Fish and Game, Redding, California)

Table 11. Number of Warden and Lieutenant Positions Listed by Region, 2003 Region/Division

Class	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	OSPR	HQ	Total
Warden	26	34	38	28	33	21	13	17	210
Lieutenant	6	9	8	5	8	3	4	3	46
Captain/ Chief	3	5	3	5	3	3	3	7	32

HQ=Headquarters, OSPR=Oil Spill Prevention and Response

In addition to Department personnel, other Federal, State, and local law enforcement officers have the authority to enforce the Fish and Game Code and Title 14, CCR. Approximately half of the proposed project area is within lands patrolled by BLM and USFS law enforcement personnel. The county Sheriff, local police, and other State peace officers (California Highway Patrol, State Park Rangers, State Foresters) may be called upon to respond to violations regarding illegal take of California wildlife. In addition, the Department provides a well-publicized, toll-free phone number (1-800-952-5400) for citizens to anonymously report possible violations. This program may encourage a reluctant individual to report a violation.

More pronghorn antelope appear to be lost to freak accidents (e.g., collisions with vehicles or trains) than to illegal take. Illegal harvest, especially out of season, is a rare occurrence and is not a significant adverse impact on the pronghorn antelope population.

Effects of Depredation

The Department does not have the authority to issue permits to kill pronghorn antelope causing property damage (Section 4181, Fish and Game Code). Because of this, management activities such as hunting and translocating pronghorn antelope are used to minimize private property damage problems.

Effects of Vehicle-Caused Mortality

The number of pronghorn antelope killed by vehicles is not well documented. Unlike deer, very few pronghorn antelope appear to be killed by automobiles (although at least 10 pronghorn were killed by a vehicle on Interstate Highway 5 outside the proposed hunt areas in Glenn County during 2001). During severe winters in northeastern California, pronghorn antelope have utilized the cleared railroad tracks for bedding areas and trails. Trains have killed pronghorn antelope that were on the tracks (Stone, Department of Fish and Game, Redding, California, unpublished data, January 1993). No significant effects of vehicle-caused mortality in concert with hunting are expected to adversely affect the pronghorn antelope population.

WELFARE OF THE INDIVIDUAL ANIMAL

Introduction

Section 203.1, Fish and Game Code, provides as follows: "When adopting regulations pursuant to Section 203, the Commission shall consider populations, habitat, food supplies, the welfare of individual animals, and other pertinent facts and testimony."

Consideration of pronghorn antelope populations, habitats, food supply, and other facts pertinent to the anticipated effects of the project on pronghorn antelope are contained in this environmental document that the Department has prepared to satisfy its obligation to comply with CEQA. This section deals only with considerations of individual animal welfare. This subject is discrete and distinct from those included in the CEQA-mandated environmental analysis. It is an additional obligation imposed on the Department by the Fish and Game Code. This chapter is included in this document for convenience and to permit the public and interested persons to consult a single document in order to read and evaluate the Department's analysis.

Effects of Various Methods of Take

Section 353, Title 14, CCR, describes the methods authorized for taking pronghorn antelope. The Commission has authorized the use of rifles using center fire cartridges with soft nose or expanding bullets; bow and arrow; and wheel lock, matchlock, flintlock, or percussion type muzzle-loading rifles of at least .40 caliber. Historically, these methods have been used to take a variety of big game species throughout North America. With the Commission's specified equipment restrictions these methods are efficient and effective for taking pronghorn antelope.

Section 354, Title 14, CCR, contains provisions for the use of archery equipment as a method of take. It restricts arrows to those with a broad head type blade that, when open, will not pass through a whole seven-eight of an inch in diameter. In addition, bows used for pronghorn antelope must be sufficient to cast a legal hunting arrow a horizontal distance of 130 yards. These restrictions are designed to ensure that animals are shot with equipment capable of killing efficiently. Recently, the efficacy of archery equipment for the take of big game has been questioned. In particular, concern has been expressed that animals taken with archery equipment experience undue suffering. In order to fully disclose the various aspects of the controversy about the use of archery equipment to take big game, the Department has conducted a thorough review of the archery wounding issues and archery literature later in this section ("Effects of Wounding").

Few premises are more obvious than that animals can feel pain [Journal of the American Veterinary Medical Association (JAVMA) 1987, page 1,186], regardless of the method of take. Determining whether an animal is experiencing pain or suffering is difficult. Despite this difficulty, many manifestations of pain are shared by many animal species (JAVMA 1987, page 1,186). The intensity of pain perceived by animals could be judged by the same criteria that apply to its recognition and to its physiologic and behavioral observations in human beings. If a condition causes pain in a human being, it probably causes pain in other animals (JAVMA 1987, page 1,188).

Suffering is a much used and abused colloquial term that is not defined in most medical dictionaries. Neither medical nor veterinary curricula explicitly address suffering or its relief. Therefore, there are many problems in attempting a definition.

Nevertheless, suffering may be defined as a highly unpleasant emotional response usually associated with pain and distress. Suffering is not a modality, such as pain or temperature. Thus, suffering can occur without pain; and, although it might seem counter-intuitive, pain can occur without suffering (JAVMA 1987, page 1,188).

There are anecdotal accounts of pronghorn antelope being shot and exhibiting no visible signs of pain. However, the Department assumes that pain results from substantially all incidents of animals being shot, either by arrows or bullets. The degree of pain experienced by individual animals probably ranges from little or no pain to significant pain.

Bullets

In the case of bullets, it has been determined that center fire bullets transfer sufficient energy to the animal to cause fatal wounds and traumatic shock adequate to bring about quick death. Despite these performance standards, time to death is affected by shot placement. An animal shot with a firearm in the heart-lung area or a critical portion of the central nervous system, such as the brain or spinal cord, will generally die in less than 22.3 seconds, with a range from one to 26.4 seconds (Ludbrook and Tomkinson 1985, page 13). An animal shot in a less vital area may not die for a considerably longer period of time, ranging from 240 to 360 seconds, depending on the location (Ludbrook and Tomkinson 1985, page 13). Some shots in non-vital areas wound but do not kill the animal (Benke 1989).

Archery

In the case of archery equipment, it has been determined that bows transfer sufficient energy to an arrow (fitted with a razor-sharp broadhead) to cause a fatal wound by cutting arteries and veins resulting in blood loss. In addition to severing the blood supply, arrows shot through the lungs cause the lungs to collapse, causing rapid death. Broadheads can also cut through softer bones, such as ribs. However, arrows shot from even a very heavy bow (draw weight) will rarely penetrate large bones found in the shoulder, hips, head, and neck.

Despite these performance standards, time to death is affected by shot placement. An animal shot with an arrow in the heart-lung area or spinal cord will generally die in less than 29.7 seconds, with a range from one to 36.2 seconds (Ludbrook and Tomkinson 1985, page 13). An animal shot in a less vital area may not die for a considerably longer period of time, ranging from 18 to 397 seconds, depending on the location (Ludbrook and Tomkinson 1985, page 13). Some shots in nonvital areas wound but do not kill the animal (Benke 1989). Archery wounding issues will be discussed later in this section ("Effects of Wounding").

Much public controversy exists over the effects of using archery equipment for taking pronghorn antelope. This is evidenced by the successful legal action taken in

1990 to stop the archery bear season. In an effort to disclose the available information regarding the effects of archery hunting, the Department has reviewed the archery literature. While little specific information has been published on archery take of pronghorn antelope, information is available on the effectiveness of archery equipment for taking deer (primarily white-tailed deer). The effectiveness of archery equipment for taking mammals such as pronghorn antelope and deer is discussed further in the "effects of wounding" section.

The Commission has authorized an archery-only season for pronghorn bucks annually since 1982. An archery-only season was authorized for does in 1991, 1992, 1998 and 1999. Average hunter success during the archery-only season is relatively low, and the harvest has been a minor portion of the total pronghorn antelope harvest (i.e. less than three percent; see Table 3). Based on the archery analysis and the low level of archery hunting, the Department does not expect significant effects due to archery or rifle as a method of take.

Use of Dogs

California law (Section 357.1, Title 14, CCR) prohibits the use of dogs while hunting pronghorn antelope. The use of dogs is not applicable to this issue.

Chase Related Effects

It is possible that an individual pronghorn antelope will be chased by hunters. Such a chase would probably cause the animal to suffer anxiety, fear, and stress. Anxiety is generally defined as an unfocused response to the unknown (JAVMA 1987). Fear is a focused response to a known object or previous experience (JAVMA 1987, page 1,187). Stress is commonly defined as the effect of physical, physiologic, or emotional factors that induce an alteration in an animal's homeostasis or adaptive state.

Stress and its subsequent responses may be categorized in three ways. These are: (1) neutral stress - this form of stress is not intrinsically harmful and evokes responses that neither improve nor threaten the animal's well being; (2) eustress - stress that involves environmental alterations that in themselves are not harmful to the animal but which initiate responses that may in turn have potentially beneficial effects; and (3) distress - stress that creates a state in which the animal is unable to adapt to an altered environment or to altered internal stimuli (JAVMA 1987, pages 1,187-1,188).

Animals may experience anxiety and fear in response to naturally occurring stimuli. For example, pronghorn antelope are naturally chased by predators. Hunt-related pursuit by humans may subject the individual to anxieties or fears that are qualitatively different from naturally occurring anxieties and fears. It is assumed that pronghorn antelope, if given a choice, would choose not to be pursued. In this sense, pursuit may be viewed as having an adverse effect on individual animal welfare.

The three recognized forms of stress (JAVMA 1987, pages 1,186-1,187) have different manifestations. Eustress is not applicable. The project will not alter the individual pronghorn antelope's environment. Pronghorn antelope have evolved an exceptional physical ability to flee from pursuers. Consequently, pursuit by hunters does not represent a change to the pronghorn antelope's natural environment sufficient to prompt further evolutionary responses.

Neutral stress and distress are both potentially relevant and adverse. Neutral stress would be exhibited by an animal fleeing from hunters and would probably continue up to the point at which the pursuit ended. Presumably, the pursuit would end when the animal evaded its pursuers or was shot by the hunter. Effects of wounding will be discussed separately.

Additionally, behavior exhibited by pronghorn antelope during pursuit may indicate that the stress of the pursuit is lessened by its own curiosity. Pronghorn antelope are known to approach a hunter after the pursuit. Although pronghorn antelope may quickly leave an area during pursuit, they often immediately return.

A pursued animal could experience some degree of distress. The distress could become more acute if the animal were cornered or otherwise became unable to successfully flee. If the stress-inducing stimuli are short-term, the animal's responses should not result in long-term harmful effects. Prolonged or excessive stress may result in harmful responses, such as abnormal feeding and social interaction behavior and lowered reproductive success. It has been reported that long-term distress in animals can result in pathologic conditions, such as gastric and intestinal lesions, hypertension, and immuno-suppression (JAVMA 1987, page 1,188).

Both neutral stress and distress may be viewed as adverse effects on the welfare of individual animals. Neutral stress resulting from the project may be different from naturally occurring neutral stress because of the possibility of pursuit by hunters. However, this potential stress is not expected to have long-lasting effects, because each chase presumably terminates with the pronghorn antelope's escape or death. Although distress is capable of producing long-term adverse effects, the project is not expected to have that result, because the hunting season is of limited duration and any distress-inducing conditions will be temporary.

Effects of Wounding

Because pronghorn antelope inhabit open range, wounding loss is extremely low. Animals shot do not often escape from the view of the hunter. A summary of wounding loss, as reported by California pronghorn antelope hunters, indicates that less than 10 percent of the animals shot are wounded and lost in a given year (Figure 14).

Cumulatively, wounding loss has been less than two percent of all animals shot. The following is a detailed summary of the effects of wounding. Its inclusion here is to

address the issue of wounding by archery and rifle equipment. To the Department's knowledge, there have been no recent scientific studies from other states of wounding effects on pronghorn antelope under the conditions of the pronghorn hunts in California.

Wounding is the most significant adverse effect that the project will have on the welfare of individual animals. As a result of the project, individual animals may be wounded.

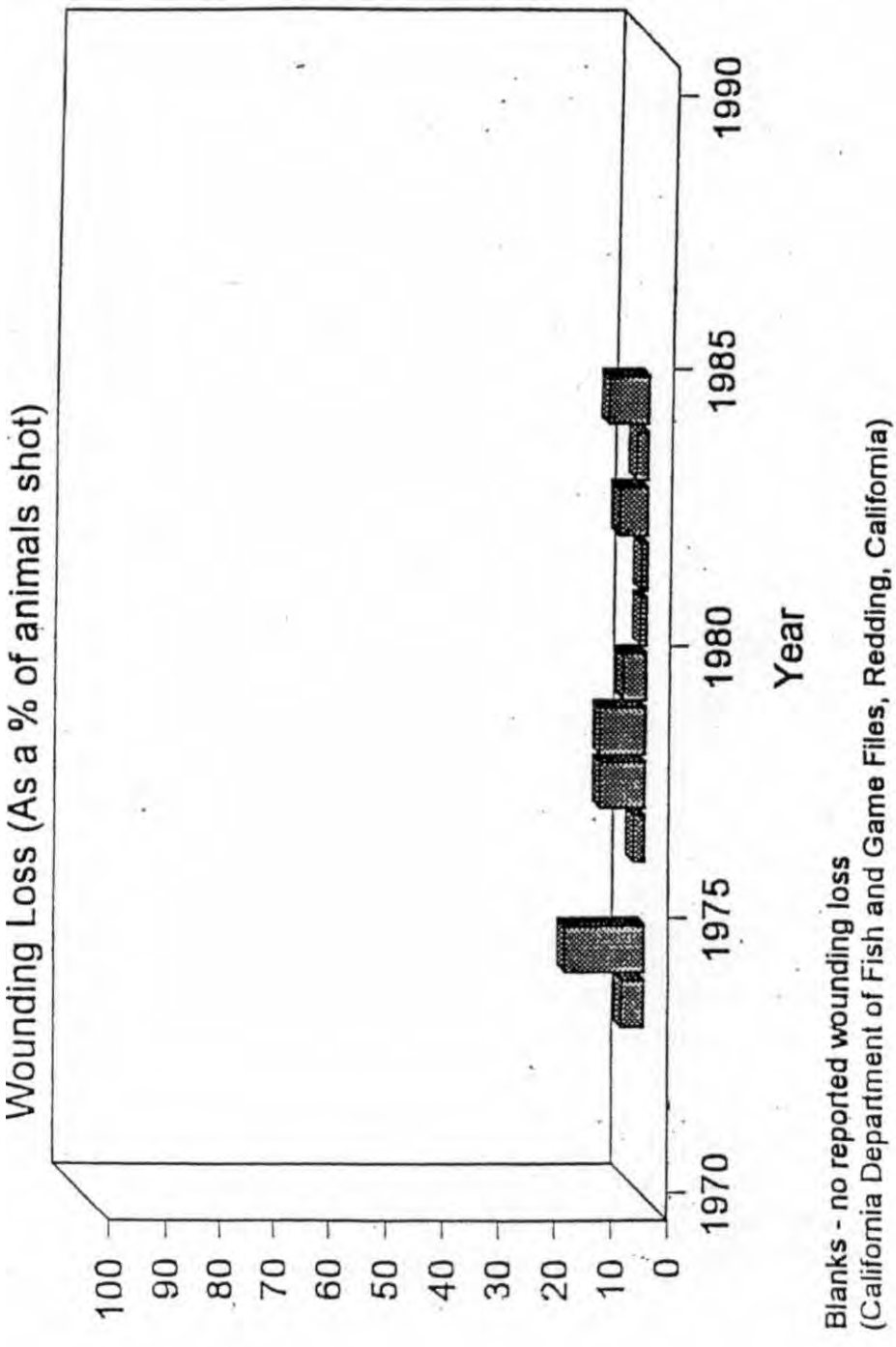
Wounding is a generic term that refers to any nonlethal injury (McCaffery 1985). The nature of the specific wounds ranges from superficial to seriously disabling (Nettles et al. 1976, Burke et al. 1976, Lohfeld 1979). In many cases, a seriously disabling wound may lead to the animal's death from secondary causes, such as infection or disability that prevents the animal from successfully foraging for food, evading natural predators, or performing other functions necessary to its survival (Nettles et al. 1976). The wounding of animals is an unavoidable result of hunting. Wounding rates vary considerably, depending on the type of equipment used (guns or archery equipment). Death caused as a result of these wounds (wounding loss) varies as well.

Some authors suggest that archery wounding rates and loss are as high as 80 to 100 percent of the legal take (Boydston and Gore 1987, Benke 1989, Pacelle 1990). Others believe that, while archery wounding rates can be as high as 50 percent of harvest (Downing 1971, Herron 1984), wounding loss is less than 15 percent (Lohfeld 1979, Herron 1984, Ludbrook and Tomkinson 1985, Fuller 1990).

The effects of wounds on the individual animal are the subject of much debate. Benke (1989) states that broadheads are ineffective in killing deer and thus cause much pain and suffering. The contrary view of this effect is offered by Georen (1990a) and Dr. Bruce Stringer (International Bowhunter Educational Manual 1989, pages 33-34). They believe that lethal wounds result in quick, near painless death due to blood loss. Moreover, Nettles et al. (1976) asserts that long-term suffering resulting from traumatic injury probably affects very few deer.

Existing evidence is inconclusive as to the extent to which archery wounds lead to infection. Benke (1989) and Pacelle (1990) state that a common cause of death is septic infection caused by arrow wounds. They contend that arrows generally inflict dirty wounds, because numerous hairs are drawn into the wound. Bacteria from the clipped hairs begin multiplying in the wound channel and eventually cause death.

Figure 14
Reported Pronghorn Antelope Wounding Loss 1970-90,
as a Percentage of Animals Shot



The Department was unable to identify studies that have been published that measure or evaluate whether these wounds cause septic conditions. It has been suggested (Georen 1990a), however, that non-lethal wounds cause relatively clean wounds and that such wounds bleed profusely.

It is clear that wounding causes pain. The extent or level of this pain (considering the type of wounds) felt by the animal is unclear and the information available is inconclusive.

Archery Wounding Issues

The public, as well as wildlife managers and scientists, have raised numerous questions regarding archery wounding. The issue of archery wounding is controversial. These questions have created public concern over the effects of archery wounding on big game populations and the welfare of individual animals. In order to address these concerns, the Department has identified and analyzed the key archery wounding issues. These issues were identified based on the concerns raised in scoping sessions, past testimony at Commission meetings, previous lawsuits, and the literature (scientific and popular). The major archery wounding issues are as follows:

1. **Fewer Animals are Taken with Archery Equipment than with Firearms** - In California, the archery-only pronghorn antelope harvest constitutes less than 3 percent of the total harvest (Table 3). Studies by Downing (1971), Stormer et al. (1979), Langenau and Aho (1983), Fuller (1990), and others have found similar results. They report that fewer animals are taken with bows than with guns.

2. **There are Fewer Bowhunters than Firearm Hunters** - Approximately three percent of the applications for pronghorn antelope hunts are from hunters wanting to hunt in the archery-only season. While hunters possessing a general season pronghorn antelope tag can hunt with either bow and arrow or rifle, tag returns indicate few, if any, elect to use archery equipment during the general season (California Department of Fish and Game data, Sacramento, California).

3. **Bowhunters Have a Lower Success Rate than Firearm Hunters** - General season pronghorn antelope hunters have averaged above 70 percent success for bucks. Archery-only season hunters have averaged less than 30 percent success for bucks (1980-present Department of Fish and Game data, Sacramento, California). Similar results were found for other states by Downing (1971), Stormer et al. (1979), Langenau and Aho (1983), Benke (1989), Fuller (1990), Lemke (1990), and others.

4. **Bowhunters Generally Spend More Time in the Field Per Animal than Firearm Hunters Do** - During the 2001 pronghorn antelope season in California, archers spent 7.7 days in the field per animal taken (based on report cards; n=7),

whereas rifle/black powder hunters spent 3.3 days in the field per animal taken (n=176 report cards). Studies in other states have established several relationships related to archery deer hunting. Research by Herron (1984) found an average of 7.5 deer was harvested per 100 bowhunter days. Similarly, Severinghaus (1963) found that deer harvested per 100 hunter days for archery hunting on the Howland Island Game Management Area in New York ranged from one to 16, depending on the year. Conversely, he found that firearm hunting resulted in a range of 13-66 deer per 100 hunter days in the same area. Langenau and Aho (1983), in their review of the relative impact of firearms and archery hunting on deer populations, reported that "about 17 percent of all deer hunting in the United States during 1976 was done with bows: 11.4 million days of archery deer hunting and 54.6 million days of firearm deer hunting."

5. **Archery Wounding Losses are Higher than Firearm Wounding Losses -** Existing information is inadequate to establish exact percentages. Publications by Boydston and Gore (1987), Benke (1989), Pacelle (1990), and others state that broadheads (bowhunting in general) are an ineffective method of taking big game, and hence result in excessive (50-100 percent) wounding loss. Benke (1989) notes "that he personally wounded three or four animals for each one he killed." In addition, Benke contends that "archery wounding is the most denied problem in bowhunting and the most ignored problem in wildlife science." An opposite perspective on this issue is presented by Lohfeld (1979), Herron (1984), Ludbrook and Tomkinson (1985), and Fuller (1990). Ground search studies conducted by these researchers found that archery wounding rates ranged from seven to 40 percent. However, field verification to determine actual wounding loss for these hunts ranged from zero to 14 percent.

6. **Animals Generally Live Longer After Being Shot With an Arrow than After Being Shot With a Bullet** - Existing information is inadequate to establish exact "time-to-death" measurements. Benke (1989) states that broadheads are very ineffective in killing deer. Specifically, he relates a personal experience where he watched and waited for 20 to 30 minutes for a spine/lung-shot buck to die. Being unable to "handle it any longer" he dispatched the animal with an arrow through the heart. Moreover, Pacelle (1990) states that animals shot with arrows routinely contract peritonitis or a septic infection, hence suggesting that death is slow. He also reiterates Benke's (1989) assertion that the average killing time of hunting arrows must be measured in days rather than hours or minutes.

Ludbrook and Tomkinson (1985) provide data on immobilization time of animals shot with broadheads and rifles. They report that immobilization time of 17 animals shot with 60-pound compound bows with broadheads in the chest cavity averaged 30 seconds. This compares to 28 animals shot in the chest cavity with rifles becoming immobilized in 22.3 seconds. Compound bows dropped 32 animals within an average of 100 meters, while 17 animals shot with a .30/06 rifle died within an average of 70 meters. It is important to note that the

range of immobilization time from "drug-free" arrow hits found by Ludbrook and Tomkinson (1985) is similar to the findings of Causey et al. (1978), where succinylcholine chloride (SCC) tipped arrows were used (ranged from zero to 45 seconds).

Additional data on distance traveled after being hit by arrows is provided by Georen (1990a). Distances covered by the animals after being shot were correlated to shot placement. Hits in the head, neck, and spine had the highest frequency of animals covering less than 50 meters, while hits in the heart/lung area had the highest frequency of animals covering less than 100 meters.

7. **Broadhead Arrows Cause Less Trauma to Surrounding Tissues than Bullets** - Little disagreement exists on this issue. Work by Ludbrook and Tomkinson (1985) shows that, when an arrow fitted with a sharp broadhead strikes a nonvital area, a minimum of surrounding tissue damage occurs. They state that arrow wounds sustained by animals in nonvital places are most likely to heal completely because of the lack of extensive tissue damage compared to gunshot wounds. Similar conclusions can be drawn from data collected by the Lonestar Bowhunter Association (1989), where archers experienced "through" shots (total pass through of the arrow) on 46 of the 102 deer killed.

8. **There is Evidence that Slotted Broadhead Arrows Carry Hair and Other Surface Materials into the Wound Channel** - Existing evidence is inconclusive as to the extent to which this leads to infection. Benke (1989) and Pacelle (1990) state that a common cause of death is septic infection caused by arrow wounds. They assert that "arrows generally inflict dirty wounds, due in part to the structure of the most popular, multibladed broadheads." They suggest that slotted, multibladed broadheads drag numerous hairs into the wound channel. Thus, the bacteria from the clipped hairs begin multiplying in the wound channel and eventually cause death. Similarly, Boydston and Gore (1987) contend that "about all abdominally shot deer die a slow death due to peritonitis." However, in their technical report, Boydston and Gore (1987) do not provide any data where death by peritonitis is measured.

Wegner's (1990) article on wounded deer behavior in *Deer and Deer Hunting* states that "it should be pointed out that university researchers at Auburn University are currently studying the broadhead wound channels of eighty-six euthanized white-tailed deer. Their findings indicated that in 100 percent of the wounds clipped hairs are present that can lead to serious infection, thus casting doubt on this whole notion of clean wounds and unique survivability."

In an effort to gain more information on this study, a representative of the Department contacted the researcher at Auburn University (Dr. Causey). The work at Auburn University is concentrated on studying the broadhead wound

channel inflicted on carcasses of wild white-tailed deer (depredation kills). No data on infection were collected; hence no preliminary conclusions were reached. Information collected on these wound channels was restricted to the depth of penetration and amount of hair in the wound.

Dr. Causey's work concentrated solely on examining the ability of smooth-blade versus slotted-blade broadheads to carry hair into the wound. No assessment was made on the type or amount of bacteria associated with the hairs in the wounds. He stated that "anything written about his work beyond the results of the simple test of the two broadhead types was purely 'poetic license' on the part of the author." He made no attempt to determine if the wounds caused a septic condition or to speculate on deaths caused by hairs being drawn into the wound (Causey pers. comm.). He did state, however, that both types of broadheads did draw hair into the wound, with more hair being present with the slotted-type broadhead, but that the ultimate effect of this is unknown.

A contrary view of the notion that arrow wounds cause septic conditions is presented by Georen (1990a). Dr. Georen notes that "non-lethal broadhead wounds can cause a relatively clean wound." Such wounds bleed profusely, "with an inner cleaning effect" before bleeding is impeded by thrombosis, arterial spasm, coagulation, etc. He states that the local damage is free of contusion and normally heals quickly and without complications. Geist (1987) provides a biological perspective on the ability of cervids (deer family) to deal with infections caused by puncture wounds. This popular magazine article was based on his peer-reviewed journal article entitled New Evidence of High Frequency of Antler Wounding in Cervids (Geist 1986). The author examined hides from dead deer, elk, and moose. He found that the average buck deer or bull elk received 20-30 wounds per year. Wounds ranged from zero on young of the year to 225 on a 10.5-year-old moose. He concluded that puncture wounds are a very common natural occurrence. Geist (pers. comm.), commenting further on his results, noted that he doubts the relevance of his study to the problem of hair entering deep body wounds. However, he believes that "no doubt antler wounds are 'well inoculated' with dirt." Thus, antler wounds can be badly infected.

There is Evidence that Lethal Arrow Wound Channels Bleed Profusely, and Hence Animals Bleed to Death - Generally, animals must lose about 35 percent of their total blood volume in order to succumb to death. There is approximately one ounce of blood per pound of body weight in the circulatory system of animals like deer. Thus, a 100-pound pronghorn antelope would have about 100 ounces of blood in its system and would have to lose about 35 ounces (2.125 pints of blood) in order for death to occur. According to Dr. Bruce Stringer, veterinarian and Director of the Rio Grande Zoological Park, broadheads cause some level of shock. "Shock produces a numbing effect and the razor sharp broadhead probably causes little discomfort. As blood loss occurs, a near painless death follows."

Georen (1990a), in his article on the Mechanism of the Hunting Arrow, states that "An arrow with a broadbladed razorsharp point has a rapid mortal effect when penetrating the chest of game. This effect derives from a quick clearing of blood causing acute hypoxia, from suspended lung function or a combination of both." Dr. Georen states that "in the case of an arrow hit in the central lung area several of the lung arteries will invariably be cut. To some extent the bleeding time can be illustrated by water running from three hoses with an inner diameter of 0.5 cm and the pressure of the lung arteries of 0.5 liters will last six seconds."

10. **Evidence from Necropsy Studies Indicate that Relatively Few Animals Suffer from Crippling injuries, Whether Caused Naturally or from Hunting -** Animals with natural or hunting-caused wounds appear to recover with little or no external manifestation of the injury. Nettles et al. (1976) reported on frequency of chronic debilitation of white-tailed deer from necropsy records on 1,002 animals collected for scientific purposes throughout the southeastern United States. The evidence of previous injury was only present in 76 deer (7.6 percent). Percentages of injured deer did not vary significantly according to sex, physical condition, or six-month periods associated with high or low hunting pressure. They stated that "the few deer which survive injury do not become debilitated, as evidenced by the fact that deer in poor physical condition comprised only 6.6 percent of all injured animals. Thus, long-term suffering resultant to traumatic injury probably affects very few white-tailed deer." They reported that five of the 1,002 deer examined (0.5 percent) showed signs of previous arrowhead wounds. Similar effects would be expected for pronghorn antelope. Similar results were reported by Burke et al. (1976) and Lohfeld (1979), where less than one percent of the animals taken by hunters showed signs of debilitating hunting wounds.

11. **In Order to Make Arrows More Lethal and Lessen Archery Wounding Losses, it has been Proposed that Archery Hunters be Required to Use SCC as an Alternative or Adjunct to Broadheads** - Causey et al. (1978), Boydston and Gore (1987), Benke (1989), and Pacelle (1990) all support the use of SCC as an alternative to render arrows more lethal, hence reducing wounding loss. Benke (1989), in The Bowhunting Alternative, presents the idea that using the drug SCC on broadheads will reduce wounding losses. The author utilizes personal opinion, personal experiences, and selected references from the literature to establish his conclusion.

"To render bowhunting even minimally humane," Benke advocates "the use of the tranquilizer SCC as a means of ensuring that the target animals will die quickly without needless misery." He was contemptuous of "elitists" who,

arguing that using such a drug diminishes the primal pleasure and athletic challenge of the sport, are willing to inflict needless suffering on their hopeless prey.

Causey et al. (1978), in a study of bowhunting white-tailed deer with SCC-treated arrows, found that the average elapsed time to knock-down time was 13 (ranged from zero to 45) seconds. This result was based on 42 observations of the 88 deer shot with SCC-treated broadheads (16 percent wound rate and three percent known crippling losses with SCC-treated arrows). The authors found that wounded deer traveled an average of 112 (ranged from zero to 376) paces (approximately 100 meters) after being struck by a treated arrow. They conclude that "the addition of SCC to the broadhead hunting arrow in the manner described herein greatly increases the killing efficiency of the bow and arrow. The question is whether the decreased crippling rate and increased recovery rate of deer shot with drug-treated arrows adequately compensates for any undesirable aspects of using these arrows."

There are several aspects of the drug issue, such as legality, humaneness, public safety, and ethics that need further discussion. There is some question about whether the use of such drugs is legal under Federal law, pending testing of the delivery system (SCC pod) by the Food and Drug Administration. Also, SCC is an extremely dangerous drug. Placing chemical substances on arrows could lead to the accidental death of a person coming into contact with the arrow.

Dr. Edward Often, Director of Toxicology in the Department of Emergency Medicine at the University of Cincinnati Medical Center and a member of the Board of Directors of the Wilderness Medical Society, suggests that using SCC would make death less humane, because it kills by suffocation (unpublished data). Postoperative muscle pain occurred in 60 percent of patients given SCC (Waters and Mapleson 1971, Verma et al. 1978).

Research conducted by Dr. E. Murl Bailey, a Professor of Toxicology, Experimental Surgery, and Pharmacology at Texas A&M University, has found that drugs such as SCC cause a very cruel death (M.R. James, Bowhunter April/May 1990). Dr. Bailey's research shows that massive doses of SCC cause very painful death, as consciousness continues long after respiration ceases. He concludes, therefore, that the drug can cause inhumane deaths and is dangerous for use in bow and arrow sport hunting.

Gutierrez et al. (1979) discuss the ethics of using SCC in a paper on hunting ethics, self-limitation, and the role of SCC in bowhunting. Although they strongly believe that the incidence of wounding deer should be decreased, they do not subscribe to the use of drug-treated arrows to accomplish this goal for the following reasons.

a. "The concept of bowhunting as a primitive sport placed emphasis on hunting skills rather than equipment sophistication. Adding drugs to modern archery tackle eliminates much of the primitive aspect of the sport-the aspect giving bowhunting its greatest appeal to many archers."

b. "The potential danger of increasing the incidence of fatal human accidents from drugged arrows must be considered carefully once the entire animal becomes a vital area, as shot selection and good arrow placement are less important. Under these conditions we feel there will be a tendency for less cautious target identification, thus increasing the potential for human error and accidents."

c. "Crippling rate (more accurately wounding rate) and crippling loss are not equivalent, but with drug-treated arrows more wounded deer would die."

d. "As Leopold (1943) warned and Kozicky (1977) reemphasized, the modern hunter is quickly becoming a gadgeteer. Some sportsmen have refused to become a part of this gadget-oriented hunting trend; they choose to use muzzle-loading firearms and archery equipment (although there certainly are gadgeteer archers). Their attempt at self-limitation is evidence of their efforts to increase the sport in sportsmanship. Wildlife managers should be encouraged by, and should encourage this attitude. The use of drug-treated arrows would likely encourage less competent archers to go a field unless more stringent requirements were set to qualify for an archery license."

The project has been designed to limit wounding through the specification of minimum performance requirements for archery equipment and firearms. It is expected that some wounding will nevertheless occur. The methods of take are not 100 percent lethal. Lethality is largely a function of hunter skill and accuracy.

Conclusion

The successful hunting of an animal results in the death of that individual. This is an adverse effect on the individual animal's welfare. Data and experience indicate that some animals killed as a result of the project would have died from other non-hunt-related causes. Nevertheless, in order to adequately analyze the effects that the project will have on an individual animal's welfare, the Department assumed that all animals killed by the project would have survived in its absence. Although some impacts may have a minor temporary effect on the environment, none of these impacts, either singly or in combination, will be significant.

CHAPTER 5. ANALYSIS OF ALTERNATIVES TO THE PROJECT

INTRODUCTION

In addition to the proposed project, the Department is providing the Commission with a range of five alternatives to the project which could feasibly attain the basic project objectives for pronghorn antelope management. They were selected to provide the Commission with a range of hunting alternatives to consider.

There is some public sentiment against hunting, and that segment of the public may consider other alternatives as viable means to achieve some management objectives. An alternative that does not include hunting is provided to the Commission for consideration. Consideration of such alternatives "foster informed decision-making and informed public participation" [CEQA Guidelines Section 15126(d)] towards meeting management objectives for pronghorn antelope. These alternatives are:

Alternative 1. No Change

The no change alternative would maintain quotas, season dates, boundaries and other special conditions for each hunt without change. It is unlikely that significant irreversible impacts would occur immediately or statewide as a result of selecting the no change alterative. However, this alternative is not recommended because it does not provide hunting opportunities that would maintain pronghorn antelope populations at desired levels, consistent with biological/environmental conditions. Retaining existing tag quotas for each zone is not responsive to biologically-based changes in the status of various herds. Management plans specify desired sex and age ratios which are attained/maintained in part by modifying tag quotas on an annual basis. In order to maintain hunting quality in accordance with management goals and objectives, it is periodically necessary to adjust quotas.

Alternative 2. Increased Harvest

This alternative would result in a significant increase in the pronghorn antelope harvest by issuing 50 percent more tags than the maximum in Table 1. Additionally, approximately 50 percent more PLM tags would be authorized under this alternative. Resulting harvest quotas would likely reduce and/or keep population numbers in the project area well below the objective level established by the Department.

Initially, hunter opportunity would significantly increase under this alternative because 50 percent more pronghorn antelope tags would be issued compared to the proposed project. This alternative would provide the most recreational (hunting) and economic benefits of any alternative in that it would provide the highest number of hunting opportunities, for the immediate future. Due to the short season, this alternative would not have a significant effect on non-consumptive recreational opportunities. However, it would reduce the quality of the hunt because of increased

hunter densities. Presently, hunters describe the pronghorn antelope hunt as a premier experience, partly due to the relatively low hunter densities. In addition, the significant increase in the harvest would likely cause an equally significant decrease in the number of tags in following years.

Pronghorn antelope population levels would be immediately reduced but might recover based on increased survival of young the following year(s) (Hess 1986). It is likely that habitat quality would improve somewhat as grazing and browsing is reduced. This alternative has the potential to improve the general health of the hunted pronghorn antelope populations in that it results in more rapid turnover of the population and increased fawn production and survival, as well as a younger age structure in the population. This alternative would not significantly affect the environment.

This alternative initially provides the highest level of pronghorn antelope hunting opportunity. But at current population levels, local, regional, and statewide pronghorn antelope populations may eventually experience significant negative impacts. Coordination with Oregon and Nevada biologists for the interstate portion of the northeastern California population has provided an agreement to manage pronghorn antelope for a minimum post-harvest buck-to-doe ratio of 20 to 100. However, based on simulation modeling, this alternative would result in a lower buck-to-doe ratio than any other state. A 50 percent increase in a buck-only harvest would eventually reduce buck-to-doe ratios in each hunt area well below 24 bucks to 100 does. A post-harvest ratio of 24 bucks per 100 does will maintain a healthy and viable population by assuring a sufficient number of bucks for breeding.

The increased harvest alternative would likely necessitate a dramatic reduction in the number of license tags in subsequent years to compensate for the significantly increased harvest expected under this alternative. The Department recommends the proposed project over this alternative so that pronghorn antelope can be managed consistently in a cautious and biologically conservative manner. Therefore, this alternative was judged less desirable by the Department than the proposed project.

Alternative 3. Reduced Harvest (Bucks Only)

Under the reduced harvest alternative, only 50 percent of the number of tags in the proposed action would be issued (see Table 1). These would be buck only tags. The total PLM tag allocation would also be reduced. This alternative would reduce hunter opportunity and provide only minimal herd reductions in areas where depredation and range overuse could be causing damage. Fawn-to-doe ratios, an indicator of population health, are negatively correlated with density of pronghorn antelope (Figure 11) (Pyrah 1987). As the population reaches or exceeds carrying capacity, further range degradation would be expected and, ultimately, a lowered carrying capacity for pronghorn antelope would result. Thereafter, lowered fawn recruitment and higher natural mortality would be expected to occur under this alternative.

Regular harvest of buck pronghorn antelope should result in a slight decrease in the buck-to-doe ratio similar to the proposed project. However, the reduced take of bucks under this alternative would not adjust the ratio as rapidly as the proposed action. The decrease in the number of tags issued for this alternative would likely result in an increase in the number of tags issued in subsequent years. A significant increase in pronghorn antelope numbers under this alternative would not necessarily be expected. The quantity/quality of pronghorn antelope forage would not improve under this alternative; however, implementing the lower harvest level would not cause significant adverse impacts to the environment.

Implementing this alternative would limit opportunity for junior hunts which typically involve either-sex tags. This alternative does not meet objectives of the pronghorn antelope management program to reduce property damage, maintain healthy, viable herds, and provide optimal hunting opportunity. Although there would be no significant effect on non-consumptive recreational opportunities, it would unnecessarily reduce hunting opportunities compared to the proposed action. The Department recommends the proposed project over this alternative.

Alternative 4. Increased Archery

The increased archery alternative would allocate a similar number of tags as the proposed project, with an increase in archery-only tags. Additional PLM license tags might also be authorized. The additional archery-only tags would significantly increase the archery-only tag allocation, although this alternative would not significantly increase the harvest of pronghorn antelope, because archery-only hunter success rate is approximately 30 percent. The increased harvest of buck pronghorn antelope would not be expected to adversely affect the population, particularly if the archery-only tags were distributed in zones with buck-to-doe ratios above the Department's population goals described in the Northeastern California Pronghorn Antelope Management Plan.

This alternative would slightly increase hunter opportunity for archery-only hunters, with a concomitant reduction in opportunity for general season hunters. Under this alternative, fewer general season tags would be allocated to account for the higher archery harvest. In 1992, the Commission selected this alternative, increased the archery-only tag allocation by 10, and decreased the general season allocation by four. The percentage of archery-only applicants did not increase compared to applications for other pronghorn hunts in 1992. In 1993, the Department received the lowest percentage of archery-only license tag applications since initiation of the archery-only season. This alternative would provide an unfair advantage for archers by further increasing the probability of an archery-only applicant being drawn for an archery-only tag, and consequently decreasing the probability of a general season applicant being drawn for a general season tag.

Under the increased archery alternative, a few additional hunters will be in the field, but other recreational opportunities, such as photography, viewing, and nature study, would not be affected. The archery-only season is one of the first hunts to occur. Archery-only hunters are distributed throughout zones 1-6. Due to the limited number of hunters in the field at one time and the amount of public land which is open to the public for diverse recreational uses, the increased archery alternative would not cause a significant adverse effect on the environment.

The Department recommends the proposed project as a tool for the management of pronghorn antelope and to provide an equitable and diverse use of the resources. The Department does not recommend this alternative, because it would provide an unfair advantage for archery-only season applicants over general season applicants.

Alternative 5. No Hunting

The no hunting alternative would prohibit pronghorn antelope hunting and return pronghorn antelope management activities to levels similar to those practiced prior to 1942 (see Chapter 2). The Commission and the Department have broad authority for a wide range of pronghorn antelope management activities, including public hunting. This alternative would eliminate public hunting as an element of the Department's pronghorn antelope management program. Translocation efforts would continue as surplus pronghorn become available and suitable sites are identified. Overtime, suitable sites for releasing animals eventually would become increasingly scarce. The lack of suitable release sites would limit the activity of translocating pronghorn antelope to only a few new areas.

Pronghorn antelope are translocated only to suitable historic habitat. Such areas are rare in California today. Therefore, the rate of translocation projects is expected to remain slow. The fact that approximately 1,100 pronghorn antelope have been captured and relocated since 1947 to only 10 sites is an indicator of the difficulty in finding additional suitable sites. It is important to recognize that translocation efforts would not increase under the no-project alternative.

Under the no hunting alternative, the Department would continue to survey pronghorn antelope populations annually and update management plans as appropriate. In accordance with current statutes, pronghorn antelope would not be taken by depredation permits; consequently, the effectiveness of management actions to eliminate conflicts (i.e., property damage) and to maintain herd sizes at the identified objective levels would be limited. Ability to provide biologically sound public use of

pronghorn antelope in the form of hunting would be eliminated. Overall efforts to gather data on pronghorn antelope would be less intensive in the future, because most are now done in conjunction with the hunting program.

From 1987 until 1993, the northeastern California pronghorn antelope population often exceeded the management plan's objective of 5,600-7,000 animals. Although the population currently appears to be below this objective, there is potential that this objective again will be exceeded during the next several years. The Department needs to address real and potential conflicts resulting from excessive pronghorn antelope population numbers, such as property damage and habitat degradation. Pronghorn antelope intensively use alfalfa fields in mid summer. The no hunting alternative would likely increase crop damage (Cole 1956) and fail to adequately resolve existing conflicts and management problems. Legislative actions might be initiated to provide for depredation permits.

Under existing regulations hunting is used as a mechanism to reduce private property depredation conflicts attributed to pronghorn antelope. Thus, some private landowners are assured that a cost effective means exists to reduce localized damage and dampen sharp population increases. The existence of a cost effective means of reducing conflicts may improve the tolerance of private landowners for pronghorn antelope and enhance the prospect for reintroduction to suitable portions of their historic range that currently are unoccupied. Without a means of resolving existing or potential conflicts, it is unlikely that large areas of privately owned land within suitable historic range will become available to pronghorn antelope in the future.

The no hunting alternative may affect the PLM Program, which enhances wildlife habitat to benefit numerous wildlife species while permitting the limited hunting of selected species to achieve specific management goals. Implementing this alternative could potentially terminate PLM agreements for habitat enhancement projects. Cancellation of these projects on private lands could affect several wildlife species, including threatened and endangered species (e.g., bald eagle, Swainson's hawk, and greater sandhill crane). Several projects have been implemented that will benefit these species. This alternative may dissuade private landowners from becoming involved in such programs to enhance private property for the benefit of wildlife if the State is not able to provide efficient and economical means to manage wildlife species.

Non hunting public uses of pronghorn antelope, including viewing, photography, and natural history study, would not be expected to change appreciably as a result of implementing the no-hunting alternative. There are no restrictions on these activities at present. Ecological and behavioral studies may still be proposed and would not be greatly affected. Under this alternative, population size would be expected to fluctuate more as a result of weather and periodic die-offs associated with overuse of the range. Analysis indicates there would not be a significant impact on the environment if the no project alternative is selected (Chapter 4). However, in the future the use of more intensive management alternatives would be considered to achieve the Department's management objectives in the project area.

The no hunting alternative forgoes a number of cost-effective (see "Impacts on Economics" in Chapter 4) and biologically sound (Loft 1989) management activities. This alternative also fails to meet the objective of providing public hunting opportunities as an element of pronghorn antelope management. Because of the above considerations, the Department recommends the proposed action over this alternative.

CHAPTER 6. CONSULTATION

An integral part of the Department's wildlife management program is consultation with other agencies and qualified professionals in the wildlife management field. To this end, Department staff involved with pronghorn antelope management are continually interacting with other agencies and professional biologists involved with pronghorn antelope management in other states. An interstate (California, Nevada, and Oregon) antelope meeting is conducted annually to discuss management activities of each state. A biennial pronghorn antelope workshop is attended to exchange information and ideas on management of pronghorn antelope with biologists from other western states and provinces.

In addition to maintaining close informal contact with personnel from other agencies involved in pronghorn antelope management, Department personnel also maintain formal contact with personnel representing wildlife management agencies, universities, and the private sector (both inside and outside of California) by attending professional wildlife management workshops, conferences, and seminars.

CEQA encourages public input. One of the primary purposes of the environmental document review process is to obtain public comment, as well as to inform the public and decision makers. It is the intent of the Department to encourage public participation in this environmental review process.

Prior to preparing this environmental document, the Department developed an NOP. In early December, the NOP was provided to the State Clearinghouse for distribution, as well as to land management agencies in California that have an interest, or play a key role, in pronghorn antelope management (including the USFWS, BLM, NPS, and USFS). This NOP was also provided to individuals and/or organizations which expressed an interest in pronghorn antelope management in the past. The NOP requested that any comments regarding the scope of the environmental document be submitted to the Department within 30 days of receipt of the NOP.

CHAPTER 7. RESPONSE TO COMMENTS REGARDING THE PROPOSED PROJECT

In accordance with CEQA, Public input and agency consultation were encouraged during the environmental review process. An NOP was provided to the State Clearinghouse, land management agencies having a key role in pronghorn antelope management, and all individuals and organizations which expressed an interest in pronghorn antelope management. The draft environmental document examined a variety of alternatives. The proposed project was recommended by the Department because it provided the public with the widest range of recreational opportunities related to wild pig populations, either state wide or locally. Every effort was made to avoid a biased analyses of issues. In general, the Department attempted to make the draft environmental document understandable to the public and to objectively summarize a large amount technical information. The Department reviewed and summarized a great deal for scientific literature, which is cited in the document.

No comments regarding the draft environmental document were received.

BIBLIOGRAPHY

(Note: All literature cited is available through public, government, and/or university libraries. Cited data is on file at California Department of Fish and Game Headquarters, Wildlife and Inland Fisheries Division, Sacramento, California.)

Allen, S. A., and J. M. Samuelson. 1987. Precision and bias of a summer aerial transect count of pronghorn antelope. Prairie Naturalist. 19:19-24.

Arizona Game and Fish Department. 1981. The Sonoran Pronghorn Special Report N. 10. p. 55.

Autenreith, R. ed. 1983. Guidelines for the management of pronghorn antelope. Texas Parks and Wildl. Dep. Booklet 7000-81. 51 p.

Bakker, E. 1972. An island called California. Univ. of California Press, Berkeley.

Barbour, M.G., and J. Majors, eds. 1977. Terrestrial vegetation of California. John Wiley and Sons, New York.

Benke, A. 1989. The Bowhunting Alternative. B. Todd Press, San Antonio, TX, 110 PP-

Boydston, G.A. and H.G. Gore. 1987. Archery wounding loss in Texas. Texas Parks and Wildlife Dept. 11 pp.

Burcham, L.T. 1975. Climate, structure, and history of California's annual grassland ecosystem. Pages 7-14 in R.M. Love, ed. The California annual grassland ecosystem. Univ. of California, Davis, Inst, of Ecology Publ. No. 7.

Burke, D., G.P. Howard, R.C. Lund, P. McConnel, and R. McDowell, 1976. A report of New Jersey's Deer Management Program for Fiscal Year 1974-1975. Division of Fish, Game, and Sellfisheries. Project W45R-11.

Byers, J. 1989. Pronghorns in- and out of- a rut. Nat. History 98:38-49.

California Department of Fish and Game, 2001. The status of Rare, Threatened, and Endangered Animals and Plants of California. Annual report for 2000.

California Department of Fish and Game. Files on record. CDFG offices Redding and Sacramento.

Causey, K., J.E. Kennamer, J. Logan, and J.I. Chapman, Jr. 1978. Bowhunting White-Tailed Deer with Succinylcholine Chloride-Treated Arrows. Wildlife Society Bulletin 6(3):142-145.

Cole, G. 1956. The pronghorn antelope: its range use and food habits in central Montana with special reference to alfalfa. Montana Fish and Game Dept. Bull. 516. 63 p.

Conover, M. R. 1995. What is the urban deer problem and where did it come from? Pp. 11-18 in J. B. McAninch and L. P. Hansen (eds.), Urban Deer A Manageable Resource? North Central Section, TWS, 55th Midwest Fish & Wildlife Conference, St. Louis, Missouri. 175 pp.

Copeland, G. L. 1982. The impact of hunting antelope during the rut. Proc. West. Assoc. Fish and Wildl. Agencies. 28 p.

Dasmann, W.P. 1952. Antelope planting investigation. CDFG mimeo. 10 p.

Department of Water Resources (DWR). 1991. California's continuing drought. 40 pp + appendices.

Department of Water Resources data. Sacramento, California

Downing, R.L. 1971. Comparison of crippling losses of white-tailed deer caused by archery, buckshot, and shotgun slugs. Proc. Southeastern Assoc. Game and Fish Comm. 25:77-82.

Fuller, T.K. 1990. Dynamics of a declining white-tailed deer population in North-central Minnesota. Wildlife Monograph #110.

Geist, V. 1987. Battle scars. Deer and Deer Hunting. P. 56-62.

Georen, B. 1990a. The mechanisms of the hunting arrow. Six page report, written for the Danish Bowhunters Association as part of their bowhunter education program.

Georen, B. 1990b. The Danish bowhunting statistics. A preliminary report. Danish Bowhunters Association.

Graham, V. K. 1993. Elk movements in northwest Colorado: The temporal relationship with hunting seasons during 1985. Pp. 9-14 in D. E. Guynn and D. E. Samuel (eds.), Proc. Western Bowhunting Conference, Bozeman, Montana. 134 pp.

Greise, H. J. 1993. Regulating urban Alaska moose populations with bow & arrow. Pp. 27-32 in D. E. Guynn and D. E. Samuel (eds.), Proc. Western Bowhunting Conference, Bozeman, Montana. 134 pp.

Gutierrez, R.J., R.A. Howard, Jr., and D.J. Decker. 1979. "In My Opinion..." Hunting Ethics, Self-Limitation, and the Role of Succinylcholine Chloride in Bowhunting. Wildlife Society Bulletin 7(3): 170-172.

Hall, E. R. and K. R. Kelson. 1959. The Mammals of North America. Vol. II. pp. 1,021-1,023.

Herron, J.S.C. 1984. Deer Harvest and Wounding Loss Associated with Bowhunting White-tailed Deer. Masters Thesis, University of Wisconsin, Madison.

Hess, M. 1986. Density-dependent summer pronghorn antelope fawn survival rates in the Interstate antelope population. Nev. Dep. of Wildl. 12 p.

Hjersman, H. 1958. The American pronghorn antelope. CDFG unpubl. report. 3 p.

Holland, R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. California Department of Fish and Game. P. 155.

International Bowhunter Education Manual. 1989. National Bowhunter Education Foundation.

James, M.R. 1990. Pro-Drug book bashes broadheads as ineffective. Bowhunter April/May. Pp. 48-49.

Johnsgard, P.A. 1973. Grouse and Quails of North America University Nebraska Press, Lincoln. 553pp.

Jones, F.L. 1954. Report on resurvey of proposed antelope planting sites. CDFG mimeo. 13 p.

Journal of the American Veterinary Medical Association. 1987. Panel Report on the Colloquim on Recognition and Alleviation of Animal Pain and Distress. Vol. 191, No 10. pp. 1184-1298.

Kindschy, R.R. and others. 1982. Wildlife management in managed rangelands-the Great Basin of southeastern Oregon. USFS Gen. Tech. Rep. PNW-145. 18 p.

Kozicky, E.L. 1977. Tomorrow's hunters - gadgeteers or sportsmen? Wildl. Soc. Bull. 5:175-178.

Krueger, W. J. 1995. Aspects of wounding of white-tailed deer by bowhunters. M.S. Thesis, West Virginia Univ., Morgantown, West Virginia. 118 pp.

Langenau, E.E., J.R. and R.W. Aho. 1983. Relative impact of firearms and archery hunting on deer populations. Pages 97-121 in K.H. Beattie and B.A. Moss (eds.), Proc. Midwest Bowhunting Conf. Wisconsin Chapter, The Wildlife Society.

Lee, T.E., J.W. Bickham, and M.D. Scott. 1984. Mitochondrial DNA and Allozyme Analysis of North American Pronghorn Populations. J. Wildl. Manage. 58:307-318.

Lemke, T. 1990. Bows, arrows, and bulls. Montana Outdoors 21:31-34.

Leopold, A. 1943. Wildlife in American culture. J. Wildl. Manage. 7:1-6.

Loft, E. 1989. Pronghorn antelope: A California success story. Outdoor California, 50:1-4.

Lohfeld, M.L. 1979. Crippling loss and illegal kill of white-tailed deer (Odocoileus virginianus) during a controlled hunt in a New Jersey State Park. Masters Thesis, Rutgers University, New Brunswick, N.J.

Lonestar Bowhunters Association. 1989. Texas bowhunting and bowfishing record system kill data for white-tailed deer in 1989. Provided by the Lonestar Bowhunters Association, Texas.

Loomis, J. and J. Cooper. 1988. The net economic value of antelope hunting in Montana. Mont. Dep. Fish, Wildl., and Parks. 21 pp.

Loomis, J., D. Donnelly, C. Sorg, and L. Oldenburg. 1985. Net economic value of hunting unique species in Idaho: bighorn sheep, mountain goat, moose, and antelope. USDA For. Serv. Res. Bull. RM-10. 16 pp.

Ludbrook, J.V. and A.J. Tomkinson. 1985. Evaluation of bow hunting as a form of recreational hunting in Natal Parks. Game and Fish Preservation Board, Natal, South Africa.

McCaffery, K.R. 1985. On crippling semantics: an opinion. The wildlife society bulletin 13:360-361.

McDowell, R., D. Burke, and R. Lund. 1993. The role of bowhunting in New Jersey's deer management program. Pp. 17-26 in D. E. Guynn and D. E. Samuel (eds.), Proc. Western Bowhunting Conference, Bozeman, Montana. 134 pp.

McLean, D.D. 1944. The prong-horned antelope in California. Calif. Fish and Game 30:221-241.

Munz, P.A., and D.D. Keck. 1973. A California flora with supplement. Univ. of California Press, Berkeley.

Nettles, V.F., F.A. Hayes, and W.M. Martin. 1976. Observation on injuries in White-tailed Deer. Proc. S.E. Assoc. Game and Fish Comm. 30:474-480.

O'Gara, B. 1978. Antilocapra americana. Mammalian Species, 90:1-7.

Oruduff, R. 1974. Introduction to California plant life. Univ. of California Press, Berkeley.

Owensby, J. R. and D. S. Ezzell. 1992. Monthly Station Normals of Temperature. Precipitation and Heating and Cooling Degree Days 1961-1990. Climatography of the United States No. 81 NOAA.

Pacelle, W. 1990. Bow hunting: A most primitive sport. Animals Agenda, May: 15-18.

Peek, J. 1986. A review of wildlife management. Prentice-Hall, N.J. 486 p.

Pickford, G. 1932. The influence of continued heavy grazing and of promiscuous burning on spring-fall ranges in Utah. Ecology 13:169-171.

Pyrah, D. 1987. American pronghorn antelope in the Yellow Water Triangle, Montana. Montana Dept. Fish, Wildlife and Parks. 121 p.

Pyshora, L. 1977. The pronghorn antelope of northeastern California. Admin. Rep. 77.2.

Pyshora, L. 1982. Pronghorn antelope management plan, California. California Dept. Fish and Game. 122 p.

Salwasser, H. and K. Shimamoto. 1979. Some aspects of pronghorn antelope ecology and management in northeastern California. 22 p.

Salwasser, H. 1980. Pronghorn antelope population and habitat management in northwestern Great Basin environments. USFS rep. 55 p.

Severinghaus, C.W. 1963. Effectiveness of archery in controlling deer abundance on the Howland Island Game Management Area. New York Fish and Game Journal 10:186-193.tailed Deer. Proc. S.E. Assoc. Game and Fish Comm. 30:474-480.

Shaw, J.H. 1985 Introduction of Wildlife Management. McGraw Hill, Inc. 316 pp.

Smith, J. L, W. A. Michaelis, K. Sloan, J. Musser, and D. J. Pierce. 1995. An analysis of elk poaching losses, and other mortality sources in Washington using biotelemetry. Washington Dept. Of Fish and Wildl. Olympia, Washington.

Stephens, Frank. 1921. Annotated List of Mammals of San Diego County, California. Transactions of the San Diego Society of Natural History, Vol. 3:41-46.

Stone, T. Unpubl. Data. Department of Fish and Game, Redding, California.

Stormer, F.A., CM. Kirkpatrick, and T.W. Hoekstra. 1979. Hunter-inflicted wounding of white-tailed deer. Wildl. Soc. Bull. 7:10-16.

Tibor, D.P. (e.d.) 2001. Inventory of rare and endangered plants of California, 6th edition. California Native Plant Society, Sacramento, California 388 pp.

Tsukamoto. G. Pronghorn antelope: species management plan. Nevada Dept. of Wildlife. 59 p.

U.S. Dept. of the Interior. 1996. Carrizo Plain Natural Area Draft Management Plan. Bureau of Land Management, Bakersfield, California; California Dept. of Fish and Game; The Nature Conservancy.

U.S Dept. of Interior, Fish and Wildlife Service, and US Dept. of Commerce, Census Bureau 2002. 2001 National Survey of Fishing, Hunting and Wildlife-Association Prevention. 116pp.

Verma, R.S., S. Chatterji, N. Mathur. 1978. Diazepam and succinylcholine-induced muscle pains. Anesthesiology Analg. 57:295-297.

Ver Steeg, J. M., J. H. Witham, and T. J. Beissel. 1995. Use of bowhunting to control deer in a suburban park in Illinois. Pp. 110-116]n J. B. McAninch and L. P. Hansen (eds.), Urban Deer A Manageable Resource? Proc. Of the 1993 Symp. Of the North Central Section, TWS. 175 pp.

Waters, D.J., and W.W. Mapleson. 1971. Suxamethonium pains: hypothesis and observation. Anaesthesia 26:127-141.

Wegner, R. 1990. Wounded deer behavior. Deer and Deer Hunting Magazine, August: 66-86.

Zeiner, D. C, W. F, Laudenslayer, Jr., K. E. Mayer, and M. White. 1990. California Wildlife Volumes I, II, and III.

1991 Annual Report on the Status of California State Listed Threatened and Endangered Animals and Plants. 1992. State of California, Resources Agency, Department of Fish and Game. Pages 1-193.

Appendix 1 -
State and Federal Laws and Regulations Relating to Pronghorn Antelope

SECTION 1. Section 206 of the Fish and Game Code is amended to read:

-206. (a) In addition to, or in conjunction with, other regular or special meetings the commission shall, at least every three years, hold meetings in the first 10 days of August, October, November, and December for the purpose of considering and adopting revisions to regulations relating to fish, amphibians, and reptiles. The commission shall alternate the locations of the August and December meetings between Los Angeles or Long Beach and Sacramento, and the October and November meetings between San Diego and Redding or Red Bluff.

(b) At the August meeting, the commission shall receive recommendations for regulations from its own members and staff, the department, other public agencies, and the public.

(c) At the October and November meetings, the commission shall devote time for open public discussion of proposed regulations presented at the August meeting. The department shall participate in this discussion by reviewing and presenting its findings regarding each regulation proposed by the public and by responding to objections raised pertaining to its proposed regulations. After considering the public discussion, the commission shall announce, prior to adjournment of the November meeting, the regulations it intends to add, amend, or repeal relating to fish, amphibia, and reptiles.

(d) At the December meeting, the commission may choose to hear additional public discussion regarding the regulations it intends to adopt. At, or within 20 days after, the meeting, the commission shall add, amend, or repeal regulations relating to any recommendation received at the August meeting regarding fish, amphibia, and reptiles it deems necessary to preserve, properly utilize, and maintain each species or subspecies.

(e) Within 45 days after adoption, the department shall publish and distribute regulations adopted pursuant to this section.

SEC. 2. Section 207 of the Fish and Game Code is amended to read:

207. (a) In addition to, or in conjunction with, other regular or special meetings, the commission shall hold meetings in the first 10 days of the months of February, March, and April at least once every three years for the purpose of considering and adopting revisions to regulations relating to mammals. The commission shall alternate the location of the February meeting between Sacramento and Los Angeles or Long Beach. The commission shall alternate the location of the March meeting between San Diego and Redding or Red Bluff. The commission shall alternate the location of the April meeting between Sacramento and Los Angeles or Long Beach.

(b) At the February meeting, the commission shall receive recommendations for regulations from its own members and staff, the department, other public agencies, and the public.

(c) At the March meeting, the commission shall devote time for open public discussion of proposed regulations presented at the February meeting. The department shall participate in this discussion by reviewing and presenting its findings regarding each regulation proposed by the public and by responding to objections raised pertaining to its proposed regulations. After considering the public discussion, the commission shall announce, prior to adjournment of the March meeting, the regulations it intends to add, amend, or repeal relating to mammals.

(d) At, or within 20 days after, the April meeting, the commission may choose to hear additional public discussion regarding the regulations it intends to adopt. At, or within 20 days after, the meeting, the commission shall add, amend, or repeal regulations relating to any recommendations received at the February meeting regarding mammals that it deems necessary to preserve, properly utilize, and maintain each species or subspecies.

(e) Within 45 days after adoption, the department shall publish and distribute regulations adopted pursuant to this section.

SEC. 3. Section 208 of the Fish and Game Code is amended to read:

208. (a) In addition to, or in conjunction with, other regular or special meetings, the commission shall hold meetings in June and August at least once every three years for the purpose of considering and adopting revisions to regulations relating to resident game birds.

(b) At the June meeting, the commission shall receive recommendations for regulations from its own members and staff, the department, other public agencies, and the public.

(c) At, or within 20 days after, the August meeting, the commission shall devote time for open public discussion of proposed regulations presented at the June meeting. The department shall participate in this discussion by reviewing and presenting its findings regarding each regulation proposed by the public and by responding to objections raised pertaining to its proposed regulations. After considering the public discussion, the commission, at, or within 20 days after, the August meeting, shall add, amend, or repeal regulations relating to any recommendation received at the June meeting regarding resident game birds that it deems necessary to preserve, properly utilize, and maintain each species or subspecies.

(d) Within 45 days after adoption, the department shall publish and distribute regulations adopted pursuant to this section.

316. Pacilic Halibut Regulations

The commission may prohibit the taking or possessing of Pacific halibut (Hippoglossus) in the same manner as the taking or possessing or Pacific halibut is prohibited by federal law or by rules or regulations adopted by the International Pacilic Halibut Commission, notwithstanding any other provision of this code.

316.5. Federal Laws For Taking, etc., Salmon; Applicability [Added Stats 1996]

The commission may prohibit the talcing or possessing ol salmon in the same manner as the taking or possessing of salmon is prohibited by federal law or by rules or i egulations adopted by the UnitedStates Secretary of Commerce, notwithstanding any other provision of this code.

(Added by Statues 1996 Chap. 870)

317. Game Taking Permits For Organizations Hunting For Servicemen or Veterans

Any organization conducting a special hunt Tor set vicemen or veterans residing in or assigned to a United States veterans or armed services medical Facility may apply to the commission Tor, and the commission may issue, under such terms and conditions as it may impose, a per mi t to take birds and mammals notwithstanding the provisions of Sections 2006 and 3002.

Article 2. Special Seasons

325. Surplus Game Hunling Season; Establishment ol

Whenever after due investigation the commission finds that game mammals, other than deer, and fur-bearing mammals and resident game birds have increased in numbers in any areas, districts, or portions thereof other than a refuge or preserve established by statute, to such an extent that a surplus exists, or to such an extent that the mammals or birds are damaging public or private property, or are overgrazing their range, the commission may provide by regulation, for a special huntingseason for the mammals and birds, additional to, or concurrent with any other open season specified by law; or provide for increased bag limits; or remove sex restrictions specified by law.

326. Public Hearing

Prior to the making of such a regulation the commission at an open meeting shall publicly announce the contents of the proposed regulation and fix a time and place at which a hearing on the proposed order shall be held. The time shall be not less than 21 days from flic day of the meeting and the placeshall be the county seat or each or the counties affected.

327. Hearing Nolice

Notice of the hearingsball be published at least once, and at least 10 days prior to the healing, in a newspaper of general circulation in each or the counties in which the hearing is to be held, or if nosuch newspaper is published in that county or counties then in such a newspaper in an adjoining county. The hearing shall be conducted by either (a) the commission, (b) a member or the commission designated by it, or (c) the director if requested so to do by the commission.

At least 10 days prior to the holding of any such hearing the commission shall notify each member of the board of supervisors, at his home address, or each county affected or the details of its proposed order affecting such county and the time and date of the hearing.

328. Mandatory Presence ol Dept. Employees At Hearing; Modification ol Proposals

Such emptoyees of the department as may be necessary or are requested by any interested group of persons, shall be present at the hearing. A lter the hearing the commission may abandon the proposal or make a final regulation, with any modifications it deems appropriate, or without modification.

329. Contents ol Regulations

The regulation may Ex a license fee for special hunting and designate the number of special licenses to be issued, tbeareain which such hunting will be permitted, the number and sex or animals or buds that may be killed by each holder of a special license, and the conditions and regulations to govern such hunting.

330. Cooperative Hunting Areas

Cooperative bunting areas, as described in Sections 1570 to 1372, may be established in connection with any area opened to hunting under the foregoing provisions of this article.

Article 2.1. Antelope and Elk

331. Antelope; Limits and License Fees

(a) The commission may determine and fix the area or areas, the seasons and hours, the bag and possession limit, and the sex and total number or antelope (Antilocapra americana) that may be taken under regulations which tbe commission may adopt from time to time. Only a resident of the State of California possessing a valid bunting license, who bas not received an antelope license tag under these provisions during a period or time specified by tbe commission, may obtain a license tag for tbe taking or aotelope.

(b) A license lag may be issned upon payment of a fee of fifty-five dollars ($55), as adjusted under Section 7 13.Tbe Tee shall be deposited in the Fish and Game Preservation Fund and shall be expended, in addition to money budgeted for salaries or persons in the department, for the expense or implementing this section.

(c) The commission shall direct the department to annually authorize not less than one antelope tag or more than 1 percent or the total number or tags available for the purpose of raising funds for programs and projects tn benefit antelope. These tags may be sold at auction to residents or nonresidents of tbe Stale of California or by another method and are not subject to the Tee limitation prescribed in subdivision (b).

(Amended by Statutes 1996 Chap. 870) (A second icrsion of Section 331, to become effective 1-1-1997, was repealed by Statutes 1996. Chap. 870.)

332. Elk; Limits and License Fees

(a) Tbe commission may determine and fix the area or areas, the seasons and hours, tbe bag and possession limit, and the number or elk that may be taken under rules and regulations which tbe commission may adopt from time to time. The commission may authorize the taking or tuleelk if the average of tbe department'sstatewide tuleelk papulation estimates exceeds 2,000 animals, or tbe Legislature determines, pursuant to the reports required by Section 3951, that suitable areas cannot be found in California to accommodate that populatioo in a healthy condition.

(b) Only a resident of tbeState of California possessiog a valid hunting license may obtain a license lag for the taking nf elk.

(c) The department may issue an elk license tag upon payment of a fee or one hundred sixty-five dollars |S 165), as adjusted under Section 713. The Tees shall be deposited in the Fish and Game Preservation Fund and shall be expended, in addition to money budgeted for salaries of the department, for the expense or implementing this section and Section 3951.

(d) The commission shall annually direct the department to authorize not more than three elk hunting license tags for the purpose or raising funds for programs and projects to benefit elk. These license lags may be sold at auction to residents or nonresidents or the State of California or by other method and are nnt subject to tbe fee limitation prescribed in subdivision (c).

(Amendedby Statutes 1992 Chap. 13701

Article 3. Migratory Birds

355. Regulations - Annual Promulgation

The commission may, annually, adopt regulations pertaining to migratory birds to conform with or to fiirther restrict tbe rules and regulations prescribed pursuant to the Migratory Bird Treaty Act.

Regulations adopted under this sectioo are not subject to Sections 11343.4, 11346.1, 11346.4, and 1 1346.8 of the Government Code.

Every regulation of the commission adopted pursuant to this article shall be filed with the Secretary of State, and shall become effective upon filing unless otherwise specified in the regulations.

(A mended by Statutes 1996 Chap. 870)

Any study relating to funding of programs administered or conducted by the department shall include express findings of whether the program is related to the protection or propagation of fish and game and shall describe the relationship.

(Amended by Statues 1990 Chap. 1706)

713. License Fees - How and When To Determine

(a) The changes in the Implicit Price Deflator for Stale and Local Government Purchases of Goods and Services, as published by the United States Department of Commerce, shall be used as the indei to determine an annual rate of increase or decrease in the fees for licenses, stamps, permits, and tags issued by the department, except commercial fishing fees.

(b) The department shall determine the change in the Implicit Price Deflator for State and Local Government Purchases of Goods and Services, as published by the United S tates Department of Commerce, for the quarter ending March 31 of the current year compared to the quarter ending March 31 of the previous year. The relative amount of the change shall be multiplied by the current fee for each license, stamp, permit, or tag issued by the department. The product shall be rounded to the nearest twenty-five cents (SO. 25), and the resulting amount shall be added to the fee for the current year. The resulting amount shall be the fee for the license year beginning on or after January 1 or the next succeeding calendar year for the license, stamp, permit, or tag which is adjusted under this section.

(c) Notwithstanding any other provision of law, the department may recalculate the current fees charged for each license, stamp, permit, or tag issued by the department, eicept commercial fishing fees, lo determine thai all appropriate indexing has been included in the current fees. This section shall apply to all licenses, stamps, permits, or lags, eicept commercial fishing fees, that have not been increased each year since the base year of the 1985 -86 fiscal year.

(d) The calculations provided for in this section shall be reported to the Legislature with the Governor's Budget Bill.

(e) The Legislature finds that all revenues generated by fees for licenses, stamps, permits, and tags, computed under this section and used for the purposes for which they were imposed, are not subject to Article XTfIB of the California Constitution.

(t) The department shall, at least every five years, analyze all fees for permits, licenses, stamps, and tags issued by it to ensure the appropriate fee amount is charged. Where appropriate, the department shall recommend to the Legislature or the commission that fees established by the commission or the Legislature be adjusted to ensure that those fees are appropriate.

(Amended by Slaiulcs 1991 Chap. 732)

714. Lifetime Sportsman's Licenses; Fees, Age Requirements, Etc.

(a) fn addition lo Section 3031, 3031.2, 7149, or 7149.2 and notwithstanding Section 3037, the department shall issue lifetime sportsman's licenses pursuant to this section. A lifetime sportsman's license authorizes the talcing of birds, mammals, fish, reptiles, or amphibia anywhere in this state in accordance with law for purposes other than profit for the life of the person to whom issued unless revoked for a violation of this code or regulations adapted pursuant to this code. A lifetime sportsman's license is not transferable. A lifetime sportsman's license does not include any special tags, stamps, or other entitlements.

(b) A lifetime sportsman's license may be issued to residents of this state, as follows:

(1) To a person 62 years of age or over upon payment of a fee of six hundred dollars ($600) in 1998.

(2) To a person 40 years of age or over and less than 62 years of age upon payment of a fee of eight hundred ninety dollars ($890) in 1998.

(3) To a person 10 years of age or over and less than 40 years of age upon payment of a fee of nine hundred ninety dollars ($990) in 1998.

(4) To a person less than 10 years of age upon payment of afeeof sir bundled dollars ($600) in 1998.

(5) The department shall establish the fee for each license authorized under this section in 1999 and subsequent years. The license fee shall not be less than the fee authorized in 1998, and the fee shall not exceed the cost of a license if the license fee was adjusted pursuant to Section 713 with the base year of 1998.

(c) Nothing in this section requires a person under the age nf 16 to obtain a license to take fish, reptiles, or amphibia for purposes other than profit or to obtain a license to take birds or mammals eicept as required by law.

(d) Nothing in this section exempts as applicant for a license from meeting other qualifications or requirements otherwise established by law for the privilege of sport hunting or sport fishing.

(e) Upon payment of a fee of three hundred ten dollars ($310), a person holding a lifetime hunting license or lifetime sportsman's license shall be issued annually one deer tag pursuant to subdivision (a) of Section 4332 and five wild pig tags issued pursuant to Section 4654.

(0 Upon payment of afeeof twu liuudred dollars (S200), a person holding a lifetime hunting license or lifetime sportsman's license shall be entitled annually to the privileges afforded to a person holding a state duck stamp or validation issued pursuant to Section 3700 or 3700.1 and an upland game bird stamp or validation issued pursuant to Section 3682 or 3682.1.

(Amended by Slaluia 2001 Chop. 112)

715. National Wildlife Violator Compact - Feasibility Report

The department shall report on or before January 30, 1996, to the Senate Committee on Natural Re- - sources and Wildlife and the Assembly Committee on Water, Parks and Wildlife on the feasibility of the department entering into the National Wildlife Violator Compact. The report shall include an analysis of the steps needed for implementation and the fiscal Impact of participation in the National Wildlife Violator Compact. The depar lineut shall not enter into the National Wildlife Violator Compact without further authorization by statute.

(A ddtd bf Si aii, ies 1995 Chap. 82 7)

CHAPTER 1.5. WILDLIFE VIOLATOR COMPACT

(Added by Siaimes 2001 Chap.398)

Article 1. General Provisions

716. Wildlife Violator Compact

The Wildlife Violator Compact is hereby enacted into law and entered into with all other participating states.

(Added by Siatttia 2001 Chap. 398)

716.1. Statement ol Policy

It is the policy of this state in enteric g into the compact to da all of the following:

(a) Promote compliance with the statutes, ordinances, and administrative rules and regulations relating to the management of wildlile resources in this stale.

(b) Recognize the suspension of wildlife license privileges of any person whose license privileges have been suspended by a participating slate and treat that suspension as if it had occurred in the licensee's home state if the violation that resulted in the suspension could have been the basis Tor suspension in the home state.

(c) Allow a violator, except as provided in subdivision (b) of Section 716.4, to accept a wildlife citation and, without delay or detention, proceed on his or her way whether or not the violator is a resident of the state in which the citation was issued, if the violator's home state is a party to this compact.

(d) Report to the appropriate participating states, as provided in the compact manual, any conviction recorded against any person whose home state was not the issuing state.

(e) Allow the home state to recognize and treat convictions recorded against its residents, if those convictions occurred in a participating state, as though they had occurred in the home state.

(0 Extend cooperation to its fullest eitent among the participating states for enforcing compliance with the terms of a wildlife citation issued in one participating state to a resident of another participating state,

(g) Maximize effective use nf law enforcement personnel and information,

(b) Assist court systems in the efficient disposition of wildlife violations.

(Added by Srnlula 2001 Chap. 398)

(e) Costs inclined by tbe department in establishing the bank site, and the direct cost of necessary ongoing monitoring and oversight.

(0 Any other information relevant to a determination of thecosl of preserving tbe wetlands in perpetuity.

(Added by Statutes 1993 Chap. 1154,

1792.5. Reimbursement For Expenses

The department shall be reimbursed for those expenses of tbe department identified in Section 1792 according to a schedule contained in an agreement with tbe person establishing a wetland mitigation bank. Tbe agreement shall be approved by all parties prior to the commencement or planning activities.

(Added by Statutes 1993 Chap. 1154)

Article 5. Discharge Into Wetlands. 1793-1796

1793. Compensation by Permittee

A permittee shall provide compensation pursuant to Section 404 or the federal Clean Water Act (3] U.S.C. Sec. 1344 etseq.). The department shall classify the wetlands that the permittee will remove according to wetland type, consistent with Article 4 (commencing with Section 1790).

(Added by Statutes 1993 Chap. 1254)

1794. Compensation Conditions

Compensation pursuant to Section 1793 is subject to the conditioo that tbe operator establish tbe trust or bond required by subparagraph (B) of paragraph (3) of subdivision (h) of Section 1786 and, in addition, is subject lo the following conditions:

(a) The full payment shall be used to purchase credits in the mitigation bank site.

(b) The payment shall provide for purchase or bank site wetland acreage required by Section 1793 thai has tbesame hydrologic, vegetative, and other characteristics as tbe system for which it wdl serve as mitigation.

(c) A permittee shall not participate io a wetlands mitigation bank if a net loss of wetland babitat values or acreage occurs.

(Wed by SalVMI / *993 Chap. 1154)*

1795. Obligations ol Permittee

After payment to tbe operator pursuant to this article, tbe permittee has no further obligations with respect to the operation of the bank site to which payment was made, unless the permittee has an equity involvement in tbe bank.

(Addedby Slawles 1993 Chap. 1154)

1796. Bank Sites; Qualification Time Limit, Reports

No bank site shall be qualified under Section 1785 on or after Jacuary 1,2010.

(Amendedby Slawles 1001 Chap. 745)

CHAPTER 8. CONSERVATION OF WILDLIFE RESOURCES

Article 1. Definitions

1800. Wildlife

As used io this chapter "wi]dlife"means birds, mammals, and reptiles not raised in captivity.

Article 2. Policy

1801. Policies and Objectives

It is hereby declared to be the policy of theslate to eccourage the preservation, conservation, and maintenance of wildlife resources under the jurisdiction and influence of the state. This policy shall include the following objectives'.

(a) To maintain sufficient populations of all species or wildlife and the habitat necessary lo achieve the objectives stated in subdivisions (b), (c), and (d).

fli) To provide for the beneficial use and enjoyment of wildlife by all citizens of the state.

(c) To perpetuate all species of wildlife for their intrinsic and ecological values, as well as Tor their direct benefits to all persons.

(d) To provide for aesthetic, educational, and nonappropriative uses of the various wildlife species.

(e) To maintain diversified recreational uses of wildlife, including the sport of hunting, as proper uses ***of*** certain designated species or wildlife, subject to regulations consistent with the maintenance of healthy, liable wildlife resouices, the public safety, and a quality outdoor experience.

(l) To provide for economic contributions to tbecitizensof tbe state, through tbe recognition that wildlife is a renewable resource of the land by which economic return can accrue to the citizens of tbe state, individually and collectively, through regulated management. Such management shall be consistent with the maintenance of healthy and thriving wildlife resources and tbe public ownership status **of** the wildlife resources.

(g) To alleviate economic bsses or public health or safety problem] caused by wUdbTe to the people **or** die state either individually or collectively. Such resolution shall be in a manner designed to bring tbe problem within tolerable limits consistent with economic and public health considerations and the objectives slated in subdivisions (a), (b) and (c).

(b) It is not intended tbat this policy shall provide any power to regulate natural resources or commercial or other activities connected therewith, except as specifically provided by the Legislature.

(A mended by Statutes 1992 Chap. 279)

1802. Jurisdiction ol Department

Tbe department has jui isdictioD over tbe conservation, protection, and management ol fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. The department, as trustee for fish and wildlife resources, shall consult with lead and responsible agencies aod shall provide, as available, tbe requisite biological expertise to review and comment upon environmental documents and impacts arising from project activities, as those terms are used in tbe California Environmental Protection Act (Division 13 (commencing with Section 21000) or the Pubbc Resources Code).

(Added by Statutes !990Chap. 1706)

CHAPTER 9. WETLANDS MITIGATION BANKING

Article 1. General Provisions

1850. Database of Wetlands Mitigation Banks Required

On or berore Jacuary 1,2002, the department shall establish an updated data base or all existing and operating wetlands mitigation banks that sell credits to tbe public in California. To the extent feasible, the department shall use all existing information in compiling this data base and shall utilize tbe CERES Environmental Data Catalog to make this information available to the public. The department shall update this data base on an annual basis andshall include all relevant information required by Section 1851.

(Added by Statutes 2000 Chap. 950)

1851. Biennial Review

On or before January 1,2002, and biennially thereafter, tbe depaitment shall review the data base and the data catalog described in Section 1850, and shall provide a report to the Legislature with a description and tbestatus of each existing wetlands mitigation bank site in operation as of January 1,2001, and each mitigation bank site approved thereafter. Tbe report sball include, but not be limited to, all of the following information:

(a) The name, address, and telephone number of theperson or agency who created the wetlands mitigation bank site.

(b) The name, address, and telephone number of the wetlands mitigation bank operator and tbe address or other appropriate physical description of the location of the wetlands mitigation bank site.

(c) The date the wetlands mitigation bank site was created.

(d) A description of tbe wetlands mitigation bank site's service area.

3246. License Revocation

Any license issued under this article may be revoked by the commission at one of the commission's regularly scheduled meetings, or by a court of competent jurisdiction, upon the licensee's conviction of a violalion of this code, and no new license may be issued lo the licensee during the same license year.

(Amended by Statutes 1986 Chap. 1244)

Article 3. Licensed Domesticated Game Bird Hunting Clubs

(Amended by Statutes 1994 Chap. 849)

3270. Pheasant Club License Conditions

(a) In order to provide additiooal bunting by stocking domestically propagated game birds, and to permit the taking of game birds under conditions that will not conflict with the public interest, any person who owns or controls the hunting rights on a tract of land may apply to the department for a game bird club bcense authorizing the taking of game birds upon that land in accordance with the regulations of the commission for the administration, including the implementation and enforcement, of this section.

(b) This section shall become operative on July 1, 1995.

(Added by Statutes 1994 Chap. 849)

Article 4. Licensed Domesticated Migratory Game Bird Shooting Areas

3300. Raise and Release Domesticated Migratory Game Birds; License Required

It is unlawful for any person to engage in the raising and releasing, or the releasing, of domesticated migratory game birds for shooting by persons wbo pay for that privilege, unless the person has a revocable nontransferable license issued by the department. The licenses may be issued annually by the department and shall be valid from July 1 through the following June 30, upon payment of abase fee of eighty dollars (S80), as adjusted under Section 713.

Any bird of a species included in the definition of migratory game birds, as defined in Section 3500, which has been held live in captivity is a "domesticated migratory game bird"For purposes of this section, eicept such a bird that has been released fromcaptivity and any control befpreattainingsisweeksof age.

(Amended by Statutes 1986 Chap. 1368)

3301. Posting ol Boundaries o(Licensed Area

Tbeapplication for a license shall show thesize and location of the area to be licensed. If an application is approved and a license is issued, the licensee shall post the boundaries of the licensed area with signs, at intervals of not more than 500 feet, which shall indicate that the area is licensed for the shooting of domesticated migratory game birds. Such signs shall be of a size not less than 12 by 18 inches.

3302. Additional License Regulations; Revocation

The commission may prescribe additional regulations deemed necessary for the releasing and shooting of domesticated migratory game birds and shall set the season and areas where such birds may be taken. If the licensee violates any of the provisions of this article or any regulations made pursuant thereto, the commission may cancel or revoke the license provided ootice has been given to the licensee and he has been given an opportunity to be heard by the commission

3303. Proper and Adequate Care al Game Birds Required

Wbere domesticated migratory game birds are reared or held for release by the licensee, the licensee shall provide proper and adequate care for the birds and shall raise and hold them only under sanitary conditions. Conditions for proper care and raising shall be prescribed by the commission. The licensee shall provide for the inspection of birds and facilities upon the request of the department.

3304. Minimum Number of Birds Required Per License Period - 500

The licensee shall raise or use a minimum of 500 birds during the annual license period.

3305. Condition and Age Requirement of Game Birds at Time ol Release

All domesticated migratory game birds at time of release for shooting shall be at least 14 weeks of age, capable of strong and sustained flight, fully feathered, and otherwise in condition to survive in the wild. Birds that are altered in any manner which would, in the opinion of the department, render them incapable of normal sustained flight, or which are diseased, or show evidence of malnutrition or injury, shall not be released.

3306. Shooting Requirements

Shooting shall be confined to blinds, except for shooting necessary to recover a downed and injured bird, and not more than three shooters shall occupy or use each blind. Such blinds shail be constructed to prevent the shooting of domestic migratory game birds over water and to insure maiimum safety lo nccupants of adjoining blinds.

The blinds shall be so situated that the occupants of the blinds cannot see the release site.

The licensee shall not permit any shooting within 500 feet of a point where the birds are released, nor shall any birds be taken within such distance from the point of release.

3307. Killed or Injured Bird Retrieval; Retrieval Dog Availability

AU birds killed or injured by shooters shall be retrieved without delay, and aU injured birds shall be humanely dispatched. The licensee shall not permit injured birds to remain on a pond or feeding area, nor shall he knowingly permit such birds to be used in any subsequent release.

In order to prevent the loss of any dead or injured birds, the licensee shaU provide the use of a retrieving dog, without cost, to all shooters, eicept that shooters may provide their own retrieving dogs. The Utensee shall not permit the shooting of any birds unless a retrieving dog is immediately available for use by all shooters.

3308. Inspection Fee - Maximum

Licensees shall pay the department an inspection fee not to exceed five cents (S0.05) for each domesticated migratory game bird raised or used on a licensed area to insure proper adherence to these regulations.

3309. Seal Attachment to Dead Birds

No dead, domesticated migratory game bird shaU be removed from the premises of a licensed area until there is securely attached to the carcass a seal, and such seal shall remain attached to the carcass until it is finally prepared for coosumplion. Each such seal shall be supplied by the department at a fee set by the commission not to exceed five cents (JO 05).

3310. Valid Hunting License Required

It shall be unlawful for any persco to shoot domesticated migratory game birds on a licensed area without having a valid hunting license as provided by Section 3031.

3311. Licensee - Must Comply with Federal Laws and Regulations

The licensee shall comply with all applicable federal laws or regulations relating to the releasing and shooting of domesticated migratory game birds.

Article 5. Enhancement and Management al Fish and Wildlife and Their Habital on Private Lands

(Amended by Statutes 1992 Chap. 313)

3400. Stale Policy - Improvement ol Wildlife Habitat on Private Land

It is the policy of the state actively to ensure the improvement of wddlife habitat on private land in nrder to encourage the propagation, utilization, and conservation of fish and wildlife resources on those lands now and for the future in cooperation with private landowners. The commissinn and the department may develop a private wildlife habitat enhancement and management program for the implementation of this article.

(Amended by Statutes 1992 Chap. 818)

3401. Licenses - Wildlife Enhancement and Management Areas; Rul Hunting

(a) The commission may authorize (he department to issue revocable, nontransferable licenses for the operation of wildlife habitat enhancement and management areas on any private lands it determines are suitable for habitat enhancement, management, utilization, propagation, and conservation of fish and wildlife resources of those lands. Any private lands affected by a habilal enhancement and management

plan licensed pursuant to this article shall not he available for use by the general public wi thout the consent of tbe landholders. No public access roadsball be closed to the public under this article as a result of licensing a wudlife habitat enhancement and management area or implementing tbe wddlife habitat enhancement and management plan.

(b) The commission shall authorize hunting during the rut only in a wildlife habitat enhancemect and management area when that hunting is consistent with the management plans prepared for tbat area or herd and does not result in an overaU negative efTect on tbe deer herd population in that area.

(Amended by SiaWIis 1991 Chap. 818)

3402. License Requirements

(a) A license for a wudlife habitat enhancement and management area may be issued to any landholder or combination of landholders upon approval by the commission of an application submitted by the landholder. As used in this article," landholder "means any person who owns, leases, or has a possessory interest in land.

(h) Each bcense application shall be accompanied by a nonrefundable fee in an amount established by the commission which, in conjunction with tbe fees collected pursuant to Section 3407, is calculated to meet the departments actual costs in administering all aspects of the habitat enhancement and management program. The application shall be accompanied by a wildlife babitat enhancement and management plan and such other information about the proposed wildlife habitat enhancement and management area as may be required by tbe commission.

(c) An appUcation Tor a Utense may be submitted by any number nf landholders if all parcels to be included in the wildlife habitat enhancement and management area are contiguous and, in combination, are of a size suitable for tbe management of tbe species included in the wildlife habitat enhancement and management plan. Tbe landholders shall designateone landholder who shall represent them in all dealings with the commission and the department. The designated landholder shall be responsible for the operation of tbe wildlife habitat enhancement and management area.

(d) A landholder who does not own the Tee to the land may apply for a license pursuant to this article only if the owner signs tbe application.

(Amended by Statutes 1991 Chap.818)

3403. Posting ol Area Boundaries Required

The commission shall require the landowners of a wildlife habitat enhancement and management area to post all or part of its boundaries with pubbc land. Tbe commission may require the owners of a wildlife habitat enhancement and management area to post all or part of its boundaries with private land.

(Amended by Statutes 1992 Chap. 818)

3404. Commission May Adopt Regulations

(a) Tbe commission may adopt regulations necessary for the administration of this article.

(b) Alter notice and a hearing, the commission may revoke the license for any violation of any provision or this code or any regulations adopted pursuant thereto or for any violation of tbe terms of the license.

(Amended by Statutes 1992 Chap. 818)

3406. License Term; Authorizations; Regulations; Restrictions

(a) Upon approval of tbe wildlife babitat enhancement and management plan, tbe department shall issue a license, which shaU be vabd for five calendar years, authorizing tbe talcing of those species of fish, game birds, and game mammals desipated in the Wildlife babitat enhancement and management plan, pursuant to tbe plan and regulations of the commission for the operation of the wildlife habitat enhancement and management area. Regulations adopted pursuant to this section may supersede any provision of this code designated by number in the regulation, but shall do so only to the eitent specifically provided in the regulation.

(b) During tbe first year of operation of a wildlife babitat enhancement and management area under a wddlife habitat enhancement and management plan and, thereafter, until tbe operator demonstrates babitat enhancement in tbe area acceptable to the department, no person shall take, and the plan shall not authorize the taking, of deer except during the general open season and consistent with the bag and

possession limits for tbe fish and game district or the zone in which tbe wildlife habitat enhancement and management area is located.

(c) Tbe activities conducted pursuant to each wildlife babitat enhancement and management plan shall be reviewed annually by the department and reviewed by the commission at a public hearing. Each licensee shall annually submit information to the department about past activities and the activities intended to be conducted in the succeeding year. Any change to the wildlife habitat enhancement and management plan or tbe regulations applicable to the wildlife habitat enhancement and management area shall be proposed to the commission by the department or the licensee at the license review hearing.

(A mended by Statutes 1992 Chap. 818)

3407. Mark with Tag or Seal Fish, Birds, or Mammals Taken

The commission may require that any fish, bird, or mammal taken in a wildlife habitat enhancement and management area licensed pursuant to this article be marked for identification with a dis tinctive tag or seal issued by the department prior to being removed from tbe area. A deer tag shall be countersigned by a person who is authorized to countersign deer tags pursuant to Section 372 of Title 14 of the California Code of Regulations. Any fish, bud, or mammal so identified may be possessed and transported at any time during the period for which the tag or seal is valid. The fees for lap and seals shall be established by the commission in amounts which, in conjunction with fees collected pursuant to Section 3402, are calculated to meet the actual costs incurred by the department in administering all aspects of the babitat enhancement and management program.

(Amended by Statutes 1992 Chap. 818)

3408. Exemptions frnm Fees or License; Exceptions

Any landholder who has paid the fee required by this article, has a valid license issued pursuant to this article, and who is conducting activities pursuant to an approved wildlife habitat enhancement and management plan that could be licensed or permitted pursuant to another provision of this code shall be exempt torn any requirement to obtain that other license or permit or to pay any other fee. This section shall not, however, be construed to exempt anyone from any requirement pertaining to hunting and sport fishing licenses and stamps.

(A mended by Statutes 1992 Chap. 818)

3409. Annual Report by Department

The department shall report every three yean on the wildlife habitat enhancement and management program conducted pursuant to this article. The report shall include a listing of landholders participating in the wildlife habitat enhancement and management program, the wildlife babitat enhancement and management activities undertaken, tbe wildlife species managed, and harvest data. The report shall be submitted to tbe Speaker of tbe Assembly, tbe Chairperson of tbe Senate Committee on Rules, and tbe chairpersocs of the policy committees in each bouse that have jurisdiction over the subject of this article. The report shall also be made available tq the public upon request.

Amended by Statutes 1001 Chap. 745)

Article 6. Management of Fish and Wildlife on Military Lands 3450-3453

(Added by Statutes 1986 Chap. 591)

3450. Policy ol Slate

It is tbe policy of, the state to actively encourage the biologically sound management of fish and other wddlife resources on lands administered by the United States Department nf Defense. The department may develop a program to implement this article in cooperation with the military services.

(Added by Statutes 1986 Chap. 591)

3451. Coordination and Cooperation with U.S. Military

The department may coordinate and cooperate with all branches of the United States military service, Department of Defense, for tbe purpose of developing fish and wildlife management plans and programs on military installations. The plans and programs shall be designed to provide biologically optimum levels of Ssh and wildlife resource management and use compatible with the primary military use of those lands.

oc employees of lhe Depai tmeut of Food and Agricultui e or by federal or county officers or employees when acting in their official capacities pursuant lo the provisions of the Food and Agricultural Code pertaining to pests, or pursuant to Article 6 (commencing with Section 6021) of Chapter 9 of Part I of Division 4 of the Food and Agricultural Code.

Landowners and tenants taking birds in accordance with this section are exempt from Section 3007.

3801.6. Possess Carcass, etc. of Nangame Bird; Exceptions and Disposition

Except as otherwise provided in this code or regulations made pursuant thereto, it is unlawful to possess the catcass, skin, or parts of any nougame bird. The carcass, skin, or parts of any nocgame bird possessed by any person in violation of any of the provisions of this code shall he seized by the department and delivered to a scientific or educational institution.

3S02. Predatory Birds; Control or Eradication

The department may enter into cooperative contracts with the United Stales Fish and Wildlife Service in lhe Department of the Interior in relation to lhe control or eradication of predatory birds, and for that purpose may expend any money made available to the department for expenditure for the control or eradication of predatory birds.

3803. Take Birds Which Prey Dpon Birds, Mammals, or Fish

The department may lake any bird which, in its opinion, is unduly preying upon any bird, mammal, or Dsh.

3B06. Licenses to Feed Migratory Game Birds lo Prevent Crop Depredation

In order to aid in relieving widespread waterfowl depredalioo of agricultural crops, the departmeot may issue licenses under regulations which the commission may prescribe to permit the feeding of migratory game birds. The commission may prescribe an annual fee for the license.

(Amettded by Statutes 1936 Chap. 1363)

CHAPTER 4. CALIFORNIA CONDOR

(Added by Statutes 1938 Chap. 83)

3850. Preservation Project Objectives

The department may cany out a California condor preservation project which has the following objectives:

(a) Habitat protection, consistent with the department's existing legal authority.
(b) Field research, including mortality studies.
(c) Captive breeding program.
(d) Condor release program.

(Added by Statutes 1938 Chap. 83)

3851. Plan Development

The department, jointly with the federal-state condor recovery team established pursuant to lhe federal Endangered Species Act shaU develop a plan to respond to the objectives in Section 3850. Based on the plan, the department shall develop specific activities, studies, and programs to be administered by the department in the areas of habitat protection and field research. The department may coo tract for all or some of these activities, studies, and programs.

(Added by Statutes 1988 Chap. 83)

3852. Breeding Programs al Zoos - Funds

The department shall provide funds to the Zoological Society of San Diego and In the Los Angeles Zoo for a condor breeding program on the grounds of each zoo.

(Added by Statutes 1988 Chap. S3)

3853. Release Program

In addition to the programs in Section 3852, a condor release program administered by lhe department and the United States Fish and Wildlife Service may be contracted to the Zoological Society of San Diegn and the Los Angeles Zoo.

(Added by Statutes 1988 Chap. 83)

3854. Administrative Casts

Not more than 10 percent of lhe funds provided lo lhe zoos under Oris chapter may be used for administrative costs of the program.

(Addedby Statutes 1938 Chap. 88)

3855. Program Reports la the Department

Both the breeding program and the release program, if authorized by the department, shaU meet criteria established by the department and shall be monitored by the department. The zoos shall submit biannual reports to the department which describe progress made in lhe breeding program and the release program.

IA dded by Statutes 1988 Chap. 38)

3856. Status Reports lo the Legislature

The department shall include copies of the biannual reports from the zoos in lhe annual report to the Legislature on the status of listed species required in Section 2079.

(Added by Statutes 1938 Chap. 38)

3857. Augmentation ol Slate Funds

Tn the eitent possible, the departmeot shall seek private sector funding and any federal hinds which may be available to augment state funds for the purposes of this chapter.

(Addedby Statutes 1988 Chap. 88)

PART 3. MAMMALS

CHAPTER 1. GAME MAMMALS

3950. Definitions ol Game Mammals

(a) Game mammals are: deer (genus Odocoileus), elk (genus Cervus), prong-horned antelope (genus A n I docapr a), wild pigs, including fetal pigs and European wild boars (genus Sus), black and brown or cinnamon bears (genus Euaictos), mountain lions (genus Felis), jackrabbits and varying bares (genus Lepus), cottontails, brush rabbits, pigmy rabbits (genus Sylvilagus), and tree squirrels (genus Sciunis and Tamiasciurus).

(b) Nelson bighorn sheep (subspecies 0 vis canadensis nelsoni) are game mammals only for the purposes of sport hunting described in subdivision (b) of Section 4902.

(Amended by Statutes 1992 Chap. 1370)

3950.1. Mountain Lions Excepted

(a) Notwithstanding Section 3950 or any other provision of this code, the mountain lion (genus Felis) shall not be listed as, or considered to be, a game mammal by the department or the commission.

(b) Section 219 does not apply to Ibis section. Neither the commission nor the department shall adopt any regulation that conflicts with or supersedes this section.

(Added by Initiative Measure. Prop 117. section 3, approved 6-5-90)

3951. Tule Elk'; Taking, Relocation, etc.

The commission may authorize the talcing nf tule elk pursuant to Section 332. The department shall relocate rule elk in areas suitable to them in the State of California and shall cooperate to the maximum Client possible with federal and local agencies and private property owners in relocating tule elk in suitable areas under their jurisdiction or ownership. When economic or environmental damage occurs, emphasis shall be placed on managing each rule elk herd at a b iol ugically sound level through the use of relocation, spoi (hunting, or other appropriate means as determined by tbe department after consulting with local landowners.

The number of rule elk in the Owens Valley shall not be permitted tn increase beyond 490, or any greater number hereafter determined by the department to he tbe Owens Valley s holding capacity in accordance with game management principles. Wi thin 180 days of tbe eoactment of the bill which amended this section a 11 he 198 7 portion of the 1987-88 Regular Session nf the Legislature, tbe department shall complete management plans for high priority areas, including, but not limited to, Potter Valley and Mendocino County. The plans shall include, but not be limited to:

(a) Delinitinn nf tbe boundaries of the management area.

(b) Characteristics of the tule elk herds within the management area.

(c) Tbe habitat conditions and trends within tbe management area.

(d) Major (actors affecting tbe tule elk population within the management area, including, but not Limited to, conflicts with other land uses.

(e) Management activities necessary to achieve tbe goals of the plan.

(Amendedby Statutes 7001 Chap. 745)

3960. Allow Dogs to Pursue Big Game Mammals; Conditions; Disposition nl Dog

It is unlawful to permit or allow any dog to pursue any big game mammal during the closed season onsucb mammal, to pursue any fully protected, rare, or endangered mammal at any time, or lo pursue any mammal in a game refuge or ecological reserve if hunting within such refuge or ecological reserve is unlawful.

Employees nf the department may capture any dog not under the reasonnable control of its owner or handler, when such uncontrolled dog is pursuing, in violation of this section, any big game, fully protected, rare, or endangered mammal.

Employees nf the department may capture or dispatch any dog inflicting injury nr immediately threatening to inflict injury to any big game mammal during tbe closed season on such mammal, and they may capture or dispatch any dog inflicting injury or immediately threatening tn inflict injury oo any fully protected, rare, nr endangered mammal at any time.

Employees of the department may capture or dispatch any dog inflicting "injury nr immediately threatening to inflict injury to any mammal in a game refuge or ecological reser ve if hunting within such refuge or ecological reserve is unlawful.

No criminal or civil liability shall accrue to any department emphyee as a result or enforcement of this section. For the purpose of this section, "pursue"means pursue, run, or chase.

Owner s of dogs with identification, that have been captured or dispatched, shall be notified within 72 hours after capture or dispatch.

3961. Property Owner Holding Grazing Permit May Seize or Dispatch Dogs

Whenever an employee of the department is not present to carry out tbe provisions of Section 3960 with respect to any dog inflicting injury or immediately threatening to inflict injury to any deer, elk, or prong-horned antelope during the closed season for these mammals, any property owner, lessee, person holding a permit for the purpose of grazing livestock, or bis or ber employee, may seize or dispatch the dog if it is found on his or her land or premises without tbe permission of tbe person who is in immediate possession of the land. If the dog has on it any readily visible identification tag or license tag as prescribed by Section 30951 of the Food and Agricultural Code, and tbe dog is found in the act of immediately threatening tn injure deer, elk, or prong-horned antelope, the dog may only be dispatched under this section if the dog has, and the owner has been notified that the dog has, previously threatened any nf these species.

No action, civil or criminal, shall be maintained for a dog lawfully seized or dispatched pursuant to this article.

The owner of a dog shall be notified wi thin 72 hours of the seizure or dispatching of that dog under this section if it had the identification tag or license tag which is required pursuant to Section 30951 or tbe Food and Agricultural Code.

CHAPTER 2. FUR-BEARING MAMMALS

Article 1. Trapping Provisions

4000. Definition of Fur-bearing Mammals

Tbe following are fur-bearing mammals: pine marten, Gsber, wolverine, mink, river otter, gray fox, cross fox. silver foi, red fox, kit fox, raccoon, beaver, badger, and muskraL

4001. Season lor Taking Fur-bearing Mammals

Fur-bearing manunatt may be taken between November 16th and the day before tbe last day of February.

4002. Methods for Taking Fur-bearing Mammals

Fur-bearing mammals may be taken only with a trap, a firearm, bow and arrow, poison under a proper permit, or with the use of dogs.

4003. Use of Poison to Take - Permit Required

It is unlawful to use poison to take fur-bearing mammals without a permit from the department. Tbe department may issue such a permit upon a written application indicating the kind of poison desired tn be used and the time and place or use.

4004. Unlawful Methods of Taking

It is unlawful to da any of the billowing:

(a) Use a trap with saw-toothed or spiked jaws.

(b) Use or sell leghold steel-jawed traps with a spread of 5 *'A* inches or larger without offset jaws.

(c) Use steel-jawed traps larger than size 1 *'A* or with a spread larger than 4 7/8 inches for taking muskrat-

ld) Set or maintain traps which do not bear a number or other identifying mark registered to the department or, in the case of a federal, state, county, or city agency, bear the name of that agency, except that traps set pursuant to Section 4152 or 4180 sbafl bear an identifying mark in a manner specified by the department. No registration fee shall be charged pursuant to this subdivision.

(e) Fad tn visit and remove all animals from traps at least coce daily. If tbe trapping is done pursuant to Section 415 2 or 4180, the inspection and removal shall be done by theperson who sets tbe trap or tbe owner of the land where tbe trap is set or an agent of either.

(0 Use a steel leghold trap with a spread exceeding 7 *'A* inches or killer-type trap of tbe conibear type that is larger than 10 inches by 10 inches.

(g) Set or maintain steel leghold traps within 30 feet of bait placed in a manner or posi lion so that it may be seen by any soaring bird. As used in this subdivision, "bait"includes any bait composed of mammal, bird, or fish flesh, fur, hide, entrails, or feathers.

(h) Set or maintain steel leghold traps with a spread nf 5 vi inches or larger without a tension device.

(Amended by Statutes 1989 Chap. 890)

4005. Take with Trap or Sell Raw Furs; License Required

(al Except as otherwise provided in this section, even person, other than a tur dealer, who ""traps ftir-hearing mammals or cocgame mammals, designated by tbe commission or who sells raw furs of those mammals, shall procure a trapping license. "Raw fur"means any fur. pelL or skin that has not been tanned or cured, eicept that salt-cured or sun-cured pelts are raw furs.

fbl Tbe department sbnll develop standards that are cecessary to ensure the competence and proficiency o r appbcants Tor a trapping Ucense. No person shall be issued a license until be or she has passed a test ol his or her knowledge and skill in this field.

(c Persons *** trapping mammals in accordance with Section 4152 nr 4180 are not required to procure a trapping license*** except when providing trapping: services lor profit.

(i l No raw furs taken bv persons providing trapping services for proGt may be sold.

(el Officers or employees or federal, county, or city agencies or tbe department, when acting in their official capacities, or officers or employees of the Department of Food and Agriculture wben acting pursuant

Article 2. Fur Dealer License

4030. License Requirements lor Fur Dealer

Ever; person engaging in, curving on, or conducting wholly or in part the business of buying, selling, trading nr dealing in raw furs of fur-bearing mammals nr nongame mammals is a fur dealer and shall procure a fur dealer license. No fur dealer license shall be required of a licensed trapper selling raw furs which he has lawfully (alien, or a domesticated game breeder selling raw furs of animals which he has raised.

4031. License Fee

A revocable fur dealer license shall be issued to any person upon payment of a base fee of seventy dollars ($70), as adjusted under Section 713.

(Amended by Statutes 1986 Chap 1368)

4032. License Requirements lor Fur Agent

Any person who is employed by a licensed fur dealer to engage in the business of buying, selling, trading, or dealing in raw furs only oo behalf of the fur dealer and not on his own behalf is a fur agent and shall procure a fur agent license.

4033. Fur Agent Revncable License

A revocable fur agent license shall be issued to any person who is employed by a licensed fur dealer upon payment of a base fee of thirty-five Julian ($35), as adjusted uoder Section 713.

(Amended by Statutes 1986 Chap. 1363)

4034. Authority and Term nf Fur Dealer License

A fur dealer license authorizes Ihe person In whom it is issued to buy, sell, barter, exchange, or possess raw furs or parts theteof of fur-bearing mammals and nongame mammals for a term of one year from July 1st, or if issued after the beginning of such term, for the remainder thereof

4035. Display of Licenses

A fur dealer or fur agent license shall be shown upon request to any person authorized to enforce the provisions of this code.

4036. Raw Fur Purchase Restrictions

It shall be unlawful for any fur dealer to purchase the raw fur of any fur-bearing mammal or nongame mammal from any person who does not hold a valid trapping license, fur dealer license, or fur agent license.

4037. Raw Fur Transler Record Requirements

Every fur dealer licensed pursuant to this article shall maintain a true and legible record of any transfer of raw furs lo show:

(a) The license number, name, and address of the seller.
(b) The signature, name, and license number, if applicable, of the buyer
(c) The number and species nf raw furs transferred, by county of take.
(d) The price paid or terms of eichaoge.
(e) The date of transfer.
(Q Such other information as the department may require.

4038. Records - Available for Inspection at All Times

The reenrd of sale, ezchange, barter, or gift shall be available for inspection at any time by the department.

4040. Annual Report by Dealers ol Fur Transfers

Each licensed fur dealer shall submit an annual report to the department on the sale, exchange, barter, or gift of raw furs, on forms furnished by the department. No license shall be renewed until such a report is received.

4041. Confidentiality ol Receipts, Records, and Reports

The receipts, records, and reports required by this article and the information contained therein, shall be confidential, and the records shall not be public records. Any information which is published shall be published in such a manner as to preserve confidentiality of tbe persons involved.

4042. Regulation ol Raw Fur Business by Commission

Tbe commission may regulate the business of buying, selling, trading, or dealing in raw furs, or parts thereof, **of** all fur-bearing mammals or nongame mammals under a fur dealer license

4043. License Revocation

Any license issued under this chapter may be revoked by tbe commission at one nf the commissions regularly scheduled meetings, upon the licensees conviction of a violation of this article.

(Amended by Suuma 19S6Chap 1244)

CHAPTER 3. NONGAME MAMMALS AND DEPREDATORS

Article 1. Nongame Mammals

4150. Definition of Nongame Mammals; Take or Possess

All mammals occurring naturally in California which are not game mammals, fully protected mammals, or fur-bearing mammals, are nongame mammals. Nongame mammals or parts thereof may not be taken or possessed eicept as provided in this code or io accordance with regulations adopted by the commission.

4151. House Cats Found Within Limits ol Reluge

Any bouse cat (Felis domesticus) found within tbe limits nf any fish and game refuge is a nongame mammal, unless it is in the residence **or** its owner or upon tbe grounds of the owoer adjacent to such residence.

4152. Taking ol Nongame Mammals Found Injuring Crops or Properly

***Except as provided in Section 4001 nonaame mammals and black-taded jackrabbits, muskrats, and red **foi** srpiirrels ***Ujai are found to be injuring growing crops or other property may be taken at any time or in any manner in accordance with this code by tbe owner or tenant **or** tbe premises or emptoyees thereof, eicept that if leghold steel-jawed traps art used to take those mammals, the traps and the use thereof shall be in accordance with subdivisions (a), (b), and (d) of Section 4004. They may also be taken by officers or emptoyees of tbe Departmeot **or** Food and Agriculture or by federal, county, or city, officers or emptoyees when acting in their official capacities pursuant to the provisions of the Food and Agricultural Code pertaining to pests, or pursuant to ""Article 6 (commencing with Section 6021) of Chapter 9 of Part 1 of Division 4 **or** the Food and Agricultural Code. Persons taking mammals in accordance with this section are exempt from the requirements of Section 3007. Raw furs, as defined in Section 4005. that are taken under

Traps used pursuant tn this section shall be inspected and all animals in tbe trap shaU be removed at least once dady. The inspection and removal shaU be done by the person who sets the trap or the owner of the land where tbe trap is set or an agent of either.

(Amended by Statutes 2002 Clap. 571)

4153. Control ol Harmlul Nongame Mammals

Tbe department may enter into cooperative agreements with any agency of the stale or the United States for tbe purpose of controlling harmful nongame mammals.

Tbe department may take any mammal which, in its opinion, is unduly preying upon aoy bird, mammal, or fish.

4154. Contracts and Expenditures lor Control ol Harmful Nongame Mammals

The department may enter into cooperative contracts with the United States Fish and Wildlife Service in the Department of the Interior in relation to the control of nongame mammals and for that purpose may expend any money made available to thedepartment for expenditure for cootrol or eradication of nongame mammals.

Article 2. Depredators

4180. Take Fur-bearing Mammals; Conditions; Use ol Leghold Steel-jawed Traps; Removal ol Animals In the Trap

"'Except as provided for in Section 4005. fur-bearing mammals ***that are injuring property may be taken at any time and in any manner in accordance with this code, eicept that if leghold steel-jawed traps are used to take those mammals, the traps and tbe use thereof shall be in accordance with subdivisions (a), (b), and (d) of Section 4004. Raw furs, as defined in Section 4005. that are taken under Hif not be sold.

Traps used pursuant to this section shall be inspected and all animals in tbe trap shall be removed at least once daily. The inspection and removal shall be done by the person who sets the trap or the owner of the land where the trap is set or an agent of either.

(Amended by Salutes 2002 Chop. 571)

4180.1. Manners of Taking Immature Depredator Mammals

It is unlawful to use snares, hooks, or barbed wire to remove from tbe den, or fire to kill in the den, any immature depredator mammal.

Nothing in this section shall prohibit tbe use of fire-ignited gas cartridges or other products registered or permitted under tbe Federal Insecticide, Rodenticide, and Fungicide Act (7 U.S.C. 135 etseq.).

4181. Kill Elk, Bear, Beaver, Wild Pig, or Gray Squirrels Damaging Property; Permit Required

(a) Except as provided in Section 4181.1, any owner or tenant **of** land or property that is being damaged or destroyed or is in danger of being damaged or destroyed by elk, bear, beaver, wdd pig, or gray squirrels, may apply tn the department for a permit to kill the mammals. The department, upon satisfactory evidence **or** the damage or destruction, actual nr immediately threatened, shall issue a revocable permit for the taking and disposition of tbe mammals under regulations adnpted by the commission. Tbe permit shall **include** a statement **or** the penalties that may be imposed for a violation of the permit conditions. Mammals so taken shall not be sold or shipped from tbe premises on which they are taken eicept under instructions from the department. No iron-jawed or steel-jawed or any type of metal-jawed trap shall be used to take any bear pursuant to this section. No poison of any type maybe used to take any gray squirrel pursuant to this section. The department shall designate tbe type of trap to be used to insure tbe most humane method is used to trap gray squirrels. The department may require trapped squirrels to be released in parks or other nonagi icultur al areas. It shall be unlawful for any person to violate the terms **or** any permit issued under this section.

(b) The permit issued for taking bears pursuant to subdivision (a) shall contain tbe following Tacts:

(1) Why the issuance of tbe permit was necessary.

(2) What efforts were made tn solve the problem without lolling the bears.

(3) What corrective actions should be implemented to prevent reoccurrence.

(c) With respect to wdd pigs, the department shall provide an applicant for a depredation permit to take wild pigs or a person who reports talcing wdd pigs pursuant to subdivision (b) of Section 4181.1 with written information that sets forth available options for wild pig control, mciuding, but not limited to, depredation permits, allowing periodic access to licensed hunters, and holding special hunts authorized pursuant to Section 4188. The department may maintain and make available to these persons bits of licensed hnntei s interested in wild pig hunting and fists of nonprofit organizations that are available to take possession of depredating wdd pig carcasses.

(Amended by Statutes 1997 Chap. 4SI)

4181.1. Take Bear or Wild Pig in Act nl Injuring Livestock; Reporting Requirement, etc.

(a) Any bear that is encountered while in the act of inflicting injury to, molesting, or killing, livestock may be taken immediately by the owner of tbe livestockor the owner's emptoyee if tbe talcing is reported no later than the next working day to the department and the carcass is made avadable to the department.

(b) Notwithstanding Section 4652, any wild pig that is encountered while in the act of inflicting injury to, molesting, pursuing, worrying, or killixig livestock or damaging or destroying, or threatening to immediately damage or destroy, land or other property, including, hut not limited to, rare, threatened, or endangered native plants, wildlife, or aquatic species, may be taken immediately by the owner of the livestock, land, or property or the owner's agent or employee, or by an agent or employee of any federal, state, coun ty, or city entity when acting in his or her ollicial capaci ty. The person taking the wild pig shall report the taking no later than the next working day to the department and shall make the carcass available to the department. Unless otherwise directed by the department and notwithstandingSection 4657, the person taking a wild pig pursuant to this subdivision, or to whom the carcass of a wild pig taken pursuant to this subdivision is transferred pursuant to subdivision (c). may possess the carcass of the wild pig. The person in possession of the carcass shall make use of the carcass, which may include an arrangement for the transfer of the carcass tn another person or entity, such as a nonprofit organization, without compensation. The person who arranges this transfer shall be deemed to be in compliance with Sectioo 4304. A violation of this subdivision is punishable pursuant toSection 12000. It is the latent of the Legislature that nothing in this subdivision shall be interpreted to authorize a person to take wild pigs pursuant to this subdivision in violation of a state statute or regulation or a local zooiog or other ordinance that is adopted pursuant to other provisions nf law and that restricts the discbarge of firearms.

(c) The department shall make a record of each report made pursuant ta subdivision (a) or (b) aod may have an emptoyee of the department investigate the taking or cause the taking to be investigated. The person talcing a wdd pig shall provide informatioo as deemed necessary by the department. Upon completion of the investigation, the investigator may, upon a finding that the requirements of this section have been met with respect to the particular bear or wild pig taken under subdivision (a) or (b), issue a written statement to the person confirming that the requirements of this section have been met. The person who took the wdd pig may transfer the carcass to another person without compensation.

(d) Notwithstanding Section 4763, any part of any bear lawfully possessed pursuant to this section is subject to Section 4758.

(e) Nothing in liiis section prohibits federal, state, or county trappers from killing or trapping bears when the bears are killing or molesting livestock, but no iron-jawed or steel-jawed or aoy type of metal-jawed trap shall be used to take the bear, and no persoo, including emptoyees of the state, federal, or county government, shall take bear with iron-jawed or steel-jawed or any type of metal-jawed traps.

(Amended by Salutes 1997 Chap. 4SI)

4181.2. Damage by Wild Pigs Defined

For the purposes of this article relating to damage caused by wild pigs, "damage'means loss or barm resulting from injury to person or property. The department shall develop statewide guidelines to aid in determining the damage caused by wild pigs. The guidelines shall consider various uses of the land impacted by pigs.

(.Wed by Statutes 1997 Chap. 481)

4181.5. Take Deer Damaging or Destroying Land; Permit, etc.

Any owner or tenant of land or property that is being damaged or destroyed or is in immediate danger of being damaged nr destroyed by deer may apply to the department for apermit to kill such deer. The department, upon satisfactory evidence of such damage or destruction, actual or immediately threatened, shall issue a revocable permit for the taking and disposi tion of such deer for a designated period not to exceed 60 days under regulations promulgated by tbe commission.

The regulations of the commission shall include provisions concerning tbe type or weapons to be used lo kill the deer. The weapons shall be such as will ensure humane lolling, bu t the regulations nf tbe commission shall provide for lhe use of a sufficient variety of weapons to permit the designation of particular types to be used in any particular locality commensurate with tbe need to protect persons and property. Firearms using.22-caliber rimfire cartridges may be used only when authorized by the director. No pistols shall be used. The caliber and type of weapon to be used by each permittee shall be specified in each permit by the issuing officer who shall take into consideration tbe location of the area, tbe necessity for dean kills,

the safety factor, locaf firearms ordinances, and other factors which apply. Rifle ammunition used shall have expanding bullets; shotgun ammunition shall have only single slugs.

The department shall issue tags similar tn those provided for in Section 4331 at the same time the permit is issued. A permittee under this section shall carry the tags while hunting deer, and upoo the killing of any deer, shall immediately fill out both parts of the tag and punch out clearly the date of the kill. One part of the lag shall be immediately attached to tbe antlers of antlered deer or to the ear of any other deer and kepi attached until ten (10) days after the permi t has expired. The other part of tbe tag shall be immediately sent to the department after it has been countersigned by any person authorized by Sectiou 4341.

A permit issued pursuant lo this section may be renewed only after a finding by the department that further damage has occurred or will occur unless such permit is renewed. A person seeking renewal of the permit shall account for all prior tags issued at lhe time be received any prior permits, aod if any tags are unused, he must show either that aoy deer killed could not reasonably be tagged or why the killing was not accomplished within the allotted lime aod why such killing would be accomplished under a new time period.

4185. Take Bears Near Beehives in Riverside or San Bernardino Counties; Conditions; Trap Requirements; elc.

In any district or part of a district within San Bernardino and Riverside Counties, bears may be taken at any time with traps within a good and substantial fence, as such fence is described in Section 17121 of the Food and Agricultural Code, surrounding beehives, if no part of the fence is at a distance greater than 50 yards from a beehive, and if a conspicuous sign is posted aod maintained at each entrance to the endosed premises to give warning of lhe presence of the traps. No iron or steel-jawed or any type or metal-jawed trap shall be used to take bear under this sectioo.

4186. Take Cottontail or Brush Rabbits Damaging Crops or Forage

Nothing in this code prohibits tbe owner or leoant of land, or aoy persoo authorized in writing by such owner or tenant, from taking cottontail or brush rabbits during any time of the year wbeo damage to crops or forage is being experienced on such land. Any person other than tbe owner or tenant of such land shall have in possession when transporting rabbits from such property written authority from tbe owner or tenant nf land where such rabbits were taken. Rabbits taken under the provision of this code may not he sold.

4188. Permits lor Licensed Hunters lo Take Wild Pigs or Deer

When a laodnwner or leuau t app lies fu i a permit under Section 4181 for wild pigs, or Section 4181.5 for deer, the commission, in lieu nf such a permit may, with the consent of, or upon the request of, the landowner or tenant, under appropriate regulations, authorize

tbe issuance nf permits to persons holding valid hunting licenses tn lake wild pigs or deer in sufficient numbers to stop the damage or threatened damage. Prior to issuing permi ts to licensed hunters, the department shall investigate and determine the number of permits necessary, tbe territory involved, tbe dates of the proposed hunt, the manner of issuing the permits, and the fee for the permit.

(Amended by Statutes 1991 Chap. 99S)

4190. I.D. of Relocated Depredatory Mammals

The department shall tag, brand, or otherwise identify in a persistent and distinctive manner large depredatory mammal relocated by, or with tbe approval of, the department for game management purposes.

CHAPTER 4. DEER

Article 1. Taking Deer

4301. Deer Meat; Sell, Purchase, or Transport lor Purposes ol Sale; Exceptions

(a) Subject lo the provisions of this code permitting the sale of domestically raised game mammals, it is uolawful to sell or purchase, or transport Tor the purpose of sale, any deer meat in this state whetber fresh, smoked, canned, or preserved by any means, except fallow deer meat processed by a slaughterer in accor-

§ 353. Methods Authorized for Taking Big Game.

(a) Except for the provisions of subsections 353(b) through (g), title 14, CCR, big game (as defined by section 350, title 14, CCR) may only be taken by rifles using centerfjre cartridges with softnose or expanding bullets; bow and arrow (see section 354, title 14, CCR, for archery equipment regulations); or wheellock, matchlock, flintlock or percussion type muzzleloading rifles using black or pyrodex powder with single ball or bullet loaded from the muzzle and at least .40 caliber in designation.

(b) Shotguns capable of holding not more than three shells firing single slugs may be used for the taking of deer, bear and wild pigs. In areas where the discharge of rifles or shotguns with slugs is prohibited by county ordinance, shotguns capable of holding not more than three shells firing size 0 or 00 buckshot may be used for the taking of deer only.

(c) Pistols and revolvers using cenrerfire cartridges with softnose or expanding bullets may be used to take deer, bear, and wild pigs.

(d) Pistols and revotvers with minimum barrel lengths of 4 inches, using centerfire cartridges with softnose or expanding bullets may be used to take elk and bighorn sheep.

(e) Crossbows may be used to take deer and wild pigs only during the regular seasons.

(f) Muzzleloading rifle hunters may not possess other firearms or archery equipment authorized for taking big game, pursuant to subsections 353 (a) through (d), and shall possess muzzleloading rifles equipped with iron sights only, while hunting under the provisions of a muzzleloading rifle only tag.

(g) Under the provisions of a muzzleloading rifle/archery tag, hunters may possess muzzleloading rifles as described in subsection 353(a) equipped with iron sights only; archery equipment as described in Section 354; or both. For purposes of this subsection, archery equipment does not include crossbows.

NOTE- Authority cited: Sections 200, 202 and 203, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1,207 and 3950, Fish and Game Code.

HISTORY

1. Repealer and new section filed 6-22-87; operative 6-22-87 (Register 87, No. 27). For prior history, see Register 85, No. 44.
2. Amendment of subsection (e) and new subsection (g) filed 5-31-88; operative 5-31-88 (Register 88, No. 23).
3. Amendment of subsection (a) and new subsection (h) filed 10-15-90 as an emergency; operative 10-15-90 (Register 90, No. 46). A Certificaie of Compliance must be tnmsmioecl to OAL by 2-12-91 oremergency language will be repealed by operation of law on the following day.
4. Reinstatement of section as it existed prior to emergency amendment filed 10-15-90 by operation of Government Code section 11346.1(f) (Register 91, No. 49).
5. Amendment of subsection (a) filed 7-8-92; operative 7-8-92 pursuant to Fish and Game Code section 215 (Register 92, No. 28).
6. Amendment of subsections (b) and (c) and NOIE filed 6-23-93; operative 6-23-93 pursuant to Fish and Game Code sections 202 and 215 (Register 93, No. 26).
7. Amendment of subsections (a) and (g) filed 7-13-94; operative 7-13-94 pursuant to sections 202 and 215, Fish and Game Code (Register 94, No. 28).
8. Change without regulatory effect amending subsection (g) filed 3-28-96 pursuant to section 100, tide 1, California Code of Regulations (Register 96, No. 13).
9. Amendment of subsection (a), new subsection (d), repealer of subsections (e) and (0. subsection relettermg, and amendment of newly designated subsection (f) filed 7-1-98; operative 7-1-98 pursuant to Fish and Game Code sections 202 and 215 (Register 98, No. 27).
10. Amendment of subsection (a) and new subsection (g) filed 6-27-20OO; operative 6-27—2000 pursuant to Fish and Game Code sections 202 and 205 (Register 2000, No. 26).

§ 354. Archery Equipment and Crossbow Regulations.

(a) Bow, as used in these regulations, means any device consisting of a flexible material having a string connecting its two ends and used to propel an arrow held in a firing position by hand only. Bow, includes long bow, recurve or compound bow.

(b) Crossbow, as used in these regulations means any device consisting of a bow or cured latex band or other flexible material (commonly referred to as a linear bow) affixed to a stock, or any bow that utilizes any device attached directly or indirectly to the bow for the purpose of keeping acrossbowbolt, an arrow or the string in a Firing position. A crossbow is not archery equipment.

(c) For the taking of big game, hunting arrows and crossbow bolts with a broad head type blade which will not pass through a hole seven-eighths inch in diameter shall be used. Mechamcal/retractable-broad heads shall be measured in the open position. For the taking of migratory game birds, resident small game, furbearers and nongame mammals and birds any arrow or crossbow bolt.may be used except as prohibited by subsection (d) below.

(d) No arrows or crossbow bolt with an explosive head or with any substance which would tranquilize or poison any animal may be used. No arrows or crossbow bolt without flu-flu fletching may be used for the take of pheasants and migratory game birds, except for provisions of section 507(a)(2).

(e) No arrow or crossbow bolt may be released from a bow or crossbow upon or across any highway, road or other way open to vehicular traffic.

(f) No bow or crossbow may be used which will not cast a legal hunting arrow, except flu-flu arrows, a horizontal distance of 130 yards.

(g) Crossbows may not be used to take game birds and game mammals during archery seasons.

(h) Archers may not possess a firearm while hunting in the field during any archery season, or while hunting during a general season under the provisions of an archery only tag..

(i) No person may nock or fit the notch in the end of an arrow to a bowstring or crossbow string in a ready-tc-fire position while in or on any vehicle.

NOTE: Authority cited: Sections 200,202,203 and 240, Fish and Game Code. Reference: Sections 200,202, 203 and 203.1, Fish and Game. Code.

HISTORY

1. Amendment of subsections (a) and (f) filed 6-24—85 as an emergency; effective upon filing (Register 85, No. 27). A Certificaie of Compliance must be transmitted to OAL within 120 days or emergency language will be repealed on 10-22-85.
2. Notice of Erroneous Filing declaring 6-24—85 Certificate of Compliance null and void filed 7-2-85 (Register 85, No. 27).
3. Amendment filed 9-27-85; effective tenth day thereafter (Rettisrer 85, No. 39).
4. Amendment of subsectioo (d) filed 10-11-85; effective upon filing (Register 85, No. 44).
5. Certificate of Compliance as to 6-24-85 order transmitted to OAL 9-30-85 and filed 11-1-85 (Register 85, No. 44).
6. Amendment of subsections (b) and(c) filed 6-22-87: operative 6-22-87 (Register 87, No. 27).
7. Amendment of subsection (c) filed 10-15-90 as an emergency; operative 10-15-90 (Register 90, No. 46). A Certificate **d**! Compliance must be Dansmi tted to OAL by 2—12-91 or emergency language will be repealed by operation of law on the following day.
8. Reinstatement of section as it existed prior to emergency amendment filed 10-15-90 by operation of Government Code section 11346.1(f) (Register 91, No. 49).
9. Amendment of subsection (f) and **NOIE** and new subsection (r) filed 7-8-92; operative 7-8-92 pursuant to Frsh and Game Code section 215 (Register 92, No. 28).
10. Change without regulatory effect amending subsection (d) filed 7-24-2001 pursuant to section 100, title 1, California Code of Regulations (Register 2001, No. 30).
11. Amendment of subsection (c) filed 6-24-2003; operative 7-1-2003 pursuant to Government Code section 11343.4 (Register 2003, No. 26).

§ 355. Weapons and Ammunition Authorized for the Taking of Big Game.

NOTE: Authority cited: Sections 200.202, and 203, Fish and Game Cade. Reference: Sections 200-203.1. 206, 207, 211-222, and 3950, Fish and Game Code.

HISTORY

1. Amendment filed 6-5-72; effective thirtieth day thereafter (Register 72. No. 24). For prior history, see Register 70. No, 23.
2. Amendment of subsection (d) filed 5-11-79; designated effective 7-1-79 (Register 79, No. 19).
3. Renumbering and amendment of Section 355 to Section 353 filed 5-13-81; designated effective tenth day thereafter (Register 81, No. 20).

§ 355.5. Firearms and Archery Equipment Authorized for Taking Nongame Animals During the Open Deer Season.

NOTE: Authority cited: Sections 200-221, Fisb and Game Code. Reference: Sections 200-221, Fish and Game Code.

HISTORY
1. New section filed 6-13-78; effective thirtieth day thereafter (Register 78, No. 24).
2. Repealer filed 3-11-79; designated effective 7-1-79 (Register 79, No. 19).
3. Change without regulatory effect amending section heading filed 3-28-96 pursuant to section 100, title 1, California Code of Regulations (Register 96, No. 13).

§ 356. Shooting Hours on Big Game.

NOTE Authority cited: Section 3000, Fish and Game Code. Reference: Sections 3000, and 3950, Fish and Game Code.

HISTORY
1. Amendment filed 6-4-70; designated effected 7-1-70 (Register 70, No. 23).
2. Amendment fded 5-28-71; designated effective 7-1-71 (Register 71, No. 22).
3. Amendment Sled 6-5-72; effective thirtieth day mercaiter (Register 72, No. 24).
4. Amendment 6-13-78; effective thirtieth day thereafter (Register 78, No. 24).
5. Renumbering of Section 356 to Section 352 Bled 5-13-81; designated effective tenth day thereafter (Register 81, No. 20).

§ 357. Use of Dogs in Hunting Deer, Bear, Wild Pigs.

NOTE Authority cited: Sections 200, 202, 203, 219, 3800, 4150, and 4853, Fish and Game Code. Reference: Sections 200-203.1,206, 207,211 -222,3800,4000, 4150, 4756, and 4850-4854, Fish and Game Code.

HISTORY
1. Amendment filed 6-16-61; designated effective 7-1-61 (Register 61. No. 12).
2. Amendment Sled 6-23-66; designated effective 7-2-66 (Register 66, No. 19).
3. Amendment filed 6-1-73; designated effective 7-1-73 (Register 73, No. 22).
4. Amendment filed 6-13-78; effective thirtieth day thereafter (Register 78, No. 24).
5. Amendment filed 5-19-80; designated effective 5-19-80 (Register80, No. 21).
6. Repealer filed 5—13-81; designated effective tenth day thereafter (Register 81, No. 20).

§ 357.1. Use of Dogs in Pursuit of and/or Hunting Wildlife.

NOTE Authority cited: Sections 200, 202. 203, 219. 3800, 4150, and 4853, Fish and Game Code. Reference; Sections 200-203.1,206,207,211-222,3800,4000, 4150, 4756. and 4850-4854, Fish and Game Code.

HISTORY
1. New section filed 6-14-77; designated effective 7-1-77 (Register 77, No. 25).
2. Amendment of subsections (a), (b), and (c) (3) filed 6-13-78; effective thirtieth day thereafter (Register 78, No. 24).
3. Amendment of subsections (a) and (c) (3) filed 5-11-79; designated effective 7-1-79 (Register 79, Na. 19).
4. Amendment filed 5-19-80; designated effective 5-19-80 (Register 80, No. 21).
5. Repealer filed 5-13-81; designated effective tenth day thereafter (Register 81, No. 20).

§ 358. Archery Deer Hunting.

NOTE Authority cited: Sections 200, 202, and 203, Fish and Game Code. Reference: Sections 200-203.1, 2Q6, 207, and 211-222, Fish and Game Code.

HISTORY
1. Amendment of subsections (a) and (b) filed 6-4-76; designated effective 7-1-76 (Register 76, No. 23). For prior history, see Register 75, No. 23.
2. Amendment filed 6-14-77; designated effective 7-1-77 (Register 77, No. 25).
3. Amendment filed 6-13—78; effective thirtieth day thereafter (Register 78, No. 24).
4. Amendment filed 5-U-79; designated effective 7-1-79 (Register 79, No. 19).
5. Amendment filed 5-19-80; designated effective 5-19-80 (Register 80, No.21).
6. Renumbering of Section 358 to Section 361 filed 5-13-81; designated effective tenth day thereafter (Register 81, No. 20).

§ 358.5. Archery Bear Hunting.

NOTE Authority cited: Sections 200. 202, and 203, Fish and Game Code. Reference: 200-203.1, 206, 207, and 211-222, Fish and Game Code.

HISTORY
1. Amendment of subsection (a) filed 6-13—78; effective thirtieth day thereafter (Register 78, No. 24). For prior history, see Register 77, No. 25.
2. Amendment filed 5-11-79; designated effective 7-1-79 (Register 79, No. 19).
3. Amendment filed 5-19-80; designated effective 5-19-80 (Register 80, No. 21).
4. Repealer filed 5-13-81; designated effective tenth day thereafter (Register 81, No. 20).

§ 359. Archery Equipment Regulations.

NOTE Authority cited: Sections 200, 202, and 203, Fish and Game Code. Reference: 200-203.1, 206, 207, and 211-222, Fish aod Game Code.

HISTORY
1. New subsection (g) filed 5-11-79; designated effective 7-1-79 (Register 79, No. 19). For prior history, see Register 78, No. 24.
2. Repealer filed 6-7-82; designated effective tenth day thereafter (Register 82. No. 24).

§ 359.5. Use of Crossbows.

NOTE Authority cited; Sections 200, 202, and 203. Fish and Game Code. Reference: Sections 200-203.1, 206, 207, and211-222. Fish and Game Code.

HISTORY
1. Amendment filed 6-14-77; designated effective 7-1-77 (Register 77, No. 25).
2. Renealer filed 6-7-82; designated effective tenth day thereafter (Register 82 No. 24).

§ 360. Deer.

Except as otherwise provided in this Title 14, deer may be taken only as follows:

(a) A, B, C, and D Zone Hunts.

(1) Zone A.

(A) Area; In the counties of Alameda, Contra Costa, Kings, Marin, Monterey, Napa, San Benito, San Mateo, Santa Clara, Santa Cruz, Solano, and Sonoma; and those portions of the counties of Colusa, Fresno, Kern, Lake, Mendocino, Los Angeles, Madera, Merced, Sacramento, San Joaquin, San Luis Obispo, Santa Barbara, Stanislaus, Tulare, Ventura and Yolo lying south and west of a line beginning at the junction of the mouth of Hardy Creek (Mendocino County) and the Pacific Ocean; east along Hardy Creek to Highway 1; north along Highway 1 to Highway 101; south along Highway 101 to Commercial Avenue in the town of Willits; east on Commercial Avenue to the Hearst-Willits Road (County Road 306); north and east on the Hearst—Willits Road to the Main Eel River, southeast on the Main Eel River to Lake Piilsbury at Scott Dam; southeast along the west shore of Lake Piilsbury and the Rice Fork of the Eel River to Forest Service Road M-10; east on Forest Service Road M-l0 to Forest Service Road 17N16; east on Forest Service Road 17N16 to Forest Service Road M-10; east on Forest Service Road M-10 to Leas Valley-Fouts Spring Road; east on the Letts Valley-Fouts Spring Road to tbe Elk Creek-Stonyford Road (County Road 306); north on the Elk Creek-Stonyford Road to the Glenn-Colusa county line; east along the Glenn-Colusa County line to Interstate 5; Interstate 5 south to Highway 99 in the City of Sacramento; Highway 99 south to Highway 166 in Kem County; west on Highway 166 to Highway 33; south on Highway 33 to Sespe Creek; east and south along Seape Creek to Highway 126; east on Highway 126 to Interstate 5; south on Interstate 5 and 405 to Interstate 10; west on Interstate 10 to the Pacific Ocean.

(B) Season: The season in Zone A shall open on the second Saturday in August and extend for 44 consecutive days.

(C) Bag and Possession Limit: One buck, forked hom (see subsection 351(a)) or better, per tag.

(D) Number of Tags: 65,000.

(2) Zone B.

(A) Area; Shall include all of Zones B-l, B-2.B-3, B-4, B-5 and B-6 (see subsections 360(a)(2)(A) 1-6).

I.ZoaeB-f.

In the County of Del Norte and those portions of Glenn, Humboldt, Lake, Mendocino, Siskiyou and Trinity counties within aline: Beginning at the California-Oregon state line and the Pacific Ocean; east along the state line to the point where Cook-Green Pass Road (Forest Service Road 48N20) intersects the California-Oregon state Line; south on the Cook-Green Pass Road to Highway 96 near Seiad Valley; west and south along Highway 96 to Highway 299 at Willow Creek; southeast along Highway 299 to the South Fork of the Trinity Riven southeast along the South Fork of the Trinity River to the boundary of the Yolla Bolly-Middle Eel Wilderness Area; southwest along the boundary of the Yolla Bolly-Middle Eel Wilderness Area to the Four Corners Rock-Washington Rock Trail; south and east on the Four Corners Rock-Washington Rock Trail to the North Fork; of Middle Fork Eel River; south on the North Fork of Middle Fork Eel River to Middle Fork Eel River; east on Middle Fork Eel River to confluence with Balm of Gilead Creek; north and east on Balm of Gilead Creek to confluence with Minnie Creek; east and south on Minnie Creek to Soldier Ridge Trail; north an Soldier Ridge Trail to Surnmit Trail; south on Suirimit Trail to Green Springs Trail head at Pacific Crest Road (U.S. Forest Service Road M-2); south on the Mendocino Pass Road to the intersection of Forest Highway 7; west on Forest Highway

17. Amendment filed 6-28-2002; operative 6-28-2002 pursuant to fish and Game Code sections 202 and 215 (Register 2002, No. 26).

18. Amendment of subsection (d) filed 6-24-2003; operative 7-1-2003 pursuant to Government Code section 11343.4 (Register 2003. No. 26).

§ 363. Pronghorn Antelope.

The Lava Beds National Monument and Federal and State Game Refuges lying within the hunt boundary are closed to pronghorn antelope hundng, except for the state's Hayden Hill (IS) and Blacks Mountain (IF) game refuges in Lassen County and the Clear Lake National Wildlife Refuge in Modoc County. Refer to subsection 363(b)(5) for special conditions for permission to enter and hunt pronghorn antelope in the Clear Lake National Wildlife Refuge.

(a) Zone 1—Mount Dome;

(1) Area: That portion of Siskiyou County within a line beginning at the junction of Interstate 5 and the California-Oregon state line; east along the California-Oregon state line to the Ainsworth Comers-Lava Beds National Monument Road; south along the Ainsworth Comers-Lava Beds National Monument Road to the Mammoth Crater-Medicine Lake Road; southwest along the Mammoth Crater-Medicine Lake Road to the Medicine Lake-Telephone Flat Road; east and south along the Medicine Lake-Telephone Flat Road to the Telephone Flat-Bartle Road; southwest along the Telephone Flat-Bartle Road to Highway 89; west along Highway 89 to Interstate 5; north along Interstate 5 to the California-Oregon state Line to the point of beginning.

(2) Seasons:

(A) The general season shall open on the Saturday following the third Wednesday in August and continue for nine consecutive days.

(B) The archery only season shall open 14 days prior to the general season and continue for nine consecutive days.

(3) Bag and Possession Limit: One pronghorn antelope in a license year.

(4) Number of License Tags:

(A) General Season: 5 buck tags and 0 doe tags.

(B) Archery Only Season: 1 buck tags and 0 doc tags.

(b) Zone 2—Clear Lake:

(1) Area: Those portions of Modoc and Siskiyou counties within a line beginning at the junction of the Lava Beds National Monument Road and the CMifomia-Oregon state line at Ainsworth Comers; east along the CalUornia-Oregon state line to the Crowder Flat Road; south along the Crowder Flat Road to Modoc County Road 73; south along Modoc County Road 73 to Modoc County Road 136; west along Modoc County Road 136 to the Blue Mountain-Mowitz Road; west and south along the Blue Mountain-Mowitz Road to the Deadhorse Hat-Badger Well Road; southwest along the Deadhorse Flat-Badger Well Road to the Badger Well-Browns Well Road; south along the Badger Well-Browns Well Road to the Sorholus Tank-Hackamore Road; southwest along the Sorholus Tank-Hackamore Road to Highway 139; southeast along Highway 139 to Modoc County Road 91; south along Modoc County Road 91 to the Mud Lake-Mud Springs Road; west along the Mud Lake-Mud Springs Road to the North Main Road; southwest along the North Main Road to the Long Bell-Iodine F'rairie Road at Long Bell Forest Service Station; northwest along the Long Bell-Iodine Prairie Road to the Bartle-Telephone Flat Road; north along the Bartle-Telephone Flat Road to the Telephone Flat-Medicine Lake Road; north and west along the Telephone Flat-Medicine Lake Road to the Medicine Lake-Mammoth Crater Road; northeast along the Medicine Lake-Mammoth Crater Road to the Lava Beds National Monument-Ainswonh Comers Road; north along the Lava Beds National Monument-Ainsworth Comers Road to the California-Oregon state line to the point of beginning.

(2) Seasons:

(A) The general season shall open on the Saturday following the third Wednesday in August and continue for nine consecutive days.

(B) The archery only season shall open 14 days prior to the general season and continue for nine consecutive days.

(3) Bag and Possession Limit; One prongbom antelope in a license year.

(4) Number of License Tags:

(A) General Season: 20 buck tags and 0 doe tags.

(B) Archery Only Season: 1 buck tags and 0 doe tags.

(5) Special Conditions: Tbe special regulations regarding the Peninsula "U" portion of the Clear Lake National Wildlife Refuge are summarized as follows:

(A) The area will be open on weekends and holidays only during the general season.

(B) Permission to enter this area must be obtained at the gate entrance located on the Clear Lake Road. Hunters for this area will be selected by public drawing. Persons selected for pronghorn antelope tags for Zone 2 (Clear Lake) may apply for this drawing by submitting an application upon receipt of their license tag to the Department of Fish and Game, 601 Locust Street, Redding, CA 96001. Applicants may apply as a party of two. Applications shall consist of the following: a standard U.S. Postal Service postcard with the applicant's tag number, name, address, city, zip code, area code, telephone number, and the notation "Application for Pronghorn Antelope Hunt Access Permit, Clear Lake Peninsula." Applications must reach the Redding office before the close of the business day on the second Friday in August. Successful applicants will be notified. A two-party application will not be split. The specific number of hunters will be determined each year by the Department No more than five hunters will be allowed on the area at any one time unless a party of two is drawn for the fifth place. If the fifth place is the first member of a party, then no more than six hunters will be allowed on the area at any time.

(C) The gate entrance will be open from 6:00 a.m. to one hour after sunset.

(D) The fence near the gate entrance constitutes the south boundary of the area.

(E) The specific number of pronghorn antelope to be taken from this area is determined by the number of pronghorn antelope present This area will be closed once this number is reached.

(c) Zone 3—Likely Tables:

(1) Area: Those portions of Modoc and Lassen counties within a line beginning at the junction of the Crowder Flat Road and the California-Oregon state line; east along the California-Oregon state line to the crest of the Warner Mountains; south along the crest of the Warner Mountains to the Summit Trail at Pepperdine Camp; south along the Summit Trail to the South Warner Road near Patterson Forest Service Station; west along the South Warner Road to the Long Valley-Clarks Valley Road; south along the Long Valley-Clarks Valley Road to the Clarks Valley-Madeline Road; west along the Clarks Valley-Madeline Road to Highway 395 at the town of Madeline; north along Highway 395 to theMadeline-Adin Road; northwest along the Madeline-Adin Road to the Hunsinger Draw-Sweagen Flat Road; east and north along the Hunsinger Draw-Sweagert Flat Road to the Sweagert Flat-Hunters Ridge Road; north and west along the Sweagert Flat-Hunters Ridge Road to Highway 299 near Lower Rush Creek Recreation Site; north along Highway 299 to the Canby Bridge-Cottonwood Flat Road; northwest along the Canby Bridge-Cottonwood Flat,Road to the Cottonwood Hat-Happy Camp Road; northwest along the Cottonwood Flat-Happy Camp Road to Modoc County Road 91; north along Modoc County Road 91 to Highway 139; north along Highway 139 to the Hackamore-Sorholus Tank Road; northeast along the Hackamore-Sorholus Tank Road to the Browns Well-Badger Well Road; north along the Browns Well-Badger Well Road to the Badger Well-Deadhorse Flat Road: northeast and east along the Badger Well-Deadhorse Flat Road to the Mowitz-Blue Mountain Road; north and east along the Mowitz-Blue Mountain Road to Modoc County Road 136; east along Modoc County Road 136 to Modoc County Road 73; north along Modoc County Road 73 to the Crowder Hat Road; north along the Crowder Hat Road to the California-Oregon state line, to the point of beginning.

(2) Seasons:

(A) Period One of the general season shall open on the Saturday following the third Wednesday in August and continue for nine consecutive days. Period Two of the general season shall open on the first Saturday in September and continue for nine consecutive days.

(B) The archery only season shall open 14 days prior to the earliest general season and continue for nine consecutive days.

(3) Bag and Possession Limit: One pronghorn antelope in a license year.

(4) Number of License Tags:

(A) General Season: Period One: 44 buck tags and 0 doe tags. Period Two: 44 buck tags and 0 doe tags.

(B) Archery Only Season: 7 buck tags and 0 doe tags.

(d) Zone 4—Lassen:

(1) Area: Those portions of Lassen, Plumas and Shasta counties within aline beginning at the junction ofHighway 36 and the Juniper Lake Road in the town of Chester; north along the Juniper Lake Road to the Lassen National Park boundary; north and west along the Lassen National Park boundary to Highway 89; north along Highway 89 to U.S. Forest Service Road 22 near the Hat Creek Ranger Station; east along U.S. Forest Service Road 22 to U.S. Forest Service Road 35N06; east and north along U.S. Forest Service Road35N06 to the State Game Refuge lS boundary; northwest along the State Game Refuge 1S boundary to the Coyote Canyon-Dixie Valley Road; northwest aloag the Coyote Canyon-Dixie Valley Road to the Dixie Valley-Boyd Hill Road; northwest along the Dixie Valley-Boyd Hill Road to the Snag Hill-Hayden Hill Road; northeast and north along the Snag Hill-Hayden Hill Road to Highway 139; southeast on Highway 139 to the Willow Creek-Hunsinger Flat Road; northeast and northwest along the Willow Creek-Hunsinger Flat Road to the Adin-Madeline Road; southeast along the Adin-Madeline Road to Highway 395 at the town of Madeline; south along Highway 395 to the Madeline-Clarks Valley Road; east along the Madeline-Clarks Valley Road to the Clarks Valley-Tuledad Road; east and southeast along the Clarks Valley-Tuledad Road to the California-Nevada state line; south along the California-Nevada state line to the Lassen-Sierra county line; west along the Lassen-Sierra county line to the Lassen-Plumas county line; north and west along the Lassen-Plumas county line to Highway 36; west along Highway 36 to the Juniper Lake Road, to the point of beginning.

(2) Seasons:

(A) Period One of the general season shall open on the Saturday following the third Wednesday in August and continue for nine consecutive days. Period Two of the general season shall open on the first Saturday in September and continue for nine consecutive days.

(B) The archery only season shall open 14 days prior to the earliest general season and continue for nine consecutive days.

(3) Bag and Possession Limit: One pronghorn antelope in a license year.

(4) Number of License Tags:

(A) General Season: Period One: 46 buck tags and 0 doe tags. Period Two: 46 buck tags and 0 doe tags.

(B) Archery Only Season: 7 buck tags and 0 doe tags.

(e) Zone 5—Big Valley:

(1) Area: Those portions of Modoc, Lassen, Shasta and Siskiyou counties within a line beginning at the intersection of Highways 299 and 89; north and northwest along Highway 89 to the Bartle-Telephone Flat Road; northeast along the Bartle-Telephone Flat Road to the Iodine Prairie-Long Bell Road; southeast along the Iodine Prairie-Long Bell Road to the North Main RDad at Lang Bell Forest Service Station; northeast along the North Main Road and the Mud Springs-Mud Lake Road to Modoc County Road 91; south along Modoc County Road 91 to the Happy Camp—Cottonwood Flat Road; southeast along the Happy Camp-Cottonwood Flat Road to the Cottonwood Flat-Canby Bridge Road; southeast along the Cottonwood Flat-Canby Bridge Road to Highway 299; south along Highway 299 to the Hunters Rldge^Sweagert Flat Road near Lower Rush Creek Recreation Site; east and south along the Hunters Ridge-Sweagert Flat Road to the Sweagert Flat-Hunsinger Draw Road; south and west along the Sweagert Flat-Hunsinger Draw Road to the Adin-Madeline Road; southeast along the Adin-Madeline Road to the Hunsinger Flat-Willow Creek Road; southeast and southwest along the Hunsinger Flat-Willow Creek Road to Highway 139; northwest along Highway 139 to the Hayden Hill-Snag Hill Road; south and southwest along the Hayden Hill-Snag Hill Road to the Boyd Hill-Dixie Valley Road; southeast along the Boyd Hill-Dixie Valley Road to the Dixie Valley-Coyote Canyon Road; southeast along the Dixie Valley-Coyote Canyon Road to the State Game Refuge IS boundary; southeast along the State Game Refuge IS boundary to U.S. Forest Service Road 35N06; south and west along U.S. Forest Service Road 35N06 to U.S. Forest Service Road 22; west along U.S. Forest Service Road 22 to Highway 89 near the Hat Creek Ranger Station; north along Highway 89 to Highway 299, to the point of beginning.

(2) Seasons:

(A) The general season shall open on the Saturday following the third Wednesday in August and continue for nine consecutive days.

(B) The archery only season shall open 14 days prior to the earliest general season and continue for nine consecutive days.

(3) Bag and Possession Limit: One pronghorn antelope in a license year.

(4) Number of License Tags:

(A) General Season: 10 buck tags and 0 doe tags.

(B) Archery Only Season: 1 buck tags and 0 doe tags.

(f) Zone 6—Surprise Valley:

(1) Area: Those portions of Modoc and Lassen counties within a line beginning at the intersection of the crest of the Warner Mountains and the California-Oregon state line; east along the California-Oregon state line to the California-Nevada state line; south along the California-Nevada state line to the Tuledad-Clarks Valley Road; west and northwest along the Tuledad-Clarks Valley Road to the Clarks Valley-Long Valley Road; north on the Clarks Valley-Lang Valley Road to the South Warner Road; east along the South Warner Road to the Summit Trail near Patterson Guard Station; north along the Summit Trail to the crest of the Warner Mountains at Pepperdine Camp; north along the crest of the Warner Mountains to the California-Oregon state line to the point of beginning.

(2) Seasons:

(A) The general season shall open on the Saturday following the third Wednesday in August and continue for nine consecutive days.

(B) The archery only season shall open'14 days prior to the general season and continue for nine consecutive days.

(3) Bag and Possession Limit: One pronghorn antelope in a license year.

(4) Number of License Tags:

(A) General Season: 10 buck tags and 0 doe tags.

(B) Archery Only Season: I buck tags.

(g) Ash Creek Junior Pronghorn Antelope Hunt:

(1) Area: Those lands owned and managed by the **department** as the Ash Creek Wildlife Management Area.

(2) Season: The season shall open on the Saturday following the cbird Wednesday in August and continue for four consecutive days.

(3) Bag and Possession Limit: One pronghorn antelope in a license year.

(4) Number of License Tags: 2 either-sex tags.

(5) Special Conditions: Only persons possessing **valid** junior hunting licenses and junior hunt license tags may hunt during the junior pronghorn antelope hunt **season** and in the area specified on the tag. Tagholders **shall** be **accompanied** by a nonhunting, **licensed adult** chaperon 18 **years** of age or older **while** hunting; and **tagholdeTS** shall attend an orientation meeting the day' **before** the opening day of the season.

(h) Honey Lake Junior Pronghorn Antelope Hunt:

(1) Area: That portion of Lassen County, including the Fleming and Dakin units of Honey Lake Wildlife Area, **within** a line beginning at the junction ofHighway 395 andLassen County Road A3 near Buntingville; northeast along County Road A3 to Mapes Lane (County Road 305); east and north along Mapes Lane to its junctions with Highway 395 approximately three **miles east** of Litchfield; east on Highway 395 to the junction of the Wendel-Flanigan Road (County Road 320); east and south on the Wendel-Flanigan Road to the Nevada state line; south on the Nevada state line to the Western Pacific-Union Pacific Railroad tracks near Herlong; west on the Western Pacific-Union Pacific Railroad tracks to the North Herlong Access Road (County Road A25); west and south along the north Herlong Access Road (County Road A25) to its **junction** with Highway 395; north and **west** on Highway 395 to the point of beginning.

(2) Season: The season shall open on the Saturday following the third Wednesday in August and continue for four consecutive days.

(3) Bag and Possession Limit: One pronghorn antelope in a license **year.**

(4) Number of License Tags: 2 either-sex tags.

(5) Special Conditions: Only persons possessing valid junior hunting licenses and junior hunt license tags may hunt during the junior pronghorn antelope hunt season and in the area specified on the tag. Tagho lders shall be accompanied by a noimunring, licensed adult chaperon 18 yean of age or older while hunting; and tagholders shall attend an orientation meeting the day before the opening day of the season.

(i) Fund-raising Hunt:

(1) Area: Those portions of Lassen, Modoc, Plumas, Shasta, and Siskiyou counties described as zones 1 through 6 in subsections 363(a) through (f).

(2) Season: The season for the Fund-Raising Hunt shall open on the Saturday before the first Wednesday in August and continue for 51 consecutive days.

(3) Bag and Possession Limit: One pronghorn antelope in a license year.

(4) Number of License Tags: 2 buck tags,

(j) Conditions:

(1) Pronghorn antelope license tags do not give the tagholders the right of entry onto privately-owned lands.

(2) Buck pronghorn antelope are defined as pronghorn antelope with horns longer than the ears. Doe pronghorn antelope are defined as pronghorn antelope with horns shorter than the ears. Either-sex pronghorn antelope are defined as buck or doe pronghorn antelope.

(3) Shooting time shall be from one-half hour before sunrise to one-half hour after sunset

(4) Method of take:

(A) The holder of any archery-only pronghorn antelope license tag may only take pronghorn antelope using archery equipment, as defined in Section 354 of these regulations.

(B) The holder of a general season, fund-raising hunt season, or junior hunt season license tag may take pronghorn antelope using legal firearms and archery equipment as described in sections 353 and 354 of these regulations.

(5) Any person taking any pronghorn antelope shall retain that portion of the head, which bean the horns during the open season and for 15 days thereafter/and shall produce it upon the demand of any officer authorized to enforce the provisions of these regulations.

(6) No person shall at any time capture or destroy any pronghorn antelope and detach or remove from the carcass only the head, hide or horns; nor shall any person at any time leave through carelessness or neglect any pronghorn antelope which is in his possession or any portion of the flesh thereof usually eaten by humans, to go needlessly to waste.

(•7) Prior to the acceptance or issuance of a pronghorn antelope license tag, all tagholders shall consent in writing to the terms and conditions set forth on the license tag.

fk) Pronghorn Antelope Tag Allocations Table.

§ 363 Pronghorn Antelope
Allocations - 2003

Hunt Area	*Archery—Only Season*		*General Season*			
			Period 1		*Period 2*	
	Buck	*Dae*	*Buck*	*Doe*	*Buck*	*Doe*
Zone 1	1	0	5	0	0	0
Zone 2	1	0	20	0	0	0
Zone 3	7	0	44	0	44	0
Zone 4	7	0	46	0	46	0
Zone 5	1	0	10	0	0	0
Zone 6	1	0	10	0	0	0
Ash Creek Junior Hunt	N/A		2 Ether-Sex		0	
Honey Lake Junior Hunt	N/A		2Either-•Sex		0	
Fund-Raising Hunt	N/A		2 Buck			

NOTE: Authority cited: Sections 219,220, 331, 1050 and 10502, Fish and Game Code. Reference: Sections 331, 713, 1050, 10500 and 10502, Fish and Game Code.

HISTORY

1. Amendment of subsections (e)-(g) Bled 5-31-88; operative 5-31-88 (Register 88, No. 23). For prior history, see Register 87, No. 27.
2. Amendment of subsections (e) and (0 Bled 6-19-89; operative 6-19-89 (Register 89, No. 27).
3. Amendment filed 6-22-90; operative 6-22-90 pursuant to section 215, Fish and Game Code (Register 90, No. 34).
4. Amendment of section Sled 6-28-91; operative 6-28-91 (Register 91, No. 42).
5. Amendment of subsections (a)(5), (bHf) and (g)(4) and NOTE Bled 7-8-92; operative 7-8-92 pursuant to Fish and Game Code section 215 (Register 92, No. 28).
6. Amendment filed 6-23-93; operative 6-23-93 pursuant to Fish and Game Code sections 202 and 215 (Register 93, No. 26).
7. Amendment filed 7-13-94; operative 7-13-94 pursuant to sections 202 and 215, Fish and Game Code (Register 94, No. 28).
8. Amendment of subsections (a)(9), (b)(2), (d), (e)(1) and NOTE filed 6-9-95; operative 6-9-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 23).
9. Amendment filed 6-26-96; operative 7-1-96 pursuant to section 11343.4(d) (Register 96, No. 26).
10. Amendment of subsection (d), table, subsection (e)(1), new subsection (e)(2) designator, subsection renumbering, and amendment of newly designated subsection (e)(2) filed 6-26-97; operative 6-26-97 pursuant to Fish and Game Code sections 202 and 215 (Register 97, No. 26).
11. Amendment filed 7-1-98; operative 7-1-98 pursuant to Fish and Game Code sections 202 and 215 (Register 98, No. 27).
12. Amendment filed 6-2-99; operative 6-2-99 pursuant to Fish and Game Code sections 202 and 215 (Register 99, No. 23).
13. Amendment filed 6-27-2000; operative 6-27-2000 pursuant to Fish and Game Code sections 202 and 205 (Register 2000, No. 26).
14. Editorial correction of subsection (k)(2) (Register 2001, No. 10).
15. Change without regulatory effect amending subsections (k)(l)-(2) filed 3-7-2001 pursuant to section 100, tide 1, California Code of Regulations (Register 2001, No. 10).
16. Amendment of subsections (a)(4)(A), (j)(4)—Table and (k)(2) filed 5-21-2001; operative 6-1-2001 pursuant to Fish and Game Code sections 202 and 215 (Register 2001, No. 21).
17. Amendment filed 6-28-2002; operative 6-28-2002 pursuant to Fish and Game Code sections 202 and 215 (Register 2002, No. 26).
18. Amendment Bled 6-24-2003; operative 7-1-2003 pursuant to Government Code section 11343.4 (Register 2003, No. ***26).***

§ 364. Elk.

(a) Siskiyou Roosevelt Elk Hunt:

(1) Area: In that portion of Siskiyou County beginning at the junction of Interstate Highway 5 with the California-Oregon state line; east along the state line to Highway 97; southwest along Highway 97 to Siskiyou County Road A-12; west along Road A-12 to Interstate 5; north along Interstate 5 to the point of beginning.

(2) Season: The season shall open on Wednesday preceding the second Saturday in September and continue for 12 consecutive days.

(3) Bag and Possession Limit: 1 elk per season.

(4) Number of License Tags: 25 either-sex tags.

(b) Northeastern California Rocky Mountain Elk Hunt:

(1) Area: Those portions of Siskiyou, Modoc, Lassen, and Shasta counties within a line beginning at the junction of Highway 97 and the C^ifornia-Oregon state line; east along the California-Oregon state line to the California-Nevada state line; south along the California-Nevada state line to the Tuledad-Red Rock-Clarks Valley Road (Lassen County Roads 506, 512 and 510); west along the Tuledad-Red Rock-Clarks Valley Road to Highway 395 atMadeline; west on USDAForest Service Road 39N08 to Adin; west on Highway 299 to Interstate 5; north on Interstate 5 to Siskiyou County Road A-12; east along Siskiyou County Road A-12 to Highway 97; north on Highway -97 to the point of beginning.

(2) Season:

(A) The General Season shall open on the Wednesday preceding the third Saturday in September and continue for 12 consecutive days.

(B) The Archery Only Season shall open on the Wednesday preceding the first Saturday in September and continue for 12 consecutive days.

(3) Bag and Possession Limit: 1 elk per season.

(4) Number of License Tags:

2. Certificate of Compliance—sec. 11422.1, Gov. Code, Qled 1-26-70 (Register 71, No. 5).
3. Amendment of NOIE Sled 7-16-S1; effective thirtieth day thereafter (Register 81. No. 29).
4. Editorial correction of NOTE fried 9—20-85; effective thirtieth day thereafter (Register 85, No. 38).
5. New subsection Qc) filed 10-19-87; operative 10-19-87 (Register 87, No. 43).
6. Amendment of subsection (b) Bled 11-4-93; operative 11-4-93 pursuant to Fish and Game Code sections 202 and 215 (Register 93, No. 45).
7. Change without regulatory effect amending subsections (g) and 0c) (5) filed 3-28-96 pursuant to section 100, title 1, California Code of Regulations (Register 96. No. 13).
8. Repealer of subsections (k)-(k)(7) filed 9-23-96; operative 9-23-96 pursuant to Fish and Game Code sections 202 and 215 (Register 96, No. 39).

§ 601. Enhancement and Management of Fish and Wildlife and their Habitat on Private Lands.

(a) Definition and Scope: A Private Lands Wildlife Habitat Enhancement and Management Area, (Herein after referred to as a Private Wildlife Management Area) is an area of private lands for which the landowner or their designee has completed and implemented a wildlife habitat enhancement and management plan that actively encourages the propagation, conservation and wise use of the fish and wildlife populations on their land. Such areas shall be licensed annually by the department.

(b) Application Process:

(1) Application Form and Management Plan: The applicant for a license to operate a Private Wildlife Management Areashall submit a complete application form to the Department of Fish and Game, at the appropriate regional office as listed on the application form. The applicant shall include three copies of a general management plan containing at least the following information:

(A) A legal description of the land to he included in the Private Wildlife Management Area. Four original USGS quadrangle maps or equivalent maps showing the boundaries of the Private Wildlife Management Area, access roads, any public lands within and/or adjacent to the Private Wildlife Management Area and all structures and facilities, shall be submitted with the original application;

(B) An estimate of the wildlife and habitats present within the Private Wildlife Management Area, including an indication of animal distribution and habitat condition based on the California Wildlife Habitat Relationships Database System;

(C) A statement of management objectives;

(D) A detailed description of proposed management actions that are intended to achieve the management objectives;

(E) The county General Plan land use designation for the Private Wildlife Management Area.

(2) Applicants shall be individuals or corporate landowners or their designee.

(3) Applications submitted by person(s) other than the landowner shall be approved and signed by the landowner^).

(4) License Fees: A nonrefundable fee shall be submitted with the application for a revocable Private Wildlife Management Area license. The fee will be based on the size of the Area as follows:

(A)	51,250	less than 5000 acres
(B)	51,800	5,001 to 10,000 acres
(C)	52,100	10,001 to 15,000 acres
(D)	52,400	greater than 15,001 acres

This application fee is established pursuant to Section 3402(b) of the Fish and Game Code. The Private Wildlife Management Area license shall be valid for five years during the period from July 1 through June 30, and subject to annual review and renewal by the Commission. The applicationfee covers the initial five-year license period. A fee shall be submitted, based on the size of the area, with the license renewal application at me beginning of each subsequent five year period. This license shall be in place of any other license that may be required of private landowners by the Fish and Game Code or regulations made pursuant thereto, This section shall not, however, be construed to exempt anyone from any requirement pertaining to hunting and sport fishing licenses and stamps.

The department will screen each application for compliance with these regulations. Applications that do not provide the information required. will be rejected and returned to the applicant. Any individual whose application has been rejected by the department may appeal that decision to the Commission. Applications accepted by the department will be forwarded for Commission review and approval.

(5) Issuance of Area License: Upon approval of the general management plan, the department, with approval of the Commission, shall issue a license for the taking of any fish, game bird or mammal in said Private Wildlife Management Area pursuant to the regulations of the Commission and the terms and conditions of the permit, which may supersede Fish and Game Code Section 331 (a) and fb) as it pertains to resident hunters and license tag fees for antelope, Section 332(b) and (c) as it pertains to resident hunters and license tag fees for elk, and sections 457-459, related to anterless and either sex deer.

(A) During the initial license year, the take of antelope or elk, will not be authorized, nor shall deer be taken except during the general open season, consistent with the bag and possession limits for the deer bunting zone in which the Area is located, unless otherwise stipulated by the Fish and Game Commission. This provision does not- apply to renewed licenses provided that the Private Wildlife Management Area has been continuously licensed in the Private Lands Wildlife Habitat Enhancement and Management Program. Upon satisfactory compledon of the first year management actions identified in the plan for the Private Wildlife Management Area, the Commission may authorize seasons and bag limits which differ from those established for the general seasons. Hunting must be consistent with the management plans prepared for that area or herd and should not result in an overall negative effect on the species population or herd being hunted as determined by the department.

(6) Annual Review: Annual renewal applications must be submitted to the department no later than March 1. The annual renewal application shall contain a summary of habitat enhancement and management activities, harvest, and full payment of fees for the preceding year. The department shall review each plan to determine that the licensee has fulfilled the obligations as prescribed in the management plan. The annual review shall evaluate the following:

(A) Results of activities carried out during the preceding year, including habitat improvement, wildlife production and population levels, hunter use and harvest of wildlife, including an accurate account of all hunting permits, seals and big game tags;

(B) Recommended changes in the general management plan,

(c) Tags and Seals:

(1) Possession of Tags and Seals: Every person hunting on a Private Wildlife Management Area shall have in their immediate possession a valid California hunting license and the appropriate tag or seal issued by a licensee or their authorized agent. Tags shall be filled out by hunters before hunting. The tags or seals shall permit hunting for the period specified, or undl revoked by the licensee or the department. Hunting permittees shall only take or possess those species and number of each species as specified by their hunting tags or seals as approved in the management plan: This does not apply to species not included in the management plan which may only be taken in accordance with the provisions of Part 2, Chapters 1-7, and 9 of these regulations and sections 4331 and 4332 of the Fish and Game Code. Hunting permittees while on the Private Wildlife Management Area shall be subject to all terms and conditions of the license.

(2) Tag and Seal Procedures:

(A) The department shall furnish each licensee with the appropriate tags or seals required by each management plan. With landowner approval and payment of the additional tag or seal fees, tags or seals issued by the licensee may be exchanged for a tag or seal for the same species far use on any other Licensed Private Wildlife Management Area for tbe take of the same species.

(B) Any deer hunteT who has been issued a deer tag or deer tag application by the department and wishes to hunt on a Private Wildlife Management Area shall exchange an unfilled public tag(s) or tag application(s) of the current license year for a Private Wildlife Management Area deer tag(s). These tags can only be used on a Private Wildlife Management

Area. In no event shall any hunting' permittee take more than two deer each year anywhere in California on either public or private lands. No person shall take more than one buck deer in the X-zones, as defined in Section 360(b), Title 14, CCR.

(C) Any pronghorn antelope hunter who has been issued a buck pronghorn antelope tag by the department and wishes to hunt on a Private Wildlife Management Area within the zone specified on the tag shall exchange an unfilled public buck pronghorn antelope tag of the current license year for a Private Wildlife Management Area buck pronghorn antelope tag. Any pronghorn antelope hunter who has been issued a doe pronghorn antelope tag by the department and wishes to hunt on a Private Wildlife Management Area within the zone specified on the tag shall exchange an unfilled public doe pronghorn antelope tag of the current license year for a Private Wildlife Management Area doe pronghorn antelope tag. In no case shall an exchange occur to allow pronghorn antelope hunting outside the geographic zone or prescribed dates of the original tag, as contained in Section 363, Title 14. No hunter shall exchange a Private Wildlife Management Area pronghorn antelope tag for a public tag.

(D) Immediately upon killing any animal under the authority of the tag issued to them by the licensee, the hunter shall completely fill out the tag and attach it to the antler or horn of the male animal or to the ear of the female animal. Prior to transporting the carcass from the Private Wildlife Management Area, the hunter shall surrender the report card portion of the tag to the licensee or their designee. The hunter shall have the license tag validated pursuant to the provisions of Section 4341 of the Fish and Game Code and Section 708(a)(8), Title 14, CCR. The completed report card portion of the deer tag or any other species tag shall be returned to the department by the licensee on or before January 1. The license tag shall remain with the animal pursuant to sections 708(a)(3), 708(c)(4), 708(d)(4), Title 14, CCR.

(3) Tag and Seal Fees: The licensee shall pay the department the following fees for each tag and seal authorized annually:

(A) Buck Deer tag	$ 48
(B) Antlerless Deer tag	S 48
(C) Either-sex Deer tag	$ 48
(D) Pig tag	J 42
(E) Bear tag	5 42
(F) Bull Elk tag	$420
(G) Antlerless Elk tag	$ 300
(H) Buck Antelope tag	S 150
(I) Doe Antelope tag	S 90
(J) Turkey tag	$ 18
(K) Upland Game seals	S 00.90

(d) Operation of a Private Lands Wildlife Habitat Enhancement and Management Area:

(1) Posting: Private Wildlife Management Areas shall be posted by the licensee by placing signs which have been approved by the department and that forbid trespass. Signs shall be placed at intervals not less than three to the mile along exterior boundaries and at all roads and trails entering such lands. Where the area is bounded by land open to public hunting, posting shall be required with signs posted at intervals not less than eight to the mile. These signs shall identify both ingress to the Area and egress from the Area. Posting shall be completed no later than fourteen days prior to hunting within either the Area or adjacent public deer hunting zone, and maintained for the life of the license. Posting shall ensure that all boundaries are clearly marked and that no public access roads or areas appear to be closed.

(2) Records: The licensee shall maintain accurate records of all tags and seals and make such records available to the department upon request The licensee shall provide the department with the location of where records will be kept and available for inspection. An accurate accounting of all hunting tags and seals authorized shall be submitted to the Licenses and Revenue Branch, 3211 S Street in Sacramento, CA 95816, by March 1 of each year. Such accounting shall include the actual exchanged tags or applications provided by the individual hunters on each area. Each licensee shall pay for all the previous year's authorized tags and seals by March 1. In the event a licensee fails to remit all fees by March 1, the department may require full payment of all tags and seals prior to the next license year.

(e) Revocation of Licenses, Tags, and Seals:

(1) License: A Private Lands Wildlife Habitat Enhancement and Management Area license may be suspended temporarily by the Director, upon their verification of the facts, for a breach or violation of the terms of the license by the bolder thereof, or by any person acting under their direction or control or in cooperation with them. The Commission shall be notified of any such suspension and subsequently may revoke or reinstate the license or fix the period of suspension after written notice and a hearing at the next scheduled Commission meeting has been provided to the licensee by the Commission. Any licensee convicted of a violation of the Fish and Game Code or regulations made pursuant thereto or a violation of the terms and conditions of their license must appear before the Commission prior to the issuance of a new license.

(2) Tags and Seals: The licensee, their designee, or any employee of the department may revoke aPrivate Wildlife Management Area hunting tag or tags, seal or seals for a violation of any Fish and Game law or regulation or the terms and conditions of the Private Lands Wildlife Habitat Enhancement and Management Area license.

(f) Termination of License: a licensee may elect to terminate involvement with the Pri vate Lands Wildlife Habitat Enhancement and Management Program only after giving the Commission and the department ten days notice of their intent to withdraw. The licensee must submit a certified letter of intent to the Fish and Game commission and the nearest regional office of the Department of Fish and Game along with a full accounting of all tags and seals used, exchange tags received, and all fees due the department. Prior to the department receiving this notice and full accounting with fees due, the licensee must abide by the terms and conditions of the license issued pursuant to Section 3402 of the Fish and Game Code.

(g) No person shall violate any of the provisions of this section or any license issued pursuant thereto. Failure to comply therewith may result in:

(1) denial of application
(2) revocation of license and/or tags and seals
(3) citation under the provisions of the Fish and Game Code.

NOTE: Authority cited: Sections 200, 202, 203, 3402, 3404 and 3406, Fish and Game Code. Reference: Sections 3400-3404, 3406-3409, 4331^*332 and 4341, Fish and Game Code.

HISTORY

1. New section Bled 9—16—81; effective tiirnieth day thereafter (Register 81, No. 38).
2. New section refiled 9-17-81 as on emergency; effective upan filing (Register 8L, No. 38).
3. Certificate of Compliance filed 9-23-81 (Register 81, No. 38).
4. Repealer and new section Bled 6-7-82; effective thirtieth day thereafter (Register 82, No. 24).
5. Amendment of subsectinn (d)(2) Bled 6-17-83; effective thirtieth day thereafter (Register 83, No. 25).
6. Repealer and new section filed 8-16-84; effective upon filing pursuant to Government Code section 11346.2(d) (Register 84, No. 33).
7. Amendment Bled 4-8-87, operative 4-8-87 (Register 87, No. 15).
8. Amendment filed 2-10-89; operative 2-10-89 (Register 89. No. 8).
9. Editonal correction of subsectioo (b)(3) printing error (Register 89, No. 39). Ed. Note: The amendment Bled 2-10—89 increasing a non-refundable bceuse fee from S400 to S800 was inadvertently omitted during the production of Register 89, No. 8.
10. Editorial correction of printing error in subsection (b)(1) (Register 91, No. 31).
11. Amendment of section heading, subsections **(aHO** and NOTE, and new subsection (g) Bled 4-7-93; operative 4-7-93 (Register 93, No. 15).
12. Amendment of subsection (c)(2) filed 6-28-2002; operative 6-28-2002 pursuant to Fish and Game Code sections 202 and 215 (Register 2002, No. 26).
13. Amendment filed 6-10-2003; operative 6-10-2003 pursuant to Government Code section 11343.4 (Register 2003, No. 24).

Chapter 10. Areas Closed to Hunting

§ 625. Area Closed: Birds or Mammals.

For the purpose of facilitating the operation of the Sutter National Wildlife Refuge, it is unlawful to take birds or mammals by hunting on

(1) Petition Action Warranted.

(A) Listing. A species shall be listed as endangered or threatened, as defined in sections 2062 and 2067 of the Fish and Game Code, if the Conimission determines that its continued existence is in serious danger or is threatened by any one or any combination of the foUowing factors:

1. Present or threatened modification or destruction of its habitat;
Z Overexploitation;
3. Predation;
4. Competition;
5. Disease; or
6. Other natural occurrences or human-related activities.

(B) Delisting. A species may be delisted as endangered or threatened, as defined in sections 2062 and 2067 of the Fish and Game Code, if the Commission determines that its continued existence is no longer threatened by any one or any combination of the factors provided in subsection (i)(l)(A) above.

1. Status During Delisting Process. A threatened or endangered species petitioned for delisting shall retain its listed status throughout the delisting process.

2. Removal of Species. After the commission has determined that the petitioned action is warranted, a delisted species shall retain its listed status until 30 days after the Office of Administrative Law has approved the associated rulemaking file and filed the regulation change with the Secretary of State.

(C) Uplisting and Downlisting, A threatened species may be uplisted to endangered if its continued existence throughout all or a significant portion of its range is in serious danger of becoming extinct by any one or any combination of the factors listed in subsection (i)(l)(A) above. An endangered species may be downlisted to threatened if it is no longer in serious danger of becoming extinct but special protection and management are still required because of continued threats to its existence by any one or any combination of the factors listed in subsection (i)(l)(A) above.

(2) Petitioned Action Not Warranted. The commission shall enter its findings in the public records and the subject species shall revert to its status prior to the filing of the petition.

(j) Submission of Regulatory DocumenL The department shall prepare an Initial Statement of Reasons for Regulation Change (also called Pre-publication of Notice Statement), including an assessment of tbe potential for adverse economic impact pursuant to Government Code Sections 11346.5 and 11346.53, when listing, delisting or change in status is recommended in the Department's report prepared pursuant to subsection (f) of this section. This document shall be submitted to the commission staff at the commission meeting after final consideration of the petition if the commission makes a finding that the petitioned action is warranted.

NOTE: Authority died: Sections 2071 and 2071.5, Fish and dame Code. Reference: Sections 2062, 2067, 2071, 2071.5, 2072, 2072.3, 2072.7, 2073.3, 2073 J, 2074.2, 2074.4, 2074.6 and 2075.5, Fish and Game Code.

HISTORY

1. New sections filed 5-30-86; effective thirtieth day thereafter (Register 86, No. 22).
2. Amendment of subsection (a) filed 8-31-90; operative 9-30-90 (Register 90, No. 42).
3. Amendment of section and NOTE filed 8-29-94; operative 9-28-94 (Register 94, No. 35).

§ 670.2. Plants of California Declared to Be Endangered, Threatened or Rare.

The following species, subspecies and varieties of California native plants are hereby declared to be endangered, threatened (as denned by section 2067 of the Fish and Game Code) or rare (as defined by section 1901 of the Fish and Game Code), as indicated:

(a) Endangered:
(1) Agavaceae (Agave Family)
(A) *Nolina interrata* (Dehesa nolina)
(2) Amaryllidaceae (Amaryllis Family)
(A) *Brodiaea coronaria* ssp. *rosea* (Indian Valley brodiaea)
(B) *Brodiaea filifolia* (thread-leaved brodiaea)
(C) *Brodiaea insignis* CKaweah brodiaea)
(D) *Brodiaea pallida* (Chinese Camp brodiaea)
(3) Apiaceae (Carrot Family)
(A) *Eryngium aristulatum* var. *parishii* (San Diego button-celery)
(B) *Eryngium constancei* (Loch Lomond button-celery)
(C) *Eryngium racemosum* (Delta button-celery)
(4) Asteraceae (Sunflower Family)
(A) *Baccharis vanessae* fEncinitas baccharis)
(B) *Blennosperma bakeri* (Sonoma sunshine)
(C) *Cirsium dlialatum* (Ashland thisde)
(D) *Cirsium fontinale* var. *fonrinale* (fountain thistle).
(E) *Cirsium fontinale var. obispoense* (Chorro Creek bog thistle)
(F) *Eriophyllum latilobum* (San Mateo woolly sunflower)
(G) *Helianthus niveus* ssp. *tephrodes* (Algodones Dunes sunflower)
(H) *Hemizonia conjugens* (Otay tarplant)
(D *Hemizonia increscens* ssp. *villosa* (Gaviata tarplant)
(J) *Hemizonia mohavensis* (Mojave tarplant)
(K) *Holocarpha macradenia* (Santa Cruz tarplant)
(L) *Lasthenia burkei* (Burke's goldfields)
(M) *Layia camosa* (beach layia)
(N) *Lessingia germanorum* (San Francisco lessingia)
(O) *Pentachaeta b'ellidiflora* (white-rayed pentachaeta)
(P) *Pentachaeta tyonii* (Lyon's pentachaeta)
(Q) *Pseudobahia bahiifolia* (Hartweg's golden sunburst)
(R) *Pseudobahia peirsonii* (San Joaquin adobe sunburst)
(5) Berberidaceae (Barberry Family)
(A) *Berberis nevinii* (Nevin's barberry)
(B) *Berberis pinnata* ssp. *insularis* (island barherry)
(C) *Mahonia sonnei* (Truckee barberry)
(6) Boraginaceae (Borage Family)
(A) *Amsinckia grandiflora* (large-flowered fiddleneck)
(B) *Plagiabothrys diffusus* (San Francisco popcorn-flower)
(7) Brassicaceae (Mustard Family)
(A) *Arabis macdonaldiana* (McDonald's rock cress)
(B) *Caulanthus califarnicus* (California jewel-flower)
(C) *Erysimum capilatum* var. *angustatum* (Contra Costa wallflower)
(D) *Erysimum menziesii* (Menzies's wallflower)
(E) *Erysimum teretifolium* (Santa Cruz wallflower)
(F) *Rorippa subumbellaia* (Tahoe yellow cress)
(G) *Streptanthus niger* (Tiburon jewel-flower)
(H) *Thetypodium stenopetalum* (siender-petaled thelypodium)
(8) Cactaceae (Cactus Family)
(A) *Opuntia basilaris* var. *treleasei* (Bakersfield cactus)
(9) Campanulaceae (Bellflower Family)
(A) *Downingia concolor* var. *brevior* (Cuyamaca Lake downingia)
(10) Caryophyllaceae (Pink Family)
(A) *Arenaria paludicola* (marsh sandwort)
(B) *Silene campanulata* ssp. *campanulata* (Red Mountain catchfly)
(11) Chenopodiaceae (Goosefoot Family)
(A) *Atriplex rularensis* (Bakersfield smallscale)
(B) *Nitrophila mohavensis* (Amargosa nitrophila)
(12) Convolvulaceae (Morning-glory Family)
(A) *Calystegia stebbinsii* (Stebbins's morning-glory)
(13) Crassulaceae (Stonecrop Family)
(A) *Dudleya blochmanieae* ssp. *brevifolia* (short-leaved dudleya)
(B) *Dudleya traskiae* (Santa Barbara Island dudleya)
(C) *Parvisedum leiocarpum* (Lake County stonecrop)
(14) Cupressaceae (Cypress Family)
(A) *Cupressus abramsiana* (Santa Cruz cypress)
(15) Cyperaceae (Sedge Family)
(A) *Carex albida* (white sedge)
(16) Ericaceae (Heath Family)
(A) *Araostaphylos densiflora* (Vine Hill manzanita)
(B) *Araostaphylos hookeri* **3sp.** *hearstiorum* (Hearst's manzanita)
(C) *Arctostaphylos hookeri* ssp. *ravenii* (Presidio manzanita)
(D) *Arctostaphylos imbricata* (San Bruno Mountain manzanita)

(E) *Arctostaphyios pacifica* (Pacific manzanita)
(F) *Arctostaphyios pallida* (pallid manzanita)
(G) *Omithostaphylos oppositifolia* (Baja California birdbush)
(17) Fabaceae (Pea Family)
(A) *Astragalus agnicidus* (Humboldt milk-vetch)
(B) *Astragalus lentiginosis* **Yar.** *sesquimetralis* (Sodaville milk-vetch)
(C) *Astragalus magdalenae* var. *peirsonii* (Peirson's milk-vetch)
(D) *Astragalus pyenostachyus var. lanosissimus* (Ventura marsh milk-vetch)
(E) *Astragalus tener* var. *titi* (coastal dunes milk-vetch)
(F) *Lotus argophyllus* var. *adsurgens* (San Clemente Island bird's-foot trefoil)
(G) *Lotus argophyllus* var. niveiu (Santa Cruz Island bird's-foot trefoil)
(H) *Lotus dendroideus* var. *traskiae* (San Clemente Island locus)
(I) *Lupinus nipomensis* (Nipomo Mesa lupine)
(J) *Lupinus tidestromii* var. *tideslromii* (Tidestrom's lupine)
(K) *Trifolium trichocaiyx* (Monterey clover)
(18) Hydrophyllaceae (Waterleaf Family)
(A) *Eriadicryon altissimum* (Indian Knob mountainbalm)
(19) Lamiaceae (Mint Family)
(A) *Acanthomintha duttonii* (San Mateo thom-rnint)
(B) *Acanthomintha ilicifolia* (San Diego thom—mint)
(C) *Monardeila linoides* ssp. *viminea* (willowy monardella)
(D) *Pogogyne abramsii* (San Diego mesa mint)
(E) *Pogogyne clareana* (Santa Lucia mint)
(F) *Pogogyne nudiuscula* (Otay Mesa Mint)
(20) Liliaceae (Lily Family)
(A) *Fritillaria roderickii* (Roderick's fritillary)
(B) *Lilium occidentals* (western lily)
(C) *Lilium pardalinum ssp. pitldnense* (Pitkin Marsh lily)
(21) Limnanthaceae (False Mermaid Family)
(A) *Limnanthes dougiasii* var. *sulphurea* (Point Reyes meadowfoam)
(B) *Limnanthes Jloccosa* ssp. *califomica* (Butte County meadowfoam)
(C) *Limnanthes gracilis* var. *parishii* (Parish's meadowfoam)
(D) *Limnanthes vinculans* (Sebastopol meadowfoam)
(22) Linaceae (Flax Family)
(A) *Hesperolinon didymocarpum* (Lake County western flax)
(23) Malvaceae (Mallow Family)
(A) *Malacothamnus clementinus* (San Clemente Island bush mallow)
(B) *Malacothamnus fasciculatus* var. *nesioticus* (Santa Cruz Island bush mallow)
(C) *Sidalcea covillei* (Owens Valley checkerbloom)
(D) *Sidalcea oregana* ssp. *valida* (Kenwood Marsh checkerbloom)
(E) *Sidalcea pedaia* (bird-foot checkerbloom)
(F) *Sidalcea stipuiaris* (Scadden Flat checkerbloom)
(24) Onagraceae (Evenmg-primrose Family)
(A) *Clarkia franciscana* (Presidio ciarkia)
(B) *Clarkia imbricata* (Vine Hill clarkia)
(C) *Clarkia lingulata* (Merced ciarkia)
(D) *Clarkia springvillensis* (Springville clarkia)
(E) *Oenothera deltoides* ssp. *howellii* (Antioch dunes evening-primrose)
(25) Poaceae (Grass Family)
(A) *Dichanthelium lanuginosum* var. *thermale* (Geysers dichanthelium)
(B) *Neostapfia colusana* (Colusa grass)
(C) *Orcuttia califomica* (California Orcutt grass)
(D) *Orcuttia inaequaiis* (San Joaquin Valley Orcutt grass)
(E) *Orcuttia pilosa* (hairy Orcutt grass)
(F) *Orcuttia tenuis* (slender Orcutt grass)
(G) *Orcuttia viscida* (Sacramento Orcutt grass)
(H) *Poa napensis* (Napa blue grass)
(!) Tuctoria mucronata (Crampton's tuctoria)
(26) Polemoniaceae (Phlox Family)
(A) *Eriastrum densifolium* ssp. *sanctorum* (Santa Ana River woollystar)
(B) *Navarretia leucocephala* ssp. *plieantha* (many-flowered navarretia)
(C) *Phlox hirsuta* (Yreka phlox)
(27) Polygonaceae (Buckwheat Family)
(A) *Chorizanthe orcuttiana* (Orcutt's spineflower)
(B) *Chorizanthe parryi vzx.femandina* (San Fernando Valley spineflower)
(C) *Chorizanthe valida* (Sonoma spineflower)
(D) *Dodecahema leptoceras* (slender—homed spineflower)
(E) *Eriogonum alpinum* (Trinity buckwheat)
(F) *Eriogonum apricum* var. *apricum* (lone buckwheat)
(G) *Eriogonum apricum* var. *prostratum* (Irish Hill buckwheat)
(H) *Eriogonum ericifolium* var. *thomei* (Thome's buckwheat)
(I) *Eriogonum grande* ssp. *timorum* (San Nicholas Island buckwheat)
(J) *Eriogonum kelloggii* (Kellogg's buckwheat)
(28) Ranunculaceae (Buttercup Family)
(A) *Delphinium variegatum* ssp. *kinkiense* (San Clemente Island larkspur)
(29) Rhamnaceae (Buckthorn Family)
(A) *Ceanothus ophicochilus* (Vail Lake ceanothus)
(30) Rosaceae (Rose Family)
(A) *Cercocarpus traskiae* (Catalina Island mountain-mahogany)
(B) *Potentilla hickmanii* (Hickman's cinquefoil)
(C) *Rosa minurifolia* (small-leaved rose)
(31) Rubiaceae (Madder Family)
(A) *Galium calalinense* ssp. *acrispum* (San Clemente Island bedstraw)
(32) Saxifragaceae (Saxifrage Family)
(A) *Lithophragma maximum* (San Clemente Island woodland star)
(33) Scrophulariaceae (Figwort Family)
(A) *Castilleja campesiris* ssp. *succulenta* (succulent owl' s-clover)
(B) *Castilleja grisea* (San Clemente Island Indian paintbrush)
(C) *Castilleja uliginosa* (Pitkin Marsh Indian paintbrush)
(D) *Cordylanthus maritimus* sap. *maritimus* (salt marsh bird's-beak)
(E) *Cordylanthus palmatus* (palmate-bracted bird's-beak)
(F) *Cordylanthus rigidus* ssp. *littoralis* (seaside bird's-beak)
(G) *Crariola heterosepala* (Boggs Lake hedge-hyssop)
(b) Threatened:
(1) Amaryllidaceae (Amaryllis Family)
(A) *Allium munzii* (Munz's onion)
(2) Asteraceae (Sunflower Family)
(A) *Cirsium loncholepis* (La Graciosa thistie)
(B) *Cirsium rhothophilum* (surf thisde)
(C) *Hazardia orcuttii* (Orcutt's hazardia)
(D) *Verbesina dissita* (crownbeard)
(3) Boraginaceae (Borage Family)
(A) *Plagiobothrys strictus* (Calistoga popcorn-flower)
(4) Brassicaceae (Mustard Family)
(A) *Dithyrea maritima* (beach spectaclepod)
(B) *Rorippa gambellii* (Gambel's water cress)
(5) Crassulaceae (Stonecrop Family)
(A) *Dudleya stolonifera* (Laguna Beach dudleya)
(6) Fabaceae (Pea Family)
(A) *Astragalus clarianus* (Clara Hunt's milk-vetch)
(B) *Lupinus citrinus* var. *deflexus* (Mariposa lupine)
(C) *Lupinus milo-bakeri* (Milo Baker's lupine)
(7) Liliaceae (Lily Family)
(A) *Calochortus tiburvnensis* (Tiburon mariposa lily)
(B) *Fritillaria striata* (striped adobe-lily)
(8) Linaceae (Flax Family)
(A) *Hesperolinon congestum* (Marin western flax)
(9) Philadelphaceae (Mock Orange Family)
(A) *Carpenteria califomica* (tree-anemone)
(10) Poaceae (Grass Family)

(A) *Pleuropogon hooverianus* (North Coast semaphore grass)
(11) Polemomaceae (Phlox Family)
(A) *Cilia tenuiflora* ssp. *arenaria* (sand gilia)
(B) *Navarretia leucacephala* ssp. *pauciflora* (few-flowered navarretia)
(12) Polygonaceae (Buckwheat Family)
(A) *Chorizanthe howeilii* (Howell's spineflower)
(13) Scrophulariaceae (Figwort Family)
(A) *Castilleja affinis* spp. *neglecta* (Tiburon Indian pamtbrush)
(14) Verbenaceae (Vervain Family)
(A) *Verbena califomica* (California vervain)
(c) Rare:
(1) Arnaryllidaceae (Amaryllis Family)
(A) *Allium yosemitense* (Yosemite onion)
(B) *Bloomeria humilis* (dwarf goldenstar)
(2) Apiaceae (Carrot Family)
(A) *Lilaeopsis masonii* (Mason's lilaeopsis)
(B) *Sanicula maririma* (adobe sarddle)
(C) *Sanicula saxatilis* (rock sanicle)
(3) Asteraceae (Sunflower Family)
(A) *Blennosperma nanum* var. *rabustum* (Point Reyes blennosperma)
(B) *Eriophyllum congdonii* (Congdon's woolly sunflower)
(C) *Hemizonia arida* (Red Rock tarplant)
(D) Hemizonia minthomii (Santa Susanna tarplant)
(E) *Machaeranthera lagunensis* (Mount Laguna aster)
(F) *Senecio ganderi* (Gander's ragwort)
(G) *Senecio layneae* (Layne's ragwort)
(4) Boraginaceae (Borage Family)
(A) *Cryptantha roosiorum* fbristlecone cryptantha)
(5) Brassicaceae (Mustard Family)
(A) *Caulanthus stenocarpus* (slender-pod jewel-flower)
(6) Campanuiaceae (Bellflower Family)
(A) *Nemacladus twisselmannii* (Twisseimann's nemacladus)
(7) Crassulaceae (Stonecrop Family)
(A) *Dudleya cymosa* ssp. *marcescens* (marcescent dudleya)
(B) *Dudleya nesiotica* (Santa Cruz Island dudleya)
(8) Cyperaceae (Sedge Family)
(A) *Carex tompkinsii* (Tompkins's sedge)
(9) Ericaceae (Heath Family)
(A) *Arctostaphylos bakeri* (Baker's manzanita)
(B) *Arctostaphylos edmundsii* var. *parvifolia* (Hanging Gardens manzanita)
(10) Euphorbiaceae (Spurge Family)
(A) *Croton wigginsii* (Wiggins's croton)
(11) Fabaceae (Pea Family)
(A) *Astragalus johannis-howellli* (Long Valley milk-vetch)
(B) *Astragalus monoensis* var. *monoensis* (Mono milk-vetch)
(C) *Astragalus traskiae* (Trask's. milk-vetch)
(D) *Lupinus padre-crowleyi* (Father Crowley's lupine)
(E) *Thermopsis macrophylla* var. *agnina* (Santa Ynez false lupine)
(F) *Trifolium polyodon* (Pacific Grove clover)
(12) Hydrophyllaceae CWaterleaf Family)
(A) *Eriodictyon capitatum* (Lompoc yerba santa)
(13) Liliaceae (Lily Family)
(A) *Calochortus dunnii* (Dunn' s mariposa lily)
(B) *Calochortus persistens* (Siskiyou mariposa lily)
(C) *Chlarogalum purpureum* var. *reduction* (Camatta Canyon amole)
(14) Limnanthaceae (False Mermaid Family)
(A) *Limnanthes bakeri* (Baker's meadowfoam)
(15) Malvaceae (Mallow Family)
(A) *Sidalcea hickmanii* ssp. *anomala* (Cuesta Pass checkerbloom)
(B) *Sidalcea hickmanii* ssp. *parishii* (Parish's checkerbloom)
(16) Onagraceae (Evemng-primrose Family)
(A) *Clarkia speciosa* ssp. *immaculata* (Pismo clarkia)
(B) *Oenothera califomica* ssp. *eurekensis* (Eureka Dunes evening-primrose)
(17) Poaceae (Grass Family)
(A) *Agrostis blasdalei* var. *marinensis* (Marin bent grass)
(B) *Calamagrostis faliosa* (leafy reed grass)
(C) *Swallenia alexandrae* (Eureka Valley dune grass)
(D) *Tuctoria greenei* (Greene's tuctoria)
(18) Polemomaceae (PUox Family)
(A) *Eriastrum tracyi* (Tracy's eriastrum)
(19) Polygonaceae (Buckwheat Family)
(A) *Dedeckera eurekensis* (July gold)
(B) *Eriogonum but lerv/0 rthianum* (Butterworth's buckwheat)
(C) *Eriogonum crocatum* (Conejo buckwheat)
(D) *Eriogonum giganteum* var. *compactum* (Santa Barbara Island buckwheat)
(E) *Eriogonum twisselmannii* (Twisseimann's buckwheat)
(20) Portulacaceae (Purslane Family)
(A) *Lewisia congdonii* (Congdon's lewisia)
(21) Ranunculaceae (Buttercup Family)
(A) *Delphinium bakeri* (Baker's larkspur)
(B) *Delphinium hesperium* ssp. *cuyamacae* (Cuyamaca larkspur)
(C) *Delphinium luteum* (yellow larkspur)
(22) Rhamnaceae (Buckthorn Family)
(A) *Ceanothus hearstiorum* (Hearst's ceanothus)
(B) *Ceanothus maritimus* (maritime ceanothus)
(C) *Ceanothus masonii* (Mason's ceanothus)
(D) *Ceanothus roderickii* (Pine Hill ceanothus)
(23) Rosaceae (Rose Family)
(A) *Ivesia callida* (Tahquitz ivesia)
(24) Rubiaceac (Madder Family)
(A) *Galium angustifolium* ssp. *borregoense* (Borrego bedstraw)
(B) *Galium buxifolium* (box bedstraw)
(C) *Galium californicum* ssp. *sierrae* (El Dorado bedstraw)
(25) Saxifragaceae (Saxifrage Family)
(A) *Bensoniella oregona* (bensoniella)
(26) Scrophulariaceae (Figwort Family)
(A) *Castilleja gleasonii* (ML Gleason Indian paintbrush)
(B) *Cordylanthus mollis* ssp. *mollis* (soft bird's-beak)
(C) *Cordylanthus nidularius* (ML Diablo birds-beak)
(D) *Cordylanthus tenuis* ssp. *capiUaris* (Pennell'3 bird's-beak)
(E) *Holmgrenanthe petrophila* (rock lady)
fF) *Pedicularis dudleyi* (Dudley's lousewort)
(27) Sterculiaceae (Cacao Family)
(A) *Fremontodendron decumbens* (Pine Hill flannelbush)
(B) *Fremontodendron mexicanum* (Mexican flannelbush)

NOTE: Authority cited: Sections 1904 and 2070, Fish and Game Code. Reference: Sections 1755, 1904,2062,2067,2070,2072.7 and 2075.5, Fish and Game Code.

HISTORY

1. New section filed 10-11-78; effective tliiitieth day thereafter (Register78, No. 41).
2. Amendment of subsections (a)(10), fb)(10), **(b)**(17) and new subsections (a)(12Ha)(27) and **(b)**(19)-fb)(21) filed 6-11-79; effective thirtieth day thereafter (Register 79, No. 24).
3. Amendment filed 8-9-79; effective thirtieth day thereafter (Register 79, No. 32).
4. Amendment filed 10-17-79; effective thirtieth day thereafter (Register 79, No. 42).
5. Repealer and new section Sled 7-16-81; effective thirtieth day thereafter (Register 81, No. 29).
5. Amendment of subsections (a)(2Ha)(4), (a)(10), (a)(16), (a)(17). (a)(20) and (a)(26) filed 12-18-81; effective thirtieth day thereafter (Register 81, No. 51).
7. New subsections (a)(7)(D), (a)(14)(E) and (F), (a)(18)(Q, (a)(20)(E) and (F), (a)(25)fB), (a)(26)(H), (a)(27) and (a)(28) filed 1-13-82; effective thirtieth day hereafter (Register 82, No. 3).
8. New subsections (a)(4)(H), (a)(7)(E). (a)(14)(G) and (H), (a)(l8)(D), (a)(24)(F), (a)(29Ha)(3t) filed 3-17-82; effective thirtieth day thereafter (Register 82, No. 12).
9. Amendment of subsection (a)(26) and new subsections (b)(2)(C), fb)(3)(F)-(H), **(b)**(16)(F), (b)(20)(F), **(b)**(2l)**(B),** and (b)(24)-(27) filed 6-4-82; effective thirtieth day thereafter (Register 82, No. 23).
10. New subsections (b)(1)(B), (b)(3)(E), (b)(9)(F) and (G), (b)(ll)(C), (b)(14)(C), **(b)**(17)(C), (b)(18)(D), **(b)**(20)(E), and **(b)**(22) and (23) filed 6-4-82; effective thirtieth day mereafter (Register 82. No. 23).
11. Amendment of subsection (a)(3) and new subsection (a)(26)(H) filed 4-20-84; effective thirtieth day thereafter (Register 84, No. 16).
12. Editorial correction filed 7-20-84 (Register 84, No. 29).

13. Amendment filed 8-3-84; effective thirtieth day thereafter (Register 84. No. 31).
14. Editorial correction of NOTE filed 9-20-B5; effective thirtieth day thereafter (Register 85, No. 38).
15. Amendment filed 5-30-86; effective thirtieth day mcreafter (Register 86, No. 22).
16. Amendment of subsection (a), relettering and amendment of fonnersubsection (b) to subsection (c), and new subsection (b) filed 1-16-87; effective upon filing pursuant to Fish and Game Code section 215 (Register 87, No. 4).
17. Amendment of subsections (a)(17) and (b)(3) filed 2-26-88; operative 3-27-88 (Register 88, No. 13).
18. Amendment of subsection (a) filed 10-23-89; operative 11-22-89 (Register 89, No. 43).
19. Editorial correction of printing error inadvertently omitting text (Register 90, No. 38).
20. Renumbering; former (a)(8) through (a)(25) to (a)(ll) through (a)(28) respectively; former (a)(26), (27), (28), (29), (30), (31); lo (a)(32), (9), (31), (10), (29) and (30) respectively; renumbering (a)(25)(A) to (a)(29)(C); relettering farmer (n)(25)(B) to (a)(28)(A); renumbering (b)(IM5) to (b)(5), (6), (7), (9), (10) respectively; adding new (a)(4)(KMN), (a)(7)(H), (a)(8), (a)(8)(A), (a)(10)(B), (a)(13)(Q, (a)(27)(I), (b)(1), (b)(1)(A), (b)(2), (b)(2)(AHC), (b)(3), (b)(3)(A), (b)(4), (b)(4)(AMB), (b)(6)(B)-(C), (b)(8), (b)(8)(A), (b)(9)(B), (b)(ll), (b)(ll)(A); nonsubstantive spelling corrections at (a)(4)(G), (J), (a)(5)(C), (a)(6)(B), (a)(7)(A), (E), (F), (a)(17)(B), (E), (G), (a)(18)(B), (a)(19)(A), (E), (a)(23)(A), (E), (a)(25)(B), (a)(32)(A), (F), (b)(7)(A), (c)(1)(A), (c)(3)(F), (c)(9)(A), (C), (E), (F), (c)(ll)(A), (C), (c)(15)(A), (B); correction of printing error repeating (a)(5), (a)(5)(A), (a)(4), (a)(4)(A)-(J) filed 10-9-90; operative 11-8-90 (Register 90, No. 45).
21. New subsection (a)(4)(0) filed 4-7-92; operative 5-7-92 (Register 92, No. 15).
22. New subsections (a)(4)(P}-(Q) and subsection (b)(8)(A) and renumbering Bled 12-1-92; operative 12-31-92 (Register92, No. 49).
23. New subsection (a)(4)(B) and subsection relettering filed 6-11-93; operative 7-12-93 (Register 93, No. 24).
24. New subsection (a)(29) and subsection renumbering Bled 12-28—93; operative 1-27-94 (RegistBT 93, No. 53).
25. New subsections (b)(13Hb)(13)(A) Bled 7-14-94; operative 8-15-94 (Register 94, No. 28).
26. Editorial correction relocating subsection (b)(8)(B) to (b)(7)(B) (Register 94, No. 28).
27. Change without regulatory effect amending subsections (a)(4)(H), (a)(4)(J), (a)(13)(B), (a)(17)(C), (a)(17)(F), (a)(19)(A), (a)(2Z)(A), (a)(25)(A), (a)(27)(G), (a)(28)(A), (a)(33)(D). (a)(33)(G), (b)(1)(A), (b)(6)(C), (b)(8)(A). (c)(3)(D), (c)(3)(G), (c)(5)(A), (c)(9)(B) and (c)(14)(B)filed 2-10-95 pursuant to section 100, title 1, California Code of Regulations (Register 95, No. 6).
28. Change without regulatory effect amending subsections (a)(26)(A), (b)(10)(B) and (b)(12)(A) filed 10-3-95 pursuant to section 100. title 1, California Code of Regulations (Register 95, No. 40).
29. Change without regulatory effect amending subsections (a)(5)(A) and(C) and (a)(20)(B) filed 8-20-98 pursuant to section 100, title 1, CaUfomia Code of Regulations (Register 98, No. 34).
30. Change without regulatory effect amending section and **NOTE** Bled 6-7-2000 pursuant to section LOO, title 1, California Code of Regulations (Register 2000, No. 44).
31. New subsection (a)(17)(D) and subsection relettering filed 11-7-2000; operative 12-7-2000 (Register 2000, No. 45).
32. New subsection (a)(16)(G) filed 4-4-2002; operative 4-4-2002 pursuant to Government Code section 11343.4 (Register 2002, No. 14).
33. New subsection (a)(27)(B) and subsection relettenng filed 8-9-2002; operative 9-8-2002 (Register 2002, No. 32).
34. New subsection (b)(2)(C) and subsection relettering filed 12-26-2002; operative 1-25-2003 (Register 2002, No. 52).
35. New subsections (b)(10)-(b)(10)(A), repealer of subsection (c)(17)(C) and subsection renumbering and relettering filed 12-30-2002; operative 1-29-2003 (Register 2003, No. 1).

§ 670.5. Animals of California Declared to Be Endangered or Threatened.

The following species and subspecies are hereby declared to be endangered or threatened, as indicated:

(a) Endangered:
(1) Crustaceans:
(A) California freshwater shrimp *(Syncaris pacifica)*
(B) Shasta crayfish *(Pacifastacus fords)*
(2) Fishes:
(A) Bull trout *(Salvelinus confluentus)*
(B) Mohave cui chub *(Gila bicolor mohavensis)*
(C) Owens tui chub (*Gila bicolor snyderi)*
(D) Bonytail (Gila *elegans)*
(E) Colorado squawfish *(Ptychocheilus lucius)*
(F) Lost River sucker *(Deltistes luxatus)*
(G) Modoc sucker (*Catostomus microps)*
(H) Shonnose sucker (*Chasmistes brevirostris)*
(T) Razorback sucker *(Xyrauchen lexanus)*
(J) Desert pupfish (*Cyprinodon macularius)*
(K) Owens pupfish (*Cyprinodon radiosus)*
(L) Unarmored threespine stickleback *(Gaslerosteus aculeaius williamsoni)*
(M) Winter run Chinook salmon *(Oncorhynchus tshawytscha)*
(N)'Coho salmon *(Oncorhynchus kisutch)* south of San Francisco Bay.
(3) Amphibians:
(A) Santa Cruz long-toed salamander *(Ambysioma macrodactylum-croceumj*
(B) Desert slender salamander *(Batrachaseps aridus)*
(4) Reptiles:
(A) Coachella Valley fringe-toed lizard (tVma *inomata)*
(B) Blunt-nosed leopard lizard *(Gambelia silus)*
(C) San Francisco garter snake *(Thamnophis sirtalis tetrataenia)*
(5) Birds:
(A) California brown pelican *(Pelecanus occidemalis califomicus)*
(B) California condor *(Gymnogyps califomianus)*
(C) Bald eagle *(Haliaeetus leucocephalus)*
(D) American peregrine falcon *(Falco peregrinus anatum)*
(E) California clapper rail *(Ratios longiraslris obsoletus)*
(F) Light-footed clapper rail *(Rallus lon'giroslris levipes)*
(G) California least tern *(Slema andllarum browni)*
(H) Western yellow-billed cuckoo *(Coccyzus americanus occidentals)*
(I) Elf owl *(Micrathene whimeyi)*
(J) Great gray owl *(Strix nebulosa)*
(K) Least Bell's vireo *(Vireo bellii pusillus)*
(L) Inyo California townee *(Pipilo crissalis eremophilus)*
(M) Willow flycatcher *(Empidonax traillii)*
(N) Arizona Bell's vireo *(Vireo bellii arizonae)*
(0) Gila woodpecker *(Melanerpes uropygialisj*
(P) Gilded northern flicker (*Colaptes auratus chrysoides)*
(Q) Belding's savannah sparrow *(Passerculus sandwichensis beldingii)*
(R) Marbled murrelet *{Brachyramphus marmoralus)*
(6) Mammals:
(A) Riparian brush rabbit *(Sylvilagus bachmani riparius)*
(B) Morro Bay kangaroo rat *(Dipodomys heermanni morroensis)*
(C) Giant kangaroo rat *(Dipodomys ingens)*
(D) Tipton kangaroo rat *(Dipodomys nitriloides nilratoides)*
(E) Fresno kangaroo rat *(Dipodomys nitritoides exilis)*
(F) Salt-marsh harvest mouse *(Reithrodontomys raviventris)*
(G) Amargosa vole *(Microlus califomicus scirpensis)*
(H) California bighorn sheep *(Ovis canadensis califomiana)*
(b) Threatened;
(1) Gastropods:
(A) Trinity bristle snail *(Monadenia seiosa)*
(2) Fishes:
(A) Delta smelt *(Hypomesus transpacificus)*
(B) Cottonball Marsh pupfish (*Cyprinodon salinus milleri)*
(C) Rough sculpin *(Cottus asperrimus)*
(D) Spring—run chinook salmon *(Oncorhynchus tshawytscha)* of the Sacramento River drainage.
(3) Amphibians:
(A) Siskiyou mountain salamander (*Plelhodon stormi)*
(B) Kern Canyon slender salamander *(Batrachaseps simatus)*
(C) Tehachapi slender salamander *(Batrachoseps stebbinsi)*
(D) Limestone salamander *(Hydromantes brunus)*
(E) Shasta salamander *(Hydromantes shastae)*
(F) Black toad *(Bufo exsul)*
(4) Reptiles:
(A) Desert tortoise *(Copherus agassizzi)*
(B) Barefoot banded gecko (*Coleonyx switaki)*
(C) Southern rubber boa (*Charina botlae umbratica)*

(D) Alameda whipsnake *(Masticophis lateralis euryxanthus)*
(E) Giant garter snake *(Thamnophis cauchi gigas)*
(5) Birds:
(A) Swainson's hawk *(Buteo svuainsoni)*
(B) California black rail *(Laterallus jamaicensis cotumiculus)*
(C) Yuma clapper rail *(Rallus longirostris yumanensis)*
(D) Greater sandhill crane *(Cms canadensis tabida)*
(E) Bank swallow *(Riparia riparia)*
(6) Mammals:
(A) Mohave ground squirrel *[Spermohilus mohavensis)*
(B) San Joaquin antelope squirrel *(Ammospermophilus nelsoni)*
(C) Stephens' kangaroo rat *(Dipodomys stephensi)*
(D) Sierra Nevada red fox *(Vulpes vulpes necator)*
(E) San Joaquin kit fox *(Vulpes macrotis mutica)*
(F) Island fox f *Urocyon litloralis)*
(G) Wolverine *(Gulo gulo)*
(H) Guadalupe fur seal *(Arclocephalus lownsendi)*
(T) Peninsular bighorn sheep *(Ovis canadensis cremnobates)*

NOTE: Authority cited: Sections 2070 and 20755, Fish and Game Code. Reference: Sections 1755,2055, 2062,2067, 2070, 2072.7, 2075J and 2077, Fish and Game Code.

HISTORY

1. New section filed 5-2B-71; effective thirtieth day thereafter (Register 71, No. 22).
2. Amendment of subsections (a)(1), (a)(3) and (b)(3) filed 12-11-73; effective thirtieth day thereafter (Register 73, No. 50).
3. Amendment of subsections (a)(1) and (b)(1) filed 1-23-78; effective thirtieth day thereafter (Register 78, No. 4).
4. Amendment filed 9-2-80; effective thirtieth day thereafter (Register 80, No. 36).
5. Editorial correction of subsection (b) (Register 80, No. 41).
6. Editorial correction of **NOTE** and **HISTORY** 4. (Register 80, No. 51).
7. Repealer and new section filed 7-16—81; effective thirtieth day thereafter (Register 81, No. 29).
8. Amendment of subsection (b)(6) filed 3-18—83; effective thirtieth day thereafter (Register 83, No. 12).
9. Amendment filed 5-30-86; effective thirtieth day thereafter (Register 86, No. 22).
10. New subsections (a)(5)(MMO) filed 2-16-88; operative 3-17-88 (Regisrer 88. No. 9).
11. Amendment filed 2-26-88; operative 3-27-88 (Register 88. No. 13).
12. Relettering of former subsections (a)(6)(C)-(a)(6)(E) to subsections (a)(6)(DMa)(6)(F) and new subsections (a)(6)(C) and (b)(5)(E) filed 5-12-89; operative 6-11-89 (Register 89, No. 20).
13. Amendment of subsection (b)(4) filed 8-3-89; operative 8-3-89 pursuant to Government Code section 11346.2(d) (Regisier 89, No. 32).
14. New subsection (a)(2)(M) filed 9-22-89; operative 9-22-89 pursuant to Government Code section 11346.2(d) (Register 89, No. 39).
15. Reordering of subsections (a)(5)(K>-0P) and new subsection (a)(5)(Q) filed 12-3-90; operntive 1-2-91 (Register 91, No. 3).
16. Editorial correction of printing error in subsections (a)(2)(E) and (a)(5)(0) and (P) (Register 91, No. 31).
17. New subsection (a)(5)(R) filed 3-12-92 as an emergency; operative 4-13-92 (Register 92, No. 12),
18. Adoption of subsection (h)(2)(A) and subsection relettering Bled 11-9-93; operative 12-9-93 (Register 93, No. 46).
19. Repealer of subsection (b)(6)(A) and subsection redesignation fried 4-20-94; operative 5-20-94 (Register 94, No. 16).
20. New subsection (a)(6)(A), subsection redesignation and amendment of **N o t e** filed 4-29-94; operative 5-30-94 (Register 94, No. 17).
21. New subsection (a)(2)(N) filed 12-1-95; operative 12-31-95 (Regisier 95, No. 48).
22. New subsection *(b)(2)(D)* Hied 1-6-99; operative 2-5-99 (Register 99, No. 2).
23. New subsection (a)(6)(H), repealer of subsection (b)(6)(H) and subsection relettering filed 3-23-99 as an emergency; operative 3-23-99 (Register 99, No. 13). A Certificaie of Compliance must tie ttansmitted to OAL by 7-21-99 or emergency language will be repealed by operation of law on the following day.
24. Certificaie of Compliance as to 3-23-99 order, including amendment of subsection (a)(6)(H), transmitted to OAL 7-16-99 and filed 8-27-99 (Register 99, No. 35).
25. Change without regulatory effect adding subsection (b)(6)(A) and relettering subsections filed 12-13-2001 pursuant to section 100, title 1, California Code of Regulations (Register 2001, No. 50).

5 670.6. Commission Policy on Monitored Species.

It is the policy of the corrirnission that the department shall monitor and report on the impact of ongoing management efforts for and the status of species or subspecies listed herein that were previously considered for candidacy or listing by the commission. The commission may reconsider listing any of these species or subspecies at any time based upon a new petition submitted pursuant to sections 2071 or 2072.7 of the Fish and Game Code. Any petition implemented pursuant to this section will be considered by the commission in accordance with procedures set forth in Article 2, Chapter 1.5, of the Fish and Game Code (California Endangered Species Act).

(a) Monitored Species and Subspecies. Note: There are no species currently listed.

NOTE: Authority cited: Section 703, Fish and Game Code. Reference: Sections 703, 2071 and 2072.7, Fish and Game Code.

HISTORY

1. New section filed 8-29-96; operative 9-28-96 (Register 96, No. 35).
2. Amendment of subsection (a) and repealer of subsection (a)(1) filed 10-4-2000; operative 11-3-2000 (Register 2000, No. 40).

§ 670.7. Permits to Take Fully Protected Animals for Scientific Purposes.

The department may issue revocable permits to take fully protected species for scientific purposes under the following conditions:

(a) Permits may be issued only to members of the faculty or professional staff of a scientific or educational institution; professional wildlife staff of a government agency or private institution; or others who are deemed qualified by the department.

(b) Requests for permits to take fully protected species shall be submitted to the department in writing, and shall include the following information:

(1) Name and address of applicant.
(2) Species and number to be collected.
(3) Scientific background and research experience of principal investigator and assistants.
(4) Description of proposed study, with reference to the literature, including purpose, methods of capture, materials, expected result, and intended disposition of animals collected or handled.
(5) Duration of study; locality and periods of sampling or capture.

(c) Revocable permits issued by the department shall be in the form of a memorandum of understanding. This memorandum shall include the conditions under which caking of animals may be permitted, beginning and termination dates, and requirements for periodic reports to the department, which shall be at least yearly. The memorandum, and any addenda to it, shall be signed by the director of the department and by the applicant or the applicant's executive supervisor.

(d) The department shall notify the commission prior to the issuance of any memorandums and prepare a report annually regarding any memorandums issued pursuant to this section.

(e) Commission approval shall be required prior to the issuance by the department of any memorandum for a fully protected species listed in subsection (f). Such memorandums shall be subject to conditions established by the commission.

(f) Commission approval shall be required for studies involving the take for scientific purposes of the following fully protected species:

(1) California condor *{Gymnogyps califomianus).*
(2) Southern sea otter *{Enhyara lutris nereis).*
(3) Bighorn sheep (Ovir *canadensis).*

(g) Permits for the taking of fully protected species that are also declared to be rare or endangered by the commission pursuant to Section 670.5, or federally designated as endangered or threatened by the Secretary of the Interior, shall be subject to conditions of State-Federal Cooperative Agreements relating to these species.

(h) Any permit issued pursuant to these regulations may be cancelled or suspended at any time by the director of the department when, in his judgment, permittee is acting or has acted contrary to the terms and conditions of subject permit, or if, in his judgment, tbe safety or welfare of the species authorized to be taken by subject permit is or may be jeopardized by the actions of permittee.

NOTE: Authority cited: Section 1002. Fish and Game Code. Reference: Sections 3511, 4700, 5050 and 5515, Fish and Game Code.

HISTORY

1. New section filed 2-18-81; effective thirtieth day thereafter (Register 81, No. 8).

(h) Unusual Project Applications. Public or private projects which are unusually extensive and/or protracted, inducting but not limited to projects that (1) involve more than one departmental adrninistrarive region, or (2) involve more than 15 streams (excluding timber harvest applications), shall be charged fees under the following provisions:

(1) The project sponsor shall submit the appropriate application fee required in the above fee schedule. Should this application fee be insufficient to defer the department's costs, then the department and the project sponsor shall arrange for a billing schedule to recover the department's additional project-related costs.

NOTE: Authority cited: Section 1607, Rah and Game Code. Reference: Section 1607, Hsh and Game Code.

HISTORY

l.New section filed7-l-91; operative 7-1-91 pursuant to Government Code section 11346.2(d) (Register 91. No. **40).**

2. Amendment of subsections (a)-(f) tiled 4-14-92; operative 5-14-92 (Register 92, No. 18).

3. Amendment tiled 2-23-2000; operative 3-24-2000 (Register 2000, No. 8).

§ 700. Hunting and Fishing Licenses, Possession and Display Of.

(a) Display of Sport Fishing License: Every person, while engaged in taking any fish, amphibian or repdle, shall display their valid sport fishing license by attaching it to their outer clothing at or above the waistline so that it is plainly visible, except when diving as provided in Section 7145 of the Fish and Game Code.

(b) Possession of Hunting License: Every person, while engaged in taking any bird or mammal must have on their person or in their immediate possession a valid hunting license.

NOTE: Authority cited: Sections 200,202,203,205,215,1050 and 3050, Fish and Game Code. Reference: Sections 200-205, 215, 220, 221, 1050, 1052, 1053, 2012, 3007, 3031, 3037, 3055, 3060-3063 and 7145-7150.5, Fish and Game Code.

HISTORY

1. New section filed 6-24—66 as an emergency; designated effective 7-2-66; Certificate of Compliance included (Register 66, No. 19).

2. Amendment filed 6-4-70; designated effective 7-1-70 (Register 70, No. 23).

3. Amendment of **NOTE** filed 7-16-81; effective thirtieth day thereafter (Register 81, No. 29).

4. Editorial correction of NOTE filed 9-20-85; effective thirtieth day thereafter (Register 85, No. 38).

5. Amendment of section heading, text and **NOTE** filed 2-25-94; operative 2-25-94 pursuant tn Government Code section 11346.2(d) (Register 94. No. 8).

§ 705. Hunting and Fishing Licenses, Application for.

The following procedure shall be followed in issuing hunting or sport fishing licenses:

(a) A hunting or sport fishing license, except as provided in subsection 705 (b), Title 14, CCR, shall contain the following information about the licensee before being issued to the licensee:

(1) True name
(2) Residence address
(3) Date of Birth
(4) Height
(5) Color of eyes
(6) Color of hair
(7) Weight
(8) Sex

(b) A sport fishing license issued pursuant to subsections 7149(a)(3) and 7149(c) of the Fish and Game Code shall contain the date of validity.

(c) Notwimstanding the provisions of Fish and Game Code section 1053, a person may purchase a hunting or sport fishing license, license tags or license stamps for another person, as long as the application contains the licensee's true name and residence address. Prior to using any license or license stamps, the licensee shall complete the license so that it contains all of the information required in subsection (a) above.

NOTE: Authority cited: Sections 1050 and 4331, Fish and Game Code. Reference: Sections 1050, 3031, 4331, 7145, 7149, 7149.2 and 7150, Fish and Game Code.

HISTORY

1. New section filed 4-13-73; effective thirtieth day mereafter (Register 86. No. 27).

2. Amendment filed 7-16-81; effective thirtieth day thereafter (Register 81, No. 29).

3. Editorial correction of **NOTE** filed 9-20-85; effective tiurrieth day thereafter (Register 85, No. 38).

4. New subsection filed 7-1-86; effective upon filing (Register 86, No. 27).

5. Amendment of subsections (a) and (b) filed 6-5-87; operative 7-5—87 (Register 87, No. 24).

6. Amendment filed 4-24-90; operative 5-24-90 (Register 90, No. 20).

7. Amendment of subsection (b) filed 2-1-93; operative 3-3-93 (Register 93, No. 6).

8. New subsection (a)(9) and amendment of section heading, subsection (c) and **N o t e** filed 3-3-94; operative 4-4-94 (Register 94, No. 9).

9. Amendment of subsection (a), repealer nf subsection (a)(9), and amendment of subsection (c) filed 12-27-96; operative 12-27-96 pursuant lo Fish and Game Code sections 202 and 215 (Register 96, No. 52).

§ 706. Hunting and Fishing License, Validation of.

Except as provided in subsection 705(b) above, every hunting or sport fishing license to be valid shall contain the information required in section 705 above, and it shall be signed by the licensee and the license shall show the date of issue.

NOTE: Authority Cited: Section 200,202,203 and 205, Fish and Game Codc.Reference: Sections 70, 200-205, 220, 221, 1050-1110, 2012. 3007, 3031, 3031.5, 3034, 3037, 3038, 3049, 3050, 3052, 3053, 3055. 3060-3063 and 7145-7150.5, Fish and Game Code.

HISTORY

1. New section filed 4-13-73; effective thirtieth day thereafter (Register 73, No. 15).

2. Amendment of NOTE filed 7-16-81; effective thirtieth day thereafter (Register 81, NoJ29).

3. Editorial correction of NOTE filed 9-20-85; effective thirtieth day thereafter (Register 85, No. 38)

4. Amendment filed 4-24-90; operative 5-24-90 (Register 90, No. 20).

5. Amendment filed 12-27-96; operative 12-27-96 pursuant to Fish and Game Code sections 202 and 215 (Register 96, No. 52).

§ 707. Licenses, Certificates, Permits and License Tags, Dating of.

Except as provided in subsection 705(b) above, every person who issues any license, certificate, permit or license tag authorized by the Fish and Game Code, shall enter in the space provided on the license, certificate, permit or license tag the date it was issued, and when required by the department shall Tnainrain a record of the date issued in the manner prescribed by the department. Any license agent who issues a permit or license tag shall immediately enter the tag number in the space provided on the appropriate current license.

NOTE: : Authority cited: Sections 200, 202, 203 and 205, Fish and Game Code. Reference:Sections 1050-1054.5. 1056, 1059-1110, 3034, 3037, 3038, 3050, 3053, 3055, 3060, 3063, 7146, 7149 and 7150, Fish and Game Code.

HISTORY

1. New section filed 5-4-76; effective tfdmeth day thereafter (Register 76, No. 19).

2. Amendment of NOTE filed 7-1 f>-81; effective thirtieth day thereafter (Register 81, No. 29).

3. Amendment filed 8-18-82; effective upon filing pursuant to Government Code section 11346.2(d) (Register 82, No. 34).

4. Editorial correction of NOTE filed 9-20-85; effective thirtieth day thereafter (Register 85, No.38).

5. Amendment filed 4-24-90; operative 5-24-90 (Register 90, No. 20).

§ 708. Big Game License Tag, Application, Distribution and Reporting Procedures,

(a) Deer License Tag Procedures and Requirements

(1) Deer License Tags.

No person shall hunt deer without a valid deer license tag in possession for that particular area as defined in sections 360 and 361. Deer shall be tagged only with a valid deer license tag for the area (as defined in sections 360 and 361) in which the deer is killed. Except as otherwise provided in the Fish and Game Code, no person shall take more than two deer during any license year.

(2) Deer License Tag Application and Distribution Procedures.

(A) Distribution of License Tags:

1. Premium deer hunt tags for X zones, additional hunts, and area-specific archery hunts shall be distributed by drawing, as described in sub-

section 708(g)(1) and (2), unless otherwise authorized. Applicants shall submit their deer tag application to the Department of Fish and Game. License and Revenue Branch, 3211 S Street, Sacramento, California 95816 (Or by mail to PO Box 949035, West Sacramento, CA 95798-9035). Applications must be received by the department by 5:00 p.m. on the first business day after June 1. Successful applicants will be selected by drawing within 10 calendar days following the application deadline date. If the drawing is delayed due to circumstances beyond the department's control, the department shall conduct the drawing at the earliest date passible. Successful and unsuccessful applicants will be notified by mail.

2. Except as noted in subsection 708(a)(2)(E) below, deer tags for A, B, C, and D zones and leftover drawing tags shall be issued upon request until each tag quota fills. If, on any given day, the number of applications received for any zone or hunt exceeds the number of available tags, the department may conduct a drawing for that zone or hunt.

(B) Application Farms: Except for permits and deer tags issued pursuant to sections 4181.5, 4188, and 4334 of the Fish and Game Code, application forms for deer tags (2002/2003 CALIFORNIA RESIDENT ONE-DEER TAG APPLICATION, LRB 1371 A, rev. 4/2002; 2002/2003 CALIFORNIA NONRESIDENT ONE-DEER TAG APPLICATION, LRB 1371B, rev. 4/2002; 2002/2003 CALIFORNIA RESIDENT SECOND-DEER TAG APPLICATION, LRB 137IC, rev. 4/2002; 2002/2003 CALIFORNIA NONRESIDENT SECOND-DEER TAG APPLICATION, LRB 1371D, rev. 4/2002, incorporated by reference herein) shall be made available to the public at license agents and regular offices of the department.

(C) Application Procedures:

1. Applicants must be at least L2 years of age and possess a California resident or nonresident hunting license valid far the deer hunting season for which they are applying, except applicants for additional junior deer hunts, who must possess a Caliibrnia junior hunting license.

2. No more than six persons may apply together as a party. To be considered as a party, all applications must be stapled together with the party leader's application on top and mailed in one envelope. All party members' applications must show the same tag choices in the same order of preference, the total number of persons in the party, and the party leader's name and identification number. All party members shall be awarded tags according to the choices listed on the party leader's application. Party applications for premium deer hunts shall not be split to meet the tag quota if the number of party members exceeds the number of available tags. Party applications which exceed the number of available tags shall be bypassed until the quota is reached. Incorrect or incomplete party applications will be separated and awarded tags on an individual basis.

3. Incomplete, incorrect, or ineligible applications will be rejected.

(D) Application Fee: Tbe department shall require that the specified fee for a deer tag be paid as a prerequisite to obtaining a deer tag application. In addition to the tag fee, the department shall also charge a nonrefundable $2.00 processing fee for each deer tag application.

(E) Application Restrictions:

1. One-Deer Tag Application:

a A person may use a one-deer tag application to apply for any premium deer hunt tag (X zone, additional hunt, or area-specific archery hunt) issued by drawing as specified in subsection 708(a)(2)(A) 1., above.

b. A person may use a one-deer tag application to apply for an A, B, C, or D zone tag or archery-only tag issued upon request.

c. A person may use a one-deer tag application to apply for any premium deer hunt tag QC zone, additional hunt, or area-specific archery hunt) remaining on the first business day after July 1. Applications must be submitted to the department's License and Revenue Branch in Sacramento, except applications for area-specific archery hunt A-22, which may be submitted in person to the department's Los Alamitos or San Diego offices.

2. Second-Deer Tag Application:

a. A person may use a secood-deer tag application to apply for an A or B zone tag or archery-only tag issued upon requesti

b. A person may use a second-deer tag application to apply for any area-specific arcbery tag remaining on the first business day following July 1. Applications must be submitted to the License and Revenue Branch in Sacramento, except applications for area-specific archery hunt A-22,.which may be submitted in person to the department's Los Alamitos or San Diego offices.

c. A person may use a second-deer tag application to apply for any C or D zone tag or additional hunt tag, except an additional junior hunt tag, remaining on the first business day following August I. Applications may be submitted before that date to the License and Revenue Branch in Sacramento.

d. A person in possession of a valid junior hunting license, who has not used a one-deer tag application to apply for an additional junior hunt, may use a second-deer tag application to apply for an additional junior hunt tag issued by drawing as specified in subsection 708(a)(2)(A)l., and 708(g)(2)(A). A junior hunter may not submit more than one application for additional junior hunts.

e. No person shall submit more than one one-deer tag application and one second-deer tag application to the department during any one license year. Any person in violation of this subsection may be denied deer tags for the current and following license year.

(F) Deer Tag Exchange Fee: The department shall charge a nonrefundable S6.25 processing fee for exchanging a deer tag for a different zone or hunt

(3) Tagging Requirements:

Immediately upon killing a deer, both portions of the deer license tag must be completely filled out and the date of kill permanently marked on the deer license tag. The deer license tag. must be attached to the antlers of an antlered deer or to the ear of any other deer and kept attached during the open season and for 15 days thereafter. Except as otherwise provided, possession of any untagged deer shall be a violation (refer to Fish and Game Code, Section 4336).

(4) Tag Validation and Countersigning Requirements, and Transporting for the Purpose of:

Any person legally killing a deer in this state shall have the deer license tag validated and countersigned by a person authorized by the commission as described below in subsection 708(a)(8) before transporting such deer, except for the purpose of taking the deer to the nearest person authorized to countersign the license tag, on the route being followed from the point where the deer was taken (refer to Fish and Game Code, Section 4341).

(5) Deer Head Retention Requirements and Production Upon Demand:

Any person taking any deer in this state shall retain in their possession during the open season thereon and for 15 days thereafter, that portion of the head which in adult males normally bears the antlers, and shall produce the designated portion of the head upon the demand of any officer authorized to enforce the provisions of this regulation (refer to Fish and Game Code, Section 4302).

(6) Deer Tag Reporting Requirements:

Every person to whom a deer tag is issued shall return the completed report card portion to the department within thirty days of taking a deer.

(7) Deer Violations, Tag Forfeiture:

Any person who is convicted of a violation involving deer shall forfeit their current year deer license tags and no new deer license tags may be issued to that person during the then current hunting license year, and that person may not apply for a deer tag for the following license year (refer to Fish and Game Code, Section 4340).

(8) Deer and Elk Tags, Persons Authorized to Validate.

The following persons are authorized to validate or countersign deer and elk tags:

(A) State:

1. Fish and Game Conrmiasioners
2. Employees of the Department of Fish and Game
3. Deputy Foresters
4. Assistant Deputy Foresters

5. Forest Rangers
6. Park Rangers—Grades 1, 2, 3, and 4
7. Supervising Plant Quarantine Inspectors
8. Junior, Intermediate and Senior Plant Quarantine Inspectors
9. Foresters
10. Fire Prevention Officers—Grades 1, 2, 3, and 4
11. Fire (Captains
12. Fire Apparatus Engineers

(B) Federal: (FS = U.S. Forest Service, FWS = U.S. Fish &: Wildlife Service, BLM = Bureau of Land Management)

1. Range Technicians (BLM)
2. Forest Supervisors (FS)
3. Assistant Forest Supervisors (FS)
4. District Forest Rangers (FS)
5. Foresters (FS, BLM)
6. Range Conservationists (FS, BLM)
7. Forest Engineers (FS, BLM)
8. Forestry Aides (FS)
9. Fire Control Crfficers or Aides (FS, BLM)
10. Clerks (FS, FWS, BLM) while on duty at their headquarters
11. Game Management Agents (FWS)
12. Wildlife Management Biologists (FS, FWS, BLM)
13. District Managers (BLM)
14. Information Specialists (BLM)
15. Area Managers (BLM)
16. Realty Specialists (BLM)
17. Natural Resource Specialists (BLM)
18. rmgineers (BLM)
19. Engmeering Technicians (BLM)
20. Recreation Resource Specialists (BLM)
21. Geologists (BLM)
22. Recreation Aides (BLM)
23. All Uniformed Personnel of the National Park Service
24. Commanding officers of any United States military installation or their designated personnel for deer taken Dn their reservation.
25. Postmasters
26. Post Office Station or Branch Manager for deer brought to their post office.

(C) Miscellaneous:

1. County firemen at and above the class of foreman for deer brought into their station.
2. Judges or Justices of all state and United States courts.
3. Notaries Public
4. Peace Officers
5. Nonsalaried police officers or deputy sheriffs while on scheduled duty in a city or county of appointment for deer brought to a police station or sheriffs office
6. Officers authorized to admnister oaths
7. Owners, corporate officers, managers or operators of lockers or cold storage plants for deer brought to their place of business.

(D) No person may validate or countersign their own tag.

(b) Distribution of Bighorn Sheep License Tags:

(1) Fund-raising Nelson bighorn ram license tags: Two fund-raising license tags for the taking of mature Nelson bighorn rams shall be sold for the purpose of raising funds to manage bighorn sheep. The department may designate a nonprofit organization to sell this fund-raising tag. Any resident or nonresident is eligible to buy the tag. The purchaser of a fund-raising license tag shall complete a required hunter orientation program conducted by the department and meet the hunter education requirements for a hunting license. The fund-raising license tags are defined as follows:

(A) Open-zone fund-raising license tags: These fund-raising license tags are valid in any of the areas described in subsection 362(a).

(2) General Nelson bighorn ram license tags: The application form (2002 NELSON BIGHORN SHEEP DRAWING APPLICATION, LBR 1362, Rev. 4/2002, incorporated by reference herein) shall be made available to the public at license agents and regular offices of the department. Applicants must be California residents or nonresidents, at least 16 years of age, possessing a California hunting license valid during the bighorn ram season for which they are applying, and must not have been previously issued a bighorn license tag in Calif ornia. Applicants must apply for only one designated zone. No person shall submit more than one application. Applicants shall submit the application with a nonrefundable processing fee of $6.75 to the Department of Fish and Game, License and Revenue Branch, 3211 S Street, Sacramento, CA 95816. (Or by mail to PO Box 989041, West Sacramento, CA 95798-9041). Applications must be received before 5:00 p.m. on the first business day after June 1. Incomplete applications and applications submitted without the appropriate processing fee will not be included in the drawing. Successful applicants and a list of alternates for each zone shall be deterniined by drawing within 10 calendar days following the application deadline date. If the drawing is delayed due to circumstances beyond the department's control, the department shall conduct the drawing at the earliest date possible. No more than one nonresident shall be selected to receive a general license tag. Unsuccessful applicants will not be notified. Successful applicants will be mailed notification as soon as practical. Upon receipt of the notification, the applicant shall submit the appropriate tag fee, either $270.25 for a resident or $500.00 for a nonresident to the Department of Fish and Game, License and Revenue Branch, 3211 S Street Sacramento, CA 95816. The tag fee shall be received by the department by 5:00 p.m. on the Monday following the second Saturday in July. Should the quota for each zone rerriain unfilled after that date, the alternate lists shall be used. Successful applicants shall be issued tags only after successfully completing the required hunter orientation program conducted by the department.

(3) Tagholder Responsibilities:

(A) Only persons possessing valid Nelson bighorn sheep license tags are entitled to hunt bighorn sheep. Tags shall not be transferable and are valid only in the zone or zones specified.

(B) Individuals awarded a fund-raising license tag and all successful applicants for general license tags shall attend and successfully complete a mandatory hunter orientation program Licensed guides employed by successful applicants and the fund-raising license tag buyer shall accompany their clients to this orientation program.

(C) All successful bighorn sheep tagholders shall have their tags validated. All tags must be returned to the department within 10 days after the close of the season, even though the tagholder may not have killed a Nelson bighorn ram.

(D) Tags must be completed and attached to the carcass of a bighorn ram immediately after the animal is killed. All successful bighorn sheep tagholders shall have their tags validated.

(E) All tagholders will be notified by mail as to whether they will be required to report to the department before hunting and upon completion of hunting. The notification shall contain procedures for reporting, including appropriate methods of contacting the department

(F) The tagholder shall surrender his tag to an employee of the department for any or all of the following reasons:

1, Any act on the part of the tagholder which violates any of the provisions of the Fish and Game Code, or any regulations of the commission.

2. Any act on the pan of the tagholder which endangers the person or property of others. The decision of the department in such respects shall be final and binding upon the tagholder.

(c) Distribution of Pronghorn Antelope License Tags:

(1) The pronghorn antelope license tags shall be issued by drawing, as described in subsection 708(g)(5)(A) and (B). Application forms (2002 RESIDENT ANTELOPE DRAWING APPLICATION, LRB 1363, Rev. 4/2002, incorporated by reference herein) shall be marie available to the public at license agents and regular department offices. Each applicant must be a California resident at least 12 years of age, and possess a California hunting license valid during the pronghorn antelope season for which they are applying. Applicants for buck pronghorn antelope license tags must not have been issued a buck pronghorn antelope license

tag cluring the previous ten yean. Applicants may apply for doe and junior hunt license tags every year. Applicants for the junior pronghorn antelope hunts must be California residents possessing a junior hunting license valid during the pronghorn antelope season for which they art applying. No person shall submit more than one application for a pronghorn antelope license tag. No more than two persons shall apply together as a party. To be considered as a party, both persons must apply on the same application for the same tag choice. Incomplete applications and applications submitted without the appropriate processing fee will not be included in the drawing.

(7.) Applicants shall submit the application with a nonrefundable processing fee of $6.75 for Single and $13.50 for Party to the Department of Fish and Game, License and Revenue Branch, 3211 S Street, Sacramento, CA 95816 (Or by mail to POBox 989041, West Sacramento, CA 95798-9041). Applications must be received before 5:00 pm_ on the first business day after June 1. Successful applicants and a list of alternates for each hunt shall be determined by drawing within 10 calendar days following the application deadline date. If the drawing is delayed due to circumstances beyond the department's control, the department shall conduct the drawing at the earliest date possible. Except as provided in subsection 708(g)(5)(A)5., parry applications drawn for the last tag available for a hunt will be split and the party leader (first person listed) as indicated on the application form shall be awarded the pronghorn antelope license tag. The party member shall become the first alternate for that hunt Unsuccessful applicants will not be notified. Successful applicants and alternates will be mailed notification as soon as practical. Upon receipt of the notification the applicant or alternate shall submit an $95.75 tag fee to the Department of Fish and Game, License and Revenue Branch, 3211 S Street, Sacramento, CA 95816. The tag fee shall be received by the department by 5:00 p.m. on the Monday following the second Saturday in July. S hould the quota for each zone remain unfilled after that date, the alternate list shall be used. In the event only one pronghorn antelope license tag is available to an alternate, patty applications will be split and the alternate tag shall be awarded to the party leader as indicated on the application form. Undistributed tags will be issued after the drawing. Any tags unclaimed by successful applicants after that date shall be awarded to paid alternates for that zone, on an individual basis, in the order drawn. Any remaining tags may be issued to paid alternates for other zones.

(3) Fund-raising License Tags: Fund-raising license tags for the taking of buck pronghorn antelope shall be offered for sale to raise funds for the management of pronghorn antelope. Any resident or nonresident is eligible to buy one of the fund-raising license tags. Bidden for and purchasen of fund-raising tags are exempt from the 10-year waiting period to purchase **a** buck pronghorn antelope fund-raising tag. The sale price of **a** fund-raising license tag includes the fee for processing and issuing **a** hunting license. Tbe purchaser shall be issued the fund-raising license tag only after meeting the hunter education requirements for a hunting license.

(4) Tagholder Responsibilities:

(A) Only persons possessing valid pronghorn antelope license tags are entitled to hunt pronghorn antelope during these hunts. Tags shall not be transferable and are valid only in the area, season, and period specified on the tag.

(B) All tagholden must return the report card portion of their license tag to the department within one week after the close of the pronghorn antelope season, even though the tagholder may not have killed a pronghorn antelope.

(C) Tbe holder of a pronghorn antelope license tag, immediately after (tilling **a** pronghorn antelope, shall fill out both parts of the tag and mark permanently the date of kill. The tag portion shall be immediately attached to **a** hom of buck pronghorn antelope or to an ear of doe pronghorn antelope and kept attached for 15 days after the close of the open season.

(D) The tagholder shall surrender his license tag to an employee of the Department of Fish and Game for any of the fallowing reasons:

1. Any acton the part of the tagholder which violates any of the provisions of the Fish and Game Code, or any regulations of this commission.

2. Any act on the part of the tagholder which endangers the penon or property of others. The decision of the Department of Fish and Game in such respects shall be final and binding upon the tagholder.

(d) Distribution of Elk License Tags:

(1) Three fund-raising license tags for the taking of elk bulls shall be offered for sale to raise funds for the management of elk. The department may designate a nonprofit organization or organizations to sell the fund-raising tags. Any resident or nonresident is eligible to buy one of the license tags. The purchase of fund-raising tags shall complete required hunter orientation programs conducted by the department and meet the hunter safety requirements for a hunting license.

(2) Application forms for elk tags (2002 RESIDENT ELK DRAWING APPLICATION, LRB 1364, Rev. 4/2002, incorporated by reference herein) shall be made available to the public at license agents and regular department offices. Each applicant must be a California resident at least 12 years of age and possess a California hunting license valid during the elk season for which he/she is applying. No penon shall submit more than one application for an elk license tag. No more than two persons shall apply together as a party. To be considered as a party, both persons must apply on the same application for the same tag choice. Incomplete applications and applications submitted without the appropriate processing fee will not be included in the drawing.

(3) The elk hunting license tags shall be issued by drawing, as described in subsection 708(g)(4)(A) and (B). Applicants shall submit the application with a nonrefundable $6.75 for Single and $13.50 for Parry processing fee to the Department of Fish- and Game, License and Revenue Branch, 3211 S Street, Sacramento, CA 95816 (Or by mail to PO Box 989041, West Sacramento, CA 95798-9041). Applications must be received before 5:00 p.m. on the first business day after June 1. Except as provided in subsection 7Q8(g)(4)(A)5., party applications drawn for the last tag available for a hunt will be split and the party leader (first penon listed) as indicated on the application form shall be awarded the elk tag. The party member shall become the first alternate for that hunt Successful applicants and a list of alternates for each hunt will be determined by drawing within 10 calendar days following the application deadline date. If the drawing is delayed due to circumstances beyond the department's control, the department shall conduct the drawing at the earliest date possible. Unsuccessful applicants will not be notified. Successful applicants and alternates will be mailed notification as soon as practical. Upon receipt of the notification, the applicant or alternate shall send a $286.75 tag fee to the Department of Fish and Game, License and Revenue Branch, 3211 S Street, Sacramento, CA 95816. The tag fee shall be received by the department by 5:00 p.m. on the Monday following the second Saturday in July. Any tags unclaimed by successful applicants after that date shall be awarded to paid alternates for that hunt, on an individual basis, in the order drawn. Any remaining tags may be issued to paid alternates for other zones.

(4) Tagholder Responsibilities:

(A) All tagholden must return their license tags to the Department of Fish and Game within one week after the close of the elk season, even though the tagholder may not have killed an elk.

(B) License tags must be attached to the antler of an antlered elk, or to the ear of antlerless elk immediately after killing.

(C) Persons authorized to validate or countersign elk tags are listed in Section 708(a)(8). Elk tags must be countenigned before transporting such elk, except for the purpose of talcing it to the nearest penon authorized to countenign the license tag on the route being followed from the point where the elk **i3** taken.

(D) Only penons possessing valid elk license tags are entided to take elk. Tags are not transferrable and are valid only for the area and period specified.

(E) The tagholder shall surrender his tag to an employee of the Department of Fish and Game for any or all of the following reasons:

1. Any act on the pan of the tagholder which violates any of the provisions of the Fish and Game Code, or any regulations of the Commission made pursuant thereto.

2. Any act on the part of the tagholder which endangers the person or property of others. Tbe decision of the Department of Fish and Game shall be final.

(F) Elk may be taken on Santa Rosa Island pursuant to a permit issued by the department. For methods of take, see sections 353 and 354.

(e) Bear License Tags.

(1) Application for Bear License Tags:

(A) With the exception of permits and tags issued pursuant to section 4181 of the Fish and Game Code, all bear license tag applications shall be submitted on forms provided by the department

(B) The department may reqtiire that the specified fee provided for in section 4751 of the Fish and Game Code for such bear license tags be paid as a prerequisite to obtaining a bear license tag application.

(C) The department shall charge a nonrefundable S2.00 processing fee for each bear tag application.

(D) Only one bear license tag application may be submitted to the department during any one license year. Any person who submits more than one bear license tag application may be denied bear license tags for the current license year.

(2) Distribution of bear tags: Applications for bear tags (2002/2003 CALIFORNIA RESIDENT BEAR TAG APPLICATION, LRB 1365 A, rev. 4/2002; and 2002/2003 NONRESIDENT BEAR TAG APPLICATION, LRB 1365B, rev. 4/2002, incorporated by reference herein) shall be available to thepublic at license agents and regular offices of the department Tags will be issued at regular department offices.

(3) Use of Guides: Any bolder of a bear license tag who utilizes the services of a guide or guides shall verify that the guide is in possession of a valid guide's license and shall place the guide's license number on the bear license tag in the space provided.

(4) Use of Dogs: Any holder of a bear license tag who utilizes dogs to take bear shall so indicate on his bear license tag in the space provided.

(5) Validation of Bear Tags: Only Department of Fish and Game employees may validate bear tags (This provision supersedes section 4755 of the Fish and Game Code). Bear tags must be countersigned before trarisporring 3uch bear except for the purpose of taking it to the nearest person authorized to countersign the license tag, on the route being followed from the point where the bear is taken.

(6) Return of Bear License Tags:

(A) Every person who takes a bear shall immediately return the report card portion of the bear license tag, after having the tag countersigned as required in (e) above. The tag may be presented to a department office/officer or returned through the United States Mail.

(B) Every person who is unsuccessful in taking bear shall return the report card portion of the bear license tags by February 1 of the current license year. The tag may be presented to a department office/officer or returned through the United Stales Mail.

(f) Application For and Use of Wild Pig License Tags:

(1) Any person, 12 years of age or older, who possesses a valid hunting license may procure wild pig license tags as specified in Section 4654 of the Fish and Game Code.

(2) Wild pig license tags will be sold to residents in packets of five. Nonresident wild pig license tags will be sold individually.

(3) Wild pig license tags are valid only during that portion of the current hunting license year in which wild pigs may be legally harvested as provided in subsection 368(a).

(4) Any person hunting wild pigs shall carry a wild pig license tag while hunting wild pigs, and upon the killing of any wild pig shall immediately fill out both parts of the tag, clearly mark the date of the kill and attach the tag to the carcass of the wild pig. The report card portion shall be immediately returned to the department.

(g) Big Game Drawing System

(1) General Conditions

(A) Except as otherwise provided, the department shall award license tags for premium deer (X zones, additional hunts, and Area-specific archery hunts), bighorn sheep, elk and pronghorn antelope hunts, as described in sections 360(b) and (c), 361,362, 364 and 363, using a Modified-Preference Point drawing system.

(B) Except as otherwise provided, the Modified-PTeference Point drawing system shall award proportions of hunt tag quotas, as specified for each species, using the following drawing methods:

1. Preference Point Drawings. Tags are awarded based on the following order of priority: an applicant's hunt choice (first choice only for deer), accumulated point totals by species (highest to lowest), and computer-generated random number (lowest to highest).

2. Draw-By-Choice Drawings. Tags are awarded according to an applicant's hunt choice and computer-generated random number (lowest to highest), without consideration of accumulated points.

(C) Except as otherwise provided, applicants unsuccessful in receiving a tag for premium deer (based on first choice selection), bighorn sheep, elk or pronghorn antelope hunts shall earn one (1) preference point for use in future Big Game Drawings.

(D) To earn and accumulate a point for any species, a person must comply with all application requirements for that species as specified in subsections 708(a), (b), (c) and (d), including the following conditions:

1. Applicants must be at least 12 years of age at the time of application (16 years of age for bighorn sheep applications).

2. Applicants must possess a California hunting license valid for the hunting season requested (applicants for junior deer hunts must possess a junior hunting license). Applicants must provide evidence of such license at the time of application.

3. Applicants for elk and pronghorn antelope hunts must be California residents.

4. Applications for bighorn sheep, pronghorn antelope and elk hunts must include the appropriate nonrefundable processing fees.

5. Applications must be received by the department's License and Revenue Branch by 5:00 p.m. on the first business day after June 1.

6. Except for junior deer hunt applicants, applicants shall not submit more than one drawing application for each species during the same license year.

(E) No applicant shall earn more than one (1) preference point per species, per drawing, for use in future drawings. Preference points are accumulated by species and shall not be transferred to another species or another person. Preference points are not zone or hunt specific.

(F) Except as otherwise provided, successful applicants receiving tags for their first choice premium deer, bighorn sheep, elk or pronghorn antelope hunts shall lose all preference points for that species.

(G) For party applications, the department shall use the average preference point value of all party members (total preference points for the party divided by number of party members) as the basis for consideration in the drawing for that species. Point averages shall not be rounded.

(H) Except as otherwise provided, persons who do not wish to apply for an antelope, elk, bighorn sheep or premium deer tags may earn one (1) preference point for any or all of these species, by submitting the appropriate application(s), as specified in subsections 708 (a), (b), (c) and (d), and writing the point code number for that species, as defined by the department in the hunt choice box (first choice only for deer). Persons applying for a preference point in this manner shall be subject to the same application requirements as regular drawing applicants as specified in subsection 708(g)(1)(D).

(I) The department shall maintain records of preference points earned by individual applicants based on the hunter identification number provided on each application (driver's license number. Department of Motor Vehicles identification number, or hunter identification number assigned by the department). Applicants shall notify the department's License and Revenue Branch, at 3211 S Street Sacramento, CA 95816, in writing, of any changes or corrections regarding name, mailing address or hunter identification number.

(J) Persons not applying for premium deer, bighorn sheep, elk, or pronghorn antelope hunts through the department's Big Game Drawings for five (5) consecutive years shall have their preference points for that species reduced to zero (0). For the purposes of this subsection, persons whose applications are disqualified from drawing shall be considered the same as persons not applying. Applying for preference points as described in (H) above, will keep an applicant's file active.

(2) Premium Deer Hunts

(A) Except for junior deer hunt applicants, as specified in subsection 708(a)(2)(E), persons must use a one-deer tag application to apply for premium deer hunts through the department's Big Game Drawing.

(B) License tags for premium deer hunts (except junior deer hunts) shall be awarded based on the following:

1. Ninety percent (90%) of the individual zone or hunt tag quota shall be awarded using a Preference Point drawing. Tag quota splits resulting in decimal fractions of a tag shall be rounded to the next higher whole number.

2. Ten percent (10%) of the individual zone or hunt tag quota shall be awarded using a Draw-By-Choice drawing. Tag quota splits resulting in decimal fractions of a tag shall be rounded to the next lower whole number,

3. For zones or hunts with quotas less than ten (10) tags, one (1) tag shall be awarded using a Draw-By-Choice drawing. Remaining tags shall be awarded using a Preference Point drawing.

4. Tags awarded to applicants for second or third choice zones or hunts shall be through a Draw-By-Choice drawing and shall not result in loss of accumulated points.

(C) License tags for junior deer hunts (J Hunts) as described in subsection 360(c) shall be awarded based on the following:

1. Fifty percent (50%) of the hunt tag quota shall be awarded through a Preference Point drawing. Tag quota splits resulting in decimal fractions of a tag shall be rounded to the next higher whole number.

2. Fifty percent (50%) of the hunt tag quota shall be awarded through a Draw-By-Choice drawing. Tag quota splits resulting in decimal fractions of a tag shall be rounded to the next lower whole number.

(D) A junior hunter applying for premium deer hunts (X zones. Area-specific archery hunts, and additional hunts) on a one-deer tag application and a second-deer tag application shall:

1. Receive a point only if he/she is unsuccessful in the big game drawing with his/her first choice on both applications.

2. Lose all preference points for deer if he/she receives his/her first choice on either application.

(3) Bighorn Sheep Hunts

(A) Successful bighorn sheep tag applicants shall be determined as follows, based on tag quotas for each hunt

1. For quotas of one, the tag shall be awarded using a Draw-By-Choice drawing.

2. For quotas of two, one tag shall be awarded using a Preference Point drawing, and one tag shall be awarded using a Draw-By-Choice drawing.

3. For quotas of three, two tags shall be awarded using a Preference Point Drawing, and one tag shall be awarded using a Draw-By-Choice drawing.

4. For quotas of four or more, seventy-five percent (75%) of the quota shall be awarded using a Preference Point drawing. Any resulting fractional tag shall be rounded to the next higher whole number. The remaining portion o f the quota shall be awarded using a Draw-By-Choice drawing.

(B) Alternates shall be selected for each hunt using a Preference Point Drawing.

(4) Elk Hunts

(A) Successful elk tag applicants shall be determined as follows, based on tag quotas for each hunt or hunt period.

1. For quotas of one, the tag shall be awarded using a Draw-By-Choice drawing.

2. For quotas of two, one tag shall be awarded using a Preference Point drawing, and one tag shall be awarded using a Draw-By-Choice drawing.

3. For quotas of three, two tags shall be awarded using a Preference Point drawing, and one tag shall be awarded using a Draw-By-Choice drawing.

4. For quotas of four or more, seventy-five percent (75%) of the quota shall be awarded using a Preference Point drawing. Any resulting fractional tag shall be rounded to the next higher whole number. The remaining portion of the quota shall be awarded using a Draw-By-Choice drawing.

5. Party applications shall be split as described in Section 708(d)(3) to fill the last tag available through the Preference Point drawing. Party applications shall not be split to fill the last tag available through the Draw-By-Choice drawing.

(B) Alternates shall be selected for each hunt or hunt period using a Preference Point drawing.

(5) Pronghorn Antelope Hunts

(A) Successful pronghorn antelope tag applicants shall be determined as follows, based on tag quotas for each hunt or hunt period.

1. For quotas of one, the tag shall be awarded using a Draw-By-Chaice drawing.

2. For quotas of two, one tag shall be awarded using a Preference Point drawing, and one tag shall be awarded using'a Draw-By-Choice drawing.

3. For quotas of three, two tags shall be awarded using a Preference Point drawing, and one tag shall be awarded using a Draw-By-Choice drawing.

4. For quotas of four or more, seventy-five percent (75%) of the quota shall be awarded using a Preference Point drawing. Any resulting fractional tag shall be rounded to the next higher whole number. The remaining portion of the quota shall be awarded using a Draw-By-Choice drawing.

5. Parry applications shall be split as described in Section 708(c)(2) to fill the last tag available through the Preference Point drawing. Party applications shall not be split to fill the last tag available through the Draw-By-Choice drawing.

(B) Alternates shall be selected for each hunt or hunt period using a Preference Point drawing.

NOTE: Authority cited: Sections 200, 202, 203, 215, 219, 220, 331, 332, 1050, 1572,4302.4331,4336,4340, 4341 and 10502, Fish and Game Code. Reference: Sections 200-203.1, 207, 210, 215, 219, 220, 331, 332, 713, 1050, 1570-1572, 3950, 3951, 4302, 4330-4333, 4336, 4340,4341,4652^1655, 4657, 4750-4756, 4902, 10500 and 10502, Fish and Game Code.

HISTORY

1. New section filed 6-28-2002; operative 6-28-2002 pursuant to Fish and Game Code sections 202 and 215 (Register 2002, No. 26).
2. Amendment of section and NOTE filed 3-27-2003; operative 4-26-2003 (Register 2003, No. 13).

§ 710. Hunter Education Training Equivalency.

(a) The department may evaluate the quality and coverage of hunter education courses offered by other countries, their political subdivision, or by the Armed Forces of the United States. Upon satisfactory evidence that a course fully meets or exceeds the requirements of the California hunter education course, the department may issue to graduates of such courses a California Certificate of Equivalency. (NOTE: See section 3050 (a)(3) of the Fish and Game Code regarding hunter safety certificates from other states.)

(b) The department shall prepare a comprehensive hunter education equivalency examination, to be administered to qualified applicants. Pass/fail criteria will be established by the department. Qualification to take the equivalency examination must include affirmation that the applicant has not previously taken and failed the examination.

Applicants who successfully pass the equivalency examination will be issued a hunter education certificate of equivalency.

comment by the public and other public agencies shall be provided as required by Government Code section 11346.8.

NOTE; Authority cited: Secdon 702, Fish and Game Code. Reference: Section 21080.5(d)(2)(iii) and (iv), Public Resources Code.

HISTORY

1. New section Bled 8-27-98; operative 8-27-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

§ 777.B. Evaluation and Adoption of Proposed Regulations.

(a) When preparing the Initial Statement of Reasons, the Department shall evaluate proposed regulations for consistency with the Department's enabling legislation. The Department's evaluation shall be set forth in writing in the Initial Statement of Reasons.

(b) When evaluating proposed regulations, the Department shall utilize an interdisciplinary approach that will ensure the integrated use of the natural and social sciences in decision making, consistent with the environmental protection purposes of the Department's enabling statute. The evaluation shall address both short-term and long-term effects on the environment, and shall also address growth-inducing effects and any potential cumulative effects.

(c) Any proposed regulations for which significant adverse environmental effects have been identified during the review process shall not be approved or adopted as proposed if there are feasible mitigation measures or feasible alternatives available which would avoid or substantially lessen any significant adverse effect which the proposed regulations may have on the environment in accordance with Public Resources Code section 21081.

(d) If the analysis identifies significant adverse environmental effects for which feasible mitigation measures are not available, it shall also include a statement describing any specific environmental, economic, legal, social, technological, or other benefits which mightjustify the significant environmental effects of the proposed regulations.

(e) In addition to meeting the requirements of Government Code section 11346.9(a)(3), if comments are received from other public agencies and members of the public during the evaluation process which raise significant environmental points, the Department shall summarize and respond to such comments in writing prior to taking final action on the proposed regulations and such written responses shall be included in the record of the rulemaking proceeding.

NOTE; Authority cited: Secdon 702, Fish and Game Code. Reference: Sections 21080.5(d)(2)(i), (ii) and (iv), and 21081, Public Resources Code.

HISTORY

1. New section Bled 8—27-98; operative 8-27-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

§ 777.9. Notice of Decision.

(a) A notice of the final decision by the Department which indicates whether the proposed regulations will, or will not have a significant effect on the environment shall be filed with the Secretary of the Resources Agency. The notice of the final decision shall be available for public inspection, and a list of the notices will be posted on a weekly basis in the Office of the Resources Agency, and will remain posted for a period of thirty (30) days.

NOTE; Authority cited: Section 702, Fish and Game Code. Reference: Section 21080_5(d)(2)(v). Public Resources Code.

HISTORY

1. New section filed 8-27-98; operative 8-27-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

Article 3. Fish and Game Review Procedures for EIRs and Negative Declarations

§ 778. General.

The nature and extent of Fish and Game's review of EIRs and Negative Declarations will be determined by the following conditions:

(a) Fish and Game has legal jurisdiction with respect to a project as it affects natural resources which are held in trust for the people of the State of California.

NOTE: Authority cited: Section 21080.5, Public Resources Code; Section 15050 of the Stale EIR Guidelines. Reference: Section 21080.5, Public Resources Code; Secdon 15050 of the Slate EIR Guidelines.

§ 779.5. Review of Projects Affecting Natural Resources Held In Public Trust—Early Consultation.

Under conditions specified in Section 21080.3 of CEQA, a lead agency shall consult with Fish and Game prior to the decision of whether an **EIR** or Negative Declaration is required. Comments shall be provided by the responsible regional unit

Section 21080.4 of CEQA requires lead agencies to send a Notice of Determination to Fish and Game if an EIR is required. Upon receipt of such notice ESB personnel shall send the Notice to the responsible regional unit This unit shall specify the scope and content of environmental information germane to Fish and Game statutory responsibilities and identify specific concerns with the project. The above information shall be provided in writing to ESB for review within 40 days of the date on the Notice of Determination. ESB shall obtain appropriate signatures and forward Fish and Game comments to the Resources Agency within 45 days of the date on the Notice of Determination.

In order for the environmental review process of a project to be timely and complete, the responsible regional unit of Fish and Game may request one or more meetings between representatives of agencies involved in the project. In addition, the responsible unit shall attend any such meeting requested by the lead agency or any other agency involved in the project Such meetings shall be convened.as soon as possible, but no later than 30 days, after they have been requested.

NOTE: Authority cited: Section 21080.5, Public Resources Code; Section 15050 of the State ELR Guidelines. Reference: Section 21080.5, Public Resources Code; Section 15050 of the Slate EIR Guidelines.

§ 780. Review of Draft EIRs and Negative Declarations.

Fish and Game in reviewing environmental documents, shall focus on the sufficiency of the EIR in accordance with Section 15161(c) of the State EIR Guidelines. Comments should focus on any shcrncomings in the EIR. The appropriateness of using a Negative Declaration, or additional alternatives or mitigation measures which the document should include. Comments shall be provided by the regional unit to ESB for review. If the comments are sufficient, appropriate signatures shall be obtained, and the comments forwarded to the Resources Agency for incorporation into other Agency comments, it any, If the comments are not sufficient regional unit personnel and ESB personnel shall coordinate to complete the comments before obtaining necessary signatures.

NOTE: Authority cited: Section 21080.5, Public Resources Code; Section 15050 of the State EIR Guidelines. Reference: Section 21080.5, Public Resources Code; Section 15050 of the State ELR Guidelines.

§ 780.5. Review of. Final EIRs and Negative Declarations.

The same procedure shall be used to review final documents as is used to review draft documents.

NOTE: Authority cited: Section 21080J, Public Resources Code; Section 15050 of the Stale EIR Guidelines. Reference: Section 21080.5, Public Resources Code; Section 15050 of the State ELR Guidelines.

§ 781. Designation of Contact Person.

Under the conditions and procedures specified above. Fish and Game shall supply with its comments the name of a Fish and Game contact person in accordance with Section 15161(d) of the State FJR Guidelines.

NOTE: Authority cited: Section 210805, Public Resources Code: Section 15050 of the State ELR Guidelines. Reference: Section 21080j. Public Resources Code; Section 15050 of the Stale EIR Guidelines.

§781.5. Regulation Procedure.

(a) When the department submits a recommendation to the cornmission with regard to adopting regulations which may have a significant effect on the environment or it is anticipated that a substantial body of opinion will reasonably consider the environmental effect to be adverse, the recommendation shall be presented in written form containing:

(1) The proposal.

(2) Reasonable alternatives to the proposal, and

(3) Mitigation measures to minimize any significant adverse environmental impacts of the proposal.

(b) Recommendations from the department shall consider the relevant portions of policies declared by the state legislature and the commission dealing with the management of fish and wildlife resources.

. (c) Recommendations received from any person other than the department shall be considered as a comment on, or counter proposal to, the recommendations received from the department, and a written response shall be prepared by the department.

(d) The commission will evaluate proposals according to how well the recommendations would achieve the purposes and policies of fish and wildlife management described in the Fish and Game Code, and in Division 1, Tide 14, Califomia Administrative Code.

(e) After receipt of the recommendation from the department, the commission shall consult with all other public agencies having jurisdiction by law with respect to the activities involved in the recommendation.

(f) Notice of the filing of the recommendation by the department shall be made to the public following the statutory requirements of the Fish and Game Code. The notification shall be provided early enough that people will have at least 30 days, or until the next meeting, whichever occurs first, to respond to the recommendation before the commission takes its action. Notice shall also be mailed to any person who requests in writing such notification.

(g) The conimission will not adopt regulations as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment, unless specific economic, social or other conditions make infeasible such project alternatives or such mitigation measures.

(h) The final action on the adopting of regulations shall include the written response of the commission to sigmficant environmental points raised during the evaluation process by other public agencies and members of the public. Responses to comments received prior to the final public meeting when the commission must take its action will be prepared in writing prior to the meeting. Responses to comments received at the final meeting may be made orally by the commission during the meeting. Such oral responses will be included in the official written minutes of the meeting.

(i) Notice of the adoption of a regulation adopted pursuant to Section 2108O.5, Public Resources Code, shall be filed with the Secretary for Resources. The notice shall be available for public inspection and shall remain posted for a period of 30 days.

NOTE: Authority cited: Section 21080.5, Public Resources Code, and Section 15050 of the Stale EIR Guidelines. Reference: Section 21080.5, Public Resources Code, and Section 15050 of the State EIR Guidelines.

HISTORY

1. New section tiled 10-19-76; effective tnirtieth day mereafter (Regisier 76, No. 43).
2. Amendment of subsection (a) filed 3-15-77 as an emergency; effective upon Sling (Register 77, No. 12).
3. Omficate of Compliance filed 7-8-77 (Register 77, No. 28).
4. Amendment of subsection (a) filed 7-8—77; effective thirtieth day thereafter (Register 77, No. 28).
5. Amendment of NOTE filed 7-16-81; effective tnirtieth day mereaner (Register 81, No. 29).
6. Renumbering of Section 3.9Qto Section 781.5 filed 2-17-82; designated effective 3-1-82 (Register 82, No.8).

Chapter 5. Fish and Game Commission, Wildlife Conservation Board, Marine Research Committee, and Department of Fish and Game—Conflict of Interest Code

NOTE: It having been found, pursuant to Government Code Section 11344, that the printing of the regulations constituting the Conflict of Interest Code is impractical and these regulations being of limited and particular application, these regulations are not published in full in the California Code of Regulations. The regulations are available to the public for review or purchase at cost at the following locations:

FISH AND GAME COMMISSION
1416 NINTH ST.
SACRAMENTO, CALIFORNIA 95BI4

WDJIUFE CONSERVATION BOARD
1416 NINTH ST. -
SACRAMENTO, CALIFORNIA 95B14

MARINE RESEARCH COMMITTEE
350 GOLDEN SHORE
LONO BEACH. CALIFORNIA 90802

DEPARTMENT OF FISH AND GAME
14IS NINTH ST.
SACRAMENTO, CALIFORNIA 93114

FAIR POLITICAL PRACTICES COMMISSION
1IC0 "K- ST.

SACRAMENTO, CALIFORNIA 95S14

ARCHIVES
SECRETARY OF STATE
1020 "0- ST.
SACRAMENTO. CALIFORNIA 95SI4

The Conflict of Interest Code is designated as Chapter 5 of Title 14 of the California Code of Regulations, and consists of sections numbered and titled as folio ws:

Section
782. General Provisions
Appendix

NOTE: Authority cited: Section 87300 and 87304, Government Code. Reference: Sections 87300, et seq., Government Code.

HISTORY

1. New Chapter 5 (Articles 1-5, Sections 782-786.7) filed 11-9-77; effective thirtieth day thereafter. Approved by Fair Political Practices Commission 10-4-77 (Register 77, No. 46).
2. Repealer of Chapter 5 (Article 1-4, Sections 782-786.7) and new Chapter 5 (Section 782 and Appendix) filed 2-26-81; effective thirtieth day thereafter. Approved by Fair Political Practices Commission 12-1-80 (Register 81, No. 9).
3. Amendment of Appendix filed 1-20-87; effective thirtieth day thereafter. Approved by Fair Political Practices Commission 10-14-86 (Register 87, No.4).
4. Amendment of Appendix filed 1-21-93; operative 2-22-93. Submitted to OAL for printing only pursuant to Government Code section 11343.8. Approved by Fair Political Practices Commission 11-9-92 (Register 93, No. 4).

Chapter 6. Regulations for Implementation of the California Endangered Species Act

Article 1. Take Prohibition; Permits for Incidental Take of Endangered Species, Threatened Species and Candidate Species

§ 783.0. Purpose and Scope of Regulations.

This article imp lements Section 2080 and Section 2081 of the Fish and Game Code. This article does not affect the Department's authority to authorize take pursuant to any other provision of this division.

NOTE: Authority cited: Sections 702 and 2081(d), Fish and Game Code. Reference: Sections 2080 and 2081, Fish and Game Code.

HISTORY

1. New chapter 6, article 1 (sections 783.0-783.8) and section filed 12-30-98; operative 12-30-98 pursuant to Government Code section 11343.4(d) (Register 99, No. 1).

5 783.1. Prohibitions;

(a) No person shall import into this State, export out of this State or take, possess, purchase, or sell within this State, any endangered species, threatened species, or part or product thereof, or attempt any of those acts, except as otherwise provided in the California Endangered Species Act, Fish and Game Code Section 2050, et seq. ("CESA"), the Native Plant Protection Act, the Natural Community Conservation Planning Act, the California Desert Native Plants Act, or as authorized under this article in an incidental take permit.

Appendix 2 -
List of Individuals and Organizations Receiving the 2003 Draft Environmental Document Regarding Pronghorn Antelope

List of Individuals and Organizations
Receiving the 2003 Draft Environmental Document
Regarding Pronghorn Antelope Hunting

1. Mr. G. Lynn Sprague, U.S. Forest Service, Vallejo, California
2. Mr. Wayne White, U.S. Fish and Wildlife Service, Sacramento, California
3. Mr. Mike Pool, Bureau of Land Management, Sacramento, California
4. Mr. John Reynolds, National Park Service, San Francisco, California
5. Director, California Department of Parks and Recreation, Sacramento, California
6. Ms. Virginia Handley, The Fund for Animals, San Francisco, California
7. Ms. Lois Kliebe, Sportsmen^ Council of Northern California, Redding, California
8. Ms. Kathy Lynch, Lynch and Associates, Sacramento, California
9. Mr. Gerald Upholt, California Rifle and Pistol Association, Sacramento, California
10. Mr. Keith Ringgenberg, Outdoor Sportsmen's Coalition, Fresno, California
11. Ms. Camilla Fox, Animal Protection Institute, Sacramento, California
12. Mr. Wayne Pacelle, Humane Society of the United States, Washington, DC
13. Mr. Patrick L. Smith, United State Department of Agriculture, Sacramento, California
14. Ms. Shannon Hebert, United State Department of Agriculture, Portland, Oregon
15. Mr. Alan Sanders, Sierra Club, Los Padres Chapter, Hueneme, California
16. Dr. J. Rod McGinnis, California Bowmen Hunter, Sacramento, California
17. Mr. Michael Dunbar, US fish and wildlife Service, Lakeview, Oregon
18. Mr. Jim Yoakum, Verdi, Nevada
19. Mr. Dave Carter, Dixon, California
20. Modoc County Fish and Game Commission, Alturas, California

FINAL ENVIRONMENTAL DOCUMENT

Section 362, Title 14, California Code of Regulations

Regarding

Bighorn Sheep Hunting

May 5, 2011

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

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CHAPTER 1. SUMMARY

Existing law (Section 4902, California Fish and Game Code) allows the Commission to authorize sport hunting of mature Nelson bighorn rams in geographic areas for which management plans have been developed. Section 4901 of the California Fish and Game Code provides the Commission to authorize the take of a limited number of mature Nelson bighorn rams by establishing the areas, seasons and hours, bag and possession limits, and the number of Nelson bighorn sheep rams that may be taken pursuant to its regulations.

State law (Section 207 of the Fish and Game Code) requires that the Commission review the mammal hunting regulations, and the Department to present its recommendations for changes to the mammal hunting regulations to the Commission at a public meeting. Mammal hunting regulations adopted by the Commission provide for hunting bighorn sheep in specific areas of the State (Section 362, Title 14, California Code of Regulations).

In adopting regulations providing for limited hunting of mature Nelson bighorn sheep rams, the Commission would be implementing section 4902 of the Fish and Game Code, which is consistent with the wildlife conservation policy adopted by the California Legislature (Section 1801, Fish and Game Code). The State's wildlife conservation policy, among other things, contains an objective of providing hunting opportunities when such use is consistent with maintaining healthy wildlife populations.

PROPOSED PROJECT AND ALTERNATIVES

The project discussed in this document (proposed project) involves hunting of mature male Nelson bighorn sheep (Sections 4900-4904, California Fish and Game Code). Specifically, the Department is proposing to adjust tag quotas, establish 2 additional hunt zones, modify hunt zone boundaries, and establish the zones in which tags for fund-raising purposes are valid. Because final hunter quotas cannot be established until harvest and survey results are completed and analyzed, the Commission is provided with a range of proposed hunting tag quotas (Appendix 1). Upon completion of the aforementioned analyses, the Department will determine and recommend to the Commission final hunting tag quotas.

The Department is also providing the Commission with a range of alternatives to the proposed project that could feasibly attain the basic objectives of the project. It is anticipated that the proposed project would fall around the upper end of the proposed tag ranges. Alternative 1 (no change) would maintain quotas and seasons for each existing hunt zone without change. Alternative 2 (increased harvest) would involve issuing tag quotas at a rate greater than the proposed project, and would necessarily involve legislative changes to the Fish and Game Code.

Table 1-1: Proposed 2011 Tag Allocation

HUNT ZONE	2010 Tag allocation	2011 Tag allocation (proposed)
Zone 1 - Marble/Clipper Mountains	4	3-4
Zone 2 - Kelso Peak/Old Dad Mountains	4	3-4
Zone 3 - Clark/Kingston Mountain Ranges	2	2
Zone 4 - Orocopia Mountains	1	1-2
Zone 5 - San Gorgonio Wilderness	2	2-3
Zone 6 - Sheep Hole Mountains	2	1-2
Zone 7 – White Mountains	4	3-5
Zone 8 - South Bristol Mountains	-	2-3
Zone 9 – Cady Mountains	-	3-4
Open Zone Fund-raising Tag	1	1
Marble/Clipper/Sheep Hole Mountains Fund-raising Tag	1	-
Marble/Clipper/South Bristol Mountains Fund-raising Tag	-	1
Kelso Peak/Old Dad Mountains Fund-raising Tag	1	1
TOTAL	22	23-32

SUMMARY OF IMPACTS AND MITIGATION

Table 1-2 summarizes Department findings that there are not significant long-term adverse impacts associated with the proposed project or any of the project alternatives considered for the 2011 bighorn sheep hunting regulations.

Table 1-2: Effects on the Environment of Limited Public Hunting of Bighorn Sheep

Alternative	Significant Impact	Nature of Impact	Mitigation Available	Nature of Mitigation
Proposed Project: Adding new hunt areas and modifying number of tags and zone boundaries	No	None	N/A	N/A
Alternative 1: No change	No	None	N/A	N/A
Alternative 2*: Increased harvest of mature rams	No	None	N/A	N/A

It is anticipated that the number of tags issued will fall near the upper end of the proposed ranges (Table 1-1). On a zone basis, the resulting harvest for 2011 will likely be similar to that which occurred in 2010, because hunter success generally approaches 100%. On a statewide basis, the total hunter harvest will likely exceed that of previous years because of the allocation of tags in 2 newly established hunt zones. Based on success rates from previous years, it is anticipated that the actual harvest will be approximately 95% of the bighorn sheep tags allocated for 2011.

PUBLIC INPUT AND AGENCY CONSULTATION

The Legislature has delegated authority to the Commission, whose members are appointed by the Governor, to regulate the take and possession of wildlife. The Legislature has further directed the Commission to hold no fewer than three public meetings for the purpose of considering and adopting revisions to regulations relating to hunting and trapping of mammals (Section 207, Fish and Game Code [FGC]).

Recommendations and comments from the Department, other agencies, and the public are to be received and considered at these meetings. The Commission may then, after considering public input, adopt regulations relating to any recommendations received at the initial meeting it deems necessary to preserve, properly utilize, and maintain each species or subspecies.

The California Environmental Quality Act (CEQA) encourages public input. One of the primary purposes of the environmental document review process is to obtain public comment, as well as to inform the public and decision makers. It is the intent of the Department to encourage public participation in this environmental review process.

Prior to preparing this environmental document, the Department developed a Notice of Preparation (NOP). On December 8, 2010, the NOP was provided to the State Clearinghouse for distribution, as well as to land management agencies in California that have an interest, or play a key role, in Nelson bighorn sheep management [including the U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), National Park Service (NPS) and U.S. Forest Service (USFS)]. The NOP requested that any comments regarding input to this environmental document be submitted to the Department within 30 days of receipt of the NOP.

In addition, this environmental document was available for public review for 45 days (Section 15087, Title 14, California Code of Regulations). During the review period, the public was encouraged to provide written comments regarding the document. During the comment period one comment letter was received. Responses to comments provided on the 2011 Draft Environmental Document Regarding Bighorn Sheep Hunting are included in Chapter 6. The Department received confirmation from the State Clearinghouse, noting that the Department had complied with the CEQA review requirements for the draft environmental document and that no State agency comments were received.

AREAS OF CONTROVERSY

The Department has encouraged public input into the environmental document by holding a scoping session to discuss documents prepared in support of mammal hunting and trapping regulations. This scoping session was held in Sacramento, CA on November 18, 2010. No areas of controversy were identified.

ISSUES TO BE RESOLVED

As provided by existing law, the Commission is the decision-making body (lead agency) considering the proposed project, while the Department has the responsibility for management activities, such as hunting, translocating bighorn sheep to historical range(s), and preparing management strategies. The primary issue for the Commission to resolve is whether to change bighorn sheep hunting regulations as an element of bighorn sheep management. If such changes are authorized, the Commission will specify the areas, seasons, methods of take, number of bighorn sheep tags to be allocated, and other special conditions as appropriate.

FUNCTIONAL EQUIVALENCY

California Environmental Quality Act (CEQA) review of the proposed project will be conducted in accordance with the Commission's certified regulatory program (CRP) approved by the Secretary for the California Resources Agency pursuant to Public Resources Code Section 21080.5. The California Environmental Quality Act requires all public agencies in the State to evaluate the environmental impacts of projects they approve, including regulations, which may have a potential to significantly affect the environment. The Department has prepared this Environmental Document (ED), which is the functional equivalent of an Environmental Impact Report, on behalf of the Commission in compliance with this requirement. The ED provides the Commission, other agencies, and the general public with an objective assessment of the potential effects of the proposed action.

CHAPTER 2. THE PROPOSED ACTION

1. Number of Tags

In order to maintain management goals and objectives, it is periodically necessary to adjust quotas in response to dynamic environmental and biological conditions. This proposed project adjusts bighorn sheep tag ranges to account for fluctuations in populations of bighorn sheep (Appendix 1).

Fish and Game Code Section 4902 limits the number of hunting tags for mature Nelson bighorn sheep rams to no more than 15% of the number of such males estimated to

occur in each geographic area for which an approved management plan has been prepared. Annual population estimates are based on aerial surveys carried out by Department biologists, or on models developed from data obtained during those aerial surveys. Annual survey data or resulting models of population size upon which tag allocations are based are available from the Wildlife Branch, California Department of Fish and Game, Sacramento, California.

2. Establish New Hunts

a. Establish a new bighorn sheep hunt in the South Bristol Mountains, San Bernardino County. Bighorn sheep are widespread in southeastern California, and the proposal would increase the total number of geographic areas, or hunt zones from 7 to 8. The proposal will add one new bighorn sheep hunt, termed the South Bristol Mountains bighorn sheep hunt, to the list of areas open to hunting of bighorn sheep (Figure 2-1). The number of tags (range 2 to 3) to be issued would be restricted to no more than 15% of the number of mature Nelson bighorn rams estimated to occur in the hunt zone, as stipulated by state law. Tags would be available to the general public during a season beginning on the first Saturday in December 2011, and continuing through the first Sunday in February 2012 (Appendix 1). This opportunity complies with Sections 4900-4904 of the California Fish and Game Code (Appendix 2) and recommendations provided in the approved management plan for the South Bristol Mountains Bighorn Sheep Management Unit (Bleich et al. 2010)

b. Establish a new bighorn sheep hunt in the Cady Mountains, San Bernardino County. Bighorn sheep are widespread in southeastern California, and the proposal would increase the total number of geographic areas from 8 to 9. The proposal will add one new bighorn sheep hunt, termed the Cady Mountains bighorn sheep hunt, to the list of areas open to hunting of bighorn sheep (Figure 2-1). The number of tags (range 3 to 4) to be issued would be restricted to no more than 15% of the number of mature Nelson bighorn rams estimated to occur in the hunt zone, as stipulated by state law. Tags would be available to the general public during a season beginning on the first Saturday in December 2011, and continuing through the first Sunday in February 2012 (Appendix 1). This opportunity complies with Sections 4900—4904 of the California Fish and Game Code and recommendations provided in the approved management plan for the Cady Mountains Bighorn Sheep Management Unit (Bleich et al. 2010).

3. Modify One Existing Hunt Boundary

a. Existing regulations specify the boundary for the Old Dad/Kelso bighorn sheep hunt. A small number of bighorn sheep now occupy the South Soda Mountains, near the west end of the Old Dad Peak-Kelso Mountains bighorn sheep hunt zone. Additionally, proposed regulatory changes will establish the Cady Mountains bighorn sheep hunt zone. The proposal to modify the existing boundary for the Old Dad/Kelso bighorn sheep makes the western boundary contiguous with the Cady Mountains bighorn sheep hunt zone while simultaneously encouraging continued expansion of the population of bighorn sheep now established in the South Soda Mountains (Appendix 1).

4. Establish Valid Areas and Dates for Three Fund-Raising Tags

a. Allocate one open zone fund-raising tag that shall be valid in any zone open to the hunting of mature Nelson bighorn sheep rams. In the White Mountains bighorn sheep hunt, this tag shall be valid from the first Saturday in August 2011 and continue through the last Sunday of September 2011. In the San Gorgonio Wilderness, this tag shall be valid from the third Saturday in November 2011 to the third Sunday of February 2012. In all other zones open to the hunting of mature Nelson bighorn sheep rams, this tag shall be valid from the first Saturday of November 2011 through the first Sunday of February 2012.

b. Allocate one fund-raising tag that shall be valid only in the Marbles and Clipper Mountains and the South Bristol Mountains hunt zones. This tag shall be valid from the first Saturday of November 2011 through the first Sunday of February 2012.

c. Allocate one fundraising tag that shall be valid only in the Kelso Peak /Old Dad Mountains hunt zone. This tag shall be valid from the first Saturday of November 2011 through the first Sunday of February 2012.

The Department is recommending that the Commission adopt regulations that will provide for taking no more than 15 percent of the mature Nelson bighorn rams from each management unit, the establishment of 2 additional hunt zones, a modification to existing hunt zone boundaries, and establish the zones and season dates in which tags

for fund-raising purposes are valid.

Figure 2-1: Location of Nelson Bighorn Sheep Hunt Zones

BACKGROUND AND EXISTING CONDITIONS

Historical Perspective of Bighorn Sheep Management in California

Bighorn sheep existing today probably are the descendants of similar animals that entered North America via the Bering land bridge during the Illinoisan glaciation, at least 150,000 years ago (Cowan 1940, Geist 1970). Wild sheep spread across the glaciated mountains of western North America during the Sangamon interglacial period. The Wisconsin glaciation, 10,000-125,000 years ago, then separated the animals into two populations that persisted in unglaciated areas. Subsequently, Dall's sheep (*Ovis dalli*) evolved from populations in the Alaska-Yukon region, and bighorn sheep (*Ovis canadensis*) evolved in a region south of glaciated mountains and forests in what is now the continental United States (as summarized by Bailey 1980). Following the Wisconsin glaciation, wild sheep radiated into dry, mountainous terrain.

Geist (1971) tied the evolution of Asiatic and North American sheep to the expanding availability of favorable habitat, an occurrence concomitant with receding

glaciers. The races, or subspecies, of *Ovis canadensis* currently recognized as desert bighorn sheep evolved from wild sheep that persisted in the southern region despite climatic changes. In part, they may have persisted because of the lack of competition with other large, native herbivores (Bailey 1980).

In California, bighorn sheep are found primarily in the southeastern part of the State in numerous Mojave and Sonoran desert mountain ranges. They also occur in several populations in the eastern Sierra Nevada; and, in three populations, in the Transverse Ranges of Ventura, Los Angeles, and San Bernardino counties. The probable historical and current distributions of bighorn sheep in California are illustrated in Figure 2-2.

Until recently, taxonomists have recognized three subspecies of mountain sheep in the state, including *O. c. californiana* (which was thought to occur throughout the Sierra Nevada and historically in northeastern California), *O. c. nelsoni* (which occurs throughout the majority of the Mojave and Sonoran deserts and in the transverse ranges of southwest California), and *O. c. cremnobates* (which occupied the peninsular ranges located primarily near the border with Mexico) (Cowan 1940). There have, however, been recent changes in nomenclature with respect to bighorn sheep inhabiting the Sierra Nevada and the peninsular ranges. Indeed, bighorn sheep occupying the Sierra Nevada were designated *O. c. californiana* and are the only representative of that taxon; at the same time, all other wild sheep formerly designated as *O. c. californiana* were synonymized with *O. c. canadensis*, and are now recognized as the Rocky Mountain subspecies (Wehausen and Ramey 2000). Moreover, bighorn sheep inhabiting the peninsular ranges and formerly recognized as the subspecies *cremnobates*, were synonymized with *O. c. nelsoni*, and no longer are considered a distinct subspecies (Wehausen and Ramey 1993).

To further complicate nomenclature, Joseph Grinnell (1912) had assigned the subspecific epithet *sierrae* to those animals he described from the Sierra Nevada before Cowan (1940) published his revision of the taxonomy of North American mountain sheep and, obviously, before Wehausen and Ramey (2000) synonymized *californiana* with *canadensis*. Because sheep in the Sierra Nevada warrant subspecific recognition (Wehausen and Ramey 2000), judicious application of the rule of priority as it appears in the International Code of Zoological Nomenclature dictates that those animals are once again assigned to the subspecies *sierrae* (Wehausen et al. 2005).

Throughout much of the range occupied by bighorn sheep, the downward trend in numbers began with the human settlement of vast, uninhabited areas (Buechner 1960). Although a great deal of attention has been paid to the potential impacts of unregulated market hunting associated with the influx of gold mining during the 1850s (Buechner 1960) another likely factor was the introduction of livestock, primarily domestic sheep, throughout much of the range of bighorn sheep (Buechner 1960). Indeed, Francisco Garces, who chronicled the expeditions of Father Anza as he traveled from what is now Arizona north and west toward the Pacific coast of California, described dead and dying bighorn sheep in the Santa Rosa Mountains of southern California as early as 1776 (Bolton 1930). Garces described dead and moribund animals in association with livestock being herded northward by the Anza Expedition (Bolton 1930). Further evidence persists in the form of a legend among the Kaliwa Indians of Baja California, which describes a pestilence that killed many wild sheep in northern Mexico following the arrival of Spaniards and their livestock (Tinker 1978).

Historically, bighorn sheep were more numerous than they are today (Buechner 1960); a reasonable estimate for California is about 10,000 individuals in 1800 (Bleich 2006). These animals were distributed among approximately 100 populations at that time (Wehausen et al. 1987a).

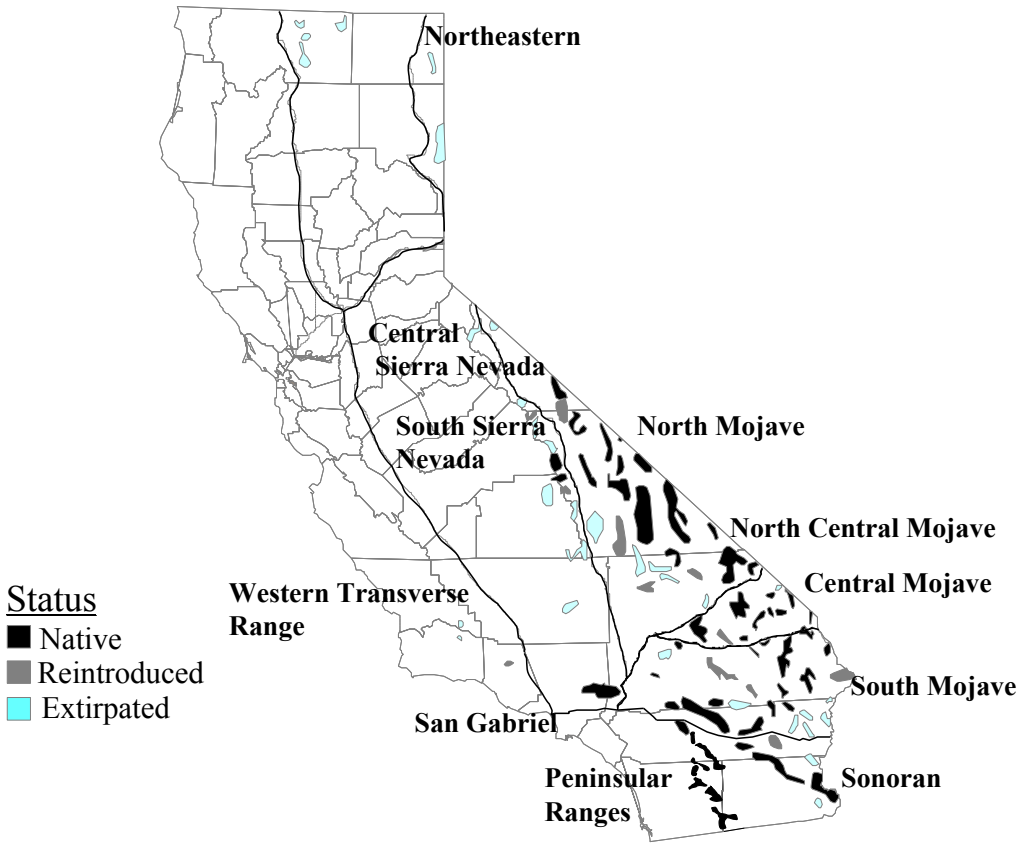
In the decades immediately following the discovery of gold in California, several populations of bighorn sheep in the Sierra Nevada were eliminated, likely as a result of diseases contracted from domestic sheep that were grazed in that mountain range. The reduction in bighorn sheep, and wildlife populations in general, resulted in the first legal protection for bighorn sheep and other species of large mammals in California. At that time, it was believed that wildlife populations protected from hunting would flourish and recolonize former ranges and, in 1872, the California Legislature passed a law protecting deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), and pronghorn (*Antilocapra americana*) for eight months of the year. In 1878, the Legislature amended the act to establish a four-year moratorium on the taking of any elk, pronghorn antelope, bighorn sheep, or female deer and, in 1883, the moratorium on taking bighorn sheep was extended indefinitely. In 1933, bighorn sheep became the first species in California to be classified as "fully protected" by the California Legislature (California Department of Fish and Game 2005a).

Despite the well-intentioned efforts of the California Legislature, total protection did not halt the loss of bighorn sheep in California (Wehausen et al. 1987a, Bleich 2006), and populations of bighorn sheep continued to disappear (Epps et al. 2003). Historic surveys and population estimates suggest that diseases, habitat changes, and competition for forage, rather than illegal take, resulted in the elimination of bighorn sheep in some areas, of which the most recent examples were the losses of translocated populations of bighorn sheep at Lava Beds National Monument in Siskiyou County (Weaver 1983), and in the Warner Mountains of Modoc County (Weaver and Clark 1988), both of which are thought to have resulted from respiratory disease contracted from domestic sheep in those areas (Foreyt and Jessup 1982, Weaver and Clark 1988).

Contemporary Management of Bighorn Sheep in California

Currently, bighorn sheep occupy about 60 mountain ranges in California (Wehausen et al. 1987a); these populations are distributed primarily in the Sierra Nevada and desert regions of eastern and southern California (Epps et al. 2003). About 400 bighorn sheep occupy the Sierra Nevada, 950 occupy the peninsular ranges, and the remainder (about 3,850) occurs in the transverse ranges, the Mojave Desert, and the Sonoran Desert. There are more populations than there are mountain ranges supporting bighorn sheep, because some larger mountain ranges contain multiple populations based on distinct ranges of females (Bleich et al. 1996).

Figure 2-2: Bighorn sheep distribution



As a result of the aforementioned taxonomic and nomenclatural revisions, two subspecies of bighorn sheep currently are recognized in California. *Ovis canadensis nelsoni* occurs in suitable habitat in the Transverse Ranges, the Mojave Desert, and the Sonoran Desert; *O. c. sierrae* is restricted to the Sierra Nevada. Since 1998, bighorn sheep occupying the peninsular ranges have been afforded protection under the federal Endangered Species Act (U.S. Fish and Wildlife Service 2000), and bighorn sheep occupying the Sierra Nevada have been afforded similar protection since 2000 (U.S. Fish and Wildlife Service 2008). The California Fish and Game Commission has classified bighorn sheep inhabiting the peninsular ranges as threatened, and those inhabiting the Sierra Nevada are classified by the Commission as endangered.

Although the Department has supported an active management program for many years, contemporary management of bighorn sheep began with the passage of Senate Resolution 43 in 1963 (Bleich 2006). Input from interested conservation groups was instrumental in the passage of that resolution, which resulted in funding for the most detailed survey of bighorn sheep yet conducted in California; until that time, basic

inventory data consisted only of cursory surveys that occurred in 1940, 1946, and 1957. Survey work completed during 1968-1972 as a result of Senate Resolution 43 yielded an estimate of 3,700 bighorn sheep in California (Weaver 1972). More importantly, however, was the fact that for the first time ever the management needs of bighorn sheep, including land-use conflicts, water developments, and re-introductions, were addressed.

As a result of management recommendations resulting from implementation of Senate Resolution 43, the Department of Fish and Game implemented an ambitious program to acquire habitat for bighorn sheep occupying the peninsular ranges. Additionally, the Volunteer Desert Water and Wildlife Survey (VDWWS) was founded to help carry out recommendations for water developments put forth by Weaver (1972), and to assist the Department with census efforts and other work related to bighorn sheep and other desert wildlife. Since 1970, volunteers have contributed thousands of hours of labor to the program, resulting in dozens of habitat enhancement projects directed specifically at conserving populations of bighorn sheep (Bleich et al. 1982, Bleich 1990).

An effort to reestablish bighorn sheep on historical ranges also occurred as a result of Senate Resolution 43. The first such effort took place in 1971 at Lava Beds National Monument, and in 1980 a similar effort was initiated in the Warner Mountains. As described previously, both of those attempts ultimately were unsuccessful.

In 1979, translocation of California bighorn sheep from the Mount Baxter herd in the Sierra Nevada was initiated, largely as a result of research conducted by Wehausen (1979) in combination with recommendations by the Department (Leach 1974) that the subspecies be introduced to areas from which it had been eliminated. Since then, a total of 118 animals have been translocated, 108 of which were used to reestablish bighorn sheep populations in three areas of the Sierra Nevada: Wheeler Crest, Mount Langley, and Lee Vining Canyon or to augment other extant populations in that range, and 10 of which were translocated to the Warner Mountains of Modoc County, California. These translocations took place in 1979, 1980, 1982, 1986, 1987, 1988, 2001, 2005, and 2009.

In 1981, Assembly Concurrent Resolution 41 was passed and directed the Department to prepare a study plan to investigate population status, competition,

diseases, and the potential to introduce bighorn sheep to historically occupied areas in California. Funding was allocated from the California Environmental License Plate Fund for the purpose of carrying out the investigations outlined by the Department's study plan (Weaver 1983).

In 1983, the Department completed a statewide management plan for bighorn sheep (California Department of Fish and Game 1983). A number of specific management programs, designed to help meet statewide goals for the management and restoration of bighorn sheep populations, were contained in that plan. Goals specifically listed in the statewide plan are to: (1) maintain, improve, and expand bighorn sheep habitat where possible or feasible; (2) reestablish bighorn sheep populations on historic ranges where feasible; (3) increase bighorn sheep populations so that all races become numerous enough to no longer require classification as threatened or fully protected; and (4) provide for aesthetic, educational, and recreational uses of bighorn sheep. Aside from the specific recommendations of Leach et al. (1974) regarding California bighorn sheep, this was the first official Department document to advocate the reintroduction of all subspecies of bighorn sheep in California.

Subsequently, in 1983 a series of translocation projects involving Nelson bighorn sheep (*O. c. nelsoni*) from two large Mojave Desert mountain ranges began. To date, 230 animals have been removed from Old Dad Peak for translocation to the Whipple Mountains, Sheep Hole Mountains, Eagle Crags, Argus Mountains, Avawatz Mountains, Chuckwalla Mountains, Bristol Mountains, and Bullion Mountains. A total of 55 animals have been removed from the Marble Mountains for translocation to the Whipple Mountains and Eagle Crags (Bleich et al. 1990, Torres et al. 1994).

By 1983, it was determined that the population of Nelson bighorn sheep in the San Gabriel Mountains was large enough to support removals for translocation (Holl and Bleich 1983), and in 1983, 1985, and 1987, a total of 71 animals were removed from winter ranges in the South Fork of Lytle Creek and Cattle Canyon. Those animals were translocated to a vacant, historical winter range in the Prairie Fork of the San Gabriel River (within the San Gabriel Mountains) and to historical habitat near San Rafael Peak, in Ventura County (Bleich et al. 1990). In 1988, 10 sheep were captured in Lone Tree Canyon of the White Mountains, Mono County, and translocated to Silver Canyon, also in the White Mountains, Inyo County. Since 1979, the Department has reestablished 11 new populations and augmented four small populations through

translocation projects.

In 1986, the enactment of Assembly Bill 3117 (Chapter 745) created a series of laws which comprised the most significant legislation affecting bighorn sheep management in California since the 1878 legislation that established the initial moratorium on the taking of bighorn sheep. This law contained language that directed the Department to prepare management plans for each population of bighorn sheep in California. In addition, Assembly Bill 3117 differed from previous legislation that would have authorized hunting in that it: (1) made bighorn sheep a game mammal in only two areas (Old Dad Peak and the Marble Mountains); (2) provided for one hunting tag to be available for fund-raising purposes each year, with the revenues from bighorn sheep hunting to be put in an account set aside solely for the benefit of bighorn sheep; (3) set a biologically conservative limit on the number of tags which could be offered each year, not to exceed 15 percent of the mature males counted annually in each population; and (4) contained an expiration date of December 31, 1992, unless the Legislature extended it beyond that date. In 1990, the Legislature removed the expiration date.

Implementation of Section 4902 of the California Fish and Game Code (Appendix 2) has included hunting of a limited number of mature Nelson bighorn rams since 1987, when specific regulations similar to the proposed action were initially adopted by the Commission. Hunts have been conducted annually since then, pursuant to Section 362 of Title 14, CCR.

Assembly Bill 977 amended sections 4902 and 4903, Fish and Game Code, and thereby (1) permitted the Commission to authorize hunting of Nelson bighorn rams in management units for which plans have been developed pursuant to Section 4901, Fish and Game Code; (2) increased to three the permissible number of fund-raising license tags to be available for programs and projects to benefit bighorn sheep (the number of these authorized, if more than one, would not be permitted to exceed 15 percent of the total number of tags authorized generally); and (3) specified that any use of those revenues for the Department's administrative overhead shall be limited to the reasonable costs associated with direct administration of the program.

The Department's Bighorn Sheep Management Program is currently revising the statewide management plan or bighorn sheep in California. This planning effort will identify and prioritize activities to ensure the long-term viability of bighorn sheep

populations, consistent with existing State policy. Protection of important habitats and inter-mountain movement corridors, identification of future introduction sites, and habitat enhancements will be addressed. This planning effort is occurring in cooperation with the Bureau of Land Management, California Department of Parks and Recreation), Department of Defense (Military), and National Park Service (NPS).

Intensive data collection continues to provide basic information for updating and preparing additional management plans, as required by the California Fish and Game Code. These efforts include assessing habitat and potential movement corridors, and surveys to estimate population sizes, age class structure, sex ratios, sampling individual animals for the prevalence of diseases and parasites, and implementing strategies to stabilize or enhance individual populations of bighorn sheep.

EXISTING REGULATIONS REGARDING BIGHORN SHEEP HUNTING

Regulated public hunting for Nelson's bighorn sheep began in 1987 in California with passage of AB 3117, and has occurred without interruption since that date. Additional public hunts for Nelson's bighorn sheep have been established subsequent to 1987, annual hunts for Nelson's bighorn sheep have been part of the existing conditions in California for the last 24 years. Appendix 1 lists the verbatim for the current and proposed conditions for hunting Nelson's bighorn sheep in California.

POLICY CONSIDERATIONS

The Legislature formulates laws and policies regulating the management of fish and wildlife in California. The general wildlife conservation policy of the State is to encourage the conservation and maintenance of wildlife resources under the jurisdiction and influence of the State (Section 1801 of the California Fish and Game Code). The policy includes the following objectives:

1. To provide for the beneficial use and enjoyment of wildlife by all citizens of the State;
2. To perpetuate all species of wildlife for their intrinsic and ecological values, as well as for their direct benefits to man;
3. To provide for aesthetic, educational, and non-appropriative uses of the various wildlife species;

4. To maintain diversified recreational uses of wildlife, including hunting, as proper uses of certain designated species of wildlife, subject to regulations consistent with the maintenance of healthy, viable wildlife resources, the public safety, and a quality outdoor experience;
5. To provide for economic contributions so the citizens of the State through the recognition that wildlife is a renewable resource of the land by which economic return can accrue to the citizens of the State, individually and collectively, through regulated management. Such management shall be consistent with the maintenance of healthy and thriving wildlife resources and the public ownership status of the wildlife resource;
6. To alleviate economic losses or public health and safety problems caused by wildlife; and
7. To maintain sufficient populations of all species of wildlife and the habitat necessary to achieve the above-stated objectives.

With respect to Nelson's bighorn sheep, the Legislature has established the State's policy regarding management in sections 4900-4904 of the California Fish and Game Code (Appendix 2). Section 4900 declares that bighorn sheep are an important wildlife resource of the state that are to be managed and maintained at sound biological levels, and that it is the policy of the state to encourage the preservation, restoration, utilization, and management of California's bighorn sheep population, and that such management shall be in accordance with the policy set forth in Section 1801 of the Fish and Game Code. Section 4901 directs the Department to determine the status and trend of bighorn sheep populations by management units, and to prepare plans for each of the management units. Each plan is to address (a) the numbers, age, sex ratios, and distribution of bighorn sheep within the management unit; (b) range conditions and any competition that may exist as a result of human, livestock, wild burro, or any other mammal encroachment; (c) the need to relocate or reestablish bighorn populations; (d) the prevalence of disease or parasites within the population; and (e) recommendations for achieving the policy objective of Section 4900.

Section 4902 provides that the Commission (a) may adopt all regulations pertaining to biologically sound management of Nelson bighorn sheep (O. c. nelsoni), including sport hunting of mature Nelson bighorn rams; (b) may not authorize permits in a single year within a single management unit in excess of the Department's annual estimate of the population in that management unit; (c) may determine the fee for a tag

to take a Nelson bighorn ram, but restricts that amount to five hundred dollars; (d) shall annually direct the department to authorize not more than three of the tags available for issuance that year to take Nelson bighorn rams for the purpose of raising funds for programs and projects to benefit Nelson bighorn sheep, that those tags may be sold to residents or nonresidents for fund-raising purposes and shall not be subject to any fee limitation as described in Section 4902(c), specifies certain non-profit organization(s) as the seller(s) of not less than one of those tags if more than one fund-raising tag is authorized, restricts the number of fund-raising tags, if more than one, to no more than 15 percent of the total number of tags authorized to hunt Nelson bighorn rams in any given year, and mandates that all successful applicants complete a hunter familiarization and orientation conducted by the Department prior to hunting.

Section 4903 establishes a special bighorn sheep account into which funds generated from the sale of tags for hunting Nelson bighorn sheep rams shall be deposited and made available solely for programs and projects to benefit bighorn sheep and for the direct costs and administrative overhead incurred solely in carrying out the Department's bighorn sheep activities.

Section 4904 mandates that the Department prepare and submit a biennial report that includes information on any management plans prepared, losses of bighorn sheep, a summary of data used to prepare recommendations pursuant to Section 4902 of the Fish and Game Code, and an assessment of the environmental impacts of hunting mature Nelson bighorn rams on the various herds.

CHAPTER 3. POTENTIAL FOR SIGNIFICANT IMPACTS

Hunting of bighorn sheep will result in the deaths of individual animals. The removal of individual male animals from only 9 populations (Marble Mountains, Old Dad Peak/Kelso Mountains, Clark/Kingston Mountains, Orocopia Mountains, San Gorgonio Wilderness, Sheep Hole Mountains, White Mountains, South Bullion Mountains, and Cady Mountains) is not expected to significantly reduce herd size, or to affect the reproductive base of the population. The proposed action (modification of hunting tag numbers in 7 existing hunt zones and the addition of two hunt zones) will result in maintaining these herds at or above the approved management plan objectives and will maintain the ratio of male to female bighorn sheep at levels adequate to insure reproduction.

The approximately 60 herds of bighorn sheep in California occur from Mono County in the north, to the Mexican border in the south (Torres et al. 1996). These populations are widely distributed, primarily throughout the southeastern part of the State and in the Sierra Nevada. Nelson bighorn sheep, the subspecies currently being considered in the proposed action, number about 4,800 and occur in Mono, Inyo, San Bernardino, San Diego, Riverside, Ventura, Imperial, and Los Angeles counties. Only nine populations of Nelson bighorn sheep are proposed to be hunted. Therefore, the other populations will not be influenced by that activity.

Assuming that all holders of bighorn sheep tags are successful, as many as 32 mature Nelson bighorn rams could be removed in 2011 from the statewide estimated population of 4,800 Nelson bighorn sheep. This short-term reduction of less than one percent of the total statewide population of Nelson bighorn sheep is well within the ability of the statewide population to maintain or increase in size over the long-term. The ability of bighorn sheep populations to experience a given level of hunting mortality without decreasing in health or vitality is described by Savidge and Ziesenis (1980) as sustained-yield management. It is reasonable that a removal of less than one percent of the statewide population is compatible with the long-term conservation of the subspecies. Thus, the removal of up to 32 male bighorn sheep is not expected to have a measurable impact on regional or statewide populations.

Pursuant to Section 4902, Fish and Game Code, the number of tags allocated will not exceed more than 15 percent of the mature rams estimated in any management unit. Depending on the management unit, assessment of aerial or ground survey data will ensure that harvest will not exceed 15 percent of the mature rams in each management unit, as provided for by State law.

Before taking action regarding this proposal, the Commission will consider bighorn sheep populations, habitat, food supplies, the welfare of individual animals, and other pertinent facts and testimony.

THE SPECIES

Population

Under the proposed hunting programs, it is expected that a segment of the mortality previously identified as "natural" mortality will be shifted to hunting mortality. To a degree, hunting mortality will be substituted for, rather than added to, natural mortality. This follows the concept of compensatory mortality as described by Peek (1986) who noted that, "If hunting is a compensatory form of mortality then populations may be presumed to fluctuate in response to other factors, and stocks are little affected by exploitation. However, if hunting is additive to other forms of mortality then it serves as a depressant."

According to the concept of compensatory mortality, the production and survival of young animals within each population are ultimately expected to replace the animals removed by hunting. At the low level of proposed harvest, when combined with differential use of habitats by males and females during the birthing season (Bleich et al. 1997), influences of compensatory mortality are not expected to be measurable. Ongoing long-term demographic research on bighorn sheep populations has been funded to identify the primary factors influencing the abundance of those specialized herbivores. Given the importance and significant variation in annual precipitation in these desert ecosystems, and the associated variation in diet quality, density-dependent mechanisms are difficult to observe (Wehausen 1992), but increased recruitment of young should compensate for increased rates of death resulting from harvest.

Since the hunting of bighorn sheep will occur, at most, in only nine of the State's approximately 60 populations of bighorn sheep under the alternatives considered, the removal of individual animals is not expected to have a significant effect on the statewide population of bighorn sheep. The existing populations of bighorn sheep in California are geographically separated and widely distributed, yet capable of moving among and between mountain ranges (Bleich et al. 1996). Therefore, the proposed action of providing opportunities to harvest no more than 4 male bighorn sheep in the South Bristol Mountains, where a minimum of 32 mature males are estimated to occur, and 5 male bighorn sheep in the Cady Mountains, where a minimum of 61 mature males are estimated to occur, and the total potential statewide harvest of 32 mature Nelson bighorn rams from an estimated population of 4,800 total Nelson bighorn sheep

will not have a significant adverse impact on any specific population to be hunted or on the statewide population of bighorn sheep.

The Department is committed to long-term demographic investigations of bighorn sheep populations. This research is particularly important in management units for which individual bighorn sheep are removed for translocation or harvest. To facilitate this research, animals have been telemetered and monitored in each proposed hunt zone.

The Department annually conducts fall/winter aerial surveys that involve counting bighorn sheep within the majority of the management units being considered in this assessment, and ground counts are conducted during summer in the White Mountains Management Unit. These surveys result in minimum population estimates, because many animals are missed during such surveys. Several published articles (Caughley 1974, Samuel et al. 1987, Graham and Bell 1989, Bodie et al. 1995, Bleich et al. 2001, Bernatas and Nelson 2004) have demonstrated that significant portions of populations being surveyed using aerial census techniques are not observed because of "visibility bias".

In some of the proposed hunt zones, aerial survey data are supplemented with independent ground surveys to record numbers of marked and unmarked sheep, which are used to generate additional information on population size. This synthesis of data has made it possible to accurately assess the changes in bighorn sheep numbers, ratios of males to females or young to females, and to monitor the impacts of hunting and relocation (Wehausen 1992). Additionally, these aerial and ground survey results are used for determining tag allocations, and to ensure that the proposed harvest does not exceed 15 percent of the mature rams in any of the respective management units.

Tag allocations have historically been determined by computing 15 percent of the mature rams observed during the annual surveys. These data are used to adjust the range of tags to be allocated to ensure that tags for no more than 15% of the minimum number of mature males known to be present are harvested. The results of such surveys represent the minimum number of bighorn sheep, including mature males, present in a given population, and result in under-estimates the true population of males and the total population. This procedure will continue to be used to generally assign tag allocations.

Independent estimates of population size and demographic parameters of bighorn sheep populations are derived using a combination of aerial census and ground observations of marked and unmarked animals in the hunt zones, and intensive ground surveys are conducted in the White Mountains. Wehausen (1990) and Jaeger et al. (1992) refer to this method as Multiple Direct Sampling (MDS). This method estimates population parameters from cumulative (or repeated) surveys that record the number of marked and unmarked animals observed, and assumes binomial sampling probabilities with replacement (Wehausen 1992).

The herd plan objectives include maintaining a 40 ram: 100 ewe ratio to provide a reasonable opportunity to view mature rams and insure reproductive success.

Social Structure

Bighorn sheep demonstrate pronounced sexual segregation (rams and ewes separate) during the majority of the year (Bleich et al. 1997). During periods of segregation, competition between the sexes for food and water is limited or nonexistent. In order for density-dependent responses to occur, a reduction in competition between males and females and the offspring of those females must occur if the population size is limited by the habitat. The removal of so few rams, that likely do not compete with females and young to any appreciable extent, is unlikely to result in substantial increases in recruitment of young animals into any population. Nevertheless, enhanced body condition among males, decreased consumption of available resources by bighorn sheep throughout the management unit, and decreased energetic costs resulting from fewer potential interactions among mature males, would be among the compensatory responses expected to occur as a result of the removal of < 15% of mature Nelson bighorn rams from any particular hunt zone, as specified by State law.

The proposed action has the potential to increase the current hunter harvest by one ram each in the Orocopia Mountains, San Gorgonio Wilderness, and White Mountains, thereby altering rate of change of the ratio of males to females in each of those zones. It is unlikely, however, that the proposed action will increase the survivorship of young in those populations, given that males and females live separately for the majority of the year. Moreover, removal of 55 bighorn sheep from the Marble Mountains for translocation during 1983-85 did not result in measurable responses in

recruitment rates (Wehausen 1988). Thus, it is unlikely that the removal of a small number of males from the proposed hunt zones will result in a detectable increase in recruitment rates of young.

Although 230 animals have been removed from Old Dad Peak for translocation purposes since the early 1980s, the population has continued to expand. Recruitment rates have been very high in that population (Wehausen et al. 1987a, 1987b, 1992; Bleich 1986) and the population remains one of the largest in California. Further, the possibility exists that improved habitat conditions, resulting from an aggressive water development program, have produced the high recruitment rates in that population (Bleich 1983). The removal of less than fifteen percent of the total number of rams present in the population is not expected to result in an appreciable increase in recruitment rate.

Genetics

Apollonio et al. (1989) reported that the removal of the majority of successfully breeding males from a population of lek-breeding fallow deer (*Dama dama*) resulted in a decrease of the overall productivity of the lek. Byers and Kitchen (1988) reported that in pronghorn (*Antilocapra americana*), the deaths of all mature males during a severe winter storm was followed by a mating system change from territoriality to harem defense, apparently because no males were sufficiently dominant to exclude other males from a territory. Speculation regarding the removal of large, old males of bighorn sheep, a species in which males form a tending bond with estrous females, thus warrants some consideration (Festa-Bianchet 1989).

It has been hypothesized that harvesting older males may remove the “best genes” from populations of bighorn sheep subject to “trophy hunting”. Fitzsimmons et al. (1995) reported that horn growth was higher males with greater genetic diversity, or heterozygosity, than less heterozygous rams for the 6^{th}, 7^{th}, and 8^{th} years of life, and that by the end of the 8^{th} year males exhibiting the greatest heterozygosity had higher horn volumes than males exhibiting lower heterozygosity.

The unregulated harvest of male bighorn sheep from a small, isolated population of Rocky Mountain bighorn sheep reportedly resulted in significant declines in body size and horn size (Coltman et al. 2003). Moreover, severe rates of selective harvesting that

are unlikely to be implemented by management agencies, potentially elicit an undesired evolutionary response when the targeted trait is heritable, as are size of horns or antlers (Hartl et al. 1991, 1995; Williams et al. 1994, Lukefar and Jacobson 1998, Kruuk et al. 2002). Nevertheless, the only example demonstrating the negative effects of selective harvest of ungulates in North America is that of Coltman et al. (2003), who investigated this phenomenon at Ram Mountain, Alberta, Canada. That population of Rocky Mountain bighorn sheep was small and isolated, but harvest was regulated only by a 4/5 curl regulation, and hunter opportunity essentially was unlimited. As a result, nearly every male was harvested upon attaining legal size, thereby allowing males with slow-growing horns to reach older age classes and do a disproportionate amount of the breeding. As a result, Coltman et al. (2003) concluded that the harvest rate in their study population resulted in selection against the fastest growing males before they reached their reproductive peak, and thereby reduced their genetic contribution to the population. Conversely, Coltman (2008) recognized that the selective effect reported by Coltman et al. (2003) may have been overestimated because it was not possible to account for the confounding effects of changes in population density during their study, a phenomenon that affected nutrient availability among animals in that population. Garel et al. (2007) concluded that selective harvest in a bottlenecked and genetically mixed population of mouflon (*Ovis* spp.) reduced the reproductive contribution of males that possessed a horn conformation desirable to hunters, which ultimately resulted in a selective advantage for smaller-horned males in that population. Neither of the situations described by Coltman et al. (2003) or Garel et al. (2007) are applicable to the harvest of bighorn sheep in California because of the very limited (< 15%) potential harvest of mature males resulting from carefully regulated hunting opportunities.

Despite these observations, selection of large males by hunters may facilitate copulations by younger, smaller-horned males that may not encounter breeding opportunities in the presence of larger males (Hogg 1984). Resultant breeding by subdominant, smaller-horned males has the potential to increase the ratio of effective population size to census population size and, thereby, the potential to increase total genetic diversity within some populations (Singer and Zeigenfuss 2002). The effect of an increase in the ratio of effective population size to census population size would, thus, offset the potential effects of the removal of some dominant males.

The consequences of declines in genetic diversity have also been questioned with respect to their demographic influences. Nevertheless, bighorn sheep that have

been severely impacted by population bottlenecks and have resultant low genetic diversity appear not to be impacting the potential of those populations to recover in size (Wehausen and Ramey 2004). In contrast to the essentially unlimited harvest rates described by Coltman et al. (2003), harvest proposals considered in this document are extremely restricted, and remove but a very small proportion (≤ 15%) of the minimum number of mature males from any single population, and < 1% of the statewide population as a whole. As a result, the limited harvests proposed by the Department will not result in the small population sizes described by Wehausen and Ramey (2004).

Geist (1971) suggested that, if mortality of older males was related to rutting activity, younger males should be expected to suffer greater mortality if allowed to participate in the rut because of the absence of older males. Indeed, Heimer (1980), Heimer et al. (1984), and Heimer and Watson (1986) suggested that the removal of older and larger males by hunters would result in lowered survival of young males. Moreover, Heimer et al. (1984) reported that natural survival of Dall's sheep (*Ovis dalli*) males aged four to eight years was lower in areas with greater hunting pressure and a less restrictive definition of legal males.

In a specific test of Heimer's predictions, Murphy et al. (1990) reported no support for the hypothesis that reducing the number of older males had an adverse effect on the survival rate of young males. Similarly, other studies of *Ovis spp*. (Stewart 1980, Hoefs and Barichello 1984) have failed to demonstrate evidence of depressed survival of young rams in heavily hunted populations. The strongest support for the hypothesis is Heimer et al.'s (1984) study of the high rate of disappearance of young rams that had been trapped and marked, and were part of a hunted population. Murphy et al. (1990) concluded, however, that the disappearance of those young rams could be explained by dispersal and reduced sightability, rather than by reduced survivorship. Males tend to move over larger areas than do females, and their absence in areas they occupied as lambs does not mean they died. Further, Whitten (2001) concluded that sheep harvest trends were driven largely by weather patterns that affected sheep productivity, survival, and abundance, rather than by horn curl regulations. Moreover, in populations of Rocky Mountain bighorn sheep and desert bighorn sheep in which removal rates were carefully regulated and very low, Singer and Zeigenfuss (2002) concluded that young rams did not expend greater energy than young rams in non-hunted populations. Those authors concluded that there was no detectable affect on survivorship of those young rams and that harvesting of mature males did not lower

survivorship of young males.

The nine populations under consideration in this proposed project are dominated by old, large rams. Indeed, in 2009 and 2010, the majority of rams observed were three-quarter curl in all of the proposed hunt zones. Moreover, the low harvest rates proposed to be implemented should not disrupt the age structure and, hence, the social structure of these populations. An analysis of the hunter harvest to date indicates that the average age of all rams taken as of 2009 was about 8.5 years. This mean age is lower than the life expectancy of a desert bighorn sheep, suggesting that harvests are not particularly concentrated on the oldest or largest males; hence, selective removal of the fastest growing males is an unlikely consequence of the limited opportunities being proposed.

The extremely conservative harvest rates in populations dominated by large, mature males have likely precluded any shift in the age structures or genetic diversity of these populations. Even with the combined removal of up to 32 mature Nelson bighorn sheep rams from nine proposed hunt zones, and with a maximum potential of 6 in any single zone, no changes in the age structure of the populations are anticipated, nor are any other adverse effects.

Habitat

The removal of one additional ram from the Orocopia Mountains, San Gorgonio Wilderness, and White Mountains, combined with the removal of up to 3 mature males from the South Bristol Mountains and up to 4 from the Cady Mountains will slightly reduce the total number of bighorn sheep in each of the hunt zones, as well as the statewide population, until the birth of young the following spring. Under the proposed regulations, the maximum number of bighorn sheep that could be removed from any single zone is 6, and that take would be limited to the White Mountains. The maximum number of mature male bighorn sheep that could be removed from any other zone is 5 (Old Dad Peak-Kelso Mountains, Marble/Clipper Mountains, and Cady Mountains). Those rates of harvest could yield some slight improvement in habitat conditions, particularly in areas of those hunt zones that are utilized primarily by adult males. It is unlikely, however, that any substantial improvement in habitat conditions will result, nor that any increase in recruitment rate, will be realized. The maximum number of mature Nelson bighorn rams that would be removed during the 2011 hunting season is 32. The

proposed removal rate and the distribution of animals to be removed among 9 separate hunt zones is again expected to be too low to result in any measurable change in habitat conditions.

Wehausen et al. (1987b) demonstrated a strong relationship between precipitation and recruitment rates in a Sonoran Desert bighorn sheep population. Similarly, Monson (1960) noted the relationship between precipitation and bighorn sheep populations. Beatley (1974) emphasized the relationship between precipitation and phenological events in Mojave Desert ecosystems, and Wehausen (1988, 1990) noted the apparent relationship between high recruitment in the Marble Mountains in the late 1970s and early 1980s and levels of precipitation. Thus, it is likely that timing and amount of precipitation, rather than population levels of bighorn sheep, are the primary factors determining habitat conditions in the proposed hunt zones.

OTHER WILDLIFE AND PLANT SPECIES

The results of the Department's previous determination that no significant impacts would be incurred by other wildlife or plant species as a result of bighorn sheep hunting, as published in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) is hereby incorporated by reference and can be found online at http://dfg.ca.gov/wildlife/hunting/sheep/dates.html.

RECREATIONAL OPPORTUNITIES

Hunting Opportunities

The proposed action would authorize up to 10 additional hunting opportunities for taking Nelson bighorn sheep rams, resulting in a maximum of 10 additional hunters participating in this unique outdoor experience. This will be the 25th such hunt in as many years. The demand for bighorn sheep hunting opportunities in California, and worldwide, is extremely high, as described in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b), and hereby incorporated by reference.

In 2010, all applicants for bighorn sheep tags paid a $7.50 nonrefundable application fee just to enter the drawing, and they must possess a California hunting

license. Additionally, a total of approximately $ 3.6 million has been received through the auction of fundraising tags from 1987 – 2010. The proposed action will positively impact the hunting public of the State by providing hunting opportunities consistent with sections 203.1 and 4902, Fish and Game Code, and the State's wildlife conservation policy, contained in Section 1801 of the Fish and Game Code, and will provide funds specifically for the conservation and restoration of bighorn sheep in California, consistent with Sections 4902 and 4903 of the Fish and Game Code.

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005) and incorporated herein by reference, there will be overlap of upland game (quail and chukar), rabbit, predator, and deer hunting seasons in two additional hunt areas for a portion of the year. However, due to the low numbers of sheep hunters in each area, coupled with the large areas open to hunting, it is unlikely that sheep hunters will affect hunters of other species of wildlife in terms of hunter success or quality of experience.

Nonhunting Opportunities

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005) and incorporated herein by reference, the non-hunting users of the bighorn sheep resource (viewing, nature study, research, photography) are not expected to be significantly impacted by the take of up to 32 mature bighorn sheep rams from a statewide population of that now numbers approximately 5,200 animals. No populations of bighorn sheep occurring in 52 other mountain ranges will be exposed to hunting as a result of this project and, as a result, opportunities for non-hunting uses of those populations will not be affected.

ECONOMICS

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, the proposed action has the potential to result in an insignificant positive economic effects on communities located near the proposed sheep hunting areas.

Under the proposed alternative, hunters from outside the local areas would continue to visit the region and purchase goods and services from local merchants.

This additional spending will generate retail sales, income, and possibly employment in businesses such as motels, restaurants, and retail stores. Spending effects would be minor, because of the small number of tags sold. Any potential effects would likely be distributed among those communities located nearest to the sheep hunt areas, including Barstow, Baker, Blythe, Cadiz, Ludlow, Indio, Morongo Valley, Desert Center, Needles, Twenty-Nine Palms, and Amboy, in Riverside, San Bernardino, Inyo, and Imperial counties.

PUBLIC SAFETY

Since 1987, the Department has not received any reports of bighorn sheep hunting related casualties in California, as discussed in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference.

SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The proposed project allows an increase of up to 10 successful bighorn sheep hunters, bringing the potential harvest to a total of 32 animals distributed across 9 hunt zones, assuming that the maximum number of tags is allocated. As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, this short-term use could enhance long-term productivity by reducing competition for forage but, given the extremely limited harvest, any reduction in intraspecific competition would be negligible and likely undetectable.

If the proposed project were delayed, no significant long-term impact on the population would be expected. However, this delay would eliminate the proposed allocation of additional hunting opportunities as per the Department's bighorn sheep management program, and would not address the high demand for more recreational hunting opportunities involving bighorn sheep or be consistent with State policy regarding bighorn sheep management.

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, the proposed action of removing a maximum of 32 mature Nelson bighorn sheep rams by

hunting will not have a significant long-term adverse impact on either the specific populations to be hunted or on the statewide population of bighorn sheep.

CHAPTER 4. CUMULATIVE IMPACTS

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, the Commission could consider and may approve additional hunts in the future, and the Department has concluded that there will be no significant adverse cumulative effects on the State's bighorn sheep resource is the proposed project is implemented. The statutorily mandated regulation process involves review at least once every three years, and data are collected by the Department during each year, appropriate, biologically sound recommendations would be presented by the Department to the Commission prior to consideration of any future hunt. Existing law requires that the Commission receive recommendations regarding mammal hunting regulations from Commission members, its staff, the Department, other public agencies and the public. The process is comparable to the Commission establishing specific harvest quotas or regulations for deer, elk, and pronghorn antelope seasons annually, and has worked well over time in adjusting the hunting program to maintain healthy populations of the aforementioned species.

HABITAT LOSS OR DEGRADATION

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, the proposed project, in combination with current bighorn hunts and other factors, is not likely to cause habitat loss and degradation. A maximum of 32 hunters, their guides, and selected individuals will participate in the bighorn sheep hunt. Given the low densities of human use, any habitat loss and degradation attributable to the proposed project would be negligible. Therefore, the cumulative environmental impact of habitat loss and the proposed project will not be significant.

DROUGHT

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, drought

can have an impact on local populations of bighorn sheep, and droughts are a natural occurrence with which bighorn sheep have been faced throughout their evolutionary history. Further, drought conditions are generally localized, both spatially and temporally. The removal of no more than 32 mature Nelson bighorn sheep rams would, in fact, decrease competition among males for available forage within hunt zones, but the effects of such a reduction in competition would be difficult to detect. Further, the possibility of drought impairing the bighorn sheep population on a statewide basis is unlikely. It is anticipated that the statewide population will remain in a healthy, viable condition, even though dynamic weather patterns may affect some populations in some years.

WILDFIRES

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, the sparse vegetation and lack of fuel makes it unlikely that wildfires have the potential to adversely affect bighorn sheep in the majority of the hunt zones. However, the San Gorgonio Wilderness occurs in an area of potential wildfires, and a wildfire burned portions of the Hackberry Mountains and Providence Range during recent years. Most research has shown burning, especially prescribed burning, to be favorable to bighorn sheep and deer. These fires maintain movement corridors, escape terrain, and provide new herbaceous vegetation, which is higher in nutrition than decadent vegetation and, ultimately, enhance nutrient availability to animals foraging in newly burned areas.

DISEASE, ROAD KILLS AND OTHER MORTALITY

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, there are no data available to indicate that road kills, disease, predation, or natural mortality factors will act as additive impacts which, along with the mortalities associated with the limited hunting program, will have significant adverse cumulative impacts on local, regional or statewide bighorn sheep populations. The Department does not anticipate any significant impacts resulting from disease in combination with the proposed hunting project.

ILLEGAL HARVEST

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, the Department has documented annually approximately one to three cases of bighorn sheep being killed illegally statewide; four such incidents currently are being investigated. The verified illegal take involves an extremely low proportion of the State's approximately 5,200 bighorn sheep and is widely distributed. Illegal take does not appear to be a significant factor affecting the population and, even with the potential harvest of up to 32 bighorn sheep statewide, the cumulative impacts of illegal harvest are not expected to be significant. Since the bighorn sheep outside the hunt zones are either fully protected or State-listed species, detecting and preventing illegal take is a high priority for the Department.

DEPREDATION

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, the Department does not have the authority to issue kill permits for bighorn sheep causing property damage (Section 4181, Fish and Game Code).

THE INDIVIDUAL ANIMAL

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, the preferred project will result in the deaths of individual bighorn sheep, and wounding losses could occur as a result of implementation of the proposed project. However, the Department is aware of only one animal having been lost after being wounded in 24 hunting seasons. Thus, the rate of wounding is extremely low, and the cumulative impacts of the potential harvest of 32 bighorn sheep statewide, combined with the exceedingly low rate of wounding, would not result in an impact that could be considered to significantly impact the population of bighorn sheep inhabiting any hunt zone, or the state of California as a whole.

GLOBAL CLIMATE CHANGE

Climate changes caused by increasing atmospheric concentrations of greenhouse gases are expected to result in marked changes in climate throughout the world (deVos and McKinney 2007). Although many wildlife habitats in North America have become progressively warmer and drier in the last 12,000 years (Lane et al. 1994, Ball et al. 1998), the greatest rate of change has occurred during the last 150 years (Fredrickson et al. 1998). Predicted changes due to continued warming include increased frequency and severity of wildfires, increased frequency of extreme weather events, regional variation in precipitation, northward and upward shifts in vegetative communities, and modifications to existing biotic communities (Bachelet et al. 2001, McCarty 2001, Walther et al. 2002). These changes are expected to affect abundance, distribution, and structure of vegetative and animal communities (Kapelle et al. 1999).

Local and specific regional changes in climate and associated changes in vegetative communities will be the determining factors regarding the distribution and abundance of bighorn sheep in California and elsewhere. Although research specific to bighorn sheep responses to climate change is limited, what information that is available indicates that those populations inhabiting the hottest, low-lying mountain ranges will be among the first to be impacted (Epps et al. 2004), but those populations inhabiting the highest and most botanically diverse desert ranges may be less affected, and serve as refugia for the species (Epps et al. 2006). Moreover, some areas occupied by bighorn sheep may experience increases in the quality of habitat (Epps et al. 2006).

Populations of bighorn sheep in California are vulnerable to any decrease in habitat quality as mediated by climate change (Epps et al. 2006) For example, higher spring and summer temperatures will result in reduced diet quality for bighorn sheep (Epps 2004), and extended droughts and drying of water sources may produce die-offs of adult animals (Allen 1980). Among bighorn sheep inhabiting desert environments, diet quality or forage availability influence body condition, which affects reproduction and recruitment rates (Wehausen 2005) and, ultimately, population size. Thus, future changes in climate that result in warmer temperatures or greater aridity have the potential to result in fewer bighorn sheep in desert ecosystems (Epps et al. 2006). Nevertheless, habitat conditions in some areas that currently are occupied by bighorn sheep, for example the San Gabriel Mountains and other transverse ranges of

California, may experience changes that will be of benefit to bighorn sheep (Epps et al. 2006) as a result of lower densities of vegetation (Epps et al. 2006). Thus, information that currently is available indicates that global climate change portends both adverse and beneficial effects to bighorn sheep habitat and, ultimately, bighorn sheep populations.

Bighorn sheep hunting in California is regulated by the California Fish and Game Commission. Hunting seasons and tag quotas are proposed to the Commission for adoption on an annual basis. These seasons and quotas are based on annual population estimates as dictated by the California Legislature (Fish and Game Code Section 4902), and are adjusted each year. Although the impacts of climate change on bighorn sheep in California could be positive in some instances, they most certainly will be negative in others. Nevertheless, the Department and the Commission have the ability to quickly respond to population fluctuations by increasing or decreasing hunter opportunity in accordance with current and future management objectives for this species. Reducing one mortality factor, for example sport hunting, will not alone mitigate for impacts associated with global climate change; the ability to manage and provide adequate amounts of resources, both nutritional and otherwise, will be the factor that ultimately dictates which populations persist, and which do not.

CHAPTER 5. ALTERNATIVES TO THE PROJECT

The Department considered two alternatives to the proposed project, which would create two additional zones in which the hunting of bighorn sheep will be legal, place constraints on the way that hunting effort would be distributed among holders of special fund-raising tags, and change the boundary of one existing hunt zone.

ALTERNATIVE 1 – NO CHANGE

The "no-change" alternative would continue to provide hunting opportunities for mature Nelson bighorn rams in the 7 hunt zones that currently are open to that activity, the range of tags available to hunt bighorn sheep in each of those zones would remain the same, and would not be subject to adjustment as determined by the Department's annual population estimates as specified in Section 4901 of the Fish and Game Code. In short, there would be no change from the 2010 bighorn sheep hunting regulations.

This alternative would continue to provide 2 special bighorn sheep tags for fund-raising purposes, and distribution of hunting effort by hunters holding those fund-raising tags would remain unrestricted. The "no-change" alternative would preclude any adjustments to hunting opportunities associated with the fund-raising tags, and could result in the harvest of more than 15% of mature Nelson bighorn rams estimated to be present in any of the 7 open hunt zones if individuals holding fund-raising tags all elected to hunt in the same open zone along with other hunters drawn for that zone, an outcome inconsistent with existing State law as specified in Section 4902 of the Fish and Game Code.

Bighorn sheep now occupy the South Soda Mountains, which is included within the existing boundary of the Old Dad Peak - Kelso Mountains Hunt Zone, and currently is open to hunting. The Department's goal of allowing the population of bighorn sheep in the South Soda Mountains to increase in size at its maximum potential rate would not be realized, and would be inconsistent with the Department's overall strategy of encouraging natural colonizations of historical ranges.

On a statewide basis, the total number of mature Nelson bighorn sheep rams potentially harvested would remain unchanged, but opportunities to provide additional recreational hunting opportunity, consistent with the approved management plans for the Cady Mountains and South Bristol Mountains bighorn sheep hunts, would not be realized. Under this alternative, it is possible that support for bighorn sheep management programs by interested conservation groups and hunters would decline. This decline could result from reducing the value of bighorn sheep to a segment of the public by unnecessarily preventing the hunting of an additional, albeit very limited, number of mature rams. These groups have provided support, both politically and financially (Bleich et al. 1982), for bighorn sheep management in California and have been the primary supporters of habitat protection and improvement projects (Bleich 1990). Without the continuing support of these individuals and organizations, it is possible that activities associated with the protection and enhancement of bighorn sheep habitat and the political support for the Department's conservation and restoration program would be reduced.

ALTERNATIVE 2 – INCREASED HARVEST

The ranges of potential hunting tags available for each zone is intentionally conservative, and is based on the number of mature rams that are known to exist in any given zone, or on the number of mature rams estimated to be present following application of an extremely conservative correction factor (N/0.80) that assumed aerial surveys resulted in observations of 80% of the animals present; Wehausen and Bleich (2007) reported that aerial surveys in an ecologically similar mountain range produced observations of < 50% of the total number estimated to be present using mark-resight methods. To increase the harvest beyond the range of tags proposed by the Department (Appendix 1) could result in a violation of state law if the end result exceeded more than 15% of the total number of mature Nelson bighorn sheep rams known to be, or estimated to be, present in any single hunt zone. Even if the very conservative proposed rates of harvest could be increased, and yet the total harvest remained at or below 15% of the total number of mature Nelson bighorn rams known to be, or estimated to be, present in each of the hunt zones, the potential for negative interactions among participants would increase, resulting in a decline in the quality of this special hunting experience. Under the ”increased harvest” alternative, it is possible that support for bighorn sheep management programs among interested conservation groups and hunters would decline, because conservation has been at the forefront of issues affecting bighorn sheep. An increased rate of harvest would not have unanimous support among bighorn sheep advocacy groups.

The Department has concluded that the proposed project will not have a significant adverse effect on the environment. No mitigation measures or alternatives to the proposed project are needed.

CHAPTER 6. PUBLIC REVIEW AND COMMENTS

Public input and agency consultation were encouraged throughout the draft environmental document review process. A Notice of Preparation (NOP) was provided to the State Clearinghouse, land management agencies having a key role in desert bighorn sheep management and all individuals and organizations which expressed an interest in bighorn sheep management. The DED was made available for public review on February 3, 2011 and comments were due by March 21, 2011. It was mailed to 181 libraries located throughout California and was made available on the Department's website.

During the 45-day notice period one comment letter was received from Marilyn Jasper of the Public Interest Coalition. The Department appreciates the effort and time this organization put forth into comments regarding the DED.

1. Comment: Non-Hunting Opportunities to view, study, research or photograph bighorn sheep have to be significantly impacted when the kill quota is increased. For every ram killed, there is one less chance for the non-hunting citizen to observe bighorn sheep. Thus, raising the kill quota is a significant impact in regard to wildlife recreation for the non-hunting public.

   Response: The DED disclosed changes to the current project which proposes adjusting tag quotas, establishing two additional hunt zones, modifying hunt zone boundaries and establishing the zones in which tags for fund-raising purposes are valid. As described on page 1, the proposed project will increase the kill of mature rams from 22 to as many as 32. As described on pages 19—20 of the DED, at the maximum level of kill, the bighorn sheep population in the hunt areas will be slightly reduced from 4,800. Non-hunting opportunities were previously analyzed in the 2005 Final Environmental Document Regarding Bighorn Sheep Hunting which has been incorporated by reference into the current document as described on page 28 of the current document.

2. Comment: Economics may be negatively impacted by hunters. Non-hunting tourists do not want to be exposed to lethal weaponry or be any where near a "firing," a wounding, or a kill. Since there are more tourist to the various sheep hunt areas than hunters, it is logical to assume that the impacts to the local

economy will be negative. Please consider reducing the number of areas to be opened to bighorn sheep hunting, rather than increasing them.

Also, after being fired at, all sheep will be "skittish" and tend to stay out of sight of human non-hunting visitors, thus making it even more difficult to see (observe/photograph/study, etc.) bighorn sheep.

Response: The DED disclosed changes to the current project. Economic impact near hunt areas and non-hunting opportunities were previously analyzed in the 2005 Final Environmental Document Regarding Bighorn Sheep Hunting on pages 97 –98. At the maximum kill quota, there will be on 32 hunters throughout over 400,000 acres of bighorn sheep range in California. As disclosed on page 18, 51 sheep populations are not included in the area open to hunting.

3. Comment: It is a bit of a stretch to believe that only one sheep has been lost after being wounded in 24 hunting seasons. It might be more accurate to state that only one hunter admitted to wounding and losing a big horn sheep. How many hunters will volunteer to DFG that they wounded and lost a sheep, let alone any animal? To base the claim, "Thus the rate of wounding is extremely low," on one person's reporting to DFG that he wounded and lost a bighorn sheep is not scientifically justifiable. One can just as easily conclude that many more are wounded and lost, and that the conclusions in the DED are either highly exaggerated or naively optimistic.

   The pursuit of sheep can and does cause extreme stress, which can be exacerbated in severe weather conditions and have long-term negative impacts. Because extreme or severe weather conditions are not unusual in bighorn sheep habitat, please consider no hunt days when weather conditions are likely to increase sheep distress levels to significant impact levels. The ability of the sheep to flee could attribute to lack of "wounding" statistics; they exist, but the hunter does not observe them to report back.

   DFG is mandated by Section 203.1 of the California Fish and Game Code to consider the welfare of individual animals. Please address how the welfare of any bighorn sheep is impacted with chase, blasts from firearms, wounding, and any other hunt/hunter stress-producing activities[1].

This DED is silent on sheep bow hunting. With sheep, bow hunting should not be allowed, in part because of the exorbitantly high wounding rates and loss[2]. Please recognize the wounding/infection's significant negative impact and insert language to prohibit bow or archery hunting with sheep.

Response: The DED disclosed changes to the current project. Wounding and infection as a result of archery hunting were previously addressed on pages 110-111 in the 2005 Final Environmental Document Regarding Bighorn Sheep Hunting.

4. Comment: We are grateful that the DFG and FGC can respond quickly to population fluctuations. However, the potential severity of Climate Change impacts is too volatile to gamble with. We urge DFG and FGC to follow the Precautionary Principle and issue fewer tags and reduce the number of open hunt areas, rather than issuing additional tags and opening more hunt areas.

   Response: The Department has addressed the potential influences of climate change on bighorn sheep on pages 33--34 in the 2011 Draft Environmental Document Regarding Bighorn Sheep Hunting. Global climate has become progressively warmer over thousands of years (Lane et al. 1994, Ball et al. 1998). The Commission makes regulatory changes on an annual basis and would be able to respond to climate change when adopting changes in hunting seasons, zones and tag quotas.

   Since 1987, the Commission has adopted regulations to provide for bighorn sheep hunting. The adoption of projects that include an increase in hunting zones and tags are adjusted annually to match legislative mandate, ensuring a conservative and regulated take of mature rams.

   Furthermore, the Commission has the authority to close the taking of bighorn sheep as added protection against factors such as climate change pursuant to Fish and Game Code section 314. There is no documentation to suggest that climate change is likely to occur in a significant and rapid manner that would affect the project in 2011.

5. Comment: Possibly it's understood or stated elsewhere, but this DED and any changes in regulations must reiterate that no dogs may be used in any type of sheep hunting. The absence of mentioning that rule can open the door to huge problems. Please insert the language in the DED and the Final Enviro Documents.

   Response: The DED disclosed changes to the current project. Furthermore, the use of dogs is prohibited for the take of bighorn sheep under Title 14 CCR §265.

6. Comment: This DED does not provide enough information on compliance with existing hunting regulations. What is the rate of compliance with the requirement that "All tags must be returned to the DFG within 10 days after the close of the season, even though the tag holder may not have killed a Nelson bighorn ram?" And what is the rate of compliance with the 24 hour notice and/or 48-hour validation after killing? Without that information, how accurate and reliable can DFG's statistics be? We cannot rely on assumptions to establish hunt regulations on such an important species.

   Response: The DED disclosed changes to the current project which proposes adjusting tag quotas, establishing two additional hunt zones, modifying hunt zone boundaries and establishing the zones in which tags for fund-raising purposes are valid. The Department's hunt tag statistics are not used to determine tag allocation for bighorn sheep hunt zones; tag allocations are derived from survey data collected from each hunt zone. Because bighorn sheep hunting is a unique experience, hunters are required as per Fish and Game Code Section 4902 (e) to participate in pre-hunt orientation meetings. The Department has received 100 percent of the tags that were issued as over 95% percent of the hunters have been successful since 1987.

7. Comment: Limiting the fee for a Nelson bighorn ram to less than five hundred dollars ($500) is woefully low and short sighted. The killing or wounding of one ram has huge impacts on the non-hunting millions of citizens who would enjoy seeing and photographing a ram. To allow the kill/wound opportunity for a mere $500 is a give away of our natural resource. The fee should start at $1,000 and have no upper "limit." In addition to justifying increased tag fees for intangible reasons (non-hunter wildlife recreation), real or tangible costs for Game Warden

resources and DFG research (and/or the “Fish and Game Preservation Fund) should be fully factored into the fee. If the high bid of $80,000 is accurate for one open-zone fundraising tag, then a $500 tag fee limit brings new meaning to “take” of a public resource.

Response: The fee for the purchase of bighorn sheep tag is limited by the legislation as described by Fish and Game Code Section 4902. As discussed in response to comment number 1, at the maximum number of tags, the statewide bighorn sheep population would be reduced by about one-half of one percent.

8. Comment: There is no discussion of grazing (all livestock possibilities) and its impacts on the bighorn sheep populations. The negative impacts of grazing on bighorn sheep should be thoroughly examined and the issuance of tags lowered accordingly.

   Response: Grazing of domestic livestock near bighorn sheep was previously analyzed in the 2005 Final Environmental Document Regarding Bighorn Sheep Hunting.

BIBLIOGRAPHY

NOTE: these documents are generally available through university libraries. Documents prepared by governmental agencies can be obtained through those agencies.

Allen, R. W. 1980. Natural mortality and debility. In G. Monson and L. Sumner, editors. The desert bighorn: its life history, ecology, and management. University of Arizona Press, Tucson, Arizona, USA.

Apollonio, M., M. Festa-Bianchet and F. Mari. 1989. Effects of removal of successful males in a fallow deer lek. Ethology, 83: 320-325.

Bachelet, D., R. P. Neilson, J. M. Lenihan, and R. J. Drapek. 2001. Climate change effects on vegetation and carbon budget in the United States. Ecosystems 4:164-185.

Bailey, J. A. 1980. Desert bighorn, competition, and zoogeography. Wildlife Society Bulletin 8:208-216.

Ball, R., D. D'Amours, K. Duncan, et al. 1998. North America. In R. T. Watson, M. C. Zinyowera, R. H. Moss, and D. J. Dokken, editors. The regional impacts of climate change: an assessment of vulnerability. Cambridge University Press, Cambridge, United Kingdom.

Beatley, J. C. 1974. Phenological events and their environmental triggers in Mojave Desert ecosystems. Ecology. 55:856-863.

Bernatas, S., and L. Nelson. 2004. Sightability model for California bighorn sheep in canyonlands using forward-looking infrared (FLIR). Wildlife Society Bulletin 32:638-647.

Bleich, V. C. 1983. Big game guzzlers and mountain sheep. Outdoor California 44(6):10.

Bleich, V. C. 1986. Early Breeding in Free-ranging Mountain Sheep. Southwest. Natur. 31:530-531.

Bleich, V. C. 1990. Affiliations of volunteers participating in California wildlife water development projects. Pages 187-192 in G. K. Tsukamoto and S. J. Stiver, editors. Wildlife water development. Nevada Department of Wildlife, Reno, USA.

Bleich, V. C. 2006. Mountain sheep in California: perspectives on the past, and prospects for the future. Biennial Symposium of the Northern Wild Sheep and Goat Council 15:1-13.

Bleich, V. C., L. J. Coombes, and G. W. Sudmeier. 1982. Volunteer participation in California wildlife habitat management projects. Desert Bighorn Council Transactions 26:56-58.

Bleich, V. C., J. D. Wehausen, R. R. Ramey II, and J. L. Rechel. 1996. Metapopulation theory and mountain sheep: implications for conservation. Pages 353-373 *in* D. R. McCullough, editor. Metapopulations and wildlife conservation. Island Press, Washington D.C., USA.

Bleich, V. C., R. T. Bowyer, and J. D. Wehausen. 1997. Sexual segregation in mountain sheep: resources or predation? Wildlife Monographs 134:1-50.

Bleich, V. C., C. S. Y. Chun, R. W. Anthes, T. E. Evans, and J. K. Fischer. 2001. Visibility bias and development of a sightability model for tule elk. Alces 37:315-327.

Bleich, V. C., A. M. Pauli, S. G. Torres. 2010. Bighorn Sheep Management Plan: Cady Mountains. California Department of Fish and Game. http://www.dfg.ca.gov/wildlife/hunting/sheep/mgmtplans.html

Bleich, V. C., S. G. Torres. 2010. Bighorn Sheep Management Plan: South Bristol Mountains. California Department of Fish and Game. http://www.dfg.ca.gov/wildlife/hunting/sheep/mgmtplans.html

Bodie, W. L., E. O. Garton, E. R. Taylor, M. McCoy. 1995. A sightability model for bighorn sheep in canyon habitats. Journal of Wildlife Management 59:832-840.

Bolton, H. E. 1930. Anza's California expeditions. Volume IV. Font's complete diary of the second Anza expedition. University of California Press, Berkeley, California, USA.

Buechner, H. K. 1960. The bighorn sheep in the United States, its past, present, and future. Wildlife Monographs 4:1-174.

Byers, J. A. and D. W. Kitchen. 1988. Mating system shift in a pronghorn population. Behav. Ecol. Sociobiol. 22:355-360.

California Department of Fish and Game. 1983. A plan for bighorn sheep. California Department of Fish and Game, Sacramento, California, USA.

California Department of Fish and Game. 2005a. The status of rare, threatened, and endangered plants and animals of California 2000-2005. California Department of Fish and Game, Sacramento, USA.

California Department of Fish and Game. 2005b. Environmental document for bighorn sheep hunting. California Department of Fish and Game, Sacramento, California, USA.

Caughley, G. 1974. Bias in aerial survey. Journal of Wildlife Management 38:921-933.

Coltman, D. W. 2008. Molecular ecological approached to studying the evolutionary impacts of selective harvesting in wildlife. Molecular Ecology 16:221-235.

Coltman, D. W., P. O'Donoghue, J. T. Jorgenson, J. T. Hogg, C. Strobeck, and M.

Festa-Bianchet. 2003. Undesirable evolutionary consequences of trophy hunting. Nature 426:655–658.

Cowan, I. McT. 1940. Distribution and variation in the native sheep of North America. American Midland Naturalist 24:505-580.

deVos, J. C., Jr., and T. McKinney. 2003. Recent trends in North American mountain lion populations: a hypotheis. Pages 297-307 in C. van Riper III and D. J. Mattson, editors. The Colorado Plateau II. University of Arizona Press, Tucson, USA.

Epps, C. W. 2004. Population processes in a changing climate: extinction, dispersal, and metapopulation dynamics of desert bighorn sheep in California. Unpublished Ph.D. dissertation, University of California, Berkeley, California, USA.

Epps, C. W., V. C. Bleich, J. D. Wehausen, and S. G. Torres. 2003. Status of bighorn sheep in California. Desert Bighorn Council Transactions 47:20-35.

Epps, C. W., D. R. McCullough, J. D. Wehausen, V. C. Bleich, and J. L. Rechel. 2004. Effects of climate change on population persistence of desert-dwelling mountain sheep in California. Conservation Biology 18:102-113.

Epps, C. W., P. J. Persboll, J. D. Wehausen, G. K. Roderick, and D. R. McCullough. 2006. Elevation and connectivity define genetic refugia for mountain sheep as climate warms. Molecular Ecology 15:4295-4302.

Festa-Bianchet, M. 1989. Survival of male bighorn sheep in southwestern Alberta. Journal of Wildlife Management, 53: 259-263.

Fitzsimmons, N. N., S. W. Buskirk, and M. H. Smith. 1995. Population history, genetic variability, and horn growth in bighorn sheep. Conservation Biology 9:314-323.

Foreyt, W. J., and D. A. Jessup. 1982. Fatal pneumonia of bighorn sheep following association with domestic sheep. Journal of Wildlife Diseases 18:163-168.

Fredrickson, E., K. M. Havstad, R. Estell, and P. Hyder. 1998. Perspecives on desertification: south-western United States. Journal of Arid Environments 39:191-207.

Garel, M., J.-M. Cugnasse, D. Maillard, J.-M. Gaillard, A. J. M. Hewison, and D. Dubray. 2007. Selective harvesting and habitat loss produce long-term life history changes in a mouflon population. Ecological Applications 17:1607-1618.

Geist, V. 1970. Mountain sheep. University of Chicago Press, Chicago, Illinois, USA.

Graham, A., R. Bell. 1989. Investigating observer bias in aerial survey by simultaneous double-counts. Journal of Wildlife Management 53: 1009-1016.

Grinnell, J. 1912. The bighorn of the Sierra Nevada. University of California,

Publications in Zoology 10:143-153.

Hartl, G. B., F. Klein, R. Willing, M. Apollonio, and G. Lang. 1995. Allozymes and the genetics of antler development in red deer (*Cervus elaphus*). Journal of Zoology 237:83-100.

Hartl, G. B., G. Lang, F. Klein, and R. Willing. 1991. Relationships between allozymes, heterozygosity and morphological characters in red deer (*Cervus elaphus*), and the influence of selective hunting on allele frequency distributions. Heredity 66:343-350.

Heimer, W. E. 1980. Can population quality be related to population density through nutrition? Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 2:288-309.

Heimer, W. E., S. M. Watson, and T. C. Smith III. 1984. Excess ram mortality in a heavily hunted Dall sheep population. Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 4:425-432.

Heimer, W. E., and S. M. Watson. 1986. Time and area specific variations in Dall sheep lamb production: an explanatory hypothesis. Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 5:78-101

Hoefs, M., and N. Barichello. 1984. Comparison between a hunted and an unhunted Dall sheep population – a preliminary assessment of the impacts of hunting. Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 4:433-466.

Hogg, J. T. 1984. Mating in bighorn sheep: multiple creative male strategies. Science 225:526–529.

Holl, S. A., and V. C. Bleich. 1983. San Gabriel mountain sheep: biological and management considerations. USDA Forest Service, San Bernardino National Forest, San Bernardino, California, USA.

Jaeger, J. R., J. D. Wehausen, and V. C. Bleich. 1992. Evaluation of time-lapse photography to estimate population parameters. Desert Bighorn Council Transactions 35:5-8.

Kapelle, M., M. M. I. Van Vuuren, and P. Baas. 1999. Effects of climate change on biodiversity: a review and identification of key research issues. Biodiversity and Conservation 8:1383-1397.

Kruuk, L. E. B., J. Slate, J. M. Pemberton, S. Brotherstone, F. Guinness, and T. Clutton-Brock. 2002. Antler size in red deer: heritability and selection but no evolution. Evolution 56:1683-1695.

Lane, L. J., M. H. Nichols, and H. B. Osborn. 1994. Time series analysis of global

change data. Environmental Pollution 83:63-68.

Leach, H. R. 1974. At the crossroads: a report on California's endangered and rare fish and wildlife. California Department of Fish and Game, Sacramento, California, California, USA.

Lukefar, S. D., and H. A. Jacobson. 1998. Variance component analysis and heritability of antler traits in white-tailed deer. Journal of Wildlife Management 62:252-268.

McCarty, J. P. 2001. Ecological consequences of recent climate change. Conservation Biology 15:320-331.

Monson, G. 1960. Effects of climate on bighorn numbers. Desert Bighorn Council Transactions 4:12-14.

Peek, J. M. 1986. A review of wildlife management. Prentice-Hall, Englewood Cliffs, New Jersey, USA.

Samuel, M. D., E. O. Garton, M. W. Schlegel, and R. G. Carson. 1987. Visibility bias during aerial surveys of elk in northcentral Idaho. Journal of Wildlife Management 51:622-630.

Savidge, I. R., and J. S. Ziesenis. 1980. Sustained yield management. Pages 405-410 *in* S. D. Schemnitz, editor. Wildlife management techniques manual. The Wildlife Society, Washington, D.C., USA.

Singer, F. J., and L. C. Zeigenfuss. 2002. Influence of trophy hunting and horn size on mating behavior and survivorship of mountain sheep. Journal of Mammalogy 83:682-698.

Stewart, S. T. 1980. Mortality patterns in a bighorn sheep population. Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 2:313-331.

Tinker, B. 1978. Mexican wilderness and wildlife. University of Texas Press, Austin, Texas, USA.

Torres, S. G., V. C. Bleich, and J. D. Wehausen. 1994. Status of bighorn sheep in California, 1993. Desert Bighorn Council Transactions 38:17-28.

Torres, S. G., V. C. Bleich, and J. D. Wehausen. 1996. Status of bighorn sheep in California, 1995. Desert Bighorn Council Transactions 40:27-34.

United States Fish and Wildlife Service. 2000. Recovery plan for the bighorn sheep in the peninsular ranges (*Ovis canadensis*). United States Department of the Interior, Fish and Wildlife Service, Portland, Oregon, USA.

United States Fish and Wildlife Service. 2007. Recovery plan for the Sierra Nevada bighorn sheep. United States Department of the Interior, Fish and Wildlife

Service, Sacramento, California, USA.

Walther, G. R., E. Post, P. Convery, et al. 2002. Ecological response to recent climate change. Nature 416:389-395.

Weaver, R. A. 1972. California's bighorn management plan. Desert Bighorn Council Transactions 17:22-42.

Weaver, R. A. 1983. The status of bighorn sheep in California. Desert Bighorn Council Transactions 27:44-45.

Weaver, R. A., and R. K. Clark. 1988. Status of bighorn sheep in California, 1987. Desert Bighorn Council Transactions 32:20.

Wehausen, J. D. 1979. Sierra Nevada bighorn sheep: history and population ecology. Ph.D. Dissertation, University of Michigan, Ann Arbor, USA.

Wehausen, J. D. 1988. Cattle impacts on mountain sheep in the Mojave Desert: report II. Administrative Report. California Department of Fish and Game, Bishop, USA. Contract 85/86c - 1492.

Wehausen, J. D. 1990a. Cattle impacts on mountain sheep in the Mojave Desert: report III. Interagency Agreement FG 7468-A1. California Department of Fish and Game, Sacramento, USA.

Wehausen, J.D. 1992. Demographic studies on mountain sheep in the Mojave Desert: report IV. Interagency agreement FG 1411. California Department of Fish and Game, Sacramento, USA.

Wehausen, J. D. 2005. Nutrient predictability, birthing seasons, and lamb recruitment for desert bighorn sheep. In J. Goerrissen and J. M. Andre, editors. Symposium Proceedings for the Sweeney Granite Mountains Desert Research Center 1978-2003: A Quarter Century of Research and Teaching. University of California Natural Reserve Program, Riverside, California, USA.

Wehausen, J. D., and V. C. Bleich. 2007. The effect of survey intensity on bighorn sheep helicopter counts. Desert Bighorn Council Transactions 49:23-29.

Wehausen, J. D., and R. R. Ramey II. 1993. A morphometric reevaluation of the peninsular bighorn subspecies. Desert Bighorn Council Transactions 37:1-10.

Wehausen, J. D., and R. R. Ramey II. 2000. Cranial morphometric and evolutionary relationships in the northern range of *Ovis canadensis*. Journal of Mammalogy 81:145-161.

Wehausen, J. D., and R. R. Ramey II. 2004. Microsatellite diversity in Sierra Nevada mountain sheep herds. Unpublished Contract Report, Sierra Nevada Bighorn Sheep Recovery Program, California Department of Fish and Game, Bishop, California.

Wehausen, J. D., V. C. Bleich, and R. A. Weaver. 1987a. Mountain sheep in California: a historical perspective on 108 years of full protection. Western Section of The Wildlife Society Transactions 23:65-74.

Wehausen, J. D., V. C. Bleich, B. Blong, and T. L. Russi. 1987b. Recruitment dynamics in a southern California mountain sheep population. Journal of Wildlife Management 51:86-98.

Wehausen, J. D., V. C. Bleich, and R. R. Ramey II. 2005. Correct nomenclature for Sierra Nevada bighorn sheep. California Fish and Game 91:216-218.

Williams, J. D., W. F. Krueger, and D. H. Harmel. 1994. Heritabilities for antler characteristics and body weight in yearling white-tailed deer. Heredity 73:78-83.

Appendix 1.
Regulatory Language for 2010 Bighorn Sheep Hunting with Proposed Changes

§362. Nelson Bighorn Sheep.

(a) Areas:

(1) Zone 1 -Marble/Clipper Mountains: That portion of San Bernardino County beginning at the intersection of Kelbaker Road and the National Trails Highway; north on Kelbaker Road to the junction with Interstate Highway 40; east on Interstate Highway 40 to the intersection with National Trails Highway; southwest on National Trails Highway to junction with Kelbaker Road.

(2) Zone 2 -Kelso Peak and Old Dad Mountains: That portion of San Bernardino County beginning at the intersection of Kelbaker Road and the Union Pacific Railroad in Kelso; southwest along the Union Pacific Railroad to intersection with unnamed road at Crucero; north on unnamed road to the ~~junction~~ merging with ~~Rasor~~ Mojave Road; north~~west~~east ~~on~~ on ~~Rasor~~ Mojave Road to the junction with Zzyzx Road; north on Zzyzx Road to intersection with Interstate Highway 15; northeast on Interstate Highway 15 to the intersection with Cima Road; south on Cima Road to the intersection with the Union Pacific Railroad in Cima; southwest on the Union Pacific Railroad to the intersection with Kelbaker Road in Kelso.

(3) Zone 3 -Clark and Kingston Mountain Ranges: That portion of San Bernardino and Inyo counties beginning at the intersection of Interstate Highway 15 and California State Highway 127 in Baker; north on California State Highway 127 to the junction with Old Spanish Gentry Road ~~on~~at Tecopa; southeast on Old Spanish Gentry Road to the junction with Furnace Creek Road; southeast on Furnace Creek Road to the junction with Mesquite Valley Road; north on Mesquite Valley Road to Old Spanish Trail Highway; north and east on Old Spanish Trail Highway to California/Nevada state line; southeast on California/Nevada state line to the intersection with Interstate Highway 15; southwest on Interstate Highway 15 to the junction with California State Highway 127.

(4) Zone 4 -Orocopia Mountains: That portion of Riverside County beginning at the intersection of Interstate Highway 10 and Cottonwood Springs Road; east on Interstate Highway 10 to the junction with Red Cloud Mine Road; south on Red Cloud Mine Road to the junction with the Eagle Mountain Mining Railroad; southwest on the Eagle Mountain Mining Railroad to the junction with the Bradshaw Trail; southwest on the Bradshaw Trail to the Intersection with the Coachella Canal; west along the Coachella Canal to the junction with Box Canyon Road; northeast on Box Canyon Road to the junction with Cottonwood Springs Road; north on Cottonwood Springs Road to the intersection with Interstate Highway 10.

(5) Zone 5 -San Gorgonio Wilderness: That portion of Riverside and San Bernardino counties beginning at the intersection of Interstate Highway 10 and California State

Highway 62, west on Interstate Highway 10 to the junction with California State Highway 30; north on California State Highway 30 to the junction with California State Highway 38; east and north on California State Highway 38 to the junction with Forest Service Route 1N01; east on Forest Service Route 1N01 to its joining with Pipes Road; east on Pipes Road to the junction with Pioneertown Road; southeast on Pioneertown Road to the junction with California State Highway 62; southwest on California State Highway 62 to the intersection with Interstate Highway 10.

(6) Zone 6 -Sheep Hole Mountains: That portion of San Bernardino County beginning at the junction of California State Highway 62 and Ironage Road; northwest on Ironage Road to the intersection with Amboy Road; north on Amboy Road to the intersection with National Trails Highway; east on National Trails Highway to the junction with Saltus Road; southeast on Saltus Road to the junction with unnamed road in Saltus that runs through Cadiz Valley; southeast on unnamed road to the intersection with California State Highway 62; west on California State Highway 62 to the junction with Ironage Road.

(7) Zone 7 -White Mountains: That portion of Mono County within a line beginning at U.S. Highway 6 and the Mono-Inyo county line; northward on Highway 6 to the California-Nevada State Line; southeasterly along the California-Nevada State Line to the Mono-Inyo County Line; westward along the Mono-Inyo County Line to the point of beginning.

(8) Zone 8 –South Bristol Mountains: That portion of San Bernardino County beginning at the junction of Kelbaker Road and the National Trails Highway; west on the National Trails Highway to the intersection with Interstate Highway 40; east on Interstate Highway 40 to the junction with Kelbaker Road; south on Kelbaker Road to the point of beginning.

(9) Zone 9 –Cady Mountains: That portion of San Bernardino County beginning at the junction of Interstate Highway 40 and Newberry Road; north on Newberry Road to intersection with Riverside Road; East on Riverside Road to junction with Harvard Road; north on Harvard Road to junction with Interstate Highway 15; northeast on Interstate Highway 15 to junction with Basin Road; south on Basin Road to intersection with Union Pacific Railroad; east on Union Pacific Railroad to intersection with Crucero Road; south on Crucero Road to intersection with Interstate Highway 40; west on Interstate Highway 40 to the point of beginning.

(b) Seasons:

(1) Open Zone Fund-raising Tag: The holder of the fund-raising license tag issued pursuant to subsection 4902(d) of the Fish and Game Code may hunt:

(A) Zones 1 through 4, ~~and~~ 6, 8 and 9: Beginning the first Saturday in November and extending through the first Sunday in February.
(B) Zone 5: Beginning the third Saturday in November and extending through the third Sunday in February.
(C) Zone 7: Beginning the first Saturday in August and extending through the last Sunday in September.
(2) Marble/Clipper/~~Sheep Hole~~South Bristol Mountains Fund-raising Tag: The holder of the fund-raising license tag issued pursuant to subsection 4902(d) of the Fish and Game Code may hunt:
(A) Zones 1 and ~~6~~8: Beginning the first Saturday in November and extending through the first Sunday in February.
(3) Kelso Peak and Old Dad Mountains Fund-raising Tag: The holder of the fund-raising license tag issued pursuant to subsection 4902(d) of the Fish and Game Code may hunt:
(A) Zone 2: Beginning the first Saturday in November and extending through the first Sunday in February.
(4) Except as provided in subsection 362(b)(1), the Nelson bighorn sheep season in the areas described in subsection 362(a) shall be defined as follows:
(A) Zones 1 through 4, ~~and~~ 6, 8 and 9: The first Saturday in December and extend through the first Sunday in February.
(B) Zone 5: The third Saturday in December and extend through the third Sunday in February.
(C) Zone 7: Beginning the third Saturday in August and extending through the last Sunday in September.
(5) Except as specifically provided in section 362, the take of bighorn sheep is prohibited.
(c) Bag and possession Limit: One mature ram defined as follows: a male Nelson bighorn sheep (Ovis canadensis nelsoni) having at least one horn, the tip of which extends beyond a point in a straight line beginning at the front (anterior) edge of the horn base, and extending downward through the rear (posterior) edge of the visible portion of the eye and continuing downward through the horn. All reference points are based on viewing the ram directly from a 90 degree angle from which the head is facing. A diagram showing the correct viewing procedure shall be distributed by the department to each successful applicant.
(d) Number of License Tags:

Nelson Bighorn Sheep Hunt Zones for 201~~0~~1

Tag	Allocation
Zone 1 - Marble/Clipper Mountains	3-4
Zone 2 - Kelso Peak/Old Dad Mountains	3-4
Zone 3 - Clark/Kingston Mountain Ranges	2
Zone 4 - Orocopia Mountains	1-2
Zone 5 - San Gorgonio Wilderness	2-3
Zone 6 - Sheep Hole Mountains	1-2
Zone 7 - White Mountains	3-5
Zone 8 - South Bristol Mountains	2-3
Zone 9 - Cady Mountains	3-4
Open Zone Fund-Raising Tag	1
Marble/Clipper/~~Sheep Hole~~South Bristol Mountains Fund-Raising Tag	1
Kelso Peak/Old Dad Mountains Fund-Raising Tag	1
	Total: 22-32

(e) Conditions:

(1) Nelson bighorn rams shall only be taken between one-half hour before sunrise and one-half hour after sunset.

(2) Only methods specified in sections 353 and 354, Title 14, CCR, for taking bighorn sheep may be used.

(3) Each tagholder shall possess a spotting telescope capable of magnification of 15 power (15X), which is not affixed to a rifle, while hunting.

(4) Successful general tagholders shall present the head and edible portion of the carcass of a bighorn ram to the department's checking station within 48 hours after killing the animal. All successful tagholders shall notify the department's Bishop office by telephone at (760) 872-1171 or (760) ~~240~~413-~~1372~~9596 within 24 hours of killing the animal and arrange for the head and carcass to be examined.

(5) All successful bighorn sheep tagholders shall make the horns of each ram available to the department to be permanently marked in the manner prescribed by the department for identification purposes within 48 hours of killing the animal. The purpose of the permanent marking shall be to identify Nelson bighorn rams which were legally taken and which may be transported and possessed outside the areas described in subsection 362(a).

(6) The department reserves the right to take and use any part of the tagholder's bighorn ram, except the horns, for biological analysis as long as no more than one pound of edible meat is removed.

Note: Authority cited: Sections 200, 202, 203, 220, 1050 and 4902, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 207, 1050, 3950 and 4902, Fish and Game Code.

Appendix 2.
California Fish and Game Code
Chapter 11. Bighorn Sheep

4900. The Legislature declares that bighorn sheep are an important wildlife resource of the state to be managed and maintained at sound biological levels. Therefore, it is hereby declared to be the policy of the state to encourage the preservation, restoration, utilization, and management of California's bighorn sheep population. The management shall be in accordance with the policy set forth in Section 1801.

4901. The department shall determine the status and the trend of bighorn sheep populations by management units. A plan shall be developed for each of the management units. The plan for each management unit shall include all of the following:

(a) Data on the numbers, age, sex ratios, and distribution of bighorn sheep within the management unit.

(b) A survey of range conditions and a report on the competition that may exist as a result of human, livestock, wild burro, or any other mammal encroachment.

(c) An assessment of the need to relocate or reestablish bighorn populations.

(d) A statement on the prevalence of disease or parasites within the population.

(e) Recommendations for achieving the policy objective of Section 4900.

4902. (a) The commission may adopt all regulations necessary to provide for biologically sound management of Nelson bighorn sheep (subspecies Ovis canadensis nelsoni).

(b) (1) After the plans developed by the department pursuant to Section 4901 for the management units have been submitted, the commission may authorize sport hunting of mature Nelson bighorn rams. Before authorizing the sport hunting, the commission shall take into account the Nelson bighorn sheep population statewide, including the population in the management units designated for hunting.

(2) Notwithstanding Section 219, the commission shall not,

however, adopt regulations authorizing the sport hunting in a single year of more than 15 percent of the mature Nelson bighorn rams in a single management unit, based on the department's annual estimate of the population in each management unit.

(c) The fee for a tag to take a Nelson bighorn ram may be determined by the commission, but shall not exceed five hundred dollars ($500).

(d) The commission shall annually direct the department to authorize not more than three of the tags available for issuance that year to take Nelson bighorn rams for the purpose of raising funds for programs and projects to benefit Nelson bighorn sheep. These tags may be sold to residents or nonresidents of the State of California at auction or by another method and shall not be subject to the fee limitation prescribed in subdivision (c). Commencing with tags sold for the 1993 hunting season, if more than one tag is authorized, the department shall designate a nonprofit organization organized pursuant to the laws of this state, or the California chapter of a nonprofit organization organized pursuant to the laws of another state, as the seller of not less than one of these tags. The number of tags authorized for the purpose of raising funds pursuant to this subdivision, if more than one, shall not exceed 15 percent of the total number of tags authorized pursuant to subdivision (b).

(e) No tag issued pursuant to this section shall be valid unless and until the licensee has successfully completed a prehunt hunter familiarization and orientation and has demonstrated to the department that he or she is familiar with the requisite equipment for participating in the hunting of Nelson bighorn rams, as determined by the commission. The orientation shall be conducted by the department at convenient locations and times preceding each season, as determined by the commission.

4903. Revenue from the fees authorized by this chapter shall be deposited in the Fish and Game Preservation Fund and shall be expended solely for purposes of the bighorn sheep program. Notwithstanding Sections 711 and 13004, this revenue, upon appropriation by the Legislature, shall be available for expenditure

by the department solely for programs and projects to benefit bighorn sheep and for the direct costs and administrative overhead incurred solely in carrying out the department's bighorn sheep activities. Administrative overhead shall be limited to the reasonable costs associated with the direct administration of the program. These funds shall be used to augment, and not to replace, moneys appropriated from existing funds available to the department for the preservation, restoration, utilization, and management of bighorn sheep. The department shall maintain internal accountability necessary to ensure that all restrictions on the expenditure of these funds are met.

4904. (a) The department shall biennially report the following to the Legislature:

(1) The management units for which plans have been developed pursuant to Section 4901.

(2) A summary of the data from the annual count conducted by the department for the purposes of subdivision (b) of Section 4902.

(3) The number of tags issued in the preceding season, and the number of mature Nelson bighorn rams taken under valid tags in the preceding season.

(4) Any instance known to the department of the unlawful or unlicensed taking of a Nelson bighorn sheep in this state and the disposition of any prosecution therefor.

(5) The number of Nelson bighorn sheep relocated during the previous year, the area where reintroduced, a statement on the success of the reintroduction, and a brief description of any reintroduction planned for the following year.

(b) The report shall consist of a compilation of the results of the ongoing study conducted pursuant to this section each year since the enactment of this chapter and an assessment of the environmental impact of the hunting of Nelson bighorn sheep on the herds.

Appendix 3
Biennial Report to the Legislature

State of California
THE RESOURCES AGENCY
Department of Fish and Game

Biennial Report to the Legislature

Regarding Bighorn Sheep Management

December 2010

Submitted in compliance with Fish and Game Code Section 4904

INTRODUCTION

This report was prepared pursuant to Section 4904 of the Fish and Game Code, and is the most recent in a series of biennial reports to the Legislature summarizing activities and information related to bighorn sheep management. Through legislation enacted in 1986, it was declared to be the policy of the State to encourage the preservation, restoration, utilization, and management of California's bighorn sheep population in accordance with Section 1801 of the Fish and Game Code. In addition, the Fish and Game Commission was authorized to adopt all necessary regulations to provide for biologically sound management of Nelson bighorn sheep, including sport hunting of rams. However, sport hunting regulations shall not authorize hunting in a single year of more than 15 percent of the estimated mature Nelson bighorn rams in the management units.

The results for the period 2009 – 2010 are presented in this report as required by law. Requisite elements of this report include: status of unit management plans; summary of bighorn sheep counts in specified units; numbers of hunting license tags issued; summary of unlawful take of bighorn sheep; number of bighorn sheep translocated; and environmental impacts of hunting bighorn sheep.

The California Department of Fish and Game's (CDFG) Bighorn Sheep Conservation Program maintains an inventory of the distribution of bighorn sheep in California. This assessment of bighorn sheep populations is conducted as part of a long-term management strategy for bighorn sheep in California. We have grouped the populations of bighorn sheep in California into metapopulations, or regional systems of subpopulations, that represent the most logical geographic areas for managing for the long-term viability of this species. This approach recognizes the importance of intermountain areas that allow movement and exchange of individuals among populations, the recolonization of vacant habitats, and the interagency coordination of land management activities. Our definition of regional populations considers not only vegetative and geographic boundaries, but also man-made barriers such as freeways that define distributions, and that have resulted in the fragmentation of bighorn sheep habitat.

Although a metapopulation approach is an important biological principle for management and long-term survival of bighorn sheep populations, it is equally important as a management concept that emphasizes the importance of the regional coordination of bighorn sheep population and habitat management. Several investigations have emphasized the importance of population size and genetic diversity to the long-term survival of bighorn sheep populations. Although

population size is important, the number of populations, the maintenance of genetic diversity, and the ability to recolonize vacant areas are equally important aspects of metapopulation function.

Ten metapopulations of bighorn sheep have been defined within California; distributed among these were 3 subspecies defined by early scientists, but recent taxonomic revisions indicate that only two subspecies occur in California. The majority of bighorn sheep in the state currently are recognized as belonging to the Nelson subspecies (*Ovis canadensis nelsoni*), and inhabit the Sonoran Desert, the Mojave Desert, portions of the Great Basin Desert, and the transverse ranges of Ventura, Los Angeles, and San Bernardino counties. Sierra Nevada bighorn sheep (*O. c. sierrae*) are restricted in distribution to the Sierra Nevada of eastern California. Bighorn sheep inhabiting the peninsular ranges of Riverside, San Diego, and Imperial counties (and designated as the peninsular metapopulation) have been classified as endangered by the Federal Government since 1998, and are classified as threatened by the State of California. Bighorn sheep comprising the Sierra Nevada metapopulation are listed as endangered by the State, and were classified as endangered by the Federal Government in 1999. All bighorn sheep are fully protected, although limited harvest occurs in selected areas as a result of state law that provides for the biologically sound management of bighorn sheep, including the sport hunting of mature male Nelson bighorn sheep.

Given the need to understand the status and dynamics of regional populations of bighorn sheep, we have categorized all known populations by the numbers of animals (size class) within each. The Department continues to utilize historical and current data from ground, waterhole, and aerial surveys to categorize these populations. Although population estimates vary in precision, we believe the size classes are adequate to provide an accurate and conservative assessment of each population.

Our defined metapopulations are summarized by size classes, and population estimates are subsequently computed by totaling the median interval estimates. At the close of 2010, we estimate that there are about 5,200 bighorn sheep distributed across 61 mountain ranges in California. Of these, the metapopulations of Nelson bighorn sheep total approximately 4,800 individuals and, based on the most recent information available (June 2009), the Sierra Nevada metapopulation was estimated to number nearly 400 individuals. A survey conducted by CDFG in 1972 resulted in a statewide estimate of 3,737 bighorn sheep; a similar estimate in 2003 was about 4,500 bighorn sheep. These data indicate that the total number of bighorn sheep in California has increased over the past 40 years. Although the overall statewide trend has been

upward, conditions vary among local populations. Declining local populations have been, and will continue to be, a high priority for research and management programs.

Nelson Bighorn Sheep

Nelson bighorn sheep numbers continue to remain stable, continuing to fluctuate around long-term means. In general, populations of bighorn sheep in the Mojave Desert have been increasing slowly, but population dynamics are influenced strongly by the amount and timing of precipitation, which varies widely across southern and eastern California. Our helicopter surveys indicate that the recruitment of rates of lambs was quite variable in 2009 and 2010, reflecting the influences of localized rainfall as well as population density.

During 2009 and 2010, a rangewide survey of the peninsular ranges metapopulation was conducted and an analysis of those data resulted in an estimate of about 950 adult bighorn sheep and recruited lambs distributed among nine distinct subpopulations as of December 2010. Thus, the number of bighorn sheep inhabiting the Peninsular Ranges has been on an upward trend since the mid-1990s, and the population of bighorn sheep in the Peninsular Ranges currently approaches the highest previous estimate (1,070), which was reported in 1974. The U.S. Fish and Wildlife Service completed and published the recovery plan for bighorn sheep in the Peninsular Ranges in 2000.

Sierra Nevada Bighorn Sheep

Emergency action was taken in 1999 by the California Fish and Game Commission to uplist Sierra Nevada bighorn sheep from threatened to endangered, and the taxon received emergency listing as endangered in 1999 by the Federal Government, a classification that was formalized in 2000. These actions were in response to a substantial decline from an estimated 310 in 1985 to about 100 individuals in 1999, potentially the result of a combination of predation, severe winter weather, and accidental deaths. The U.S. Fish and Wildlife Service completed and published the recovery plan for Sierra Nevada bighorn sheep in 2007.

Sierra Nevada bighorn sheep are among the rarest and most endangered mammals in North America, and have been the object of an intensive recovery program directed by the California Department of Fish and Game since 2000. Elements of the recovery program include intensive population monitoring, reducing mortality, reestablishing additional populations in historic range, maintaining genetic diversity, and increasing population size. The most recent data

available indicate that about 400 bighorn sheep currently inhabit the Sierra Nevada, and that the population is on an upward trend.

MANAGEMENT PLANS

Intensive data collection continued during this report period and provided basic information for preparing additional population management plans. These efforts addressed range conditions, population sizes, age class structure, and sex ratios, as well as sampling individual animals for the prevalence of diseases and parasites.

Pursuant to Section 4901 of the Fish and Game Code, management plans have been completed for a number of major herds of bighorn sheep in California. The CDFG Bighorn Sheep Management Program currently is preparing a rangewide management plan that will inventory and evaluate the population status of all bighorn sheep populations and subpopulations within the State, and establish an overall strategy to conserve bighorn sheep in California. This planning effort will identify and set priorities for management activities to ensure the long-term viability of bighorn sheep populations. Protection of important habitats and inter-mountain movement corridors, identification of future reintroduction sites, and the maintenance, improvement, and development of wildlife water developments will be addressed as part of the overall conservation strategy. Separate recovery plans have been prepared for bighorn sheep inhabiting the Peninsular Ranges and the Sierra Nevada, and are being implemented. During 2010, drafts of two regional management plans (Cady Mountains Management Unit and South Bristol Mountains Management Unit) were completed and have been submitted for final approval.

SUMMARY OF ANNUAL SURVEYS

During 2009, aerial surveys were conducted in the Marble Mountains, Clipper Mountains, Old Dad and Kelso Peaks, Clark, Kingston, and Mesquite mountains, Orocopia Mountains, San Gorgonio Wilderness, Sheephole Mountains, and White Mountains management units. Aerial surveys were conducted during both 2009 and 2010 in the Cady Mountains and South Bristol Mountains management units. Although results obtained during 2009 in the Cady Mountains and South Bristol Mountains are shown, only survey results from 2010 contributed to the total numbers presented in the following table. These results were used to establish the 2010 hunting tag allocations, and form the basis of preliminary tag allocations for the 2011 hunting season.

Mountain Range	Survey Date	Ewes	Lambs	Rams	Total
Marble Mountains	October 2009	88	34	65	187
Clipper Mountains	October 2009	13	4	16	33
Kelso Peak and Old Dad Peak	October 2009	95	15	69	179
Clark, Kingston, and Mesquite Mountains	October 2009	45	6	28	79
Orocopia Mountains	September 2009	39	7	21	67
Sheephole Mountains	May 2009	22	3	17	42
South Bristol Mountains	October 2009	44	13	26	83
South Bristol Mountains	October 2010	33	9	30	72
Cady Mountains	September 2009	92	37	38	167
Cady Mountains	October 2010	102	23	49	174
White Mountains	March 2009	59	16	31	106
San Gorgonio Wilderness	May 2009	48	15	20	83
TOTALS		544	132	346	1,022

These data represent minimum population sizes, since they involve only animals actually observed and classified; experience indicates that actual populations are much larger. Conservative population estimates (as derived from the above results and corrected for an average visibility bias of 0.80) for the Marble Mountains, Clipper Mountains, Kelso Peak and Old Dad Peak, Clark, Kingston, and Mesquite Mountains, Orocopia Mountains, Sheephole Mountains, South Bristol Mountains, Cady Mountains, White Mountains, and San Gorgonio Wilderness management units are 270, 50, 250, 110, 100, 60, 100, 250, 150, and 120 adults and recruited young, respectively.

NUMBER OF HUNTING TAGS

After 22 successful hunting seasons since 1987, a 23rd hunt was approved by the Fish and Game Commission in 2009, and a 24th hunt was approved in 2010. A total of 19 Nelson bighorn ram hunting tags were authorized for the season in 2009. Four tags were allocated in the Marble Mountains Management Unit, 6 tags were allocated in the Kelso Peak-Old Dad Peak Management Unit, 2 tags were allocated in the Clark-Kingston Mountains Management Unit, 1 tag was allocated in the Sheephole Mountains Management Unit, 3 tags were allocated in the White Mountains Management Unit, and 1 tag was allocated in the San Gorgonio Wilderness

Management Unit. In addition, two fund-raising tags were valid in any open unit; each of these fund-raising tags was provided pursuant to Section 4902 of the Fish and Game Code. During the 2009 hunting season, hunters harvested a total of 19 mature rams, ranging from 5-11 years-of-age.

In 2010, a total of 22 Nelson bighorn ram hunting tags were authorized by the Fish and Game Commission. Four tags were allocated in the Marble Mountains Management Unit, 4 tags were allocated in the Kelso Peak/Old Dad Mountains Management Unit, 2 tags were allocated in the Clark/Kingston Mountains Management Unit, 1 tag was allocated in the Orocopia Mountains Management Unit, 2 tags were allocated in the Sheephole Mountains Management Unit, 4 tags were allocated in the White Mountains Management Unit, and 2 tags were allocated in the San Gorgonio Wilderness Management Unit. Additionally, one fund-raising hunting license tag was valid in any open unit, a second fund-raising tag was valid in both the Marble-Clipper Mountains Management Unit and Sheephole Mountains Management Unit, and a third fund-raising tag was valid in only the Old Dad Peak-Kelso Peak Management Unit; each of these fund-raising tags was provided pursuant to Section 4902 of the Fish and Game Code. As of 31 December 2010, 15 of 22 hunters had been successful in taking mature rams ranging from 3 to 13 years-of-age. A total of 7 hunters will remain eligible to hunt until termination of the 2010 hunting season during February 2011.

The 2009 open-zone fundraising tag produced a high bid of $55,000, and the second fund-raising tag produced a high bid of $50,000; thus, a total of $105,000 was raised through the sale of these special tags. A total of 8,219 applications with a $ 7.50 non-refundable application fee were received for the drawing for 17 general tags, which were distributed by computerized random selection. Each of the 15 successful resident applicants paid an additional $ 357.50 hunting license tag fee. Total revenue generated from the sale of applications, permits, and special fund-raising tags for the 2009 hunting season was $ 173,378. As specified by law, this revenue was deposited in the bighorn sheep account and shall be used to augment, and not replace, existing funds available to the Department for the preservation, restoration, utilization, and management of bighorn sheep.

The 2010 the open zone fund-raising hunting license tag produced a high bid of $ 80,000, the second fund-raising tag produced a high bid of $ 60,000, and the third fund-raising tag produced a high bid of $ 50,000; thus, a total of $190,000 was raised through the sale of these special tags A total of 11,417 applications with a $7.50 non-refundable application fee were received for the drawing for 19 general tags, which were distributed by computerized random selection. Each of

18 successful resident applicants paid an additional $367.50 hunting license tag fee. One nonresident applicant was drawn in 2010, and that individual paid an additional $500 in hunting license tag fees. Total revenue generated from the sale of applications, permits, and special fund-raising tags, up to and including the 2010 hunting season, is approximately $3.6 million. As specified by law, this revenue was deposited in the bighorn sheep account and shall be used to augment, and not replace, existing funds available to the Department for the preservation, restoration, utilization, and management of bighorn sheep.

UNLAWFUL TAKING

California Department of Fish and Game Law Enforcement Division personnel reported 4 confirmed incidents involving the illegal killing of bighorn sheep during 2010; there were no known violations by hunters during either the 2009 or 2010 bighorn sheep hunt.

POPULATION RECOVERY AND REINTRODUCTION PROJECTS

The two primary management objectives of the Mountain Sheep Conservation Program are to (1) maintain, improve, and expand bighorn sheep habitat; and (2) re-establish bighorn sheep populations on historic ranges. Population reintroduction projects are a major activity used by management agencies to restore historic populations. Since 1983 the Department has captured and moved nearly 500 bighorn sheep from native ranges to restore or augment populations of *O. c. nelsoni* and *O. c. sierrae*. It is anticipated that bighorn sheep will be translocated within the Sierra Nevada during the next report period (2011-2012), but at the present time no other plans for translocation have been formulated.

During 2009, 6 bighorn sheep were translocated within the Sierra Nevada to augment existing populations in that mountain range. As the result of an aerial accident that resulted in the tragic deaths of 4 individuals early in 2010, all scheduled translocations were cancelled; hence, no bighorn sheep were captured and moved in 2010. Nevertheless, detailed demographic assessments have continued, and ensure the recovery of bighorn sheep populations from which animals previously have been removed for translocation. Comprehensive long-term demographic studies are underway in populations throughout California, and have been designed to monitor and direct management activities.

During 2010, a very limited number of bighorn sheep were captured for research purposes. A total of only 10 individuals were captured, sampled, collared, and released, all of them in the

peninsular ranges. Capture activities in 2010 were constrained substantially as the result of the helicopter accident. The following capture, sample, radio-collar, and release projects occurred in 2010:

Population	County	# Rams	# Ewes	Total
Santa Rosa Mountains	Riverside and San Diego	0	8	8
Vallecito Mountains	San Diego	1	1	2
Total		1	9	10

ASSESSMENT OF ENVIRONMENTAL IMPACT OF HUNTING ON NELSON BIGHORN SHEEP

A detailed discussion of the environmental impact of regulatory changes affecting the hunting Nelson bighorn sheep on the herds is contained in the Final Environmental Document regarding bighorn sheep hunting prepared by CDFG in 2005.

Bighorn sheep exist in approximately 61 populations (herds), with 5,200 individual animals estimated statewide. Nelson bighorn sheep occur in Mono, Inyo, San Bernardino, Riverside, Imperial, San Diego, Ventura, and Los Angeles counties. In 2010, a total of only 7 herds were hunted: the Marble Mountains, Kelso Peak/Old Dad Peak, Clark and Kingston ranges of San Bernardino and Inyo counties, Orocopia Mountains, Sheephole Mountains, San Gorgonio Wilderness (Riverside and San Bernardino counties), and the White Mountains (Mono County). Therefore, the remaining populations of bighorn sheep were not influenced by hunting activity. The potential harvest of 22 bighorn rams during the 2010 hunting season will represent less than 0.5 percent of the total number of bighorn sheep estimated to occur in California.

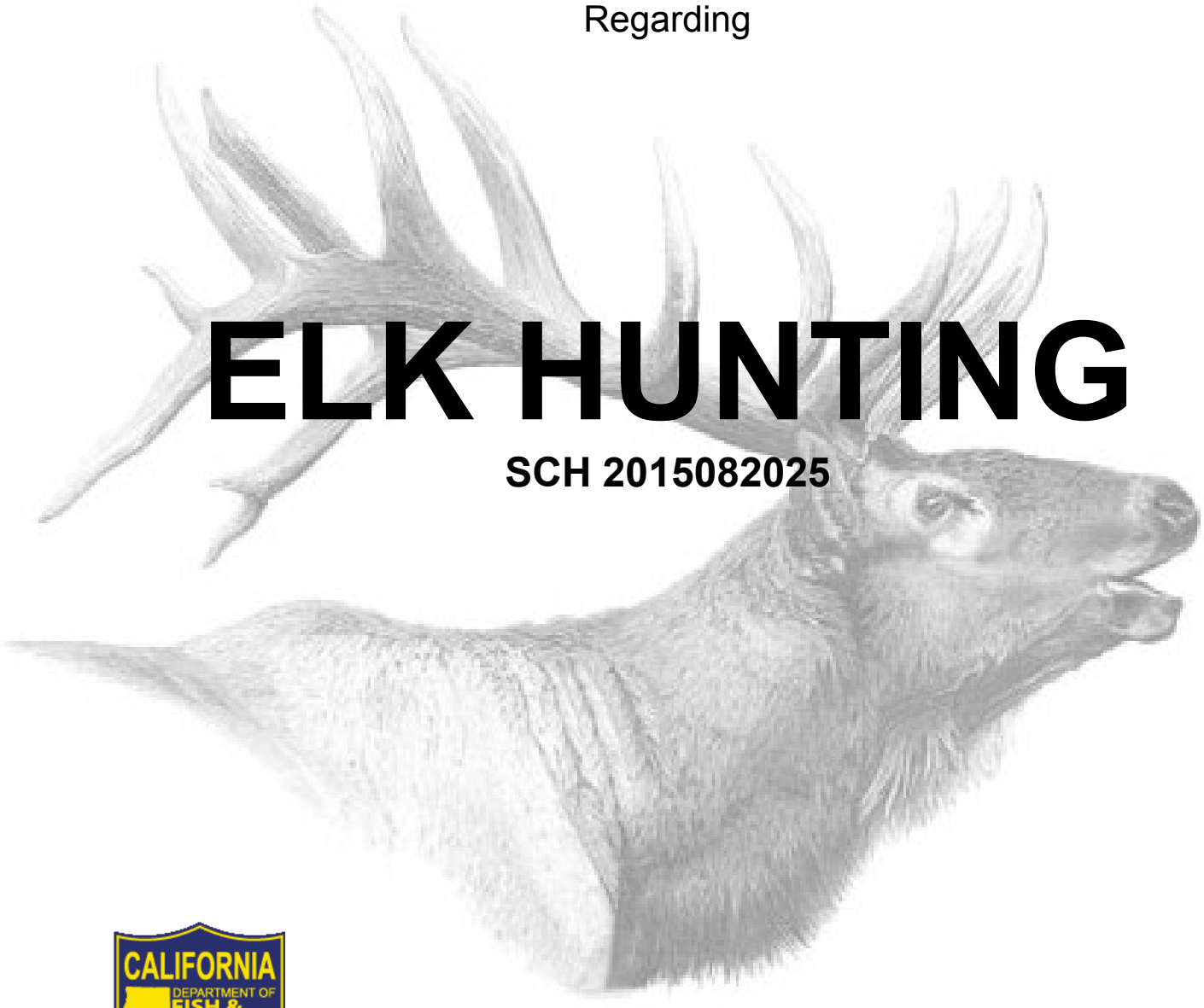
The proportion of legal rams in the Marble Mountains, Kelso Peak-Old Dad Peak, Clark-Kingston-Mesquite Mountains, Orocopia Mountains, Sheephole Mountains, White Mountains, and San Gorgonio Wilderness populations has been relatively stable from 1987 to present. This indicates that the removal of the limited number of mature rams from the herds has no adverse impact on the age structures of the herds. The number of males removed has been too small to

result in a measurable increase in lamb recruitment when compared to unhunted herds. Because the age structure is not impacted, the social structure of the herds is maintained. No impacts are expected in the future to adversely affect genetic variability or diversity due to changes in the social structure of the herds.

DRAFT
ENVIRONMENTAL DOCUMENT

Section 364, 364.1, 555, and 601
Title 14, California Code of Regulations

Regarding



ELK HUNTING

SCH 2015082025

November 15, 2015

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

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CHAPTER 1. SUMMARY

Existing law (Section 3950, Fish and Game Code) designates elk (genus *Cervus*) as a game mammal in California. Section 332, Fish and Game Code, provides that the Commission may fix the area or areas, seasons and hours, bag and possession limit, sex, and total number of elk that may be taken pursuant to its regulations. Section 203.1, Fish and Game Code, requires the Commission to consider populations, habitat, food supplies, the welfare of individual animals, and other pertinent facts when establishing hunting regulations for elk.

Existing law (Section 207 of the Fish and Game Code) also requires the Fish and Game Commission (Commission) to review mammal hunting regulations and the Department of Fish and Game (Department) to present recommendations for changes to the mammal hunting regulations to the Commission at a public meeting. Mammal hunting regulations adopted by the Commission provide for hunting elk in specific areas of the State [Section 364 and 364.1, Title 14, California Code of Regulations (CCR)].

The regulations also provided for up to 40 tags through the Cooperative Elk Hunting Program during 2015 (Section 555, Title 14, CCR), however only 28 tags were issued. Hunting for Rocky Mountain, Roosevelt, and tule elk also occurred under authority of the Private Lands Wildlife Habitat Enhancement and Management (PLM) Area Program. During 2014 116 bull tags and 87 antlerless tags were issued under the PLM program (Appendix 1).

In adopting regulations providing for limited public elk hunting, the Commission would be implementing sections 332 and 3951 of the Fish and Game Code, which is consistent with the wildlife conservation policy adopted by the Legislature (Section 1801, Fish and Game Code). The State's wildlife conservation policy, among other things, contains an objective of providing hunting opportunities when such use is consistent with maintaining healthy wildlife populations.

PROPOSED PROJECT AND ALTERNATIVES

The project discussed in this document (proposed project) involves elk hunting for the 2016 elk hunting season and subsequent seasons until a new environmental document is prepared and certified. Specifically, the Department is proposing to modify annual tag quotas, establish 9 new hunt zones, and modify hunt boundaries, season dates, and hunt periods for various existing hunts.

The Department is also providing the Commission with a range of alternatives to the proposed project that could feasibly attain the basic objectives of the project. It is anticipated that the proposed project will fall near or below the median of the proposed tag ranges in most zones. Alternative 1 (no change) would maintain quotas and seasons for each hunt zone without change. Alternative 2 (increased harvest) involves issuing tag quotas at approximately 50% above the proposed project. Alternative 3

(reduced harvest) involves issuing approximately 50 % fewer elk license tags than the proposed project. Alternative 4 (herd growth) proposes tag allocations if the elk populations increased within the zones. Population growth for elk zones were estimated based on the potential for those herds to increase in time. Growth estimates ranged from 18% to 400%. The time frame to reach the herd growth level for the analyzed population under this alternative will vary by herd. This is an alternative harvest that could be utilized within the life span of this environmental document. Current and proposed harvest strategies, for most herds, allow for population growth through time.

SUMMARY OF IMPACTS AND MITIGATION

Table 1 summarizes Department findings that there are no significant long-term adverse impacts associated with the proposed project or any of the project alternatives considered for the 2016 elk hunting regulations.

Table 1. Impact Summary

Alternative	Significant Impact	Nature of Impact	Mitigation Available	Nature of Mitigation
(Proposed Project)	No	None	N/A	N/A
1. No Change	No	None	N/A	N/A
2. Increased Harvest (+50%)	No	Some population levels may temporarily be reduced	N/A	Reducing hunting opportunity in future years
3. Reduced Harvest (-50%)	No	None	N/A	N/A
4. Herd Growth	No	None	N/A	N/A

It is anticipated that the number of tags issued will fall near or below the median from the proposed ranges (Appendix 2). The resulting harvest for 2016 will likely be lower than the proposed tag median because hunter success has historically been less than 100 percent and hunts with multiple periods may have low number of tags issued or not have tags issued in every period every year. Based on success rates from previous years, the Department expects that the actual harvest will range from 55-80 percent of the elk tags allocated for 2016 (1990-present, Department of Fish and Wildlife data on file in the Wildlife Branch, Sacramento, California).

AREAS OF CONTROVERSY

A Notice of Preparation (NOP) for the proposed project was prepared and circulated on August 17, 2015. The NOP included the Initial Study which provided a project description, a preliminary, relatively brief environmental impact analysis for the proposed project, and information regarding a public scoping meeting to be held on August 26, 2015. This started a 30-day scoping period, which ended on September 15, 2015. A public scoping meeting was held on August 26, 2015 in Sacramento, CA.

The Department noticed stakeholders about the NOP, scoping period, and scheduled scoping meeting through the following methods:

- Posting in the State Clearinghouse
- Posting Initial Study and meeting notification on CDFW's public notice website
- Email meeting notification to members of the Big Game Management Advisory Committee dated August 14, 2015

The Notice of Preparation, initial study, preliminary impact assessment, summary of the issues identified at the scoping meeting, and written comments received during the 30-day scoping period are located in Appendix 3.

ISSUES TO BE RESOLVED

As provided by existing law, the Commission is the decision-making body (lead agency) considering the proposed project, while the Department has responsibility for management activities, such as hunting, translocating elk to suitable historic range, and preparing management plans. The primary issue for the Commission to resolve is whether to change elk hunting regulations as an element of elk management. If such changes are authorized, the Commission will specify the areas, seasons, methods of take, bag and possession limit, number of elk to be taken, and other appropriate special conditions.

FUNCTIONAL EQUIVALANCY

California Environmental Quality Act (CEQA) review of the proposed project will be conducted in accordance with the Commission's certified regulatory program (CRP) approved by the Secretary for the California Resources Agency pursuant to Public Resources Code section 21080.5 (See generally Cal. Code Regs., tit. 14, §§ 781.5, and 15251, subd. (b).). CEQA requires all public agencies in the State to evaluate the environmental impacts of projects they approve, including regulations, which may have a potential to significantly affect the environment. The Department has prepared this Environmental Document (ED), which is the functional equivalent of an Environmental Impact Report, on behalf of the Commission in compliance with this requirement. The ED provides the Commission, other agencies, and the general public with an objective assessment of the potential effects.

CHAPTER 2. THE PROPOSED ACTION

The proposed project being considered consists of the following modifications to existing elk hunting regulations:

1. Number of Tags

In order to maintain hunting quality in accordance with management goals and objectives, it is periodically necessary to adjust quotas in response to dynamic environmental and biological conditions. This proposed project adjusts elk tag ranges to account for fluctuations in population numbers and hunting pressure (Appendix 2).

Elk Pop (Smith and Updike 1987) is a microcomputer-based model which was developed by the Department for the purpose of analyzing harvest alternatives. Elk Pop was used to assess effects of the proposed project (and project alternatives) on the specific Roosevelt, Rocky Mountain, and tule elk herds where hunting is proposed. The model allows the user to vary carrying capacity to reflect real-world changes in habitat capability. Population age and sex ratios (observed and estimated) are primary inputs to the model. Elk Pop allows analysis of multiple harvest alternatives simultaneously and is easily adapted to most herd situations.

Elk Pop utilizes data on age and sex composition of the herd, maximum calf survival, estimated population numbers, nonhunting mortality, and hunting mortality. Age and sex composition and maximum calf survival figures used in the model are based on observed and estimated rates. Population level and nonhunting mortality rates were estimated. Estimates of nonhunting mortality rates were considered valid representations of actual nonhunting mortality rates when the model predicted the observed herd composition ratios for 10 consecutive years. Effects of various harvest scenarios were then predicted on the basis of composition ratios and estimated nonhunting mortality rates. The computer model runs for various harvest scenarios (proposed project and the alternatives) for each elk zone where hunting is proposed can be found in Appendix 4.

2. Establish New Hunts:

a. Split existing Northwestern Roosevelt elk hunt into two separate zones within Del Norte, Humboldt, and Trinity counties (Del Norte and Humboldt Roosevelt elk hunts) and modify season framework.

Public opportunity to hunt elk in Del Norte, Humboldt, and Trinity counties currently exists. The proposal would establish two zones within Del Norte, Humboldt, and Trinity counties and adjust tag ranges and season dates. These zones will be created by splitting the Northwestern Roosevelt Elk Hunt zone into two zones (Del Norte and Humboldt Roosevelt elk zones – Appendix 5) and minor boundary adjustments for clarification. The establishment of these zones will allow the Department to distribute

hunting pressure to address landowner concerns over elk damage and increase opportunity while providing a biologically appropriate harvest within each zone. Bull (range 0-20), antlerless (range 0-50), and either-sex (0-10) tags would be available to the public during five hunt periods. Each hunt period would begin on the first of the month for September, October, November, December, and January and extend for 20 consecutive days.

b. Split existing Marble Mountains Roosevelt elk hunt into two separate zones within Humboldt, Shasta, Siskiyou, and Trinity counties (Marble Mountain North and Marble Mountain South Roosevelt elk hunts) and modify season framework.

Public opportunity to hunt elk in Humboldt, Shasta, Siskiyou, and Trinity counties currently exists. The proposal would establish two zones within Humboldt, Shasta, Siskiyou, and Trinity counties. In addition it would make minor boundary adjustments, modify seasonal framework, and adjust tag ranges. These zones will be created by splitting the Marble Mountain Roosevelt elk zone into two zones (Marble Mountain North and Marble Mountain South – Appendix 6). The establishment of these zones will allow the Department to distribute hunting pressure in relation to elk distribution, increase opportunity, and obtain an appropriate harvest level. As part of these modifications hunting periods will be divided into early season archery/muzzleloader either-sex (range 0-20); period 1 bull (range 0-50), antlerless (range 0-20), and either-sex apprentice (range 0-4); period 2 bull (range 0-10) and antlerless (range 0-40); period 3 bull (range 0-5) and antlerless (range 0-15) tags would be available to the public during the hunt periods in each zone. Early season archery/muzzleloader shall open on the last Wednesday in August and continue for 9 consecutive days. Period 1 would open on second Saturday in September and continue for 12 consecutive days. Period 2 shall open on the last Saturday in September and continue for 12 consecutive days. Period 3 shall open on the first Wednesday in November and continue for 16 consecutive days.

c. Split and expand the existing Mendocino tule elk hunt into five elk hunts within Mendocino County. (Mendocino North Coast, Mendocino Middle Fork, Mendocino Upper Russian River, Mendocino Little Lake, and Mendocino South Coast elk hunts).

Public opportunities to hunt elk are limited in Mendocino County. The proposal would establish five zones within Mendocino County (splitting the current Mendocino elk hunt zone and extending the boundaries (Mendocino North Coast, Mendocino Middle Fork, Mendocino Upper Russian River, Mendocino Little Lake, and Mendocino South Coast elk hunt zones – Appendix 7). Sufficient numbers of elk occur within the proposed hunt boundary to provide opportunity for the public to hunt elk. The establishment of these zones will allow the Department to distribute hunting pressure to address landowner concerns over elk damage and increase hunter opportunity while providing a biologically appropriate harvest within each zone. Mendocino North Coast, bull (range 0-10) and antlerless (range 0-40); Mendocino Middle Fork, bull (range 0-10) and antlerless (range 0-40); Mendocino Upper Russian River, bull (range 0-10) and antlerless (range 0-40); Mendocino Little Lake, bull (range 0-5) and antlerless (range 0-10), no tags to be issued

under current conditions (establishing zone boundaries); Mendocino South Coast, bull (range 0-5), antlerless (range 0-10) tags would be available to the public in each zone. The bull season shall open on the Wednesday preceding the third Saturday in August and continue for 10 consecutive days. The antlerless season shall open the first Saturday in November and continue for 10 consecutive days.

d. Split the Independence tule elk hunt in Inyo County into two zones, establishing a new tule elk zone (Goodale) in the Owens Valley.

In conjunction with zone boundary modifications for the Independence tule elk zone a new zone (Goodale – Appendix 8) will be created by dividing the Independence zone into two zones (Goodale and Independence). This zone is being established to efficiently distribute hunting pressure and manage harvest. Sufficient numbers of elk occur within the proposed hunt boundary to provide opportunity for the public to hunt elk. Creating a new hunt boundary (splitting the zone) allows the Department to more appropriately manage harvest. The proposal would add a new hunt (portion of existing Independence zone) in Inyo County. Bull (range 0-10) tags and antlerless tags (range 0-10) would be available to the public during the established seasons.

e. Establish new tule elk hunt in portions of Kern, San Luis Obispo, Santa Barbara, and Ventura Counties (San Emigdio Mountain tule elk hunt).

Public opportunities to hunt elk in Kern, San Luis Obispo, Santa Barbara, and Ventura Counties are limited or non-existent. Sufficient numbers of elk occur within the proposed hunt boundary to provide additional opportunity for the public to hunt elk. The proposal would add a (new) hunt for elk in Kern, San Luis Obispo, Santa Barbara, and Ventura Counties called San Emigdio Mountain tule elk hunt (Appendix 9). The establishment of this zone will allow the Department to address landowner concerns and increase opportunity while providing a biologically appropriate harvest. Bull (range 0 to 15) and antlerless (0-40) tags would be available to the public during a season beginning on the second Saturday in November and continuing for 14 consecutive days.

f. Establish new tule elk hunt in portions of Monterey and San Luis Obispo Counties (Camp Roberts tule elk hunt).

Public opportunities to hunt elk in Monterey and San Luis Obispo counties are limited. Sufficient numbers of elk occur within the proposed hunt boundary to provide additional opportunity for the public to hunt elk. The proposal would add a (new) hunt in Monterey and San Luis Obispo Counties called Camp Roberts tule elk hunt (Appendix 10). Bull (range 0 to 10) and antlerless (0-20) tags would be available to the public and military during each of the three hunt periods. The season for period one shall open on the third Saturday in September and continue for 16 consecutive days. The season for period two shall open on the second Saturday in November and continue for 16 consecutive days. The season for period three shall open 16 days prior to January 2 and continue for 16 consecutive days.

3. Modify Existing Hunt Boundaries:

a. La Panza tule elk hunt boundary modification.

Existing regulations specify boundaries for the La Panza tule elk hunt. In conjunction with modifications to the Fort Hunter Liggett boundary the La Panza boundary will also be modified (Appendix 11). A portion of the area previously within the La Panza zone north of highway 198 will now be within the Fort Hunter Liggett Central Coast tule elk zone. This is in an effort to better distribute harvest within these zones, increase opportunity, and address landowner concerns. The La Panza season framework will remain as previously identified.

b. Grizzly Island tule elk hunt boundary modification.

Existing regulations specify boundaries for the Grizzly Island tule elk hunt. During the last several years elk population numbers have increased and their range has expanded beyond existing hunt boundaries. The modifications will expand the boundary to outside of the Grizzly Island Wildlife Area (Appendix 12). The proposal to expand boundaries for the Grizzly Island tule elk hunt is necessary to improve hunter opportunity and implement an appropriate harvest level.

c. Fort Hunter Liggett tule elk hunt boundary modification.

Public opportunities to hunt elk in Monterey and San Benito counties are limited to the lands within the confines of Fort Hunter Liggett Military base and a portion of the La Panza and San Luis Reservoir tule elk zones. Existing regulations specify boundaries for the Fort Hunter Liggett tule elk hunts. Tule elk populations have increased and their range has expanded beyond existing hunt boundaries. The proposal expands boundaries for the Fort Hunter Liggett tule elk hunt to encompass areas not previously part of an established hunt zone. The proposed modification expands the Fort Hunter Liggett zone to encompass portions of Monterey, San Benito, and San Luis Obispo counties and changes the zone name to the Fort Hunter Liggett Central Coast tule elk hunt (Appendix 13). In conjunction with modifications to the La Panza zone, a portion of the expanded hunt zone will encompasses the northern portion of the previously established La Panza tule elk zone north of highway 198 to the boundary of the San Luis Reservoir tule elk zone. This is in an effort to improve hunter opportunity, address expanding elk populations, and respond to landowner concerns. These modifications will result in an appropriate harvest level.

4. Modify Season Dates, Hunt Periods, and Tag Ranges:

a. Siskiyou Roosevelt elk hunt.

Public opportunity to hunt elk in Siskiyou County currently exists. The recommended changes will increase opportunity and address private property conflicts through the establishment of primitive weapon, apprentice, and additional hunt periods while maintaining an appropriate harvest level. As part of these modifications hunting periods will be divided into early season archery/muzzleloader either-sex (range 0-20); period 1 bull (range 0-40), antlerless (range 0-40), apprentice either-sex (range 0-2); period 2 bull (range 0-10) and antlerless (range 0-40); period 3 bull (range 0-5) and antlerless (range 0-20) tags would be available to the public during the hunt periods in each zone. Early season archery/muzzleloader would open on the last Wednesday in August and continue for 9 consecutive days. Period 1 would open on second Saturday in September and continue for 12 consecutive days. Period 2 would open on the last Saturday in September and continue for 12 consecutive days. Period 3 would open on the first Wednesday in November and continue for 16 consecutive days.

b. Northeastern Rocky Mountain elk hunt.

The proposal modifies the season dates for the bull and antlerless tags in the Northeastern Rocky Mountain elk hunt zone. This is an effort to distribute hunter pressure for this zone. This change will modify the hunt dates for the antlerless tag to begin separately from the bull season. Currently the Northeastern Rocky Mountain elk hunt has authorized tag ranges for antlerless (range 0-10) and archery only either-sex (range 0-20). In an effort to manage at an appropriate harvest level and provide additional opportunity the proposal would modify tag ranges for antlerless (range 0-20), add archery only bull (range 0-10), and archery only antlerless (range 0-10) tags The bull season shall open on September 19 and continue for 12 consecutive days. The antlerless season shall open on the second Saturday in November and continue for 12 consecutive days.

c. Cache Creek tule elk hunt.

Currently the Cache Creek tule elk hunt has authorized tag ranges for bull (range 0-4) and antlerless (range 0-4) tags. In an effort to manage at an appropriate harvest level and allow additional future opportunity to hunters the proposal would modify tag ranges for bull (range 0-10) and antlerless (range 0-10) tags.

d. La Panza Tule Elk Hunt.

Currently the La Panza elk tule elk hunt has authorized tag ranges for bull (range 0-12 Periods 1 and 2) and antlerless (range 0-10 Period 1 and range 0-12 Period 2) tags. In an effort to manage at an appropriate harvest level, allow additional future opportunity to hunters, and address landowner concerns, the proposal would modify tag ranges for bull (range 0-20 Period 1 and 2) and antlerless (range 0-30 Period 1 and 2) tags.

e. Grizzly Island Tule Elk Hunt.

The Grizzly Island tule elk population has substantially increased over the last several years. The proposal modifies the seasonal framework, adds additional hunt periods, and modifies tag ranges. This is in an effort to safely distribute hunting pressure while maintaining an appropriate level of harvest. Currently there are five hunt periods consisting of four days each, bull (range 0-3 during periods 1-3 and range 0-2 during periods 4-5), antlerless (range 0-12 during all periods), and spike (0-6 during all periods). The proposal modifies tag ranges for bull (range 0-3), antlerless (range 0-12), and spike (range 0-10) for each of the proposed 13 periods.

f. Fort Hunter Liggett Central Coast tule elk hunt.

As part of the overall modifications to the Fort Hunter Liggett tule elk hunt zone. This proposal modifies season dates for the Fort Hunter Liggett tule elk hunts, adjusts tag quotas, and identifies the name change to Fort Hunter Liggett Central Coast tule elk hunt. Due to military use constraints, hunt dates on the base are subject to change from year to year. This is part of an effort to increase hunter opportunity and success while achieving an appropriate harvest level. The following season dates apply to both civilian and military tags (military tags are only valid on Fort Hunter Liggett military base). The archery only either-sex hunt shall open on the last Wednesday in July and continue for 9 consecutive days (range 0-6). The archery antlerless hunt shall open on the last Wednesday in September and continue for 9 consecutive days (range 0-10). Period 1 bull (range 0-14) and antlerless (range 0-16) shall open on the first Thursday in November and continue for 9 consecutive days. Period 2 bull (range 0-14) and antlerless (range 0-16) shall open November 22 and continue for 9 consecutive days. Period 3 bull (range 0-14), antlerless (range 0-14), apprentice bull (range 0-2) and apprentice antlerless (range 0-8) hunt shall open on the third Saturday in December and continue for 16 consecutive days. The muzzleloader bull (range 0-10) and antlerless (range 0-6) shall open on the second Saturday in October and continue for 12 consecutive days. Early season military only hunt bull (range 0-2) and antlerless (range 0-2) shall open on August 22 and continue for 5 consecutive days.

g. San Luis Reservoir tule elk hunt.

Tule elk numbers have significantly increased within the San Luis Reservoir zone. The proposal modifies the season dates for the San Luis Reservoir tule elk hunt zone, establishes three separate hunt periods, and modifies tag ranges. This is an effort to distribute hunter pressure over time, reduce potential crowding in popular hunt areas, provide additional opportunities for hunters, and achieve an appropriate harvest level. Currently San Luis Reservoir elk hunt has authorized tag ranges for bull (range 0-10), antlerless (range 0-10), and either-sex (range 0-10). The proposal would establish three separate hunt periods, bull (range 0-10), antlerless (range 0-20), and either-sex (range 0-10) tags for each period. The season for period 1 shall begin on the first Saturday in October and continue for 23 consecutive days. The season for period 2 shall begin on the second Saturday in November and continue for 12 consecutive days. The season for period 3 shall begin on the third Saturday in December and continue for

12 consecutive days.

h. Bear Valley tule elk hunt.

Currently the Bear Valley tule elk hunt has authorized tag ranges for bull (range 0-4) and antlerless (range 0-2) tags. In an effort to manage at an appropriate harvest level, address landowner concerns, and allow additional future opportunity to hunters the proposal would modify tag ranges for bull (range 0-10) and antlerless (range 0-10) tags.

i. Lake Pillsbury tule elk hunt.

Tule elk numbers have increased within the Lake Pillsbury zone. The proposal modifies the season dates for the Lake Pillsbury tule elk hunt zone, establishes three separate hunt periods, and modifies tag ranges. This is an effort to distribute hunter pressure over time, reduce potential crowding in popular hunt areas, provide additional opportunities for hunters, and achieve an appropriate harvest level. Currently Lake Pillsbury elk hunt has authorized tag ranges for bull (range 0-4) and antlerless (range 0-4). The proposal would establish three separate hunt periods, bull (range 0-10) and antlerless (range 0-10) tags for each period. Period 1 shall open on the Monday following the fourth Saturday in September and continue for 10 consecutive days. The season for period 2 shall open on the second Wednesday in October and continue for 10 consecutive days. The season for period 3 shall open on the fourth Wednesday in October and continue for 10 consecutive days.

j. Santa Clara tule elk hunt.

Currently the Santa Clara tule elk hunt has authorized tag ranges for bull (range 0-4). In an effort to manage at an appropriate harvest level and allow additional future opportunity to hunters when appropriate the proposal would establish tag ranges for antlerless (range 0-20) tags and modify the bull tag range to 0-15.

k. Alameda tule elk hunt.

Currently the Alameda tule elk hunt has authorized tag ranges for bull (range 0-4). In an effort to manage at an appropriate harvest level and allow additional future opportunity to hunters when appropriate the proposal would establish tag ranges for antlerless (range 0-10) tags.

l. Cache Creek apprentice tule elk hunt.

Currently the Cache Creek apprentice tule elk hunt has authorized tag ranges for bull (range 0-4) tags. In an effort to manage at an appropriate harvest level and allow additional future opportunity to hunters the proposal would establish tag ranges for antlerless (range 0-2) tags.

m. Grizzly Island apprentice tule elk hunt.

Currently the Grizzly Island apprentice hunts have authorized tag ranges for period 1 antlerless (range 0-4), spike (range 0-4) and period 2 spike (range 0-4). In an effort to manage at an appropriate harvest level and allow additional future opportunity to hunters the proposal would establish tag ranges for period 2 antlerless (range 0-4) tags, period 3 and 4 antlerless and spike (range 0-4) tags in addition to the established tag ranges for period 1.

n. Owens Valley multiple zone tule elk archery only hunt.

Currently tag holders can hunt in the Bishop, Independence, Lone Pine, Tinemaha Mountain, and Whitney zones. As part of the zone splitting of the Independence zone and to more effectively distribute hunting pressure the proposal would make the tag valid in the Bishop, Independence, and Lone Pine zones.

o. Multi-zone Fund Raising License Tag.

Current season dates for each of the zones this tag is valid in (Siskiyou, Marble Mountain, Northwestern, Northeastern, and La Panza) begin prior to the earliest season opening date within each zone. In conjunction with modifications (zone splitting) and the season frame work (additional hunt periods) within these zones and for consistency of seasonal framework the proposal establishes a single season for this tag which shall be valid across the zones. The season for all zones (Del Norte, Humboldt, Marble Mountain North, Marble Mountain South, Northeastern, and La Panza) shall open on the second Saturday in August and continue for 90 consecutive days.

The Department is recommending that the Commission adopt regulations that will provide for limited public hunting of Roosevelt, Rocky Mountain, and tule elk in 31 zones. The department is recommending tag allocations within the ranges listed in Appendix 2 for each hunt area with the following seasons: Archery only, muzzleloader only, general, apprentice, archery/muzzleloader only, military, SHARE, and fund raising hunts. Based on historic quotas from the past 5 years, the department expects that the tag quota for 2016 will fall near or below the median of the listed ranges. Additional hunt periods have been added to several hunts to provide the framework for yearly tag adjustments in response to elk movements and distribution. It is anticipated that tag issuance within hunt periods will fall below the median for most periods.

Three of the bull elk license tags shall be made available for fund-raising purposes, as authorized pursuant to subsection 332(d), Fish and Game Code. These tags will be sold pursuant to a regulation adopted by the Commission. In addition, up to 55 Cooperative Elk Hunting tags would be available (directly correlated with the number of general elk tags issued for each hunt). Hunting under authority of the PLM Program would continue and not more than 115 antlerless and 140 bull tags would be recommended under the PLM Program.

One element of the proposed project provides archery only elk hunt periods at specified locations. The proposed project provides archery only tags each for Fort Hunter Liggett Central Coast tule elk hunt, Northeastern California Rocky Mountain elk hunt, and tule elk hunts within the Owens Valley. Hunt periods exclusively for archers are designated at each location.

Another element of the proposed project provides muzzleloader only elk hunt periods at specified locations. The proposed project provides muzzleloader only tags for Fort Hunter Liggett Central Coast, and hunts within the Owens Valley tule elk hunts.

An additional element of the proposed project provides archery/muzzleloader only hunt periods at a specified location. The proposed project provides combination archery and muzzleloader only tags for the Marble Mountain (North and South) and the Siskiyou Roosevelt elk hunts.

BACKGROUND AND EXISTING CONDITIONS

THE MANAGEMENT OF ELK IN CALIFORNIA

There are three subspecies of elk in California: Roosevelt, Rocky Mountain, and tule elk. Roosevelt elk occupied the Cascade and Coast mountain ranges as far south as San Francisco (Harper et al. 1967), and eastward at least to Mount Shasta (Murie 1951). Tule elk were distributed throughout the Central, Sacramento and San Joaquin valleys and the grasslands and woodlands of central California's Coast Range (McCullough 1969). Although there appears to be disagreement regarding their subspecific status, both Murie (1951) and McCullough (1969) included portions of Shasta, Siskiyou and Modoc counties in northeastern California within the historical range of Rocky Mountain elk. Further clarification of the historical and current subspecific status of elk in northeastern California is unlikely because of the translocation of Rocky Mountain elk to the Pit River area in the early 1900s. However, predictions of genetic flow across the landscape supported by the journal entries of early American explorers suggest that elk have been endemic to northeastern California for thousands of years. Locations where historical specimens of Rocky Mountain elk have been recovered have helped scientists map the probable routes taken by these highly mobile ungulates as they populated North America (McCullough 1969).

Because of their large body size and the availability of smaller prey, it is unlikely that Native Americans had a significant impact on elk populations in California. Early explorers also had little direct impact on elk populations. Apparently they preferred domestic livestock to elk (McCullough 1969). However, these early explorers were responsible for the introduction of exotic annual grasses and domestic livestock, both of which had long-term, deleterious impacts on California's elk populations. Livestock competed directly with elk for forage and contributed to the conversion of the native perennial grasslands to annual grasslands, which resulted in the loss of important

forage plants used by elk during the summer and fall months.

Historical Perspective of Roosevelt Elk Management

Although once widely distributed throughout northern California, by the late 1800s, Roosevelt elk were extirpated throughout much of their historic California range. Barnes (1925a, 1925b) reported that by 1925, Roosevelt elk range in California was reduced to one small area in Humboldt and Del Norte counties. Mining, logging, agriculture, and market shooting were factors that contributed to the decimation of Roosevelt elk in much of California. Because of their large body size and herding behavior, elk were vulnerable to market shooting. Harper et al. (1967) discussed the historical distribution of Roosevelt elk in California and reported that by 1967 the population was increasing in size and in no danger of extinction.

Based on the current distribution of Roosevelt elk in California (Appendix 14), population growth and range expansion has continued since 1967. Public ownership (USFS and BLM) of large tracts of Roosevelt elk habitat and the associated Congressional mandates and directions to provide for and maintain wildlife habitats have resulted in significant Roosevelt elk population increases during the 20th century. Roosevelt elk herds in California are now healthy and viable. Populations of Roosevelt elk currently exist in the coastal areas of Mendocino, Humboldt, and Del Norte counties, in addition to the Cascade and Klamath mountain ranges in Siskiyou and Trinity counties. Some of these populations were established when the Department (in cooperation with other State and Federal agencies) relocated elk to suitable historic range. Other populations were established when elk moved into California from Oregon. Additionally, new populations have become established through the dispersal of elk from existing populations to adjacent suitable areas. The Department currently estimates the statewide Roosevelt elk population at between 5,000-6,000 individuals. This estimate is based on field observations and professional judgment and experience obtained in studying elk throughout California, the Department has determined that this estimate of total population size is reasonable.

Tule elk generally exist in open habitat types and can be captured in large numbers (40 or more at a time) by herding them into large corral type traps with the aid of a helicopter. On the other hand, Roosevelt elk use forested habitat types, where they are often impossible to see from a helicopter because of the dense forest canopy. For this reason, helicopter-assisted capturing of Roosevelt elk is generally not effective in California. Nevertheless, successful Roosevelt elk translocations have occurred when large groups have been captured in Redwood National Park or on winter range in Oregon. Since 1985, the Department has translocated more than 280 Roosevelt elk to reestablish populations in portions of southern Humboldt, Mendocino, Siskiyou, and Trinity counties.

Historical Perspective of Rocky Mountain Elk Management

There are currently three populations of Rocky Mountain elk in the State (Appendix 14), totaling approximately 1,500-2,000 animals. This estimate was developed using procedures similar to those used to estimate Roosevelt elk numbers.

One population of elk has become established in the Warner Mountains in Modoc County. This population was established by natural immigration of elk from southeastern Oregon and/or northern California. Two populations of Rocky Mountain elk exist in the southern part of the State. One population in southwestern Monterey and northwestern San Luis Obispo counties occurs on the Los Padres National Forest and the surrounding private lands. Another Rocky Mountain elk population exists in southern Kern County. Based on periodic ground and aerial surveys conducted by the Department, there are approximately 300-500 elk in these two southern populations, which were established through translocation efforts. The population of Rocky Mountain elk proposed for regulated public hunting is scattered throughout portions of Lassen, Modoc, Shasta and Siskiyou counties. A portion of this population was established in 1913 by the Redding Elks Club. Fifty elk were loaded on boxcars in Gardiner, Montana (near Yellowstone National Park), and released at the Bully Hill Mine in Shasta County. During subsequent years, animals dispersed from the release site (and from other locations in southeastern Oregon) to scattered locations throughout northeastern California.

Historical Perspective of Tule Elk Management

Although smaller than Roosevelt elk, the tule elk is one of the largest land mammals endemic to California. Tule elk likely evolved from Rocky Mountain elk in California during the Pleistocene (McCullough 1969). Tule elk made a lasting impression on the first Europeans to arrive in California. Accounts in journals and diaries of these early explorers indicate that approximately 500,000 tule elk inhabited much of the oak-woodland and oak-grassland habitat types in the State (McCullough 1969). Appendix 15 depicts historic tule elk range.

The discovery of gold at Sutter's Mill in 1848 brought about the greatest impact on the tule elk population, both in terms of immediate reduction of total elk numbers and permanent loss of habitat. The large influx of people into California during the gold rush era resulted in tremendous pressures placed on the State's wildlife resources. People needed clothing and food, which could be obtained from elk. Market hunters soon eliminated tule elk from large accessible areas of their range. The elk's large size, coupled with their social behavior (herding), increased their vulnerability to market shooting (McCullough 1969). However, more important than market hunting, competition with livestock, or the conversion of perennial grasslands to annual grasslands, was the conversion of large amounts of tule elk habitat to agricultural land uses. By the late 1860s, tule elk were extirpated from all but one small locale in the southern San Joaquin Valley (McCullough 1969).

In 1874, while draining a marsh on the Miller-Lux Cattle Ranch in what is now Kern

County, workers observed a small group of tule elk. Henry Miller, an extremely wealthy and powerful landowner, ordered complete protection of tule elk on his land. This was to be the first in a series of cases where, under complete protection, tule elk numbers and distribution expanded, resulting in considerable damage to private property (Fowler 1985).

By the turn of the century, the elk on the Miller-Lux Ranch were causing extensive damage to fences, crops, and irrigated pasture. Miller requested the elk be relocated in an effort to reduce his damages. Over the next few years, the U.S. Biological Survey attempted to relocate tule elk via the "rodeo technique" (ropes and horseback). This technique did not provide positive results. In fact, the majority of the elk were killed during capture attempts or during transport to the release sites. A single relocation was considered partially successful when 21 elk were relocated to the Sequoia National Park. However, they died out by 1926 (McCullough 1969).

McCullough (1969) stated that by 1914 tule elk were causing $5,000-$10,000 damage per year on the Miller-Lux Ranch. At this time, the California Academy of Science took over the tule elk relocation effort. The Academy was much more successful in capturing tule elk because they baited elk into a corral trap instead of attempting to capture them from horseback. During the period from 1914 to 1934, the Academy relocated 235 tule elk to 22 different locations, including Cache Creek and the Owens Valley. As was the case with the earlier relocation attempts by the U.S. Biological Survey, the majority of the relocation projects were unsuccessful.

Tule elk at Cache Creek were allowed to expand their range and, until the summer of 1986, did not cause significant damage to private property. At the Tupman Tule Elk Reserve, elk were confined to a 953-acre enclosure, no mechanisms for population control were used, and the herd expanded to a point where the habitat was essentially destroyed and artificial feeding was necessary. This situation was greatly improved as a result of reducing the population by moving tule elk to other sites. In addition, the California Department of Parks and Recreation has undertaken numerous habitat improvement projects. In an effort to reduce damage to the improved habitat, the Department of Fish and Wildlife has held the herd size at 30-35 individuals by periodically relocating surplus elk.

In the Owens Valley, the Miller-Lux story repeated itself. Under total protection, elk numbers in the Valley increased rapidly, and local farmers and ranchers soon were experiencing serious depredation problems, including damage to fences, irrigation equipment, and alfalfa. In 1943, the Department attempted to provide depredation relief by recommending public hunting of tule elk in the Valley. From 1943 through 1969, the Commission approved a total of seven elk hunts. These hunts were not well received by farmers, who wanted all the elk removed, or animal preservationists, who objected to the rather drastic herd reductions.

By 1960, concern by tule elk preservationists resulted in the formation of the Committee

for the Preservation of Tule Elk. The Committee and other interested groups opposed hunting of tule elk. After the adoption of the 1969 tule elk hunt by the Commission, the Committee for the Preservation of Tule Elk sought legislation to prohibit hunting of tule elk. In 1971, specific legislation (commonly referred to as the Behr Bill) was enacted into law. This law restricted the Commission's authority to authorize the take of tule elk until their statewide numbers exceeded 2,000 or until the Legislature determined that there were insufficient areas available to accommodate such a number in a healthy state. It also required the Department to relocate elk to suitable areas and to report to the Legislature every two years on the status of the State's tule elk herds. Additionally, the legislation stated the Owens Valley elk population should not exceed 490 individuals.

Tule Elk Management (1971 through Present)

In 1971, Section 332, Fish and Game Code, was amended to prohibit the Commission from authorizing the take of tule elk until the statewide population estimate exceeded 2,000 animals (Koch 1989). At that time, approximately 500 tule elk inhabited California. In 1971, upon amendment of Section 332, and addition of Section 3951, Fish and Game Code, the Department was required to identify suitable relocation sites for a species which was known to wander great distances (over and through fences) and for its potential to damage agricultural crops. There were very few individuals or government agencies with suitable tule elk habitat which offered their lands for tule elk relocation.

In 1976, the United States Congress passed Public Law (PL) 94-389, which concurred with the amended California law in recognizing that the establishment of tule elk populations totaling 2,000 animals was an appropriate national goal and in setting the ceiling of 490 tule elk for the Owens Valley. More important, however, PL 94-389 required the secretaries of Defense, Agriculture, and the Interior to cooperate with the State in making suitable Federal lands reasonably available for tule elk. Additionally, in 1977, the Secretary of the Interior recommended to Congress that an Interagency Task Force be established to carry out the provisions of Federal and State legislation. At the direction of Congress, the Tule Elk Interagency Task Force was established in 1977.

The Management Plan for the Conservation of Tule Elk was completed by the Task Force in 1977 and revised in 1985. In the plan, the Task Force provided specific criteria to be met for an area to be considered a suitable tule elk release site. These criteria are based on sound biological principles, and take into account land-use practices and the laws and regulations of the State (Appendix 16).

Since its preparation, the Management Plan for the Conservation of Tule Elk has served as the foundation for the Department's tule elk management activities. Total protection after 1971, coupled with an aggressive reintroduction program in which over 1,170 tule elk have been moved to new areas of the State, resulted in a dramatic increase in the statewide tule elk population.

However, as in the past, this increase in elk numbers and occupied range has resulted in a situation where at least 12 of the State's tule elk herds have caused or are continuing to cause damage to private property. In response to the increasing level of tule elk damage to property occurring in the State, Assemblyman Hauser introduced legislation (AB 998) in 1987 which amended sections 332 and 3951, Fish and Game Code. Assembly Bill 998 was approved by the Legislature and signed by the Governor on September 27, 1987. As amended, Section 332 of the Fish and Game Code allows the Commission to authorize tule elk hunting if the average of the Department's statewide tule elk population estimate exceeds 2,000 animals. Section 3951 specified that the maximum number of tule elk in the Owens Valley should not exceed 490 individuals, and directed the Department to relocate tule elk to suitable areas within the State and report to the Legislature every two years on their status in California (the last report to the Legislature was submitted in October, 2000 and legislation in 2001 eliminated the reporting requirement). The statute also requires that, where economic or environmental damage occurs, emphasis shall be placed on managing each tule elk herd at biologically sound levels through the use of relocation, hunting, or other appropriate means determined by the Department.

Section 3951, Fish and Game Code, also requires the Department to prepare management plans for "high priority areas, including, but not limited to Potter Valley and Mendocino County..." The Legislature only defined Potter Valley and Mendocino County as high-priority areas and left the responsibility of determining other high-priority areas to the Department. In addition to Potter Valley and Mendocino County, the Department identified Grizzly Island, La Panza, Cache Creek, Lone Pine, Tinemaha, and Bishop as other high-priority areas. Management plans for these and eight other areas have been completed and approved by the Department.

In 1987, the statewide tule elk population exceeded 2,000 animals and the Commission established regulations under which a limited number of tule elk would be hunted in 1988 (Fish and Game Commission, Statement of Purpose for Regulatory Action, January 11, 1988). However, in September 1988, a citizens group obtained a court order preventing implementation of the regulations, based primarily on a finding that the Commission's decision did not comply with CEQA. In 1989, the Department prepared an environmental document regarding tule elk hunting, which was circulated for review as provided for by CEQA. The Commission certified the environmental document and adopted regulations providing for the take of up to 95 tule elk from specific areas in the State (the Bishop and Lone Pine subherds and a portion of the herd at Cache Creek). Eighty-four elk were taken by hunters during the 1989 tule elk hunting season.

Since 1989 the Department has prepared the appropriate environmental documentation to continue to provide for public hunting of tule elk from specific populations. In 1990, Assemblyman Hauser introduced legislation which was passed by the Legislature and signed by the Governor (AB 2848), amending Section 332, Fish and Game Code, to allow the Commission to authorize issuance of up to three elk tags for fund-raising

purposes. All revenue generated by the "fund-raising" tags is to be used for elk management in California. Since 1990, the Commission has authorized public tule elk hunting at additional locations, including Alameda County, Glenn County, Grizzly Island, Fort Hunter Liggett, Fresno County, Kern County, Kings County, Lake County, Mendocino County, Merced County, Inyo County, Santa Clara County, and Stanislaus County.

The dramatic increase in numbers and distribution has provided a substantial increase in opportunities for viewing, photographing, and natural history study of tule elk. Currently (October 2016), there are at least 5,100 tule elk in 22 separate herds throughout California (Appendix 14). Four herds (San Luis, Tupman, Point Reyes, and Grizzly Island) have formal interpretive programs where the public has the opportunity to view, photograph, and observe the natural history of tule elk with assistance provided by experienced State, Federal, or volunteer staff. A tule elk viewpoint along a major highway has been established for the Tinemaha subherd. There the public can view, photograph, and study the behavior of tule elk. Interpretive signs can also be found for the Cache Creek tule elk herd.

Additionally, major land acquisitions by the Department, The Nature Conservancy, and BLM in the La Panza Tule Elk Management Unit in San Luis Obispo County and in the Cache Creek Tule Elk Management Unit (Colusa, Lake, and Yolo counties) provide increased access to areas used by elk. The management plan for the La Panza Tule Elk Management Unit contains a specific element for developing formal interpretive programs. In addition to the herds which have established interpretive programs, approximately one-half of the State's tule elk exist on public lands where the public has opportunities to observe and photograph tule elk.

Existing conditions regarding elk hunting

Regulated public hunting for Roosevelt elk has occurred annually in California since 1986, whereas annual hunting for Rocky Mountain began in 1987. Public tule elk hunting has been authorized by the Commission annually since 1989. Although additional public hunts for Roosevelt, Rocky Mountain and tule elk have been established subsequent to 1986, annual elk hunting has been part of the existing conditions in California for the last 29 years. Appendix 17 lists the verbatim for the current condition of elk hunting in California.

PLM Hunts

The PLM Program was authorized by the Legislature to protect and improve wildlife habitat by encouraging private landowners to manage their property to benefit fish and wildlife. Economic incentives are provided to landowners through biologically sound yet flexible seasons for game species, resulting in high-quality hunting opportunities which may be marketed by the landowner in the form of fee hunting and other forms of recreation. Section 601, Title 14, CCR, contains regulations adopted by the

Commission pertaining to the program, and sections 3400-3409, Fish and Game Code, contain the subject statutes.

Landowners have the right to charge access fees for hunting, fishing, and other recreation on their property. The Department carefully reviews each plan to ensure that required habitat improvement efforts benefit many species of wildlife and that harvest strategies comply with accepted goals and objectives for management of the game species involved. The PLM Program further allows the Commission to authorize hunting and fishing seasons and bag limits specific to licensed PLM areas pursuant to approved management plans.

The PLM Program currently is an element of the Department's elk management program. During 2015, five landowners offered opportunities to hunt Rocky Mountain elk, 35 landowners offered opportunities to hunt tule elk, and ten landowners offered opportunities to hunt Roosevelt elk through the PLM Program. It is anticipated that up to three additional landowners will enroll in the program and hunt Roosevelt elk in 2016 and potentially two will enroll and hunt tule elk in 2016.

During 2015 PLM hunts for elk will occur at the following ranches: Alexander Ranch, Alexander Dairy, Amann Ranch, Avenales Ranch, Bardin Ranch, Big Lagoon, Black Ranch, Camp 5 Outfitters (Morisoli), Capistran Ranch, Carnaza Wildlife Management Area, Carrizo Ranch, Chimney Rock Ranch, Clark and White Ranch, Connolly Ranch, Cottrell Ranch, D-Rafter L Ranch, DeFrancesco and Eaton, Eden Valley Ranch, Fulton Ranch, Gabilan Ranch, Hartnell Ranch, Hearst Ranch, Hunter Ranch, Indian Valley Cattle Co., Isabel Valley Ranch, JS Ranch, Klamath, Lewis Ranch, Lone Ranch, Miller-Eriksen Ranch, PBM Farms, Potter Valley Wildlife Management Area, Rancho La Cuesta, Redwood House Ranch, Rooster Comb Ranch, Roseburg Resources Pondosa, R-R Ranch, Shamrock Ranch, Slick Rack Ranch, Smith River, Spring Valley Ranch, Stover Ranch, Summer Camp Ranch, Sweetwater Ranch, Tejon Ranch, Temblor Wildlife Management Area, Trinchero Ranch, Wiggins Ranch, and the Work Ranch. During 2016, the Department does not expect major changes to the PLM participants identified in Appendix 18.

<u>Cooperative Elk Hunting Area hunts (Section 555, Title 14, CCR).</u>

The existing regulations also provided for up to 40 tags through the Cooperative Elk Hunting Program during 2015 (Section 555, Title 14, CCR), however only 30 tags were issued.

To encourage protection and enhancement of elk habitat and provide eligible landowners an opportunity for limited elk hunting on their lands, the department may establish cooperative elk hunting areas and issue license tags to allow the take of elk as specified in Section 364, and subject to the following conditions:

(a) Definition and Scope. A cooperative elk hunting area is an area of private land located within the boundary of an area open to public elk hunting (as identified in Section 364). Minimum size of a cooperative elk hunting area shall be 5,000 acres, except that contiguous parcels of at least 640 acres in size may be combined to comprise a cooperative elk hunting area. Within an area open to public elk hunting, the number of cooperative elk hunting license tags issued shall not exceed 20 percent of the number of public license tags for the corresponding public hunt and shall be of the same designation (i.e., antlerless, spike bull, bull or either-sex) as the public license tags.

(b) Application Process. Application forms are available from the department's headquarters and regional offices. A person (as defined by Fish and Game Code Section 67) owning at least 640 acres within a cooperative elk hunting area shall be eligible to apply for a cooperative elk hunting area permit. Applicants shall designate one individual eligible to receive one elk license tag by the date indicated under subsection (3) below. Such individuals shall be at least 12 years of age and possess a valid California hunting license. A person may annually submit a cooperative elk hunting area application where they own sufficient habitat as described in subsection (a) above, for each public hunt area in which their property occurs.

(1) Applications shall be submitted to the department's regional office nearest the proposed cooperative elk hunting area. Department of Fish and Game regional offices are located as follows:
Northern California and North Coast Region, 601 Locust Street, Redding 96001 (530) 225-2300
Sacramento Valley and Central Sierra Region, 1701 Nimbus Road, Rancho Cordova 95670 (916) 358-2900
Central Coast Region, 7329 Silverado Trail, Box 47, Yountville 94599 (707) 944-5500
San Joaquin Valley and Southern Sierra Region, 1234 East Shaw Avenue, Fresno 93710 (559) 243-4005
South Coast Region, 4949 View Crest Avenue, San Diego 92123 (858) 467-4201
Eastern Sierra and Inland Deserts Region, 4775 Bird Farm Road, Chino Hills 91709 (909) 597-9823

(2) Completed applications must be received by the first business day following July 1. Only those applications that are filled out completely will be accepted. The Department will evaluate applications to determine if the specified parcels are of sufficient size within the boundary of a public elk hunt area, and contain important elk habitat. Rejected applications and those that are incomplete will be returned within 15 days of receipt by the department. If the number of accepted applications exceeds the license tags available, the department will determine successful applicants and a list of alternates by conducting a random drawing from the pool of qualified applicants as soon as possible after the application deadline. For any license year that the demand for cooperative elk hunting license tags within an area open to public hunting (as identified in Section 364) exceeds the number of tags available, tags will be first issued to applicants that did not

receive a tag the previous year. If the quota is not filled, tags will be issued to the remaining applicants by random drawing.

(3) Successful applicants will be notified by the department as soon as possible after the application deadline. Applicants shall submit the name, address, and valid California hunting license number of designated elk license tag recipients and payment of elk license tag fees by check, money order, or credit card authorization in the amount specified by subsection 702(b)(1)(L)(M), to the department's regional office nearest the proposed cooperative elk hunting area, by the first business day following August 1.

(c) An elk license tag issued pursuant to the provisions of this section is valid only during the general elk season in which the cooperative elk hunting area occurs and shall only be used on land specified in the landowner's application. License tags are not transferable.

(d) All provisions of the Fish and Game Code and Title 14, CCR, relating to the take of birds and mammals shall be conditions of all license tags issued pursuant to this section.

(e) Any permit issued pursuant to Section 555 may be canceled or suspended at any time by the commission for cause after notice and opportunity to be heard, or without a hearing upon conviction of a violation of this regulation by a court of competent jurisdiction.

Note: Authority cited: Section 1575, Fish and Game Code.
Reference: Sections 67 and 1575 Fish and Game Code.

POLICY CONSIDERATIONS

The Legislature formulates laws and policies regulating the management of fish and wildlife in California. The general wildlife conservation policy of the State is to encourage the conservation and maintenance of wildlife resources under the jurisdiction and influence of the State (Section 1801, Fish and Game Code). The policy includes several objectives, as follows:

1. To provide for the beneficial use and enjoyment of wildlife by all citizens of the State;
2. To perpetuate all species of wildlife for their intrinsic and ecological values, as well as for their direct benefits to man;
3. To provide for aesthetic, educational, and non-appropriative uses of the various wildlife species;
4. To maintain diversified recreational uses of wildlife, including hunting, as proper uses of certain designated species of wildlife, subject to regulations consistent with the maintenance of healthy, viable wildlife resources, the public safety, and a quality outdoor experience;

5. To provide for economic contributions to the citizens of the State through the recognition that wildlife is a renewable resource of the land by which economic return can accrue to the citizens of the State, individually and collectively, through regulated management. Such management shall be consistent with the maintenance of healthy and thriving wildlife resources and the public ownership status of the wildlife resource;
6. To alleviate economic losses or public health and safety problems caused by wildlife; and
7. To maintain sufficient populations of all species of wildlife and the habitat necessary to achieve the above-stated objectives.

With respect to tule elk, the Legislature has established the State's policy regarding management in sections 332, 3951 and 3952, Fish and Game Code. Section 332 provides that the Commission may determine and fix the area or areas, the season and hours, the bag and possession limit, procedures for making elk hunting tags available (including fund-raising tags), and the number of elk that may be taken under the rules and regulations of the Commission. This law also provides that the Commission may authorize the take of tule elk if the average of the Department's statewide tule elk population estimate exceeds 2,000 animals or the Legislature determines, pursuant to reports provided by the Department, that suitable areas cannot be found in California to accommodate such a number in a healthy condition. In addition to providing the Commission with the authority to authorize the take of tule elk pursuant to Section 332, Section 3951 requires that when relocating tule elk to suitable areas the Department shall cooperate to the maximum extent possible with Federal and local agencies, as well as private landowners. Sections 3951 and 3952 require that, when economic or environmental damage occurs, the Department shall manage tule elk herds at sound biological levels through the use of relocation, hunting, or other appropriate means, as determined by the Department. Section 3951 establishes a maximum tule elk population level of 490 animals in the Owens Valley.

The Department has concluded that the proposed project will not have a significant adverse effect on the environment. No mitigation measures or alternatives to the proposed project are needed.

GLOBAL CLIMATE CHANGE

Climate changes caused by increasing atmospheric concentrations of greenhouse gases are expected to result in marked changes in climate throughout the world (deVos, J.C. and T. McKinney, 2007). Although many wildlife habitats in North America have become progressively warmer and drier in the last 12,000 years, the greatest rate of change has occurred during the last 150 years (Fredrickson et al. 1998). Predicted changes due to continued warming include increased frequency and severity of wildfires, increased frequency of extreme weather events, regional variation in precipitation, northward and upward shifts in vegetative communities, and replacements

of biotic communities. These changes are expected to affect abundance, distribution, and structure of animal and vegetative communities.

Local and specific regional changes in climate and associated changes in vegetative communities will be the determining factors regarding the distribution and abundance of elk in California. Although research specific to elk responses to climate change is limited, what information does exist indicates that both adverse and beneficial effects - depending on a variety of local/regional factors such as latitude, elevation, topography, and aspect – can be expected to result. For example, in the Rocky Mountain National Park where snow accumulation currently limits elk winter range, computer simulations suggest a reduction in future snow accumulations of up to 25-40%. An expansion of winter range would serve to increase over-winter survival and recruitment of juveniles into the adult population, leading to an increase of the overall elk population in that area (Hobbs et al. 2006). Conversely, research in Banff National Park, Canada indicates climate change will result in colder winter temperatures, increased snowfall, and a higher frequency of winter storms (Hebblewhite, 2005). These factors would result in a decrease in over-winter survival and recruitment, leading to an overall reduction of the elk population for that area.

Elk hunting in California is regulated by the State Fish and Game Commission. Hunting seasons and tag quotas are proposed to the Commission for adoption on an annual basis. These seasons and quotas are based on annual population and harvest data, annual population model results, and area-specific population/harvest objectives. Although the impact of climate change on California's elk population is difficult to predict and warrants continued study, the Department and the Commission have the ability to quickly respond to population fluctuations (positive or negative) by increasing or decreasing hunter opportunity in accordance with current and future management objectives for this species. However, reducing one mortality factor (sport hunting) will not alone mitigate for impacts associated with global climate change; the ability to manage and provide adequate amounts of required habitats is the ultimate deciding factor in wildlife populations.

POTENTIAL FOR SIGNIFICANT EFFECTS

The potential for significant effects include impacts on the gene pool, impacts on social structure, effects on habitat, effects on recreational opportunities, effects on other wildlife species, effects on economics, effects on public safety, growth inducing impacts, short-term uses and long term productivity, significant irreversible environmental changes, welfare to the individual animal, and cumulative impacts.

The proposed project allows limited public, PLM, and Cooperative hunting of Roosevelt elk in six areas including all or portions of Del Norte, Humboldt, Mendocino, Tehama, Trinity, and Siskiyou counties. In addition, Rocky Mountain elk in portions of Lassen, Modoc, Monterey, Shasta, San Luis Obispo, and Siskiyou counties, and tule elk in portions of Alameda, Colusa, Fresno, Glenn, Kern, Kings, Lake, Mendocino, Monterey,

San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Solano, Sonoma, and Ventura counties. The project is designed to avoid adverse environmental impacts and will result in removing not more than 625 Roosevelt elk, 108 Rocky Mountain elk, and 621 tule elk as a result of hunting programs on an annual basis (including PLM, SHARE, and Cooperative Elk Hunting). The number of tags issued to result in at or below the analyzed harvest is based on previous years average hunter success for the corresponding zone and tag type. Of these tags not more than 255 tags will be issued to hunt at specific locations in California under the PLM Program. In summary, the proposed project will involve elk hunting (public, PLM, SHARE, and Cooperative elk tags) for six of the State's Roosevelt elk areas, three Rocky Mountain elk areas, and 16 tule elk areas.

Elk hunting will result in the death of individual animals. The removal of individual animals from selected herds which are relatively large and healthy will not significantly reduce herd size on a long-term basis. Production and survival of young animals within each herd will replace the animals removed by hunting (Fowler 1985, Racine et al. 1988). Since public elk hunting will affect no more than 25 of the State's elk areas under the proposed project and all alternatives considered, removal of individuals will have little influence on the statewide elk population. The herds where hunting is proposed are geographically separated and widely distributed. The proposed project will result in maintaining the statewide tule elk population well above the legislative limit of 2,000 elk. Therefore, the proposed action of removing no more than approximately 1,099 elk by public hunting (general, SHARE, and Cooperative hunts) and 255 elk through the PLM Program will not have a significant adverse impact on either local or statewide elk populations. The Department does not anticipate issuing up to the maximum number of tags in most areas but has analyzed that potential impact under the proposed project.

Appendix 19 describes the modifications from the 2015 elk hunting regulations the Department is proposing to incorporate in the 2016 elk hunting regulations. Appendix 20 describes the impacts these modifications will have on the twelve (12) factors examined in each of the prior nineteen (19) environmental documents (1988 through 2010 – Department files) certified by the Fish and Game Commission regarding elk hunting. The modifications proposed include adding two (2) entirely new hunt boundaries, splitting four existing hunt zones into eleven (11) zones, expanding two (2) hunt zones, modifying one (1) hunt boundary, adding additional periods to six (6) hunt zones, modifying season dates for one (1) hunt zone, modifying tag ranges for ten (10) elk zones, modifying available hunt areas for one (1) archery only elk hunt, and modifying season dates for the fund raising tags.

Methodology

A computer model which simulates herd performance (Smith and Updike 1987) was used to assess effects of the proposed action on elk herds where hunting is anticipated.

A variety of natural and human-induced factors combine to affect the status of a wildlife population. Natural factors affecting elk populations include, but are not limited to, such things as predation, starvation, disease, and parasitism. Environmental factors (e.g., precipitation) can affect food quantity and quality, thereby affecting elk populations. Theoretically, competition among members of the same species and between different species (e.g., deer, elk) also can affect elk populations. Catastrophic events (e.g., wildfires) can affect localized populations on a short-term basis. Human-induced factors, such as urbanization and agricultural development, also affect elk populations. Hunting can affect a population in various ways, depending on the intensity and level of harvest.

Modern wildlife management uses models to analyze, understand, and predict the outcomes and complex interactions of the natural environment. Like many other technical fields that affect everyday life of society, such as chemical engineering, aerospace technology, and climatology, the science of wildlife management has found that the use of models is invaluable for predicting the effects of human-induced and natural events on wildlife and their habitat.

Population models can range from simple word models (the statement "elk are born, grow up, reproduce and die" is a grossly simple word model of a population process) to highly complex and sophisticated mathematical abstractions. Some models are empirical (that is, based on observed data), and others are theoretical. Many models are useful in helping to frame conceptualizations of population processes, resulting in testable predictions about the subject at hand. Nevertheless, the goal of a model is to aid in analyzing known facts and relationships that would be too cumbersome or time consuming to analyze manually. Some of these models describe specific systems in a very detailed way, and others deal with general questions in a relatively abstract fashion. All share the common purpose of helping to construct a broad framework within which to assemble an otherwise complex mass of field and laboratory observations. Though we often think of models in terms of equations and computers, they can be defined more generally as any physical or abstract concepts of the structure and function of "real systems" or natural occurrences.

There are numerous software packages available to aid in the analysis of data from elk populations and their ranges. To effectively investigate the combined effects of hunting on an elk population, a population model which acts dynamically should be employed. Simulation modeling, in which the dynamics of a population are mimicked through bookkeeping of birth and death rates, is useful in wildlife management for exploring population responses to changes in management strategies, (i.e., hunting; Walters 1986). This modeling will be discussed further.

Key in the development and use of any model is its reliability. The models used in this document have been developed based on field observation, published literature, and/or expert opinion. They have been tested against known results and are consistent.

Compensatory Response

The Stock-Recruitment model (Ricker 1954, McCullough 1984) is useful for conceptualizing compensatory mechanisms and density-dependent responses that are believed to occur in wildlife populations. This model shows population responses to changes in density in terms of net recruitment (i.e., the survival of calves). It has the advantage of not requiring assumptions about internal birth and death rates, and it can be empirical.

The fundamental assumption of the Stock-Recruitment model is that calf survival is a function of population density and decreases as density increases (the converse is also true). There is a large body of evidence indicating that this is the case among populations of elk (McCullough 1979, Clutton-Brock et al. 1982). Thus, density can be measured in either absolute or relative terms, and with net recruitment one can begin to build a model that will allow predictions of the population's response to changes in density.

At a low population size, even with a high recruitment rate, few new individuals enter the population, but their survival is higher. As population size increases, so does the number of recruits, up to a certain level. The rate of recruitment decreases as a result of lower survival of young. The degree of elk harvest necessary to achieve maximum sustained yield (MSY) can be expected to result in low population densities. Objectives to maximize residual population size and MSY are necessarily mutually exclusive. This has important implications for harvest management, as harvesting to achieve MSY suppresses the total population below its maximum potential. Spring population size (after calves are born) is thus below the carrying capacity of the range (McCullough 1984).

At high densities, the premortality population will temporarily exceed carrying capacity (if the area is at carrying capacity – few of California's elk populations are believed to be at carrying capacity), resulting in possible habitat damage. When population sizes are at or near the range carrying capacity, yield will be low (proportionately), because recruitment of calves is low relative to herds at lower density. In such cases, increases in harvest result in increased net recruitment, and the population will stabilize at a new population size if the new harvest level remains fixed (McCullough 1984).

Elk Pop (Smith and Updike 1987) is a microcomputer-based model which was developed by the Department for the purpose of analyzing harvest alternatives. Elk Pop was used to assess effects of the proposed project (and project alternatives) on the specific Roosevelt, Rocky Mountain, and tule elk herds where hunting is proposed. The model allows the user to vary carrying capacity to reflect real-world changes in habitat capability. Observed population age and sex ratios are primary input to the model. Elk Pop allows analysis of multiple harvest alternatives simultaneously and is easily adapted to most herd situations.

Elk Pop utilizes data on age and sex composition of the herd, maximum calf survival, estimated population numbers, nonhunting mortality, and hunting mortality. Age and sex composition and maximum calf survival figures used in the model are based on actual observed rates. Population level and nonhunting mortality rates were estimated. Estimates of nonhunting mortality rates were considered valid representations of actual nonhunting mortality rates when the model predicted the observed herd composition ratios for 10 consecutive years. Effects of various harvest scenarios were then predicted on the basis of observed composition ratios and estimated nonhunting mortality rates. The computer model runs for various harvest scenarios (proposed project and the alternatives) for each elk herd where hunting is proposed can be found in Appendix 4.

IMPACTS OF HUNTING ON ELK POPULATIONS

Elk hunting will result in the death of individual animals. The removal of individual animals from selected herds which are relatively large and healthy will not significantly reduce herd size on a long-term basis. Production and survival of young animals within each herd will replace the animals removed by hunting (Fowler 1985, Racine et al. 1988). Since public elk hunting will affect no more than 26 of the State's elk areas under the proposed project and all alternatives considered, removal of individuals will have little influence on the statewide elk population. The herds where hunting is proposed are geographically separated and widely distributed. The proposed project will result in maintaining the statewide tule elk population well above the legislative limit of 2,000 elk. Therefore, the proposed action of removing no more than 1,099 elk by public hunting and 255 elk through the PLM Program will not have a significant adverse impact on either local or statewide elk populations.

Numbers of elk harvested in the Big Lagoon, Klamath, Marble Mountains, Northeastern, Northwestern, and Siskiyou hunts during 2014 are reported in Table 2. Table 2 includes Roosevelt and Rocky Mountain elk that were taken by hunters in the PLM, public and Cooperative Elk Hunting programs. The Big Lagoon and Klamath hunts are no longer utilized hunt zones and currently (2015) fall within the Northwestern elk hunt boundary.

<u>Roosevelt and Rocky Mountain Elk Units</u>

TABLE 2
Roosevelt and Rocky Mountain Elk Harvest in 2014

Herd	PLM		General Season		Cooperative Elk Hunting		Total
	Bulls	Cows	Bulls	Cows	Bulls	Cows	
Marble Mountains			21	5	4	0	30
Siskiyou			11	5	3	2	21
Northwestern			22	3	2	0	27
Klamath			1	0	0	0	1
Big Lagoon			5	0	0	0	5
Northeastern			11	6	1	1	19
PLM - Roosevelt	9	3					
PLM – Rocky Mtn.	15	4					
Total	24	7	71	19	10	3	103

Siskiyou Roosevelt Elk Herds

There are 600-750 elk within the hunt area boundary. The proposed project would result in a maximum of 40 bulls and 50 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull, antlerless, and either-sex tags would be issued across three general hunt periods and one archery/muzzleloader only.

Computer simulation runs of this harvest scenario (90 elk killed, 40 bulls and 50 antlerless) indicate the population would continue to expand in total numbers and suggest that the calf-to-cow ratio will increase as a result of the proposed project. Based on computer simulation, the bull-to-cow ratio would also increase as a result of the proposed project. The Department will continue to monitor this population and will adjust the tag quota if the bull-to-cow ratio decreases as a result of the proposed quota.

Although the proposed project may result in up to 90 individual elk in the Siskiyou hunt being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local population (herd). In fact, available information suggests that elk population numbers within the hunt area in Siskiyou County have increased since the Commission authorized this hunt in 1986. Prior to implementation of the hunt, Fischer and Kitchen (1984) observed a minimum of 51 individuals in the herd (based on 21 months of field study) and suggested that there were less than 100 elk within what is now the hunt boundary. Current estimates are over 600 elk within the hunt area.

Based on computer simulation modeling of the expected harvest levels, the Department concludes that the proposed project of harvesting up to 90 elk for the Siskiyou Roosevelt elk hunt will not have a significant effect on regional or statewide Roosevelt elk populations. Population numbers have increased within the Siskiyou hunt boundary under current tag allocation levels.

Marble Mountains Roosevelt Elk Herds (Marble Mountain North & Marble Mountain South)

Since 1985, the Department has released 253 Roosevelt elk in western portions of the Klamath National Forest in an effort to reestablish herds within suitable portions of their historic range. This effort appears to have been successful. Kitchen and Woodard (1995) reported elk population numbers in and near the Happy Camp portion of the hunt area were approximately 300 and continuing to increase. Additional elk are distributed in the following locations: Salmon River drainage, Cecilville, Doggett Creek, Hilt, Alex Hole, Ukonom, Somes Bar, Klamath River, Weaverville, Trinity Alps Wilderness Area, and others. The proposed regulations split the zone into a north and south unit. Simulation runs for both Marble Mountain North and Marble Mountain South were run to model effects of the proposed Roosevelt elk hunts. The Department estimated population numbers at 1500 elk in the north and 1500 elk in the south.

The proposed project would result in a maximum of 61bulls and 60 antlerless elk being harvested in each the north and south zones including, General, PLM, SHARE, and Cooperative elk tags. Bull, antlerless, and either-sex tags would be issued across three general hunt periods and one archery/muzzleloader only.

Computer simulation runs of this harvest scenario for each the north and south indicate that population numbers would increase in both the north and south if the proposed project was continued at the same level for a ten-year period. The bull-to-cow ratio would increase. The calf-to-cow ratio would also increase under the proposed harvest scenario.

The Department does not anticipate that this harvest scenario will result in adverse impacts to the Marble Mountains North or South Roosevelt elk herds. The apparent increasing trend in population numbers is suggestive that the population can withstand this level of hunting.

Northwestern Roosevelt Elk Herds (Del Norte and Humboldt)

The proposed regulations split the zone into two distinct units (Del Norte and Humboldt elk zones). Simulation runs for Del Norte and Humboldt zones were run to model effects of the proposed Roosevelt elk hunts. The Department estimated the Del Norte population at 725 elk and the Humboldt population at 850 elk.

The proposed project for the Del Norte zone would result in a maximum of 50 bulls and 70 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull, antlerless, and either-sex tags would be issued across five general hunt periods.

Computer simulation runs of this harvest scenario for Del Norte indicate that population numbers would increase for several years and then slowly decrease (with a corresponding small reduction in antlerless tags) back to near the initial population level if this level of harvest was maintained for a ten-year period. The bull-to-cow ratio would decrease slightly, while the calf-to-cow ratio would increase under the proposed harvest scenario.

The proposed project for the Humboldt zone would result in a maximum of 65 bulls and 70 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull, antlerless, and either-sex tags would be issued across five general hunt periods.

Computer simulation runs of this harvest scenario for Humboldt indicate that population numbers would increase for several years and then slowly decrease and level off to a population above the initial estimate if this level of harvest was maintained for a ten-year period. The bull-to-cow ratio would decrease and stabilize to an adequate level well above 25 bull-to-cow ratio. The calf-to-cow ratio would increase under the proposed harvest scenario.

The Department does not anticipate that this harvest scenario will result in adverse impacts to the Del Norte or Humboldt Roosevelt elk herds. The stable to increasing trend in population numbers is suggestive that the population can withstand this level of hunting.

Northeastern California Rocky Mountain Elk Herds

Elk are endemic to northeastern California, and historically have occurred at various densities when conditions have been favorable (McCullough 1969). Their range has expanded during recent years and population numbers have increased. It is likely that elk emigrated to northeastern California from southern Oregon, and perhaps other locations in northern California. With successful reproduction, herds became established in suitable areas. Elk are not distributed uniformly throughout northeastern California. At present, elk can be found in larger numbers in four general areas: the Warner Mountains, Devils Garden, Whitehorse Reservoir and Burney/Pit River.

There are 1,000-1,500 elk within the hunt area boundary. The proposed project would result in a maximum of 40 bulls and 40 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull, antlerless, and either-sex tags would be issued during an antlerless, bull and either-sex archery only season.

To model effects of the proposed Northeastern Rocky Mountain elk hunt, the Department assumed that maximum hunter success would result in a harvest of 40 bulls and 40 antlerless elk. Computer simulation runs of this harvest scenario indicate that total population numbers would continue to increase, and that an increase in the bull and calf ratio would occur.

The Department does not anticipate that this harvest scenario will result in adverse impacts to the Northeastern Rocky Mountain elk herds. The stable to increasing trend in population numbers is suggestive that the population can withstand this level of hunting.

Tejon Ranch PLM

In 1966, Mr. Rex Ellsworth obtained a permit to import Rocky Mountain elk from Yellowstone National Park to a fenced compound on his ranch in Kern County approximately 10 miles southwest of Tehachapi (Thomas 1975). In 1967, 290 elk were shipped and 277 were released within the enclosure. Mortalities over the next few months were attributed to capture stress, transport and confinement. By mid-1967 elk began to escape from the enclosure due to a lack of fence maintenance.

There are 170-200 elk within the hunt area boundary. The proposed project would result in a maximum of 12 bulls and 7 antlerless elk being harvested. Bull and antlerless tags would be issued during the season.

To model effects of the proposed Tejon Ranch elk hunt, the Department assumed that maximum hunter success would result in a harvest of 12 bulls and 7 antlerless elk. Computer simulation runs of this harvest scenario indicate that total population numbers would remain stable, and that an increase in the bull and calf ratio would occur.

The Department does not anticipate that this harvest scenario will result in adverse impacts to the Tejon Ranch elk herd. The stable trend in population numbers is suggestive that the population can withstand this level of hunting.

Hearst Ranch PLM

There are approximately 130 elk on the PLM. These are Rocky Mountain Elk outside of their historic range in Monterey and San Luis Obispo counties. The proposed project would result in a maximum of 6 bulls and 6 antlerless elk being harvested. Bull and antlerless tags would be issued during the season.

To model effects of the proposed Hearst Ranch elk hunt, the Department assumed that maximum hunter success would result in a harvest of 6 bulls and 6 antlerless elk. Computer simulation runs of this harvest scenario indicate that total population numbers would remain relatively stable, and that an increase in the bull and calf ratio would occur.

The Department does not anticipate that this harvest scenario will result in adverse impacts to the Hearst Ranch elk herd. The stable trend in population numbers is suggestive that the population can withstand this level of hunting.

Tule/Roosevelt Elk Units

Mendocino (North Coast, Middle Fork, Upper Russian, Little lake, and South Coast)

The proposed regulation splits and expands the zone into five distinct units (North Coast, Middle Fork, Upper Russian, Little lake, and South Coast elk zones). Simulation runs for these zones were run to model effects of the proposed tule/Roosevelt elk hunts. The Department estimated populations for the North Coast at 420 elk, Middle Fork at 250 elk, Upper Russian at 200 elk, Little lake at 20 elk, and South Coast elk at 40 elk.

The proposed project for the Mendocino North Coast zone would result in a maximum of 18 bulls and 20 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Computer simulation runs of this harvest scenario for Mendocino North Coast indicate that population numbers would remain stable to a small increase if this level of harvest was maintained for a ten-year period. The bull-to-cow and calf-to-cow ratio would increase under the proposed harvest scenario.

The proposed project for the Mendocino Middle Fork zone would result in a maximum of 12 bulls and 11 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Computer simulation runs of this harvest scenario for Mendocino Middle Fork indicate that population numbers would remain stable to a small increase if this level of harvest was maintained for a ten-year period. The bull-to-cow and calf-to-cow ratio would increase under the proposed harvest scenario.

The proposed project for the Mendocino Upper Russian zone would result in a maximum of 12 bulls and 16 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Computer simulation runs of this harvest scenario for Mendocino Upper Russian indicate that population numbers would slowly decrease if this level of harvest was maintained for a ten-year period. The bull-to-cow ratio would decrease slightly at first and then maintain close to the original level. The calf-to-cow ratio would increase under the proposed harvest scenario. The Department will continue to monitor this population and adjust tags if necessary.

The proposed project for the Mendocino Little lake zone would result in a 0 elk being harvested. These regulations would establish zone boundaries. Computer simulation runs of this scenario for Mendocino Little Lake (no harvest) indicate that population numbers would slowly increase over a ten-year period. The bull-to-cow and calf-to-cow ratio would increase under this scenario.

The proposed project for the Mendocino South Coast zone would result in a maximum of 1 bulls and 1 antlerless elk being harvested including, General, PLM, and SHARE elk tags. Computer simulation runs of this harvest scenario for Mendocino South Coast indicate that population numbers would slowly increase over a ten-year period. The bull-to-cow and calf-to-cow ratio would increase under the proposed harvest scenario.

Bull and antlerless tags would be issued across during the general, SHARE, and PLM hunt periods. The Department does not anticipate that this harvest scenario will result in adverse impacts to the Mendocino (North Coast, Middle Fork, Upper Russian, Little lake, and South Coast) tule/Roosevelt elk herds. The stable to increasing trend in population numbers is suggestive that the population can withstand this level of hunting.

Tule Elk Units

Numbers of tule elk harvested in the general elk zones and PLM during 2014 are reported in Table 3. Table 3 includes tule elk that were taken by hunters in the PLM, public and Cooperative Elk Hunting programs.

TABLE 3
Tule Elk Harvest in 2014

Herd	PLM		General Season		Cooperative Elk Hunting		Total
	Bulls	Cows	Bulls	Cows	Bulls	Cows	
Alameda			0	0			0
Bear Valley			1	0			1
Cache Creek			3	2			5
East Park			2	2			4
Fort Hunter Liggett			9	4			13
Grizzly Island			16	28			44
Lake Pillsbury			2	4			6
La Panza			12	11	0	1	24
Mendocino			2	1			3
Owens Valley			26	0			26
San Luis Res.			3	0			3
Santa Clara			1	0			1
PLM - Tule	58	47					105
Total	58	47	77	52	0	1	235

Alameda Tule Elk Herds

There are 100-200 elk within the hunt area boundary. The proposed project would result in a maximum of 3 bulls and 2 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull and antlerless tags would be issued during the general and PLM seasons.

Computer simulation runs of this harvest scenario indicate the population would continue to expand in total numbers and suggest that the calf-to-cow ratio will increase as a result of the proposed project. Based on computer simulation, the bull-to-cow ratio would decrease slightly and then stabilize as a result of the proposed project. The Department will continue to monitor this population and will adjust the tag quota if the bull-to-cow ratio further decreases.

Although the proposed project may result in up to 5 individual elk in the Alameda zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

Bear Valley Tule Elk Herds

There are 225-250 elk within the hunt area boundary. The proposed project would result in a maximum of 8 bulls and 11 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull and antlerless tags would be issued during the general and PLM seasons.

Computer simulation runs of this harvest scenario indicate the population would stay relatively the same in total numbers and suggest that the calf-to-cow ratio will increase as a result of the proposed project. Based on computer simulation, the bull-to-cow ratio would also increase.

Although the proposed project may result in up to 19 individual elk in the Bear Valley zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

Cache Creek Tule Elk Herds

There are 125--150 elk within the hunt area boundary. The proposed project would result in a maximum of 4 bulls and 3 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull and antlerless tags would be issued during the general and PLM seasons.

Computer simulation runs of this harvest scenario indicate the population would stay relatively the same in total numbers and suggest that the calf-to-cow and bull-to-cow ratios would both increase as a result of the proposed project.

Although the proposed project may result in up to 7 individual elk in the Cache Creek zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

Camp Roberts Tule Elk Herds Tule Elk Herds

Camp Roberts is a newly proposed hunt. The Camp Roberts herd was established in 1978 with 21 elk from Tupman. Thirteen more elk from Tupman were released in 1983. Several animals from each release were fitted with radio transmitters and monitored. A total of 88 elk was observed during a helicopter survey of Camp Roberts in 1988. Additionally, in 1991, the Department released 13 tule elk (from Grizzly Island) on a private ranch near San Ardo in southern Monterey County; in 1992 an additional 20 were released at the same location (Department of Fish and Game, 1995). Approximately 136 elk were counted during a January, 2014 survey and 524 elk were counted in January, 2015. Some of the elk counted in 2015 are believed to be double counts. The Department estimates there are 300-400 elk within the hunt area boundary.

The proposed project would result in a maximum of 15 bulls and 30 antlerless elk being harvested including General and Military tags. Bull and antlerless tags would be issued during the general and Military seasons.

Computer simulation runs of this harvest scenario indicate the population would slowly increase in total numbers and suggest that the calf-to-cow and bull-to-cow ratios would both increase as a result of the proposed project.

Although the proposed project may result in up to 45 individual elk in the Camp Roberts zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

East Park Tule Elk Herds

There are 120--150 elk within the hunt area boundary. The proposed project would result in a maximum of 4 bulls and 10 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull and antlerless tags would be issued during the general, SHARE, and PLM seasons.

Computer simulation runs of this harvest scenario indicate the population would stay relatively the same in total numbers and suggest that the calf-to-cow and bull-to-cow ratios would both increase as a result of the proposed project.

Although the proposed project may result in up to 14 individual elk in the East Park zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

Fort Hunter Liggett (Fort Hunter Liggett Central Coast) Tule Elk Herds

The proposed regulation modifies and expands the zone boundaries for Fort Hunter Liggett and changes the name to Fort Hunter Liggett Central Coast. Simulation runs for Fort Hunter Liggett Central Coast were run to model effects of the proposed tule elk hunts. The Department estimated there are approximately 825 to 1,000 elk within the zone boundary. The proposed project would result in a maximum of 40 bulls and 70 antlerless elk being harvested including, General, Military, PLM, SHARE, and Cooperative elk tags. Bull, antlerless, and either-sex tags would be issued during the general, military, archery, muzzleloader, SHARE, and PLM seasons.

Computer simulation runs of this harvest scenario indicate the population would stay relatively the same with a small increase in total numbers and suggest that the calf-to-cow and bull-to-cow ratios would both increase as a result of the proposed project.

Although the proposed project may result in up to 110 individual elk in the Fort Hunter Liggett Central Coast zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

Grizzly Island Tule Elk Herds

The proposed regulation modifies and expands the zone boundaries for the Grizzly Island tule elk zone. Simulation runs for Grizzly Island were run to model effects of the proposed tule elk hunts. The Department estimated there are approximately 300 elk within the zone boundary. The proposed project would result in a maximum of 32 bulls and 70 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull, antlerless, and spike tags would be issued during the general, SHARE, and PLM seasons (Currently there are no PLM's in this area).

Computer simulation runs of this harvest scenario indicate the population would decrease in total numbers (with a future reduction in harvest) and suggest that the calf-to-cow and bull-to-cow ratios would both increase as a result of the proposed project. The current population level for this herd is above objectives and the proposed project would bring population levels within objectives.

Although the proposed project may result in up to 102 individual elk in the Grizzly Island zone being killed by hunters, the proposed level of harvest would be reduced in future years once the population was back within objectives (250 elk) and at that point will not have a significant negative effect on the local or statewide population.

Lake Pillsbury Tule Elk Herds

There are 150--180 elk within the hunt area boundary. The proposed project would result in a maximum of 6 bulls and 7 antlerless elk being harvested including, General,

PLM, SHARE, and Cooperative elk tags. Bull and antlerless tags would be issued during the general, SHARE, and PLM seasons.

Computer simulation runs of this harvest scenario indicate the population would stay relatively the same in total numbers and suggest that the calf-to-cow and bull-to-cow ratios would both increase as a result of the proposed project.

Although the proposed project may result in up to 13 individual elk in the Lake Pillsbury zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

La Panza Tule Elk Herds

The proposed regulation modifies the zone boundaries for the La Panza tule elk zone. Simulation runs for La Panza were run to model effects of the proposed tule elk hunts. The Department estimated there are approximately 700 elk within the zone boundary. The proposed project would result in a maximum of 50 bulls and 70 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull and antlerless tags would be issued during the general, SHARE, and PLM seasons.

Computer simulation runs of this harvest scenario indicate the population would increase and then decline over time but still being above the initial population estimate. Simulation runs suggest that the calf-to-cow and bull-to-cow ratios would both increase as a result of the proposed project.

Although the proposed project may result in up to 120 individual elk in the La Panza zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

Owens Valley Tule Elk Herds (Bishop, Goodale, Independence, Lone Pine, Tinemaha, Tinemaha Mountain, West Tinemaha, and Whitney)

The Owens Valley tule elk hunt zones are separated into eight distinct zones (Bishop, Goodale, Independence, Lone Pine, Tinemaha, Tinemaha Mountain, West Tinemaha, and Whitney zones). Currently there are seven hunt zones with the proposed splitting of the Independence hunt zone (creating a Goodale zone). Simulation runs for these zones were run to model effects of the proposed tule elk hunts. The Department estimated populations for the Bishop at 25 elk, Goodale at 35, Independence at 50, Lone Pine at 75, Tinemaha at 17, Tinemaha Mountain at 40, West Tinemaha at 20, and Whitney at 20 elk.

Tule elk herds in the Owens Valley have demonstrated their ability to experience reductions in herd size without long-term adverse impacts on either local, regional, or statewide populations (Fowler 1985). Previous hunts had no long-term adverse impact

to the Owens Valley tule elk population because minimum population numbers regularly exceeded 490 (the maximum level specified by Public Law 94-389 and Section 3951, Fish and Game Code) during the 1970s and 1980s, based on survey results. Current population levels are below 490 and the proposed project allows for harvest levels to maintain the population below the mandated 490 elk.

The proposed project for the Bishop zone would result in a maximum of 3 bulls being harvested. Computer simulation runs of this harvest scenario for Bishop indicate that population numbers would increase if this level of harvest was maintained for a ten-year period. The bull-to-cow ratio would decrease and level off, while the calf-to-cow ratio would increase under the proposed harvest scenario. The Department would continue to monitor the bull ratios in order to maintain it at an adequate level.

The proposed project for the Goodale zone would result in a maximum of 3 bulls and 2 antlerless elk being harvested. Computer simulation runs of this harvest scenario for Goodale indicate that population numbers would increase if this level of harvest was maintained for a ten-year period. The bull-to-cow ratio would initially decline and then level off close to the original. The calf-to-cow ratio would decrease slightly under the proposed harvest scenario.

The proposed project for the Independence zone would result in a maximum of 4 bulls and 2 antlerless elk being harvested including. Computer simulation runs of this harvest scenario for Independence indicate that population numbers would increase if this level of harvest was maintained for a ten-year period. The bull-to-cow ratio would decline initially and then begin to increase. The calf-to-cow ratio would remain relatively the same under the proposed harvest scenario.

The proposed project for the Lone Pine zone would result in a maximum of 7 bulls and 5 antlerless elk being harvested. Computer simulation runs of this harvest scenario for Lone Pine indicate that population would increase over time if this level of harvest was maintained for a ten-year period. The bull-to-cow ratio would decrease to an adequate level, while the calf-to-cow ratio would remain nearly unchanged.

The proposed project for the Tinemaha zone would result in a maximum of 1 bull being harvested. Computer simulation runs of this harvest scenario for Tinemaha indicate that population numbers would increase if this level of harvest was maintained for a ten-year period. The bull-to-cow ratio would decrease and level off, while the calf-to-cow ratio would increase under the proposed harvest scenario.

The proposed project for the Tinemaha Mountain zone would result in a maximum of 3 bulls being harvested. Computer simulation runs of this harvest scenario for Tinemaha Mountain indicate that population numbers would slowly increase if this level of harvest was maintained for a ten-year period. The bull-to-cow ratio would decrease to an appropriate level, while the calf-to-cow ratio would increase under the proposed harvest scenario.

The proposed project for the West Tinemaha zone would result in a maximum of 2 bulls being harvested. Computer simulation runs of this harvest scenario for West Tinemaha indicate that population numbers would increase if this level of harvest was maintained for a ten-year period. The bull-to-cow ratio would decrease and level off, while the calf-to-cow ratio would decrease and remain stable at an adequate level under the proposed harvest scenario. The Department would continue to monitor the bull ratios in order to maintain it at an adequate level.

The proposed project for the Whitney zone would result in a maximum of 2 bulls being harvested. Computer simulation runs of this harvest scenario for Whitney indicate that population numbers would increase if this level of harvest was maintained for a ten-year period. The bull-to-cow ratio would decline initially and then begin to increase. The calf-to-cow ratio would increase and then remain stable under the proposed harvest scenario.

Although the proposed project may result in up to 34 individual elk in the Owens Valley zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

San Emigdio Tule Elk Herds

San Emigdio is a proposed new hunt. In January of 1998, five sub-adult bulls and 15 cows from San Luis Refuge were released in San Emigdio Canyon on land owned by the Wildlands Conservancy. Three translocation events occurred in October of 1999 when three bulls and 34 cows from Concord Naval Weapons Station were released to augment the initial effort. In February, 2005, two bulls and 19 cows from San Luis Refuge were released. In 2013, two adult bulls, two yearling bulls and two cows from San Luis Refuge were released. In March, 2014, an additional 15 cows and calves (i.e., born in 2013) from San Luis Refuge were released.

The Department estimates the population to be between 360-400 elk. The proposed project would result in a maximum of 10 bulls and 24 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull antlerless tags would be issued during the general, SHARE, and PLM seasons.

Computer simulation runs of this harvest scenario indicate the population would increase in total numbers and suggest that the calf-to-cow and bull-to-cow ratios would both increase as a result of the proposed project.

Although the proposed project may result in up to 34 individual elk in the San Emigdio zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

San Luis Reservoir Tule Elk Herds

Twenty-one elk from Concord Naval Weapons Station were released on a private ranch south of the San Luis Reservoir to re-establish tule elk in the unit in 1990. Elk dispersed widely from the release site (BLM 1992). In 1992, eight more cows and one bull from Grizzly Island were added and nine more cows and one bull from Tupman were added in 1998.

The Department estimates the population to be 390-450 elk. The proposed project would result in a maximum of 15 bulls and 30 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull antlerless tags would be issued during the general, SHARE, and PLM seasons.

Computer simulation runs of this harvest scenario indicate the population would increase in total numbers and suggest that the calf-to-cow and bull-to-cow ratios would both increase as a result of the proposed project.

Although the proposed project may result in up to 45 individual elk in the San Luis Reservoir zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

Santa Clara Tule Elk Herds

Sixty-five tule elk from the Owens Valley were released on private ranches in southern Santa Clara County near Mt. Hamilton from 1978-1981. These elk dispersed into portions of Alameda, San Joaquin, Santa Clara and Stanislaus counties. Tule elk also have been released at various locations outside the unit since 1981 (in south San Benito County, western Merced County and south Monterey County); some of which subsequently dispersed into the unit. Finally, 9 adult bulls from San Luis National Wildlife Refuge were released at the San Antonio Valley Ecological Reserve (Santa Clara County) in March, 2014.

The Department estimates the population to be 160-180 elk. The proposed project would result in a maximum of 10 bulls and 10 antlerless elk being harvested including, General, PLM, SHARE, and Cooperative elk tags. Bull antlerless tags would be issued during the general, SHARE, and PLM seasons.

Computer simulation runs of this harvest scenario indicate the population would increase in total numbers. The bull-to-cow ratio would decrease to an appropriate level, while the calf-to-cow ratio would increase under the proposed harvest scenario.

Although the proposed project may result in up to 20 individual elk in the Santa Clara zone being killed by hunters, the information provided indicates the proposed level of harvest will not have a significant negative effect on the local or statewide population.

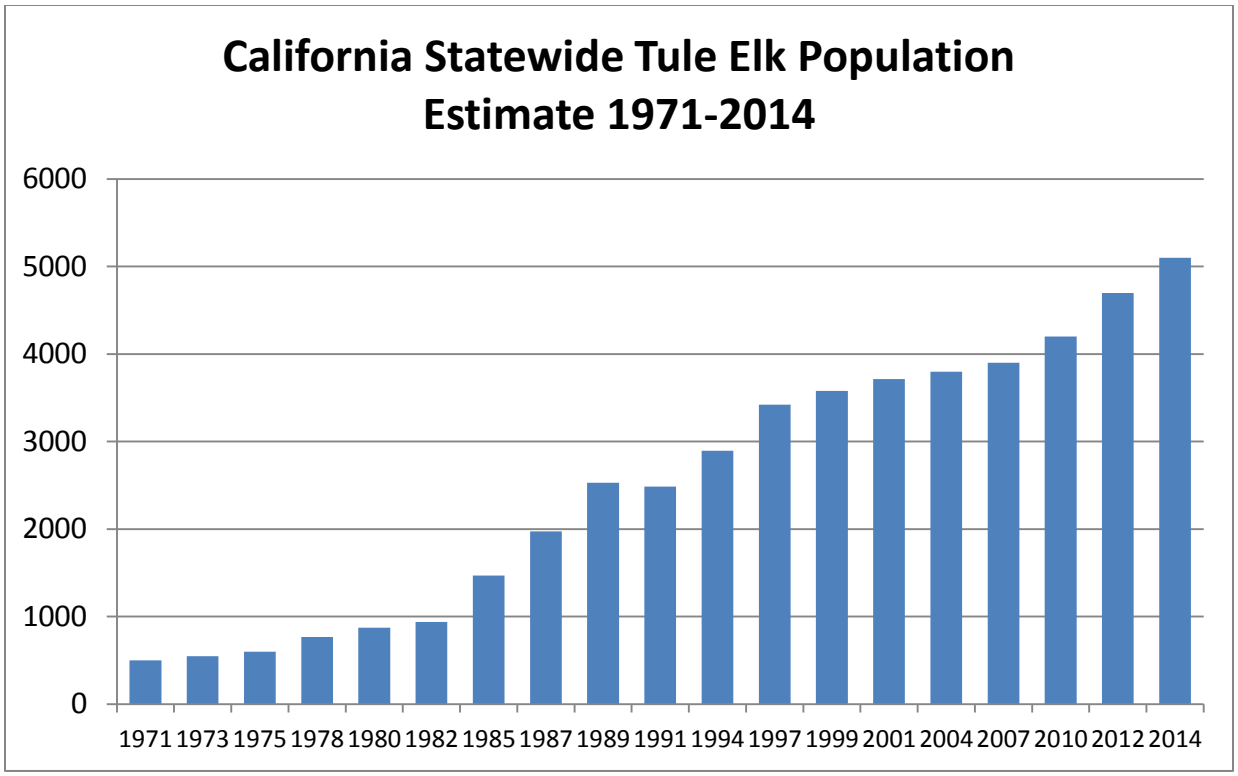
IMPACTS ON THE GENE POOL

The Department estimates there are a minimum of 5,000 Roosevelt elk distributed throughout several areas of northern California. The proposed project would allow the total public take (harvest) of no more than 625 Roosevelt elk from six areas. Assuming a condition where all tagholders were successful, this would result in a short-term reduction of twelve percent of the statewide Roosevelt elk population. This does not constitute a significant impact to the statewide gene pool and is well within the population's ability to maintain or increase in size over the long term.

As reported previously, the Department estimates there are a minimum of 1,500 Rocky Mountain elk in the State. The majority of Rocky Mountain elk occur in three separate areas of the State. The proposed project would allow the take of no more than 108 elk from the Northeastern California hunt zone and two PLM's with Rocky Mountain elk outside of their historic range. It is expected that 23-28 elk will be taken from the Tejon Ranch in Kern and Los Angeles counties and the Hearst Ranch in Monterey and San Luis Obispo counties. This level of harvest is far below the population's sustained-yield level. Therefore, the expected combined (public and PLM) take of less than 110 Rocky Mountain elk from a statewide population of over 1,500 will be a short-term reduction of less than 7.5 percent of the statewide population. This does not constitute a significant impact to the statewide gene pool and is well within the population's ability to maintain or increase in size over the long term.

As of August 2015, the average of the Department's statewide tule elk population estimate was at least 5,100 animals. The statewide tule elk population has been increasing since 1971, based on Department surveys and estimates (Figure 1). The 22 tule elk herds in the State are widely distributed throughout the coastal range of California from northern Santa Barbara County to central Mendocino County. In addition, tule elk are located in the Owens Valley and the San Joaquin Valley (see Appendix 14). There are free ranging tule elk found outside of established elk zones including Point Reyes National Seashore. In addition to the free ranging tule elk there are three fenced enclosures containing tule elk within California (Point Reyes National Seashore, San Luis National Wildlife Refuge, and Tupman Tule Elk State Preserve).

Figure 1. California Statewide Tule Elk Population Estimate 1971-2014



Assuming a condition where the analyzed maximum harvest was reached (including general, SHARE, PLM, and Military), 621 tule elk would be removed from the statewide population (5,100 animals). This short-term reduction of approximately twelve percent of the statewide tule elk population does not constitute a significant impact to the gene pool and is well within the population's ability to maintain or increase in size over the long term. The Department does not anticipate harvesting up to the maximum level but has analyzed the potential for each zone. Computer simulation modeling of the proposed harvest levels will not have a measurable impact on regional or statewide populations.

It is expected that not more than 255 elk (Rocky Mountain, Roosevelt, and tule elk combined) will be taken by hunters under the PLM Program during 2016. This constitutes just over two percent of the statewide elk population and is well within the population's ability to maintain or increase in size over the long term. Any population reduction from the PLM Program would be short term and would not constitute a significant impact to the gene pool.

The ability of elk populations to experience a given level of hunting mortality without decreasing in health or viability is described by Savidge and Ziesenis (1980) as

sustained-yield management. Sustained-yield management is closely related to the compensatory responses in reproduction that were discussed previously.

Because the proposed project involves herds at separate locations within the State that are at or above herd management objectives and because the proposed project will not significantly reduce statewide population levels, the Department concludes that there will not be an adverse impact to the gene pool, either locally or statewide.

IMPACTS ON SOCIAL STRUCTURE

Elk are gregarious and tend to form groups or aggregates. Elk do not mate for life. Males do not invest time or energy in the care of young, but generally form separate bachelor groups. Except for a short breeding period, most adult males generally remain separate from cow-calf groups during the remainder of the year. Therefore, removal of bulls by hunting will have a minimal effect on the social structure of the populations, provided that minimum herd objective bull ratios are maintained. Proposed harvest levels for each herd have been established to maintain or exceed minimum herd objective bull ratios and to provide for genetic variability, fertilization of cows, and public viewing opportunities of bull elk.

During the nonbreeding period, cow-calf groups generally contain few, if any, adult bulls. However, immature bulls are tolerated in cow-calf groups (Geist 1982). Newborn calves are initially completely dependent upon their dams but quickly adjust to the cow-calf group and form nursery groups within the larger group. Nursery groups briefly fixate and respond to a succession of adult females (Geist 1982). During the first 2.5 months of life, calves nurse extensively (Bubenik 1982). Nursing declines by August for most elk in California, when the proposed project would begin in some areas. There is no indication that calves orphaned at this time have been severely impacted; at Grizzly Island, tule elk calves orphaned in August remained within the social structure of the groups.

Generally, the proposed project has the potential to increase the ratio and number of calves in the hunted elk populations. The increase in calf survival results in a shift of age structure of the elk population from older to prime-age individuals (five to seven years). These prime-age individuals tend to provide higher recruitment rates (calf survival) for the population (Hines et al. 1985). Historical data (Fowler 1985, Botti and Koch 1988, Racine et al. 1988), computer simulation modeling (Smith and Updike 1987), and information from the literature (Taber et al. 1982) indicate that the removal of elk from the population (due to hunting, trapping for reintroduction, or high winter mortality) in one year results in a larger number of calves recruited into the population the following year.

Computer simulation modeling of the populations proposed to be hunted indicates that the removal of elk from these populations by hunting (in addition to nonhunting mortalities) will result in an increased survival of calves born the following spring for

most areas (Appendix 4). As an example, in August of 1980 the observed calf ratio for the Bishop subherd was 20 calves per 100 cows. In December of 1980, the Department relocated 75 elk from the Bishop subherd. The following August (1981), the observed calf ratio was 43 calves per 100 cows. This type of increased calf survival (recruitment) has been observed numerous times in the Owens Valley (Racine et al. 1988) and at Grizzly Island (Botti and Koch 1988).

Most western states establish a goal for a posthunt ratio of at least 20 bulls per 100 cows (the proportion of bulls to cows in the population). Some states have goals as low as six bulls per 100 cows, while other states have goals of 25 bulls per 100 cows in trophy hunt areas (Mohler and Toweill 1982). The Department's management objective for most hunted populations is to maintain at least 25 bulls per 100 cows. Specific management plans for most tule elk herds contain post-hunt sex ratio objectives of at least 25 bulls per 100 cows (the management plan for Grizzly Island calls for 45-70 bulls per 100 cows to allow for additional opportunities to view bull elk).

Most tag quotas (Tinemaha Mountain is an exception) provide for take of both male and female elk. Achieving and/or maintaining herd objective bull-to-cow ratios is accomplished most readily by harvest of both sexes, because harvesting only male elk can skew the sex ratio towards females; and, conversely, harvesting only female elk can result in a population skewed towards males (Mohler and Toweill 1982).

Based on the computer simulation analysis of expected harvest rates, for most of the proposed hunts, the post-hunt bull-to-cow ratios are expected to increase and/or remain above the Department's management objective of 25 bulls per 100 cows. Additionally, computer simulation modeling of the herds proposed for hunting indicates that the proposed take is within sustained-yield management levels. That is, under the proposed harvest levels, the population will be able to maintain itself over the long term at existing or higher population levels.

As discussed earlier, female pregnancy rates and calf survival are inversely related to the density of the elk herd in relationship to the condition of the available habitat. Management that provides for frequent reductions in female and young of the year elk in areas where elk have exceeded their herd size objective encourages age structure dominated by reproductively successful females (Hines et al. 1985).

Based on computer simulation modeling, the proposed project has the potential to increase calf survival rates for the hunted herds, resulting in improved general health of the hunted populations. Also, computer simulation modeling predicts minimal changes in bull-to-cow ratios as a result of the proposed project; such ratios for most hunted herds are predicted to increase or remain near the minimum objective ratio. Bull-to-cow ratios are predicted to remain significantly above corresponding ratios for other western states with hunting programs. Thus, it is unlikely that adverse impacts to the social structure of hunted herds will occur as a result of the proposed project. By increasing

calf-to-cow ratios, the proposed project would improve herd condition and could thus have a positive effect on herd social structure.

EFFECTS ON HABITAT

The removal of up to 625 Roosevelt elk, 108 Rocky Mountain elk, and 621 tule elk through public hunting and up to 255 elk through the PLM Program is not expected to significantly change elk population levels on a long term basis. If no major changes occur in the elk population levels, no major changes in elk-caused effects on habitat (e.g., elk foraging pressure on plants) would be expected. Therefore, the proposed project is not expected to have an impact on habitat in the hunt areas.

The typical technique used to hunt elk within the proposed hunt areas involves spotting animals at a distance and/or quietly approaching them on foot to within a reasonable shooting range. Hunting from a motorized vehicle is illegal. Some hunters may use horses to cover greater distances searching for elk. In any case, the relatively low intensity of hunting effort (because of the low number of elk hunters in the field) within these areas is not expected to produce major effects on habitat.

Both public and private lands occur within the hunt areas. On public lands, the Department provides input to the USFS regarding actions to improve the condition of elk herds and their habitat. Further, the USFS is mandated to incorporate wildlife needs, including elk, into their planning process, as required by the National Forest Management Act. In general, current timber harvest practices on public land benefit elk by creating a diverse mosaic of early successional and mature forest habitat types.

Most of the public lands proposed to be open to elk hunting within the Siskiyou, Marble Mountains, Del Norte, Humboldt, Mendocino, and Northeastern California hunt areas are currently open to the public on a year-round basis. These lands also are used for other outdoor recreational activities, such as fishing, photography, hiking, hunting, bird watching and general nature viewing. Due to the large size of the hunt areas (each area is several hundred square miles in size) and existing human use levels of the hunt areas, it is unlikely that the allocation of up to 733 license tags to the public for these hunts will individually or cumulatively negatively impact the habitat in the hunt areas.

Almost the entire Alameda hunt zone consists of private property or public land not open to hunting. Access to these properties is strictly controlled and generally not available to the public. Due to the large size of the hunt area and existing human use levels, it is unlikely that the allocation of up to 5 license tags for these hunts will individually or cumulatively negatively impact the habitat in the hunt area.

Almost the entire Bear Valley hunt zone consists of private property or public land lacking consistent elk use. Access to these private properties is strictly controlled and generally not available to the public. Due to the large size of the hunt area and existing

human use levels, it is unlikely that the allocation of up to 19 license tags to the public for these hunts will individually or cumulatively negatively impact the habitat in the hunt area.

Approximately half of the Cache Creek tule elk hunt area is public land used for a variety of recreational activities. Removing a maximum of four bulls and three cows from this area will result in only a short-term reduction of elk numbers. Historical data and computer simulation modeling of elk herd performance indicate subsequent spring calf recruitment will compensate for this reduction. Because the population level of the Cache Creek herd will not significantly change, the proposed action will not have an impact on the habitat in the Cache Creek tule elk herd area.

Camp Roberts is operated by the U.S. Army, and except during specific periods is not accessible to the public. Removing a maximum of 30 antlerless and 15 bulls from the Camp Roberts tule elk herds will result in an increase within the population over time. The proposed harvest is expected to be neutral to habitat quality.

A large portion of the East Park hunt zone consists of private property. Very little public land within the hunt zone has consistent elk use. The Bureau of Reclamation (BOR) does own property within the zone with consistent use by elk. A majority of the elk harvest since the hunts inception has taken place on the BOR property. The BOR land is also used for other outdoor recreational activities, such as fishing, camping, photography, hiking, bird watching and general nature viewing. Access to the private properties is strictly controlled and generally not available to the public. Due to the size of the hunt area and existing human use levels, it is unlikely that the allocation of up to 4 bull and 10 antlerless tags to the public for these hunts will individually or cumulatively negatively impact the habitat in the hunt area.

Fort Hunter Liggett is operated by the U.S. Army, and except during specific periods is not accessible to the public. The proposed project includes expanding the current zone boundaries. The majority of the zone expansion includes private property and a predominance of the elk outside of Fort Hunter Liggett base reside on private property. Removing a maximum of 70 antlerless and 40 bulls from the Fort Hunter Liggett Central Coast tule elk herds will result in an increase within the populations over time. The proposed harvest is expected to improve habitat quality.

The entire Grizzly Island Wildlife Area is public land; however, the wildlife area will be closed to other uses during the tule elk season. The proposed expansion of the boundaries includes additional private property. Access to these properties is strictly controlled and generally not available to the public. The Department does not anticipate any individual or cumulative adverse impacts to these lands. The proposed level of hunting at Grizzly Island (102 tags) has the potential to improve the quality of the elk habitat on the Island. The proposed level of harvest should be helpful in reaching herd objective population levels for Grizzly Island, and should prevent losses as a result of elk foraging on poison hemlock due to the lack of other suitable forage items.

Most of the public lands within the Lake Pillsbury hunt area are currently open to the public on a year-round basis. These lands also are used for other outdoor recreational activities, such as fishing, photography, hiking, hunting, bird watching and general nature viewing. Due to the size of the hunt areas and existing human use levels of the hunt areas, it is unlikely that the allocation of up to 6 bull and 7 antlerless elk will individually or cumulatively negatively impact the habitat in the hunt area.

Approximately one-fourth of the La Panza hunt area is public land. For the La Panza tule elk herd, removing a maximum of 70 antlerless and 50 bulls will result in a short-term reduction of population numbers but the ten year trend will result in an increase in the population. Spring calf recruitment will compensate for any short-term population reduction. The proposed harvest is expected to have no impact on habitat quality.

The Mendocino elk hunt zones consists of private property or public land lacking consistent elk use. Access to these private properties is strictly controlled and generally not available to the public. Due to the size of the hunt areas and existing human use levels, it is unlikely that the allocation of up to 43 bull and 48 antlerless elk tags for these hunts will individually or cumulatively negatively impact the habitat in the hunt area.

The Owens Valley tule elk hunt zones are accessible to the public and used for a variety of recreational activities. The removal of up to 34 individuals from the eight elk zones will allow the populations to increase but be managed below the mandated maximum number of 490 elk. The small increase in elk numbers should not have a measurable impact on habitat in the Owens Valley. Data collected by the Los Angeles Department of Water and Power since 1978 indicate that habitat conditions in the Owens Valley are primarily dependent upon the level of annual precipitation (Racine et al. 1988).

Almost the entire San Emigdio hunt zone consists of private property or public land with no consistent elk use. Access to the private properties is strictly controlled and generally not available to the public. Due to the large size of the hunt area and existing human use levels, it is unlikely that the allocation of up to 10 bull tags and 24 antlerless tags for these hunts will individually or cumulatively negatively impact the habitat in the hunt area.

Most of the San Luis Reservoir hunt zone consists of private property. Very little public land within the hunt zone has consistent elk use or is open to hunting. The Department of Fish and Wildlife does own property (760 acre wildlife area) within the zone with consistent use by elk. A portion of the elk harvest since the hunts inception has taken place on the Department property. The Department land is also used for other outdoor recreational activities, such as hunting, photography, hiking, bird watching, and general nature viewing. Access to the private properties is strictly controlled and generally not available to the public. Due to the size of the hunt area and existing human use levels, it is unlikely that the allocation of up to 15 bull and 30 antlerless tags to the public for

these hunts will individually or cumulatively negatively impact the habitat in the hunt area.

Nearly the entire Santa Clara hunt zone consists of private property. There is very little public land within the hunt zone. The Department of Fish and Wildlife does own property (2,900 acre ecological reserve) within the zone with consistent use by elk and is open to limited use by hunters. The Department land is also used for other outdoor recreational activities, such as hunting, photography, hiking, bird watching, and general nature viewing. Access to the private properties is strictly controlled and generally not available to the public. Due to the size of the hunt area and existing human use levels, it is unlikely that the allocation of up to 10 bull and 10 antlerless tags to the public for these hunts will individually or cumulatively negatively impact the habitat in the hunt area.

EFFECTS ON RECREATIONAL OPPORTUNITIES

Hunting Opportunities

The proposed project would authorize public hunting of Roosevelt, Rocky Mountain, and tule elk, providing opportunities to harvest up to 1,354 elk by hunters who will participate in this unique outdoor experience. The demand for elk hunting opportunities is extremely high in California. In 2015, over 35,500 individuals applied for an opportunity to hunt elk in California. In 1988, for the first time, a nonrefundable fee of $5 was charged to apply for an elk hunt. Despite the new fee, almost 10,000 licensed hunters applied for elk license tags in 1988 with the number growing almost every year to date. The proposed project benefits the hunting public by providing hunting opportunities consistent with the State's Wildlife Conservation Policy and sections 332 and 1801, Fish and Game Code.

Season dates for several elk hunts may coincide, at least partially, with local deer seasons. However, it is unlikely that deer hunters will be adversely impacted by the low number of elk hunters that may be in the field during the deer season. Most tule elk hunts do not coincide with deer seasons or only partially overlap. Many of the elk seasons will overlap with upland game (quail, chukar, and rabbit) and bear season. Wild pig season is open all year many of the tule elk hunts will coincide with this season. The large areas open to hunting and the relative short elk season dates indicate that elk hunters will not affect hunters of other species of wildlife in terms of hunter success or quality of experience. The Grizzly Island Wildlife Area is not open to deer hunting. Primary hunting activities occurring at Grizzly Island are waterfowl and upland game hunting. The proposed tule elk hunting periods on the Island avoid other game seasons, so there will be no overlap with people hunting other game species.

Some individuals have expressed concern that the hunting regulations of other states might have adverse effects on elk hunting in California (presumably by causing an influx or exodus of hunters.) For the most part, non-resident public elk hunting opportunities on California are very limited (Only up to one elk tag per year is available for non-residents to draw, non-residents may purchase the three fund-raising elk tags, and are eligible to purchase elk tags through the PLM Program). The Department does not expect that the hunting regulations of other states will have an adverse effect on elk hunting in California.

Nonhunting Opportunities

Nonhunting users of the elk resource (viewing, nature study, and photography) will not be significantly impacted by the take of up to 1,354 elk from statewide populations of approximately 5,000 Roosevelt elk, 1,500 Rocky Mountain elk, and 5,100 tule elk. Nor will the proposed project impair the nonconsumptive users' ability to enjoy the outdoors, the elk resource, or its habitat, because the nonconsumptive user will have the opportunity to view elk herds in an unhunted situation indefinitely. Many elk herds inhabit Federal or State Parks, where hunting does not occur. Three of the State's 22 tule elk herds are maintained in a penned situation where no hunting is contemplated. These herds provide the public an opportunity to enjoy tule elk in their native habitat. Additionally, the proposed action does not provide hunting opportunities at Point Reyes National Seashore, which has a large population of tule elk and is accessible to the public for the enjoyment of elk and other wildlife in the area. Elk hunting seasons are limited in time and harvest reports from 2014 indicate that elk hunters spend on average 4 days hunting elk. This indicates that even for those hunted herds a majority of the time can be spent viewing elk without hunters in the field.

The proposed action will not impact the nonhunting public, because the number of hunters in the field at any one time (established by the quotas for each hunt), in conjunction with the areas open to hunting, will result in very low hunter density. Historically, all areas open for hunting have been open for other types of hunting (waterfowl, upland game birds, rabbit, wild pigs, black bear, etc.) during the same timeframe as the proposed elk hunts. If the nonhunter is concerned about being in the field during the proposed elk hunts, there are significantly larger areas of the same habitat type located adjacent to or near all hunt areas that can be used for nonhunting activities during the short elk hunting period.

EFFECTS ON OTHER WILDLIFE SPECIES

Although there is some overlap of food habits, competition between deer and elk has not been documented to be a problem in California. Nelson and Leege (1982) stated that "It would appear, therefore, that neither the elk nor the mule deer is affected seriously by the other, mainly because of differences in primary forage species and habitat choice." This also appears to be the case in California. Potential for competition

between elk and deer can exist on critical winter ranges shared by the two species. But, there is no scientific evidence to indicate that removal of elk through a hunting program will adversely impact the local or statewide deer resource.

In some portions of the Owens Valley (primarily the Goodale subherd area), migratory deer and elk both utilize the same area. The elk use this range in the summer and are not present during the winter, when the area is used by deer (Racine et al. 1988). As indicated by Nelson and Leege (1982) and in the Owens Valley Tule Elk Habitat Management Plan, deer and elk generally do not use the same primary forage species. In an effort to verify this assumption, the Department has funded research conducted by the University of California to investigate deer and elk interactions in the Goodale tule elk subherd area. This research has been completed, confirming that deer and elk used different primary forage plants in the Goodale area and that completion was minimal (Berbach 1991).

During the last few years, the potential for competition between deer and elk has received greater attention in the western states and provinces of North America. Many states and provinces have reported a decline in deer population numbers, coinciding with an increase in elk numbers. It has not been proven that elk displace deer or are a significant factor in suppressing their numbers throughout a broad geographic region. In considering the potential for competitive interaction between deer and elk, a variety of factors may be important such as predation, climate, digestive physiology, energetics, vegetation succession, livestock, and human-related factors. Lindzey et al. (1997) discussed these and other factors in reviewing the potential for competition between deer and elk throughout the west, and compiled an extensive list of references regarding this subject. They concluded that it is appropriate to question whether the growth of elk populations has contributed to apparent deer decline, but found no consistent trends in geographic areas used sympatrically to suggest a cause-and effect relationship.

Due to their large body size, adult elk experience limited predation. Cases of lion predation on adult elk have been documented (Taber et al. 1982, Booth et al. 1988, Racine et al. 1988). Results of fall surveys have documented several confirmed lion-killed elk since 1988. However, there is no scientific evidence to indicate mountain lion predation is having a significant effect statewide on elk in California as demonstrated by increases in elk numbers.

Coyotes, black bears, wolves, and mountain lions prey on elk and/or elk calves. It is possible that, as a result of removing adult elk from elk herds, there will be increased calf production the following spring. This could provide additional prey items for predators. Historical herd performance data collected on elk herds indicate that calf recruitment will increase after an elk removal, regardless of the existence of predators in the area (Racine et al. 1988). Based on a review of available information discussed in this document, it is reasonable to assume the proposed project will not have

measurable short-term or long-term effects on other local wildlife populations, including deer, mountain lions, black bears, wolves, and coyotes.

A number of endangered, threatened or locally unique animals and plants may occur within the elk hunt areas. The Department is charged with the responsibility to determine if any hunting regulations will impact threatened or endangered species. It complies with this mandate by consulting internally and with the Commission when establishing elk hunting regulations to ensure that the implementation of the proposed project and existing hunting regulations do not affect these species. It is unlikely that adverse impacts to rare, endangered, threatened, or locally unique species associated with the proposed hunt areas will occur as a result of the proposed project. Most rare, endangered, threatened, or locally unique species associated with the hunt areas either are associated with habitats where elk hunting is not likely to occur or use these areas during a time (season) different from when the proposed project will occur. The proposed project will involve a minimal number of hunters using areas that for the most part, are open to the public for a variety of uses, including hunting. The Department has concluded that, based on conditions of the proposed project and existing hunting regulations, differences in size, coloration, distribution, and habitat use between the listed species and elk, the proposed project will not jeopardize these species.

EFFECTS ON ECONOMICS

The proposed project will not result in changes to the environment, either directly or indirectly, which would produce significant negative environmental effects. Therefore, no CEQA review of economic effects is necessary. However, the proposed project has the potential to result in minor economic effects on the communities where elk hunting is proposed, and the discussion below is provided for the Commission and the public's information.

Effects on the local economy may involve increases in economic activity near the hunt areas, because hunters from outside the local area would visit the region and purchase goods and services from local merchants. This additional spending would generate additional retail sales and income, and possibly would contribute to employment in businesses such as motels, restaurants, and retail stores. Considered on a statewide basis, spending effects would be minor because of the small number of tags available. Any potential effects would be distributed between the regions where public hunting is proposed.

Fiscal effects include direct public expenditures and revenue generation associated with the proposed project. The project will be administered by the State. Additional revenues will be directly generated by the $8.13 nonrefundable application fee and the $445.35 elk license tag fee. In 2015, more than 35,000 licensed hunters applied for Roosevelt, Rocky Mountain, and tule elk tags in California. Assuming a similar demand for elk hunting opportunities in the future, revenue generated from the project would be greater than the costs to the State to administer the program. The excess revenue would be used in the Department's Big Game Programs, as required by Section 3953, Fish and Game Code.

EFFECTS ON PUBLIC SAFETY

Since 1989, the Department has received no reports of elk hunting-related casualties in California. This does not diminish the fact that people have died or been wounded while hunting other big game animals). Based on the total number of licensed hunters in California and the annual number of accidents, there is roughly a 0.00425-0.005 percent chance of being killed or wounded while hunting deer. Additionally, Department records show that no nonhunting injuries or deaths have occurred as a result of elk hunting. As with any outdoor activity, there is always a risk of injury or death. However, the probability of being injured while hunting elk is extremely low, especially in comparison to other recreational activities. This good safety record is due, in part, to the requirement that all hunters must successfully pass a hunter safety education course prior to receiving a hunting license. It is unlikely that the proposed project will result in adverse impacts to public safety.

GROWTH-INDUCING IMPACTS

There are no growth-inducing impacts associated with the proposed project. As discussed in "Effects on Economics" in this chapter, there will be minor increases in retail sales, income, and possibly employment in the regions where the proposed hunt areas exist. However, the small number of public tags available is unlikely to create growth-inducing impacts in a State with a total human population of over 30 million.

SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The proposed project will not affect a variety of short-term uses currently available to the public. Additionally, the proposed project will provide for public hunting opportunity without adversely affecting long-term productivity of statewide or local elk populations, based on predictions of simulation modeling.

SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

No significant irreversible environmental changes are expected to occur as a result of the proposed project. The proposed harvest levels were selected to avoid adversely impacting hunted populations and to reach or maintain herd management objectives. The proposed project is designed to avoid significant adverse impacts to other wildlife species, their habitat, and listed or locally unique species. As discussed previously, adverse impacts to economics and public uses (including safety) are not expected.

WELFARE OF THE INDIVIDUAL ANIMAL

The 2004 analysis was presented on page 120 (incorporated by reference, April, 2006 Final Environmental Document, SCH#2003112075, available at 1812 9th street, Sacramento, CA 95811). The project has been designed to limit wounding through the specification of minimum performance requirements for archery equipment and firearms. It is expected that some wounding may nevertheless occur. The methods of take are not one hundred percent lethal. Lethality is largely a function of hunter skill and accuracy. The Department has evaluated the welfare of the individual animal and has specified minimum performance requirements for archery equipment and firearms in existing regulations.

CUMULATIVE IMPACTS

The proposed project provides for a specific level of public elk hunting in specified areas during 2016, and it is reasonably foreseeable that, the Commission would consider and approve hunts in these areas in the future. Because of this potential, the Department modeled population performance of hunted herds for a 10-year period. Potential effects of cumulative factors identified in this section were considered with the model runs. It

must be emphasized that the model runs specify the same level of harvest (expressed as a percentage of the population) each year. In those runs demonstrating an increasing population the harvest level was capped to not increase above the initial level. The statutorily mandated regulation process involves review and appropriate regulation changes based on the condition of a population. Data collected by the Department during the year following the approval or denial of the proposed project would be examined, and appropriate, biologically sound recommendations would be presented by the Department to the Commission prior to approval of any future hunt.

Section 207, Fish and Game Code, requires that the Commission review and consider revisions to regulations relating to mammal hunting. This law requires that the Commission receive recommendations regarding mammal hunting regulations from Commission members, its staff, the Department, other public agencies, and the public. The process is analogous to the Commission establishing specific harvest quotas for the deer and pronghorn antelope hunting seasons annually. The system has worked well over time in adjusting the hunting program annually to maintain healthy wildlife populations.

Effects of Private Lands Wildlife Habitat Enhancement and Management (PLM) Area Program

To become licensed in the PLM Program, landowners are required to submit an application package which includes a management plan. This plan must contain, among other things, habitat enhancement goals and objectives to be accomplished over the term of the five-year license. The habitat projects outlined in the plan are directed toward improving habitat for both game and nongame species. The ultimate goal of these habitat improvement practices is to enhance or stabilize (under adverse ecological conditions) populations of various wildlife species present on the area. Once licensed, the PLM is reviewed annually by the Commission to ensure compliance with all regulations and administrative procedures.

The PLM Program has been successful as an effective incentive for landowners to protect and improve wildlife habitat. Habitat improvements implemented under approved management plans on licensed areas include conducting controlled burns to improve forage conditions, reducing livestock grazing to reduce competition with wildlife, protecting wildlife fawning/nesting sites and riparian areas, developing wetland/marsh areas, constructing brush piles, improving water sources, and planting forage and cover crops for wildlife. The projects directly benefit deer, elk, bear, antelope, wild pigs, waterfowl, turkeys, quail, and a wide variety of nongame wildlife, including threatened and endangered species. Habitat improvements accomplished specifically for game species (such as riparian improvement, protection, and enhancement) directly benefit hundreds (approximately 331 species in hardwood-dominated habitats) of nongame wildlife species.

The anticipated PLM harvest for existing ranches was modeled as part of the overall (public and PLM) harvest simulation model run for the corresponding hunt zone (Appendix 4). PLM ranches outside of hunt zones were modeled separately. As discussed previously, no adverse impacts are expected, based on the simulation model runs. To determine effects of harvest under the PLM Program for the Tejon Ranch and Hearst Ranch, the Department modeled the current condition and the proposed for the subject herds. Based on simulation model runs (Appendix 4), previous harvest levels have been below the maximum sustainable yield. Because the expected harvest under the PLM Program is less than the maximum sustainable yield (harvest), the Department has determined that the PLM Program, together with the proposed project, will not have a significant adverse cumulative effect on elk populations in California.

Fifty licensees participated in the PLM Program for elk in 2015 (Appendix 18). The Department does not recommend issuing more than 255 elk tags through the PLM Program for 2016 (tule, Roosevelt, and Rocky Mountain elk combined). Maximum quotas for the PLM Program were determined against the backdrop of the proposed public elk tag quotas. Previous total elk harvests under the PLM program have been below these levels (Approximately 136 elk were harvested in 2014 under the PLM program). Expected harvest under the PLM program should be below the maximum PLM quota. Thus, harvest under the PLM program either alone or combined with the proposal public harvest, will not have a significant adverse cumulative effect on statewide or local populations of elk.

Effects of Drought

Drought cycles are part of the ecological system in California and elk are adapted to dealing with low water years. Still, multi-year droughts can reduce elk populations on a local scale. Drought conditions can impact elk in a variety of including: degraded habitat quality (less vegetation growth) and lower food production (both natural and agricultural). California has a "Mediterranean climate," meaning that over the long-term the State receives the bulk of its precipitation during the cool fall and winter months, while warm spring and summer months are generally dry. In other words, California undergoes a "summer drought" each year. However, extreme variation in precipitation occurs in the State on an annual basis. For example, the northwest coast receives a great deal of precipitation, while southern deserts receive very little precipitation. Additionally, topographic features, such as the Sierra Nevada, influence climate by creating a rain shadow, whereby most of the precipitation falls on the west side of the range, extracting most of the moisture from clouds by the time they reach the east side of the range. The amount of precipitation falling on California is extremely variable on a geographic basis within a year and extremely variable in any one area among years.

Throughout much of the State, stream courses, natural lakes, ponds, springs, and reservoirs were affected by the recent drought. As far as terrestrial wildlife are concerned, prolonged drought in areas where water was already a rare commodity, such as in the desert and south coast ranges, may affect production and survival of

young of a variety of species in future years. Droughts are cyclic over the long-term, and all wildlife species and their habitats in California have evolved under conditions of periodic drought (Bakker 1972, Munz and Keck 1973, Oruduff 1974, Burcham 1975, Barbour and Majors 1977). Since the 1800s, California has been in several drought cycles lasting two to five years (Department of Water Resources data). Because of this natural variation in available water, vegetation communities have evolved and adapted to deal with the associated changes in soil moisture (Barbour and Majors 1977). Many of California's plant communities (e.g., desert, chaparral, grassland, oak-woodland, etc.) are drought tolerant. However, this is not to say that prolonged drought will not affect plant species. Growth and vigor of forage species may be severely reduced during a drought, because the seeds of annual plants would not germinate without adequate moisture, and shrubs and trees would have reduced growth as a water conserving strategy. Consequently, the quantity and quality of forage for herbivores would be reduced.

Few specific studies of drought effects on vegetation communities have been conducted, largely because drought is unpredictable and it is a "normal" occurrence. A study measured acorn production (a primary food of many wildlife species) in five oak species occurring at a site in Monterey County from 1980-89 (Koenig et al. 1991). That study determined that acorn production was highly variable among oak species from year-to-year and that climatic variables generally did not correlate with annual variation in acorn production. That study also indicated that, while on a local geographic scale acorn crop failures may have detrimental effects on local populations, total crop failures on a community-wide basis among all species are rare, even during drought years. Similarly, acorn production data from Tehama County (Barrett, unpublished data) indicate that from 1987-90 production was approximately 60 percent, 20 percent, five percent, and 180 percent, respectively, of the mean annual crop.

Alternatively, in annual vegetation communities, lack of fall germinating rains or minimal spring rains can preclude germination of annual seeds of forbs and grasses which are important sources of forage, primarily during the fall, winter, and spring. The seeds of these species would continue to lie dormant in the soil until germinating conditions were suitable. Drought may also weaken resistance of plants to disease, fungus, and insect damage. This would be considered part of the drought cycle in terms of impact on vegetation.

Hence, during a drought, some plant species have responded in a way that would benefit wildlife (e.g., increased acorn production), while others respond in a way that would be detrimental to wildlife (e.g., lack of grass and forb growth).

Native game mammals in California have evolved to withstand both drought and flood extremes within their ranges. Before human intervention, these ranges likely varied as a response to periods of prolonged drought or wet conditions. Currently, however, remaining habitats are, to a large extent, managed and affected by humans. As it relates to drought and water availability, this has produced greater stability in modern

wildlife populations due, in part, to the advent of water wells, water sites developed for wildlife (e.g., guzzlers), irrigation, and reservoirs that are adapted to these habitats. Currently, water is more available to wildlife, regardless of drought, than it would have been prior to large-scale human development in California. There are no documented cases of wildlife being unable to obtain water due to the recent drought. Unlike humans, wildlife do not have to rely on reservoirs for their water supply.

The reduced quantity of vegetative cover due to prolonged drought in some areas could affect thermal and hiding cover important to wildlife. However, that possibility has not yet been reflected in any population data, indicating a significant effect.

Significant impacts due to drought are possible for some species in some areas of the State if drought conditions persist for more than several years. The impact would be expected in the form of reduced habitat quality and quantity, resulting in lowered reproductive success and survival of individuals in the population. As a result, periodic drought conditions may produce short-term effects due to less available forage but may have little, if any, long-term effects on the abundance of most species.

If drought has significant effects on wildlife species, it would be reflected in poorer physical condition of individual animals, decreased survival of individuals, declining production and survival of young, and declining population size. While such trends occur annually with some populations in some areas, the large-scale effects of the current drought, if significant, could be felt statewide. Presently, there are no data to indicate that drought has significantly impacted terrestrial wildlife populations, except in localized areas of southern California.

Effects of drought conditions on elk populations have been recorded in the Owens Valley and in the Cache Creek area (Fowler 1985, Booth et al. 1988, Racine et al. 1988). It should be noted that, while drought may result in increased mortality among individuals in an elk population (primarily lower calf survival), the proposed project was based on data collected on populations that can and do experience periodic drought conditions. The proposed project will not prevent local populations from remaining viable under drought conditions. There are no records of drought affecting the Grizzly Island tule elk herd (Botti and Koch 1988). Based on the above information, and population trends depicted in Figure 1, the possibility of drought impairing the statewide tule elk population is very unlikely.

Evaluation of elk herd performance and habitat conditions and trends is an ongoing facet of the Department's elk management program. Information collected by the Department and other sources will be utilized to modify any future recommendations for hunting proposals or to recommend other management activities, such as habitat improvement or acquisition projects. The impacts, if any, of a catastrophic event on elk populations would be addressed in any future management activities. In addition, the Commission has the regulatory authority (Section 314, Fish and Game Code) to take emergency action to cancel or suspend one or more proposed elk hunts if a

catastrophic event occurred which, in conjunction with a hunting program, could significantly impact the elk population. Thus, the Department does not anticipate that an adverse impact will occur as a result of drought in combination with the proposed project.

Effects of Wildfire

One aspect of prolonged drought that would affect wildlife habitat is an increased risk of wildfire due to extremely dry conditions. However, wildfire can be a problem in extremely wet years because of the buildup of fuel, and it is difficult to conclude that drought years predispose some vegetation communities to wildfire more so than wet years. Certainly in forested communities, prolonged drought that has affected the woody plant community in terms of increased plant mortality and decreased moisture content would make them more susceptible to wildfire.

Catastrophic events, such as wildfires and drought, have been affecting the State's elk resource since their evolution in pristine times. Effects of drought and wildfires can have an impact on local populations of elk. Historical data collected by the Department (McCullough 1969, Fowler 1985, Racine et al. 1988) indicate that there is no evidence that drought, wildfires, or other catastrophic events have resulted in the extirpation of an elk population.

Wildfires are a natural occurrence in elk range. Plant species in the hunt areas have evolved with fire. Many species require fire to reproduce. There is no evidence to indicate that fire has negative long-term effects on elk populations, and there is considerable information that fire can significantly improve elk habitat (Lyon and Ward 1982).

Wildfires have the potential to positively impact a population of elk. The initial fire may displace elk for a very short time period (two to three months). However, elk often return to burned areas immediately following the fire. The long-term impacts can have significant positive effects on the local populations. For example, a wildfire may burn habitat used by elk, causing short-term loss of some forage and cover. However, elk move back into the burned areas quickly to utilize the young nutritious forage growing in the burned areas (Tim Burton, Department of Fish and Game, Yreka). Also, since elk are primarily grazing animals (i.e., they eat mostly grasses), fires which burn brush and trees open areas to allow more grasses to grow, and thus benefit elk (Lyon and Ward 1982).

Based on the above information, the possibility of wildfires impairing the statewide Roosevelt, Rocky Mountain, or tule elk populations from maintaining themselves in a healthy, viable condition is very unlikely. Evaluation of elk herd performance and habitat conditions and trends is an ongoing facet of the Department's elk management program. Information collected by the Department and other sources will be utilized to modify any future recommendations for hunting proposals or to recommend other

management activities, such as habitat improvement or acquisition projects. The impacts, if any, of a catastrophic event on elk populations would be addressed in any future management activities. In addition, the Commission has the regulatory authority (Section 314, Fish and Game Code) to take emergency action to cancel or suspend elk hunting if a catastrophic event occurred which, in conjunction with a hunting program, could significantly impact the elk population.

Effects of Disease

Historical data indicate that elk are remarkably free of disease (Fowler 1985, Booth et al. 1988, Botti and Koch 1988, and Racine et al. 1988). However, Roosevelt elk tested in the Prairie Creek area of Humboldt County showed signs of heavy parasite levels and poor body condition in 1960 and 1982 (Department of Fish and Game files). The Department routinely collects blood samples from the majority of elk captured. Over the last 20 years, the Department has analyzed approximately 900 tule elk and 200 Roosevelt elk blood samples to systematically determine the prevalence of disease and assess the general health of the State's elk resource.

Recent concern has grown about effects of Chronic Wasting Disease (CWD) on deer and elk in North America (Williams et al., 2002). CWD is a fatal, contagious transmissible spongiform encephalopathy infecting the brains of deer and elk. It has been diagnosed within numerous states and provinces of North America. The Department began a surveillance program in 1999 and has tested more than 900 samples from California deer for CWD. All results to date have been negative. California is considered a low risk state for CWD; game ranching of cervids is not allowed (except for fallow deer), and importing live cervids is severely restricted. CWD is not currently known to be naturally transmitted to humans or animals other than deer and elk. On August 30, 2002, the Fish and Game Commission adopted emergency regulations placing conditions on the importation of hunter-harvested deer and elk into California. These restrictions recently were made permanent, and the Department intends to continue its CWD surveillance program until more is known about this disease.

There is no indication of a potential for the State's elk populations (either statewide or locally) to be significantly impacted by a major disease outbreak. There are no data available to indicate that disease, road kills, predation or other natural mortality factors will act as additive impacts which, along with the proposed hunting program, will have a significant adverse cumulative impact on local or statewide elk populations.

Effects of Habitat Loss and Degradation

The proposed project is not likely to cause habitat loss and degradation. The removal of individuals may actually improve elk habitat by decreasing grazing intensity. The elk hunting season is short, and most of the hunting areas are generally open to the public

for other uses year-round. The effects on habitat loss and degradation by hunters during the elk hunting season would be negligible.

On private land, there are potential changes in land ownership which may result in land-use changes. No major changes in private land-use patterns are expected in the near future. The long-term outlook for elk habitat on public lands in California is stable to improving. The cumulative impacts of habitat modification plus hunting are not expected to have a significant adverse impact on elk populations. In combination with the proposed project, potential habitat modification/ degradation is unlikely to have significant adverse cumulative effects.

Effects of Illegal Harvest

Illegal harvest of game mammals is difficult to quantify. It is likely that elk have been taken illegally from each of the proposed hunt areas, as well as from other herds where hunting is not proposed. Department records indicate at least three citations per year involving illegal take/possession of elk were issued in 1997 and 1998. At least three citations involving elk were issued each year in 2000 and 2001. Illegal harvest of other subspecies of elk has occurred in California and other western states (Potter 1982).

Illegal take of tule elk has occurred in the Owens Valley, at Grizzly Island and Fort Hunter Liggett during recent tule elk seasons. One hunter at Grizzly Island was cited for taking two and one cited for taking a spike elk while possessing an antlerless tag. Similar incidents occurred in sporadically in the past. Such incidents of unintentional illegal take have occurred with other game animals in California and other western states. The Department conducts mandatory hunter orientations for some tule elk hunt sin California and emphasizes avoiding incidents of unintentional illegal take and distributes informational material to all elk tag holders. The Department will continue this emphasis in future orientations; additionally, the Department will continue to issue citations to individuals for illegally taking elk, regardless of whether or not such take is intentional. However, despite such measures, some level of unintentional illegal take is expected to continue.

Effects of Depredation

Private property conflicts involving elk and agricultural crops, fences, and other personal property have occurred, and will continue to occur wherever elk and humans coexist. Section 4181, Fish and Game Code, provides for the killing of elk when private "property is being damaged or is in danger of being damaged or destroyed." However, current Department policy is to attempt all reasonable and practical means of nonlethal control prior to issuing a depredation permit for elk.

Issuing depredation (kill) permits is considered as the final measure to alleviate localized private property conflicts involving elk; and the Department issued no elk

depredation permits from 1989 until 2002. However, as elk population numbers have increased and distribution has expanded, conflicts on private property have increased in severity. Since 2002, the Department has issued approximately fifteen elk depredation permits.

In response to the increasing private property conflicts involving elk, the State Legislature passed Assembly Bill 1420 (AB1420, Laird; Chaptered September 4, 2003). Among other things, AB 1420 directs the Department to prepare a statewide elk management plan that identifies management activities necessary to alleviate private property damage caused by elk. Prior to issuing an elk depredation permit, AB1420 requires the Department to verify damage caused by elk, provide a written summary of corrective measure to alleviate the problem, determine the viability of the subject elk herd and the minimum population numbers needed to sustain it, and finally to ensure that the permit will not reduce the herd below the minimum population level needed.

AB1420 provided some constraints on issuance of elk depredation permits and requires identification of additional management activities to alleviate private property conflicts involving elk. The Department will investigate the potential for expanding hunting opportunities as a measure to alleviate private property conflicts involving elk. Because of the constraints in AB1420, the Department does not anticipate an adverse cumulative impact to elk populations resulting from combined effects of the proposed project and issuance of depredation permits.

Effects of Vehicle-Caused Mortality

The number of elk killed by vehicles is not well documented. Unlike deer, very few elk in California appear to be killed by automobiles each year. Vehicle-caused elk mortalities have been reported (specifically with Roosevelt elk in Del Norte and Humboldt counties and tule elk in the Owens Valley and at Cache Creek) since 1990. Unreported incidents cannot be quantified. However, the Department believes effects of vehicle-caused mortality on statewide and localized elk populations are minimal.

Conclusion

The Department has examined a variety of factors that might affect Roosevelt, Rocky Mountain, and tule elk populations statewide and locally. The Department does not anticipate that adverse cumulative impacts to statewide or local elk populations will occur as a result of the proposed project in combination with any factor discussed. However, if some unforeseen cataclysmic event should occur that threatens the welfare of either statewide elk populations or individual hunted populations, the Commission has the authority to take appropriate action, which may include emergency closure of seasons and/or reduction of future hunting opportunities.

Although hunting elk will result in the death of individual elk, specific safeguards included in the proposed action, such as limited tag quotas, short seasons, bag limits,

and close monitoring of hunter activity in the field, will result in removing elk at a level that is below the individual herds' sustained-yield capabilities. Individual elk herds proposed for hunting will be maintained at or above approved management plan objectives, and the estimated statewide tule elk population will remain well above 2,000 animals. Statewide population levels for Roosevelt and Rocky Mountain elk will remain stable. Therefore, significant adverse effects, individually or cumulatively, to elk populations are not expected to result from the proposed project. Additionally, no impacts from two or more separate factors have been identified where, when viewed alone would be minor, but whose combined effect would be significant. Because individual and cumulative negative impacts are not expected to occur, specific mitigation measures are unnecessary.

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CHAPTER 3 - ALTERNATIVES

NO PROJECT

Other than annual tag quota modifications proposed in response to herd productivity, implementation of the No Project alternative would result in no change from the 2015 elk hunting regulations described in the “Existing Condition” Appendix 17.

ALTERNATIVE 2 – INCREASED HARVEST

Alternative 2 represents management options within each hunt zone that will achieve an increased harvest (IH) from the herd(s). IH refers to a harvest strategy that maximizes the number of animals that can be harvested from a population, commensurate with the goals and objectives stated for that herd, for at least the next year. A potential problem with an IH management strategy is the risk of overharvesting. If, under an IH program, an overharvest occurred, more conservative management strategies would have to be implemented the following year to correct the situation.

ALTERNATIVE 3 – REDUCED HARVEST

Alternative 3 represents management options within a particular hunt zone that will produce a relatively small harvest. This reduced harvest (RH) is a harvest strategy that provides hunting opportunities at reduced levels from those proposed under either IH or the proposed project strategies.

ALTERNATIVE 4 – HERD GROWTH

Alternative 4 represents management options available if the number of elk increases substantially within the corresponding hunt units. The Herd Growth (HG) scenario would increase the harvest level to correspond with the increase in elk numbers. HG would provide more hunting opportunity correlated directly with elk population levels. Population growth for elk zones were estimated based on the potential for those herds to increase in time. Growth estimates ranged from 18% to 400%. The time frame to reach the herd growth level for the analyzed population under this alternative will vary by herd. This is an alternative harvest that could be utilized within the life span of this environmental document. Current and proposed harvest strategies, for most herds, allow for population growth through time.

BIBLIOGRAPHY

Bakker, E. 1972. An island called California. Univ. of California Press, Berkeley.

Barbour, M.G., and J. Majors, eds. 1977. Terrestrial vegetation of California. John Wiley and Sons, New York.

Barnes, E. P. 1925a. Elk in Del Norte County. California Fish and Game 11:90.

_____. 1925b. A few Roosevelt elk still exist in Del Norte County. California Fish and Game 11:142.

Berbach, M.W. 1991. Activity patterns and range relationships of tule elk and mule deer in Owens Valley. Ph.D. Dissertation, Univ. Calif. Berkeley. 141 pp.

Booth, J., J. Swanson, and D. Koch. 1988. Management plan for the Cache Creek tule elk management unit. California Department of Fish and Game. Sacramento, California.

Botti, F. and D. Koch. 1988. Management plan for the Grizzly Island tule elk management unit. California Department of Fish and Game. Sacramento, California.

Bubenik, A.B. 1982. Physiology. Pp. 125-179 in J. W. Thomas and Dale E. Toweill eds. Elk of North America, ecology and management. Stackpole Books, Harrisburg, PA 698 pp.

Burcham, L.T. 1975. Climate, structure, and history of California's annual grassland ecosystem. Pages 7-14 in R.M. Love, ed. The California annual grassland ecosystem. Univ. of California, Davis, Inst. of Ecology Publ. No. 7.

Clutton-Brock, T.H., F.E. Guiness, and S.D. Albon. 1982. Red deer: behavior and ecology of two sexes. Univ. Chicago Press. 378 pp.

Department of Fish and Game. 2004. Final Environmental Document, Section 364, Title 14, California Code of Regulations, Regarding Elk Hunting. State of California, The Resources Agency, Department of Fish and Game. 300 pp.

deVos, J. C., Jr. And T. McKinney. 2003 Recent trends in North American mountain lion populations: a hypothesis. Pages 297-307 *in* C. van Riper III and D. J. Mattson, editors. The Colorado Plateau II, University of Arizona Press, Tucson.

Fischer, J. and D. Kitchen. 1984. Siskiyou County elk study: final field report 1982-1984. California Department of Fish and Game, 1416 Ninth Street. Sacramento, California 95814.

Fowler, G.S. 1985. Tule elk in California: history, current status, and management recommendations. California Department of Fish and Game, 1416 Ninth Street. Sacramento, California 95814. Interagency Agreement #C-698.

Fredrickson, E., K. M. Havstad, R. Estell, and P. Hyder. 1998. Perspectives on desertification: south-western United States. Journal of Arid Environments 39:191-207.

Geist, V. 1982. Adaptive behavioral strategies. Pp. 219-277 in J. W. Thomas and Dale E. Toweill eds. Elk of North America, ecology and management. Stackpole Books, Harrisburg, PA 698 pp.

Harper, J.A., J.H. Harn, W.W. Bentley, and C.F. Yocom. 1967. The status and ecology of the Roosevelt elk in California. Wildlife Monographs No. 16. Washington D.C. The Wildlife Society. 49 pp.

Hebblewhite, M. 2005. Predation by wolves interacts with the North Pacific Oscillation (NPO) on a western North American elk population. Journal of Animal Ecology 74:226-233.

Hines, W., J. Lemos, and N. Hartmen. 1985. Male breeding efficiency in Roosevelt elk of southwestern Oregon. Wildlife Research Report Number 15. Oregon Department of Fish and Wildlife, P.O. Box 3503, Portland, Oregon 97208.

Hobbs, N.T., and 12 co-authors. 2006. An integrated assessment of the effects of climate change on Rocky Mountain National Park and its gateway community: interactions of multiple stressors. Final Report to the U.S. Environmental Protection Agency http://www.epa.gov/cgi-bin/epaprintonly.cgi.

Kitchen, D.W. and P.M. Woodard. 1995. Seasonal habitat use and herd composition by Roosevelt elk in the Marble Mountains, Siskiyou County, California. Second Report 12 May 1994. 37 pp.

Koenig, W.D., W.J. Carmen, M.T. Stanback, and R.L. Mumme. 1991. In press. Determinants of acorn productivity among five species of oaks in central coastal California. Symposium on California's Oak Woodlands and Hardwood Rangeland.

Lindzey, F.G., W.G. Hepworth, T.A. Mattson and A.F. Reeves 1997. Potential for competition interactions between mule deer and elk in the Western United States and Canada: A Review Wyoming Cooperative Fisheries and Wildlife Research Unit, Laramie, WY. 84pp.

Lyon, J. and L. Ward. 1982. Elk and land management. Pp. 443-477 in J. W. Thomas and Dale E. Toweill (eds.). Elk of North America, ecology and management. Stackpole Books. Harrisburg, Pennsylvania. 698 pp.

McCullough, D.R. 1969. The Tule Elk: Its History, Behavior and Ecology. University of California Publ. in Zoology. No. 88. University of California Press. Berkeley, California. 209 pp.

McCullough, D.R. 1979. The George Reserve deer herd: population ecology of a selected species. Univ. Michigan Press. Ann Arbor. 271 pp.
McCullough, D.R. 1984. Lessons from the George Reserve. Pp. 211-242. in: L. K. Halls (ed.). White-tailed deer: ecology and management. Stackpole Books. Harrisburg, Pennsylvania. 870 pp.

McCullough, D.R. 1984. Lessons from the George Reserve. Pp. 211-242. in: L. K. Halls (ed.). White-tailed deer: ecology and management. Stackpole Books. Harrisburg, Pennsylvania. 870 pp.

Mohler, L. and D.E. Toweill. 1982. Regulated elk populations and hunter harvests. Pp. 561-598 in J. W. Thomas and Dale E. Toweill (eds.). Elk of North America, ecology and management. Stackpole Books. Harrisburg, Pennsylvania. 698 pp.

Munz, P.A. and D.D. Keck. 1973. A California flora with supplement. Univ. of California Press, Berkeley.

Murie, O.J. 1951. The Elk of North America. Wildlife Management Institute/Stackpole Books, Harrisburg, PA. 376 pp.

Nelson, J. and T.A. Leege. 1982. Nutritional requirements and food habits. Pp. 323-368 in J. W. Thomas and Dale E. Toweill (eds.). Elk of North America, ecology and management. Stackpole Books. Harrisburg, Pennsylvania. 698 pp.

Oruduff, R. 1974. Introduction to California plant life. Univ. of California Press, Berkeley.

Potter, D.R. 1982. Recreational use of elk. Pp. 509-559 in J.W. Thomas and D.G Toweill eds. Elk of North America, ecology and management. Stackpole Books. Harrisburg, PA. 698 p.

Racine, D., T. Blankinship, and D. Koch. 1988. Management plan for the Owens Valley tule elk management unit. California Department of Fish and Game. Sacramento, California.

Ricker, W.E. 1954. Stock and Recruitment. J. Fish. Res. Board Can. 11:559-623.

Savidge, I.R. and J.S. Ziesenis. 1980. Sustained yield Management. Pp. 405-410 in Sanford D. Schemnitz (ed.). Wildlife Management Techniques Manual. The Wildlife Society. Washington, D.C. 686 pp.

Smith, D. and D. Updike. 1987. Elk Pop, unpublished computer population simulation model. Department of Fish and Game, 1416 Ninth Street, Sacramento, California 95814.

Taber, R.D., K. Raedeke, and D.A. McCaughran. 1982. Population characteristics. Pp. 279-300 in J. W. Thomas and Dale E. Toweill (eds.). Elk of North America, ecology and management. Stackpole Books. Harrisburg, Pennsylvania. 698 pp.

Thomas, R. D. 1975. The status of Rocky Mountain Elk in Kern County, 1974. California Fish and Game 61 (4): 239-241.

Walters, C.J. 1986. Adaptive management of renewable resources. MacMillian Publishing Company, New York, NY. 300 pp.

Williams, E.S., M.W. Miller, T.J. Kreeger, R.H. Kahn, and E.T. Thorne. 2002. Chronic wasting disease of deer and elk: a review with recommendations for management. Journal of Wildlife Management, 66(3): 551-563.

Appendix 1 – 2014 Elk Tags Issued and Harvested on PLM Ranches

PLM Name	Bull Tags	Bulls Harvested	Antlerless Tags	Antlerless Harvest
ALEXANDER RANCH	1	1	2	2
AVENALES RANCH	2	2	2	2
BARDIN RANCH	2	2	4	4
BLACK RANCH	1	0	1	1
CAMP 5 OUTFITTERS (MORISOLI)	3	3	3	3
CARNAZA WILDLIFE MGT AREA	3	3	3	1
CARRIZO RANCH	2	2	2	2
CHIMNEY ROCK RANCH	2	2		
CLARK AND WHITE RANCH	3	3	2	0
CONNOLLY/CORRAL HOLLOW RANCH	1	0	1	0
COTTRELL RANCH	1	0	1	1
DEFRANCESCO AND EATON	2	2	1	1
EDEN VALLEY RANCH	8	2	7	2
FULTON RANCH	1	1		
GABILAN RANCH	1	1		
HARTNELL RANCH	1	0	2	2
HEARST RANCH	6	2	6	0
HUNTER RANCH	1	1		
INDIAN VALLEY CATTLE CO.	3	3	2	2
ISABEL VALLEY RANCH	1	1		
JS RANCH	1	1		
LEWIS RANCH	1	1	1	1
LONE RANCH	3	2	2	0
MILLER-ERIKSEN RANCH	1	0		
PBM FARMS	1	0		
PEACHTREE RANCH	4	4	2	2
POTTER VALLEY WMA	2	2	10	10
RANCHO LA CUESTA	4	4	1	0
REDWOOD HOUSE RANCH	1	1		
ROOSTER COMB RANCH	2	0		
ROSEBERG RESOURCES PONDOSA	2	2	2	2
R-R RANCH	3		6	
SHAMROCK RANCH	7	6	5	5
SLICK ROCK RANCH	1	1		
SMITH RIVER	3	3		
SPRING VALLEY RANCH	4	3		
STOVER RANCH	4	2	2	1
SUMMER CAMP RANCH	1	0		
SWEETWATER RANCH	1	1		
TEJON RANCH	12	9	3	1
TEMBLOR WMA	7	7	12	7
TRINCHERO RANCH	2	0		
WIGGINS RANCH	2	2	2	2
WORK RANCH	2	0		
TOTALS	**116**	**82**	**87**	**54**

Appendix 2 - 2016 Proposed Elk Tag General Hunt Tag Quota Ranges

2016 Proposed Elk Tag Allocation [shown in ranges]				
Elk	**Bull**	**Antlerless**	**Either-Sex**	**Spike**
General Roosevelt Elk Hunts				
Siskiyou Period 1	0-40	0-40		
Siskiyou Period 2	0-10	0-40		
Siskiyou Period 3	0-5	0-20		
Del Norte Period 1	0-15	0-25	0-10	
Del Norte Period 2	0-15	0-25	0-10	
Del Norte Period 3	0-15	0-25	0-10	
Del Norte Period 4	0-15	0-25	0-10	
Del Norte Period 5	0-15	0-25	0-10	
Humboldt Period 1	0-20	0-50	0-10	
Humboldt Period 2	0-20	0-50	0-10	
Humboldt Period 3	0-20	0-50	0-10	
Humboldt Period 4	0-20	0-50	0-10	
Humboldt Period 5	0-20	0-50	0-10	
Marble Mountain North Period 1	0-50	0-20		
Marble Mountain North Period 2	0-10	0-40		
Marble Mountain North Period 3	0-5	0-15		
Marble Mountain South Period 1	0-50	0-20		
Marble Mountain South period 2	0-10	0-40		
Marble Mountain South Period 3	0-5	0-15		
General Rocky Mountain Elk Hunts				
Northeastern California	0-30	0-20		
General Roosevelt/Tule Elk Hunts				
Mendocino North Coast	0-10	0-40		
Mendocino Middle Fork	0-10	0-40		
Mendocino Upper Russian River	0-10	0-40		
Mendocino Little Lake	0-5	0-10		
Mendocino South Coast	0-5	0-10		
General Tule Elk Hunts				
Cache Creek	0-10	0-10		
La Panza Period 1	0-20	0-30		
La Panza Period 2	0-20	0-30		
Bishop Period 3	0-10	0-30		
Bishop Period 4	0-10	0-30		
Bishop Period 5	0-10	0-30		
Independence Period 2	0-10	0-30		
Independence Period 3	0-10	0-30		
Independence Period 4	0-10	0-30		
Independence Period 5	0-10	0-30		
Lone Pine Period 2	0-10	0-30		
Lone Pine Period 3	0-10	0-30		
Lone Pine Period 4	0-10	0-30		
Lone Pine Period 5	0-10	0-30		
Tinemaha Period 2	0-10	0-30		
Tinemaha Period 3	0-10	0-30		
Tinemaha Period 4	0-10	0-30		
Tinemaha Period 5	0-10	0-30		
West Tinemaha Period 1	0-10	0-30		
West Tinemaha Period 2	0-10	0-30		
West Tinemaha Period 3	0-10	0-30		
West Tinemaha Period 4	0-10	0-30		
West Tinemaha Period 5	0-10	0-30		

2016 Proposed Elk Tag Allocation [shown in ranges]				
Elk	**Bull**	**Antlerless**	**Either-Sex**	**Spike**
Tinemaha Mountain Period 1	0-8			
Tinemaha Mountain Period 2	0-8			
Tinemaha Mountain Period 3	0-8			
Tinemaha Mountain Period 4	0-8			
Tinemaha Mountain Period 5	0-8			
Whitney Period 2	0-4	0-10		
Whitney Period 3	0-4	0-10		
Whitney Period 4	0-4	0-10		
Whitney Period 5	0-4	0-10		
Goodale Period 1	0-10	0-10		
Goodale Period 2	0-10	0-10		
Goodale Period 3	0-10	0-10		
Goodale Period 4	0-10	0-10		
Goodale Period 5	0-10	0-10		
Grizzly Island Period 1	0-3	0-12		0-10
Grizzly Island Period 2	0-3	0-12		0-10
Grizzly Island Period 3	0-3	0-12		0-10
Grizzly Island Period 4	0-3	0-12		0-10
Grizzly Island Period 5	0-3	0-12		0-10
Grizzly Island Period 6	0-3	0-12		0-10
Grizzly Island Period 7	0-3	0-12		0-10
Grizzly Island Period 8	0-3	0-12		0-10
Grizzly Island Period 9	0-3	0-12		0-10
Grizzly Island Period 10	0-3	0-12		0-10
Grizzly Island Period 11	0-3	0-12		0-10
Grizzly Island Period 12	0-3	0-12		0-10
Grizzly Island Period 13	0-3	0-12		0-10
Fort Hunter Liggett Central Coast Period 1	0-14	0-16		
Fort Hunter Liggett Central Coast Period 2	0-14	0-16		
Fort Hunter Liggett Central Coast Period 3	0-14	0-14		
East Park Reservoir	0-6	0-20		
San Luis Reservoir Period 1	0-10	0-20	0-10	
San Luis Reservoir Period 2	0-10	0-20	0-10	
San Luis Reservoir Period 3	0-10	0-20	0-10	
Bear Valley	0-10	0-10		
Lake Pillsbury Period 1	0-10	0-10		
Lake Pillsbury Period 2	0-10	0-10		
Lake Pillsbury Period 3	0-10	0-10		
Santa Clara	0-15	0-20		
Alameda	0-4	0-10		
San Emigdio Mountain	0-15	0-40		
Camp Roberts Period 1	0-10	0-20		
Camp Roberts Period 2	0-10	0-20		
Camp Roberts Period 3	0-10	0-20		
Apprentice Hunts				
Siskiyou			0-2	
Marble Mountains North			0-4	
Marble Mountains South			0-4	
Northeastern CA			0-4	
Cache Creek	0-2	0-2		
La Panza Period 1	0-2	0-2		
Bishop Period 2	0-10	0-30		
Grizzly Island Period 1		0-4		0-4
Grizzly Island Period 2		0-4		0-4
Grizzly Island Period 3		0-4		0-4
Grizzly Island Period 4		0-4		0-4

2016 Proposed Elk Tag Allocation [shown in ranges]				
Elk	**Bull**	**Antlerless**	**Either-Sex**	**Spike**
Fort Hunter Liggett Central Coast	0-2	0-8		
Archery Only Hunts				
Northeastern California Archery Only	0-10	0-10	0-20	
Owens Valley Multiple Zone Archery Only	0-10	0-10		
Lone Pine Archery Only Period 1	0-10	0-30		
Tinemaha Archery Only Period 1	0-10	0-30		
Whitney Archery Only Period 1	0-10	0-30		
Goodale Period 1	0-10	0-10		
Fort Hunter Liggett Central Coast Archery Only		0-10	0-10	
Muzzleloader Only Hunts				
Bishop Muzzleloader Only Period 1	0-10	0-30		
Independence Muzzleloader Only Period 1	0-10	0-10		
Goodale Period 1	0-10	0-10		
Fort Hunter Liggett Central Coast Muzzleloader Only	0-6	0-10		
Muzzleloader/Archery Only Hunts				
Siskiyou			0-20	
Marble Mountain North			0-20	
Marble Mountain South			0-20	
Fund Raising Tags				
Multi-zone	1			
Grizzly Island	1			
Owens Valley	1			
Military Only Elk Tags				
Fort Hunter Liggett Military Early Season	0-2	0-2		
Fort Hunter Liggett Military Period 1		0-16		
Fort Hunter Liggett Military Period 2		0-14		
Fort Hunter Liggett Military Period 3	0-14			
Camp Roberts Military Only Period 1	0-10	0-20		
Camp Roberts Military Only Period 2	0-10	0-20		
Camp Roberts Military Only Period 3	0-10	0-20		
Fort Hunter Liggett Military Apprentice	0-2	0-8		
Fort Hunter Liggett Military Archery Only		0-10	0-6	
Fort Hunter Liggett Military Muzzleloader Only	0-6			
Elk SHARE Hunts				
SHARE Roosevelt Elk Hunts				
Siskiyou	0-55	0-100		
Del Norte	0-25	0-100	0-50	
Humboldt	0-25	0-100	0-50	
Marble Mountain North	0-20	0-25		
Marble Mountain South	0-20	0-25		
SHARE Rocky Mountain Elk Hunts				
Northeastern California	0-20	0-20		
SHARE Roosevelt/Tule Elk Hunts				
Mendocino North Coast	0-10	0-40		
Mendocino Middle Fork	0-10	0-40		
Mendocino Upper Russian River	0-10	0-40		
Mendocino Little Lake	0-1	0-5		
Mendocino South Coast	0-5	0-10		
SHARE Tule Elk Hunts				
Cache Creek	0-10	0-10		
La Panza	0-40	0-60		
Bishop	0-10	0-30		
Independence	0-10	0-30		
Lone Pine	0-40	0-30		
Tinemaha	0-10	0-30		

2016 Proposed Elk Tag Allocation [shown in ranges]				
Elk	**Bull**	**Antlerless**	**Either-Sex**	**Spike**
West Tinemaha	0-10	0-30		
Tinemaha Mountain	0-8			
Whitney	0-4	0-10		
Goodale	0-10	0-10		
Grizzly Island	0-2	0-50		0-50
Fort Hunter Liggett Central Coast	0-42	0-44		
East Park Reservoir	0-6	0-20		
San Luis Reservoir	0-30	0-30		
Bear Valley	0-10	0-10		
Lake Pillsbury	0-10	0-10		
Santa Clara	0-4	0-20		
Alameda	0-4	0-10		
San Emigdio	0-15	0-20		
Camp Roberts	0-10	0-20		

Appendix 3. Scoping Summary – Notice of Preparation Documents (this appendix currently empty)

Appendix 4 Simulated Computer Runs – Elk Harvest (Elk Pop)

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SISKIYOU ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL AND PLM 2016
              Ratio = 20/100/27 - Maximum Calf Survival = 60%
                 THIS PROGRAM CALCULATES CHANGES IN
                 HERD
                 CHARACTERISTICS BASED ON VARIOUS
                 HARVEST
                 RATES.

CURRENT CONDITION = NO CHANGE 20 BULL AND 20 ANTLERLESS (4 PLM )
TO HARVEST APPROXIMATELY 22 BULLS AND 14 COWS (INCLUDES COOPERATIVE ELK TAGS)
APPROXIMATE SUCCESS RATES; 70% BULL 40% COW
                                      HERD SIZE     600  ELK
       % BULLS LOST TO NON HUNTING CAUSES            16  %
        % COWS LOST TO NON HUNTING CAUSES            12  %
                 % OF BULLS KILLED BY HUNTERS        22  %
                  % OF COWS KILLED BY HUNTERS       3.5  %
```

				SURV.				BULLS	COWS
		BULLS	COWS	CALVES	TOTAL	K		HARVEST	HARVEST
START	AUG	82	408	110	600	600	|	20	12
YEAR 1	"	98	397	238	733	2000	|	22	14
YEAR 2	"	164	442	230	836	2000	|	22	14
YEAR 3	"	216	478	257	951	2000	|	22	14
YEAR 4	"	271	521	278	1071	2000	|	22	14
YEAR 5	"	327	569	304	1200	2000	|	22	14
YEAR 6	"	384	622	333	1339	2000	|	22	14
YEAR 7	"	444	682	365	1491	2000	|	22	14
YEAR 8	"	508	748	401	1658	2000	|	22	14
YEAR 9	"	577	823	441	1841	2000	|	22	14
YEAR 10	"	652	906	442	2000	2000	|	22	14

		BULL RATIO	CALF RATIO
START		20	27
POST HUNT YR	1	20	62
POST HUNT YR	2	33	54
POST HUNT YR	3	42	55
POST HUNT YR	4	49	55
POST HUNT YR	5	55	55
POST HUNT YR	6	60	55
POST HUNT YR	7	63	55
POST HUNT YR	8	66	55
POST HUNT YR	9	69	54
POST HUNT YR	10	71	50

SISKIYOU ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 20/100/27 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

PROPOSED HARVEST: BULL, ANTLERLESS, & EITHER-SEX
TO HARVEST UP TO 40 BULLS AND 50 COWS (INCLUDES COOPERATIVE & PLM ELK TAGS)
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 70% bull and 40% antlerless

HERD SIZE	600	ELK
% BULLS LOST TO NON HUNTING CAUSES	16	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	40.5	%
% OF COWS KILLED BY HUNTERS	12.2	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	82	408	110	600	600	|	20	12
YEAR 1	"	98	406	238	742	2000	|	40	50
YEAR 2	"	149	428	214	791	2000	|	40	50
YEAR 3	"	182	437	227	845	2000	|	40	50
YEAR 4	"	214	451	232	897	2000	|	40	50
YEAR 5	"	244	466	241	951	2000	|	40	50
YEAR 6	"	273	483	250	1005	2000	|	40	50
YEAR 7	"	301	502	260	1063	2000	|	40	50
YEAR 8	"	328	524	272	1124	2000	|	40	50
YEAR 9	"	357	550	285	1191	2000	|	40	50
YEAR 10	"	386	578	300	1264	2000	|	40	50

		BULL RATIO	CALF RATIO
START		20	27
POST HUNT YR	1	16	67
POST HUNT YR	2	29	57
POST HUNT YR	3	37	59
POST HUNT YR	4	44	58
POST HUNT YR	5	49	58
POST HUNT YR	6	54	58
POST HUNT YR	7	58	57
POST HUNT YR	8	61	57
POST HUNT YR	9	63	57
POST HUNT YR	10	65	57

SISKIYOU ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 20/100/27 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

INCREASED HARVEST:BULL, ANTLERLESS, & EITHER-SEX (INCLUDES COOPERATIVE TAGS)
TO HARVEST UP TO 60 BULLS AND 75 COWS (INCLUDES COOPERATIVE & PLM ELK TAGS)
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 75% bull and 50% antlerless

HERD SIZE	600	ELK
% BULLS LOST TO NON HUNTING CAUSES	16	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	60.7	%
% OF COWS KILLED BY HUNTERS	18.4	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	82	408	110	600	600	|	20	12
YEAR 1	"	98	406	238	742	1000	|	60	75
YEAR 2	"	132	405	199	736	1000	|	60	75
YEAR 3	"	145	387	198	730	2000	|	60	71
YEAR 4	"	155	374	190	718	2000	|	60	69
YEAR 5	"	160	360	183	702	2000	|	60	66
YEAR 6	"	161	346	176	683	2000	|	60	64
YEAR 7	"	159	334	170	662	2000	|	60	61
YEAR 8	"	155	321	163	640	2000	|	60	59
YEAR 9	"	149	309	157	616	2000	|	60	57
YEAR 10	"	141	298	152	591	2000	|	60	55

		BULL RATIO	CALF RATIO
START		20	27
POST HUNT YR	1	12	72
POST HUNT YR	2	22	60
POST HUNT YR	3	27	63
POST HUNT YR	4	31	62
POST HUNT YR	5	34	62
POST HUNT YR	6	36	62
POST HUNT YR	7	37	62
POST HUNT YR	8	36	62
POST HUNT YR	9	35	62
POST HUNT YR	10	33	62

SISKIYOU ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 20/100/27 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

HERD GROWTH: BULL, ANTLERLESS, & EITHER-SEX
TO HARVEST UP TO 55 BULLS AND 67 COWS (INCLUDES COOPERATIVE & PLM ELK TAGS)
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 70% bull and 40% antlerless

HERD SIZE	800	ELK
% BULLS LOST TO NON HUNTING CAUSES	16	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	40.5	%
% OF COWS KILLED BY HUNTERS	12.2	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	109	544	147	800	800	|	20	12
YEAR 1	"	136	545	319	1001	2000	|	55	67
YEAR 2	"	202	574	287	1064	2000	|	55	67
YEAR 3	"	244	586	305	1135	2000	|	55	67
YEAR 4	"	287	605	312	1204	2000	|	55	67
YEAR 5	"	325	625	323	1274	2000	|	55	67
YEAR 6	"	363	648	335	1346	2000	|	55	67
YEAR 7	"	399	674	349	1422	2000	|	55	67
YEAR 8	"	435	704	365	1504	2000	|	55	67
YEAR 9	"	472	738	382	1593	2000	|	55	67
YEAR 10	"	511	776	403	1690	2000	|	55	67

		BULL RATIO	CALF RATIO
START		20	27
POST HUNT YR	1	17	67
POST HUNT YR	2	29	57
POST HUNT YR	3	36	59
POST HUNT YR	4	43	58
POST HUNT YR	5	48	58
POST HUNT YR	6	53	58
POST HUNT YR	7	57	57
POST HUNT YR	8	60	57
POST HUNT YR	9	62	57
POST HUNT YR	10	64	57

SISKIYOU ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 20/100/27 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

REDUCED HARVEST: BULL, ANTLERLESS, & EITHER-SEX
TO HARVEST UP TO 20 BULLS AND 25 COWS (INCLUDES COOPERATIVE & PLM ELK TAGS)
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 70% bull and 40% antlerless

HERD SIZE	600	ELK
% BULLS LOST TO NON HUNTING CAUSES	16	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	20.2	%
% OF COWS KILLED BY HUNTERS	6.1	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	82	408	110	600	600	|	20	12
YEAR 1	"	98	406	238	742	2000	|	20	25
YEAR 2	"	166	450	229	845	2000	|	20	25
YEAR 3	"	219	486	255	960	2000	|	20	25
YEAR 4	"	274	530	277	1081	2000	|	20	25
YEAR 5	"	330	579	303	1212	2000	|	20	25
YEAR 6	"	388	635	333	1355	2000	|	20	25
YEAR 7	"	449	699	366	1514	2000	|	20	25
YEAR 8	"	514	772	405	1690	2000	|	20	25
YEAR 9	"	585	854	448	1887	2000	|	20	25
YEAR 10	"	663	948	389	2000	2000	|	20	25

		BULL RATIO	CALF RATIO
START		20	27
POST HUNT YR	1	21	62
POST HUNT YR	2	34	54
POST HUNT YR	3	43	55
POST HUNT YR	4	50	55
POST HUNT YR	5	56	55
POST HUNT YR	6	60	54
POST HUNT YR	7	64	54
POST HUNT YR	8	66	54
POST HUNT YR	9	68	54
POST HUNT YR	10	70	42

NORTHWESTERN CALIFORNIA ROOSEVELT ELK HERD - SIMULATION, GENERAL & PLM 2016
(INCLUDES PROPOSED DEL NORTE AND HUMBOLDT ZONES COMBINED)
Ratio = 45/100/40 - Maximum Calf Survival = 65%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

UP TO 45 EITHER-SEX TAGS & 9 COOPERATIVE TAGS, 34 PLM
CURRENT CONDITION TAGS
HARVEST APPROXIMATELY 62 BULL AND 25 COWS

HERD SIZE	1600 ELK
% BULLS LOST TO NON HUNTING CAUSES	25 %
% COWS LOST TO NON HUNTING CAUSES	16.5 %
% OF BULLS KILLED BY HUNTERS	16.6 %
% OF COWS KILLED BY HUNTERS	2.9 %

	AU	BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	G	389	865	346	1600	1600	62	25
YEAR 1	"	375	846	546	1767	4000	62	25
YEAR 2	"	439	914	534	1887	4000	62	25
YEAR 3	"	483	965	578	2026	4000	62	25
YEAR 4	"	532	1027	611	2170	4000	62	25
YEAR 5	"	582	1092	651	2325	4000	62	25
YEAR 6	"	634	1163	694	2491	4000	62	25
YEAR 7	"	689	1241	740	2670	4000	62	25
YEAR 8	"	748	1325	791	2863	4000	62	25
YEAR 9	"	810	1416	845	3071	4000	62	25
YEAR 10	"	878	1514	904	3297	4000	62	25

		BULL RATIO	CALF RATIO
START		45	40
POST HUNT YR	1	38	66
POST HUNT YR	2	42	60
POST HUNT YR	3	45	61
POST HUNT YR	4	47	61
POST HUNT YR	5	49	61
POST HUNT YR	6	50	61
POST HUNT YR	7	52	61
POST HUNT YR	8	53	61
POST HUNT YR	9	54	61
POST HUNT YR	10	55	61

DEL NORTE ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL, SHARE, AND PLM 2016
Ratio = 45/100/40 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

PROPOSED HARVEST: BULL, COW, EITHER SEX TAGS;
TO HARVEST UP TO 50 BULLS AND 70 COWS (INCLUDES PLM & COOPERATIVE TAGS)
Various combination of tags to achieved desired harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	750	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	29.5	%
% OF COWS KILLED BY HUNTERS	16.8	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	182	405	162	750	750	|	37	14
YEAR 1	"	170	416	262	848	2000	|	50	70
YEAR 2	"	188	420	232	840	2000	|	50	70
YEAR 3	"	190	410	234	835	2000	|	50	69
YEAR 4	"	193	403	229	825	2000	|	50	68
YEAR 5	"	193	396	225	814	2000	|	50	67
YEAR 6	"	191	389	221	801	2000	|	50	65
YEAR 7	"	189	382	217	787	2000	|	50	64
YEAR 8	"	185	375	213	773	2000	|	50	63
YEAR 9	"	181	368	209	758	2000	|	50	62
YEAR 10	"	177	361	205	743	2000	|	50	61

		BULL RATIO	CALF RATIO
START		45	40
POST HUNT YR	1	35	76
POST HUNT YR	2	39	66
POST HUNT YR	3	41	69
POST HUNT YR	4	43	68
POST HUNT YR	5	43	68
POST HUNT YR	6	44	68
POST HUNT YR	7	44	68
POST HUNT YR	8	43	68
POST HUNT YR	9	43	68
POST HUNT YR	10	42	68

DEL NORTE ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL, SHARE, AND PLM 2016
Ratio = 45/100/40 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

INCREASED HARVEST: BULL, COW, EITHER SEX TAGS;INCLUDES PLM & COOPERATIVE TAGS
TO HARVEST UP TO 75 BULL AND 112 COW:
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	750	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	43	%
% OF COWS KILLED BY HUNTERS	26.6	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	182	405	162	750	750	|	32	6
YEAR 1	"	174	423	268	864	1000	|	75	112
YEAR 2	"	175	391	208	773	1000	|	75	104
YEAR 3	"	153	344	192	689	1000	|	66	91
YEAR 4	"	137	307	169	613	1000	|	59	82
YEAR 5	"	122	273	151	546	1000	|	53	73
YEAR 6	"	109	242	134	485	1000	|	47	64
YEAR 7	"	97	216	119	432	1000	|	42	57
YEAR 8	"	86	192	106	384	1000	|	37	51
YEAR 9	"	77	170	94	341	1000	|	33	45
YEAR 10	"	68	152	84	303	1000	|	29	40

		BULL RATIO	CALF RATIO
START		45	40
POST HUNT YR	1	32	86
POST HUNT YR	2	35	72
POST HUNT YR	3	34	76
POST HUNT YR	4	35	75
POST HUNT YR	5	35	75
POST HUNT YR	6	35	75
POST HUNT YR	7	35	75
POST HUNT YR	8	35	75
POST HUNT YR	9	35	75
POST HUNT YR	10	35	75

DEL NORTE ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL, SHARE, AND PLM 2016
Ratio = 45/100/40 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

HERD GROWTH: BULL, COW, EITHER SEX TAGS;INCLUDES PLM & COOPERATIVE TAGS
TO HARVEST UP TO 65 BULL AND 89 COW:
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	1000	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	27	%
% OF COWS KILLED BY HUNTERS	15.8	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	243	541	216	1000	1000	|	32	6
YEAR 1	"	240	566	358	1163	2000	|	65	89
YEAR 2	"	265	577	319	1161	2000	|	65	89
YEAR 3	"	270	569	326	1166	2000	|	65	89
YEAR 4	"	277	566	321	1164	2000	|	65	89
YEAR 5	"	279	561	319	1159	2000	|	65	89
YEAR 6	"	281	556	316	1153	2000	|	65	88
YEAR 7	"	281	551	314	1146	2000	|	65	87
YEAR 8	"	280	546	311	1137	2000	|	65	86
YEAR 9	"	278	542	308	1128	2000	|	65	86
YEAR 10	"	275	537	306	1118	2000	|	65	85

		BULL RATIO	CALF RATIO
START		45	40
POST HUNT YR	1	37	75
POST HUNT YR	2	41	65
POST HUNT YR	3	43	68
POST HUNT YR	4	44	67
POST HUNT YR	5	45	68
POST HUNT YR	6	46	68
POST HUNT YR	7	47	68
POST HUNT YR	8	47	68
POST HUNT YR	9	47	68
POST HUNT YR	10	47	68

DEL NORTE ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL AND PLM 2016
Ratio = 45/100/40 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

REDUCED HARVEST: BULL, COW, EITHER SEX TAGS;
TO HARVEST UP TO 25 BULLS AND 35 COWS (INCLUDES PLM & COOPERATIVE TAGS)
Various combination of tags to achieved desired harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	750	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	15	%
% OF COWS KILLED BY HUNTERS	8.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	182	405	162	750	750	37	14
YEAR 1	"	170	416	262	848	2000	25	35
YEAR 2	"	207	450	255	912	2000	25	35
YEAR 3	"	231	477	278	987	2000	25	35
YEAR 4	"	259	511	296	1066	2000	25	35
YEAR 5	"	286	549	319	1154	2000	25	35
YEAR 6	"	315	592	344	1251	2000	25	35
YEAR 7	"	346	641	373	1361	2000	25	35
YEAR 8	"	380	698	406	1484	2000	25	35
YEAR 9	"	418	761	444	1624	2000	25	35
YEAR 10	"	461	834	487	1782	2000	25	35

		BULL RATIO	CALF RATIO
START		45	40
POST HUNT YR	1	38	69
POST HUNT YR	2	44	61
POST HUNT YR	3	47	63
POST HUNT YR	4	49	62
POST HUNT YR	5	51	62
POST HUNT YR	6	52	62
POST HUNT YR	7	53	62
POST HUNT YR	8	54	61
POST HUNT YR	9	54	61
POST HUNT YR	10	55	61

HUMBOLDT ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 50/100/40 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

PROPOSED PROJECT: BULL, COW, EITHER SEX TAGS; INCLUDING COOPERATIVE & PLM
TO HARVEST UP TO 65 BULLS & 70 COWS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	850	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	32.4	%
% OF COWS KILLED BY HUNTERS	15.2	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	224	447	179	850	850	|	47	11
YEAR 1	"	200	463	292	955	2000	|	65	70
YEAR 2	"	211	474	263	948	2000	|	65	70
YEAR 3	"	208	471	270	950	2000	|	65	70
YEAR 4	"	209	471	268	949	2000	|	65	70
YEAR 5	"	209	471	269	949	2000	|	65	70
YEAR 6	"	209	471	268	948	2000	|	65	70
YEAR 7	"	209	471	268	948	2000	|	65	70
YEAR 8	"	209	470	268	947	2000	|	65	70
YEAR 9	"	209	470	268	947	2000	|	65	70
YEAR 10	"	208	470	268	946	2000	|	65	70

		BULL RATIO	CALF RATIO
START		50	40
POST HUNT YR	1	34	75
POST HUNT YR	2	36	65
POST HUNT YR	3	36	68
POST HUNT YR	4	36	67
POST HUNT YR	5	36	67
POST HUNT YR	6	36	67
POST HUNT YR	7	36	67
POST HUNT YR	8	36	67
POST HUNT YR	9	36	67
POST HUNT YR	10	36	67

HUMBOLDT ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL,SHARE, & PLM 2016
Ratio = 50/100/40 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

INCREASED HARVEST: BULL, COW, & EITHER SEX TAGS; INCLUDES COOPERATIVE TAGS
TO HARVEST UP TO 95 BULLS 105 COWS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	850	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	47.5	%
% OF COWS KILLED BY HUNTERS	22.7	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	224	447	179	850	850	|	47	11
YEAR 1	"	200	463	292	955	2000	|	95	105
YEAR 2	"	188	443	240	871	2000	|	89	101
YEAR 3	"	164	407	230	801	2000	|	78	92
YEAR 4	"	151	378	211	739	2000	|	72	86
YEAR 5	"	138	350	196	684	2000	|	66	79
YEAR 6	"	128	324	181	633	2000	|	61	74
YEAR 7	"	118	300	168	586	2000	|	56	68
YEAR 8	"	110	278	155	543	2000	|	52	63
YEAR 9	"	101	258	144	503	2000	|	48	58
YEAR 10	"	94	239	133	466	2000	|	45	54

		BULL RATIO	CALF RATIO
START		50	40
POST HUNT YR	1	29	82
POST HUNT YR	2	29	70
POST HUNT YR	3	27	73
POST HUNT YR	4	27	72
POST HUNT YR	5	27	72
POST HUNT YR	6	27	72
POST HUNT YR	7	27	72
POST HUNT YR	8	27	72
POST HUNT YR	9	27	72
POST HUNT YR	10	27	72

HUMBOLDT ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL, SHARE & PLM 2016
Ratio = 50/100/40 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

HERD GROWTH: BULL, COW, EITHER SEX TAGS; INCLUDING COOPERATIVE & PLM
TO HARVEST UP TO 75 BULLS & 85 COWS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	1000	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	31	%
% OF COWS KILLED BY HUNTERS	15.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	263	526	211	1000	1000	47	11
YEAR 1	"	241	546	345	1132	2000	75	85
YEAR 2	"	254	558	309	1121	2000	75	85
YEAR 3	"	251	553	317	1120	2000	75	85
YEAR 4	"	251	551	314	1116	2000	75	85
YEAR 5	"	250	549	313	1111	2000	75	85
YEAR 6	"	248	546	311	1105	2000	75	85
YEAR 7	"	247	543	309	1099	2000	75	85
YEAR 8	"	245	539	307	1091	2000	75	85
YEAR 9	"	243	535	304	1082	2000	75	85
YEAR 10	"	240	530	302	1072	2000	75	85

		BULL RATIO	CALF RATIO
START		50	40
POST HUNT YR	1	36	75
POST HUNT YR	2	38	65
POST HUNT YR	3	38	68
POST HUNT YR	4	38	67
POST HUNT YR	5	38	67
POST HUNT YR	6	38	67
POST HUNT YR	7	38	67
POST HUNT YR	8	37	68
POST HUNT YR	9	37	68
POST HUNT YR	10	37	68

HUMBOLDT ROOSEVELT ELK HERD - SIMULATION RUNS, GENERAL,SHARE, & PLM 2016
Ratio = 50/100/40 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

REDUCED HARVEST: BULL, COW, EITHER SEX TAGS; INCLUDING COOPERATIVE & PLM
TO HARVEST UP TO 32 BULLS & 35 COWS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	850	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	16	%
% OF COWS KILLED BY HUNTERS	7.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	224	447	179	850	850	|	47	11
YEAR 1	"	200	463	292	955	2000	|	32	35
YEAR 2	"	235	505	287	1027	2000	|	32	35
YEAR 3	"	260	540	315	1116	2000	|	32	35
YEAR 4	"	289	584	339	1212	2000	|	32	35
YEAR 5	"	320	632	368	1320	2000	|	32	35
YEAR 6	"	354	688	400	1442	2000	|	32	35
YEAR 7	"	392	751	437	1580	2000	|	32	35
YEAR 8	"	434	823	480	1736	2000	|	32	35
YEAR 9	"	481	904	528	1913	2000	|	32	35
YEAR 10	"	535	998	468	2000	2000	|	32	35

		BULL RATIO	CALF RATIO
START		50	40
POST HUNT YR	1	39	68
POST HUNT YR	2	43	61
POST HUNT YR	3	45	62
POST HUNT YR	4	47	62
POST HUNT YR	5	48	62
POST HUNT YR	6	49	61
POST HUNT YR	7	50	61
POST HUNT YR	8	51	61
POST HUNT YR	9	52	61
POST HUNT YR	10	52	49

MARBLE MOUNTAINS ROOSEVELT ELK HERD - SIMULATION RUNS, 2016
Ratio = 60/100/41 - Maximum Calf Survival = 62%
(INCLUDES BOTH PROPOSED MARBLE MOUNTAIN NORTH AND SOUTH ZONES)
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION = BULL, ANTLERLESS & EITHER-SEX (COOPERATIVE TAGS)
CURRENT HARVEST FOR MARBLE MTN IS APPROXIMATELY 29 BULL 7 ANTLERLESS
Various combination of tags to achieved desired harvest, includes Cooperative tags
Assuming success rate of 60% bull and 70% antlerless

HERD SIZE	3000	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	17	%
% OF BULLS KILLED BY HUNTERS	3.1	%
% OF COWS KILLED BY HUNTERS	0.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	896	1493	612	3000	3000	|	29	7
YEAR 1	"	938	1487	921	3346	6000	|	29	7
YEAR 2	"	1096	1610	917	3623	6000	|	29	7
YEAR 3	"	1220	1711	994	3925	6000	|	29	7
YEAR 4	"	1350	1826	1056	4233	6000	|	29	7
YEAR 5	"	1479	1948	1128	4555	6000	|	29	7
YEAR 6	"	1611	2079	1203	4893	6000	|	29	7
YEAR 7	"	1747	2218	1284	5250	6000	|	29	7
YEAR 8	"	1888	2368	1371	5627	6000	|	29	7
YEAR 9	"	2036	2528	1436	6000	6000	|	29	7
YEAR 10	"	2180	2688	1132	6000	6000	|	29	7

		BULL RATIO	CALF RATIO
START		60	41
POST HUNT YR	1	61	62
POST HUNT YR	2	67	57
POST HUNT YR	3	70	58
POST HUNT YR	4	73	58
POST HUNT YR	5	75	58
POST HUNT YR	6	76	58
POST HUNT YR	7	78	58
POST HUNT YR	8	79	58
POST HUNT YR	9	80	57
POST HUNT YR	10	80	42

MARBLE MOUNTAINS NORTH ROOSEVELT ELK HERD - SIMULATION RUNS, 2016

Ratio = 60/100/41 - Maximum Calf Survival = 62%

THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED HARVEST = BULL, ANTLERLESS, EITHER-SEX (INCLUDES COOPERATIVE TAGS)
HARVEST up to 61 BULLS AND 60 COWS (INCLUDES COOPERATIVE ELK TAGS)
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 60% bull and 70% antlerless

HERD SIZE	1500	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	17	%
% OF BULLS KILLED BY HUNTERS	13	%
% OF COWS KILLED BY HUNTERS	8.1	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	448	746	306	1500	1500	|	15	6
YEAR 1	"	469	741	459	1669	3000	|	61	60
YEAR 2	"	510	756	422	1688	3000	|	61	60
YEAR 3	"	528	753	431	1712	3000	|	61	60
YEAR 4	"	546	754	430	1730	3000	|	61	60
YEAR 5	"	560	754	430	1745	3000	|	61	60
YEAR 6	"	572	755	430	1757	3000	|	61	60
YEAR 7	"	581	755	431	1767	3000	|	61	60
YEAR 8	"	588	756	431	1775	3000	|	61	60
YEAR 9	"	594	756	431	1782	3000	|	61	60
YEAR 10	"	599	757	432	1788	3000	|	61	60

		BULL RATIO	CALF RATIO
START		60	41
POST HUNT YR	1	60	67
POST HUNT YR	2	64	61
POST HUNT YR	3	67	62
POST HUNT YR	4	70	62
POST HUNT YR	5	72	62
POST HUNT YR	6	73	62
POST HUNT YR	7	75	62
POST HUNT YR	8	76	62
POST HUNT YR	9	77	62
POST HUNT YR	10	77	62

MARBLE MOUNTAIN NORTH ROOSEVELT ELK HERD - SIMULATION RUNS, 2016
Ratio = 60/100/41 - Maximum Calf Survival = 62%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST; BULL, ANTLERLESS, EITHER-SEX (INCLUDES COOPERATIVE TAGS)
TO HARVEST UP TO 90 BULLS AND 90 COWS (INCLUDES COOPERATIVE ELK TAGS)
Various combination of tags to achieved desired harvest, includes cooperative tags
Assuming success rate of 60% bull and 70% antlerless

HERD SIZE	1500	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	17	%
% OF BULLS KILLED BY HUNTERS	19.1	%
% OF COWS KILLED BY HUNTERS	12.1	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	448	746	306	1500	1500	|	15	4
YEAR 1	"	469	743	460	1672	3000	|	90	90
YEAR 2	"	487	733	405	1625	3000	|	93	89
YEAR 3	"	477	703	400	1580	3000	|	91	85
YEAR 4	"	469	679	383	1530	3000	|	90	82
YEAR 5	"	457	654	370	1481	3000	|	87	79
YEAR 6	"	443	631	356	1431	3000	|	85	76
YEAR 7	"	430	608	344	1381	3000	|	82	74
YEAR 8	"	416	586	331	1333	3000	|	79	71
YEAR 9	"	401	565	319	1286	3000	|	77	68
YEAR 10	"	388	545	308	1241	3000	|	74	66

		BULL RATIO	CALF RATIO
START		60	41
POST HUNT YR	1	58	70
POST HUNT YR	2	61	63
POST HUNT YR	3	63	65
POST HUNT YR	4	64	64
POST HUNT YR	5	64	64
POST HUNT YR	6	65	64
POST HUNT YR	7	65	64
POST HUNT YR	8	65	64
POST HUNT YR	9	65	64
POST HUNT YR	10	65	64

MARBLE MOUNTAINS NORTH ROOSEVELT ELK HERD - SIMULATION RUNS, 2016

Ratio = 60/100/41 - Maximum Calf Survival = 62%

THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH = BULL, ANTLERLESS, EITHER-SEX (INCLUDES COOPERATIVE TAGS)
HARVEST up to 69 BULLS AND 80 COWS (INCLUDES COOPERATIVE ELK TAGS)
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 60% bull and 70% antlerless

	HERD SIZE	2000	ELK
% BULLS LOST TO NON HUNTING CAUSES		20	%
% COWS LOST TO NON HUNTING CAUSES		17	%
% OF BULLS KILLED BY HUNTERS		11	%
% OF COWS KILLED BY HUNTERS		8.1	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	597	995	408	2000	2000	|	15	6
YEAR 1	"	629	990	613	2232	3000	|	69	80
YEAR 2	"	693	1010	564	2267	3000	|	69	80
YEAR 3	"	725	1006	576	2307	3000	|	69	80
YEAR 4	"	755	1007	574	2336	3000	|	69	80
YEAR 5	"	778	1008	575	2361	3000	|	69	80
YEAR 6	"	797	1008	575	2380	3000	|	69	80
YEAR 7	"	812	1009	575	2397	3000	|	69	80
YEAR 8	"	825	1010	576	2410	3000	|	69	80
YEAR 9	"	835	1010	576	2421	3000	|	69	80
YEAR 10	"	843	1011	577	2431	3000	|	69	80

		BULL RATIO	CALF RATIO
START		60	41
POST HUNT YR	1	61	67
POST HUNT YR	2	67	61
POST HUNT YR	3	71	62
POST HUNT YR	4	74	62
POST HUNT YR	5	76	62
POST HUNT YR	6	78	62
POST HUNT YR	7	80	62
POST HUNT YR	8	81	62
POST HUNT YR	9	82	62
POST HUNT YR	10	83	62

MARBLE MOUNTAINS NORTH ROOSEVELT ELK HERD - SIMULATION RUNS, 2016

Ratio = 60/100/41 - Maximum Calf Survival = 62%

THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST = BULL, ANTLERLESS, EITHER-SEX (INCLUDES COOPERATIVE TAGS)
HARVEST up to 30 BULLS AND 30 COWS (INCLUDES COOPERATIVE ELK TAGS)
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 60% bull and 70% antlerless

HERD SIZE	1500	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	17	%
% OF BULLS KILLED BY HUNTERS	6.5	%
% OF COWS KILLED BY HUNTERS	4	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	448	746	306	1500	1500	|	15	6
YEAR 1	"	469	741	459	1669	3000	|	30	30
YEAR 2	"	534	781	441	1757	3000	|	30	30
YEAR 3	"	579	807	466	1852	3000	|	30	30
YEAR 4	"	626	839	482	1946	3000	|	30	30
YEAR 5	"	669	871	501	2042	3000	|	30	30
YEAR 6	"	711	907	522	2140	3000	|	30	30
YEAR 7	"	753	945	544	2242	3000	|	30	30
YEAR 8	"	796	985	567	2348	3000	|	30	30
YEAR 9	"	839	1028	592	2460	3000	|	30	30
YEAR 10	"	884	1075	619	2578	3000	|	30	30

		BULL RATIO	CALF RATIO
START		60	41
POST HUNT YR	1	62	64
POST HUNT YR	2	67	59
POST HUNT YR	3	71	60
POST HUNT YR	4	74	60
POST HUNT YR	5	76	60
POST HUNT YR	6	78	59
POST HUNT YR	7	79	59
POST HUNT YR	8	80	59
POST HUNT YR	9	81	59
POST HUNT YR	10	82	59

MARBLE MOUNTAINS SOUTH ROOSEVELT ELK HERD - SIMULATION RUNS, 2016

Ratio = 60/100/41 - Maximum Calf Survival = 62%

THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED HARVEST= BULL, ANTLERLESS, EITHER-SEX (INCLUDES COOPERATIVE TAGS)
TO HARVEST UP TO 61 BULLS AND 60 COWS (INCLUDES COOPERATIVE ELK TAGS)
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 60% bull and 70% antlerless

HERD SIZE	1500	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	17	%
% OF BULLS KILLED BY HUNTERS	13	%
% OF COWS KILLED BY HUNTERS	8.1	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	448	746	306	1500	1500	|	15	4
YEAR 1	"	469	743	460	1672	3000	|	61	60
YEAR 2	"	510	758	423	1691	3000	|	61	60
YEAR 3	"	529	755	433	1716	3000	|	61	60
YEAR 4	"	547	756	431	1734	3000	|	61	60
YEAR 5	"	561	756	431	1749	3000	|	61	60
YEAR 6	"	573	757	432	1761	3000	|	61	60
YEAR 7	"	582	757	432	1771	3000	|	61	60
YEAR 8	"	590	758	432	1780	3000	|	61	60
YEAR 9	"	596	758	432	1787	3000	|	61	60
YEAR 10	"	601	759	433	1793	3000	|	61	60

		BULL RATIO	CALF RATIO
START		60	41
POST HUNT YR	1	60	67
POST HUNT YR	2	64	61
POST HUNT YR	3	67	62
POST HUNT YR	4	70	62
POST HUNT YR	5	72	62
POST HUNT YR	6	74	62
POST HUNT YR	7	75	62
POST HUNT YR	8	76	62
POST HUNT YR	9	77	62
POST HUNT YR	10	77	62

MARBLE MOUNTAIN SOUTH ROOSEVELT ELK HERD - SIMULATION RUNS, 2016
Ratio = 60/100/41 - Maximum Calf Survival = 62%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST; BULL, ANTLERLESS, EITHER-SEX (INCLUDES COOPERATIVE TAGS)
TO HARVEST UP TO 90 BULLS AND 90 COWS (INCLUDES COOPERATIVE ELK TAGS)
Various combination of tags to achieved desired harvest, includes cooperative tags
Assuming success rate of 60% bull and 70% antlerless

HERD SIZE	1500	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	17	%
% OF BULLS KILLED BY HUNTERS	19.1	%
% OF COWS KILLED BY HUNTERS	12.1	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	448	746	306	1500	1500	|	15	4
YEAR 1	"	469	743	460	1672	3000	|	90	90
YEAR 2	"	487	733	405	1625	3000	|	93	89
YEAR 3	"	477	703	400	1580	3000	|	91	85
YEAR 4	"	469	679	383	1530	3000	|	90	82
YEAR 5	"	457	654	370	1481	3000	|	87	79
YEAR 6	"	443	631	356	1431	3000	|	85	76
YEAR 7	"	430	608	344	1381	3000	|	82	74
YEAR 8	"	416	586	331	1333	3000	|	79	71
YEAR 9	"	401	565	319	1286	3000	|	77	68
YEAR 10	"	388	545	308	1241	3000	|	74	66

		BULL RATIO	CALF RATIO
START		60	41
POST HUNT YR	1	58	70
POST HUNT YR	2	61	63
POST HUNT YR	3	63	65
POST HUNT YR	4	64	64
POST HUNT YR	5	64	64
POST HUNT YR	6	65	64
POST HUNT YR	7	65	64
POST HUNT YR	8	65	64
POST HUNT YR	9	65	64
POST HUNT YR	10	65	64

MARBLE MOUNTAINS SOUTH ROOSEVELT ELK HERD - SIMULATION RUNS, 2016

Ratio = 60/100/41 - Maximum Calf Survival = 62%

THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH = BULL, ANTLERLESS, EITHER-SEX (INCLUDES COOPERATIVE TAGS)
HARVEST up to 82 BULLS AND 80 COWS (INCLUDES COOPERATIVE ELK TAGS)
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 60% bull and 70% antlerless

	HERD SIZE	2000	ELK
% BULLS LOST TO NON HUNTING CAUSES		20	%
% COWS LOST TO NON HUNTING CAUSES		17	%
% OF BULLS KILLED BY HUNTERS		13	%
% OF COWS KILLED BY HUNTERS		8.1	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	597	995	408	2000	2000	|	15	6
YEAR 1	"	629	990	613	2232	3000	|	82	80
YEAR 2	"	683	1010	564	2257	3000	|	82	80
YEAR 3	"	707	1006	576	2289	3000	|	82	80
YEAR 4	"	730	1007	574	2312	3000	|	82	80
YEAR 5	"	748	1008	575	2331	3000	|	82	80
YEAR 6	"	763	1008	575	2347	3000	|	82	80
YEAR 7	"	775	1009	575	2360	3000	|	82	80
YEAR 8	"	785	1010	576	2370	3000	|	82	80
YEAR 9	"	793	1010	576	2380	3000	|	82	80
YEAR 10	"	799	1011	577	2387	3000	|	82	80

		BULL RATIO	CALF RATIO
START		60	41
POST HUNT YR	1	60	67
POST HUNT YR	2	65	61
POST HUNT YR	3	68	62
POST HUNT YR	4	70	62
POST HUNT YR	5	72	62
POST HUNT YR	6	73	62
POST HUNT YR	7	75	62
POST HUNT YR	8	76	62
POST HUNT YR	9	76	62
POST HUNT YR	10	77	62

MARBLE MOUNTAINS SOUTH ROOSEVELT ELK HERD - SIMULATION RUNS, 2016

Ratio = 60/100/41 - Maximum Calf Survival = 62%

THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST= BULL, ANTLERLESS, EITHER-SEX (INCLUDES COOPERATIVE TAGS)
TO HARVEST UP TO 30 BULLS AND 30 COWS (INCLUDES COOPERATIVE ELK TAGS)
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 60% bull and 70% antlerless

HERD SIZE	1500	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	17	%
% OF BULLS KILLED BY HUNTERS	6.5	%
% OF COWS KILLED BY HUNTERS	4	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	448	746	306	1500	1500	|	15	4
YEAR 1	"	469	743	460	1672	3000	|	30	30
YEAR 2	"	535	783	442	1760	3000	|	30	30
YEAR 3	"	580	809	467	1856	3000	|	30	30
YEAR 4	"	627	840	483	1950	3000	|	30	30
YEAR 5	"	670	873	503	2046	3000	|	30	30
YEAR 6	"	713	909	523	2145	3000	|	30	30
YEAR 7	"	755	947	545	2247	3000	|	30	30
YEAR 8	"	798	987	569	2354	3000	|	30	30
YEAR 9	"	841	1031	594	2466	3000	|	30	30
YEAR 10	"	886	1077	621	2584	3000	|	30	30

		BULL RATIO	CALF RATIO
START		60	41
POST HUNT YR	1	61	65
POST HUNT YR	2	67	59
POST HUNT YR	3	71	60
POST HUNT YR	4	74	60
POST HUNT YR	5	76	60
POST HUNT YR	6	78	59
POST HUNT YR	7	79	59
POST HUNT YR	8	80	59
POST HUNT YR	9	81	59
POST HUNT YR	10	82	59

NORTHEASTERN CALIFORNIA ELK HERD - SIMULATION GENERAL & PLM 2016
Ratio = 20/100/27 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION = 12 EITHER SEX TAGS, 10 ANTLERLESS, 15 BULL, 8 PLM RANCH
TO HARVEST APPROX: 20 BULLS, 10 COWS (INCLUDES COOPERATIVE & PLM ELK TAGS)
APPROXIMATE SUCCESS RATE 60% BULLS & 60% ANTLERLESS

HERD SIZE	1000	ELK
% BULLS LOST TO NON HUNTING CAUSES	18	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	12	%
% OF COWS KILLED BY HUNTERS	1.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	136	680	184	1000	1000	|	20	10
YEAR 1	"	170	671	402	1243	3000	|	20	10
YEAR 2	"	288	758	396	1443	3000	|	20	10
YEAR 3	"	382	833	449	1664	3000	|	20	10
YEAR 4	"	480	922	494	1896	3000	|	20	10
YEAR 5	"	580	1019	547	2146	3000	|	20	10
YEAR 6	"	683	1129	606	2417	3000	|	20	10
YEAR 7	"	791	1251	671	2713	3000	|	20	10
YEAR 8	"	907	1387	705	3000	3000	|	20	10
YEAR 9	"	1016	1522	461	3000	3000	|	20	10
YEAR 10	"	1006	1534	460	3000	3000	|	20	10

		BULL RATIO	CALF RATIO
START		20	27
POST HUNT YR	1	23	61
POST HUNT YR	2	36	53
POST HUNT YR	3	44	55
POST HUNT YR	4	50	54
POST HUNT YR	5	55	54
POST HUNT YR	6	59	54
POST HUNT YR	7	62	54
POST HUNT YR	8	64	51
POST HUNT YR	9	66	30
POST HUNT YR	10	65	30

NORTHEASTERN CALIFORNIA ELK HERD - SIMULATION GENERA, SHARE, & PLM 2016
Ratio = 20/100/27 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED HARVEST = EITHER SEX, ANTLERLESS, BULL, & PLM
TO HARVEST UP TO: 40 BULLS, 40 COWS (INCLUDES COOPERATIVE & PLM ELK TAGS)
APPROXIMATE SUCCESS RATE 60% BULLS & 60% ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags

HERD SIZE	1000	ELK
% BULLS LOST TO NON HUNTING CAUSES	18	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	23.4	%
% OF COWS KILLED BY HUNTERS	5.9	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	136	680	184	1000	1000	|	20	10
YEAR 1	"	170	671	402	1243	3000	|	40	40
YEAR 2	"	272	732	379	1383	3000	|	40	40
YEAR 3	"	346	776	416	1537	3000	|	40	40
YEAR 4	"	421	831	442	1694	3000	|	40	40
YEAR 5	"	494	891	475	1860	3000	|	40	40
YEAR 6	"	567	958	511	2036	3000	|	40	40
YEAR 7	"	642	1033	551	2226	3000	|	40	40
YEAR 8	"	719	1117	596	2433	3000	|	40	40
YEAR 9	"	802	1210	646	2659	3000	|	40	40
YEAR 10	"	890	1315	703	2907	3000	|	40	40

		BULL RATIO	CALF RATIO
START		20	27
POST HUNT YR	1	21	64
POST HUNT YR	2	34	55
POST HUNT YR	3	41	56
POST HUNT YR	4	48	56
POST HUNT YR	5	53	56
POST HUNT YR	6	57	56
POST HUNT YR	7	61	55
POST HUNT YR	8	63	55
POST HUNT YR	9	65	55
POST HUNT YR	10	67	55

NORTHEASTERN CALIFORNIA ELK HERD - SIMULATION GENERAL,SHARE, & PLM 2016
Ratio = 20/100/27 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST = EITHER SEX, ANTLERLESS, BULL TAGS
TO HARVEST UP TO: 60 BULLS, 60 COWS (INCLUDES COOPERATIVE & PLM ELK TAGS)
APPROXIMATE SUCCESS RATE 60% BULLS & 60% ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags

HERD SIZE	1000	ELK
% BULLS LOST TO NON HUNTING CAUSES	18	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	35	%
% OF COWS KILLED BY HUNTERS	8.9	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	136	680	184	1000	1000	|	20	10
YEAR 1	"	170	671	402	1243	3000	|	60	60
YEAR 2	"	256	715	367	1337	3000	|	60	60
YEAR 3	"	311	738	393	1442	3000	|	60	60
YEAR 4	"	367	769	407	1544	3000	|	60	60
YEAR 5	"	419	804	426	1648	3000	|	60	60
YEAR 6	"	469	842	446	1758	3000	|	60	60
YEAR 7	"	519	885	469	1873	3000	|	60	60
YEAR 8	"	569	933	495	1997	3000	|	60	60
YEAR 9	"	621	986	524	2130	3000	|	60	60
YEAR 10	"	675	1046	556	2276	3000	|	60	60

		BULL RATIO	CALF RATIO
START		20	27
POST HUNT YR	1	18	66
POST HUNT YR	2	30	56
POST HUNT YR	3	37	58
POST HUNT YR	4	43	57
POST HUNT YR	5	48	57
POST HUNT YR	6	52	57
POST HUNT YR	7	56	57
POST HUNT YR	8	58	57
POST HUNT YR	9	61	57
POST HUNT YR	10	62	56

NORTHEASTERN CALIFORNIA ELK HERD - SIMULATION GENERAL,SHARE, & PLM 2016
Ratio = 20/100/27 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH = EITHER SEX, ANTLERLESS, BULL TAGS
TO HARVEST UP TO: 61 BULLS, 70 COWS (INCLUDES COOPERATIVE & PLM ELK TAGS)
APPROXIMATE SUCCESS RATE 60% BULLS & 60% ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags

HERD SIZE	1300 ELK
% BULLS LOST TO NON HUNTING CAUSES	18 %
% COWS LOST TO NON HUNTING CAUSES	12 %
% OF BULLS KILLED BY HUNTERS	27 %
% OF COWS KILLED BY HUNTERS	8 %

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	177	884	239	1300	1300	20	10
YEAR 1	"	227	874	525	1626	3000	61	70
YEAR 2	"	351	939	483	1772	3000	61	70
YEAR 3	"	435	977	521	1934	3000	61	70
YEAR 4	"	521	1028	544	2092	3000	61	70
YEAR 5	"	600	1082	575	2257	3000	61	70
YEAR 6	"	677	1144	607	2428	3000	61	70
YEAR 7	"	754	1212	644	2610	3000	61	70
YEAR 8	"	832	1288	685	2806	3000	61	70
YEAR 9	"	913	1374	713	3000	3000	61	70
YEAR 10	"	991	1461	548	3000	3000	61	70

		BULL RATIO	CALF RATIO
START		20	27
POST HUNT YR	1	21	65
POST HUNT YR	2	33	56
POST HUNT YR	3	41	57
POST HUNT YR	4	48	57
POST HUNT YR	5	53	57
POST HUNT YR	6	57	57
POST HUNT YR	7	61	56
POST HUNT YR	8	63	56
POST HUNT YR	9	65	55
POST HUNT YR	10	67	39

NORTHEASTERN CALIFORNIA ELK HERD - SIMULATION GENERAL,SHARE, & PLM 2016
Ratio = 20/100/27 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST = EITHER SEX, ANTLERLESS, BULL TAGS
TO HARVEST UP TO: 20 BULLS, 20 COWS (INCLUDES COOPERATIVE & PLM ELK TAGS)
APPROXIMATE SUCCESS RATE 60% BULLS & 60% ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags

HERD SIZE	1000	ELK
% BULLS LOST TO NON HUNTING CAUSES	18	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	12	%
% OF COWS KILLED BY HUNTERS	3	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	136	680	184	1000	1000	|	20	10
YEAR 1	"	170	671	402	1243	3000	|	20	20
YEAR 2	"	288	749	390	1428	3000	|	20	20
YEAR 3	"	379	814	438	1630	3000	|	20	20
YEAR 4	"	474	891	476	1840	3000	|	20	20
YEAR 5	"	567	976	522	2065	3000	|	20	20
YEAR 6	"	662	1071	573	2306	3000	|	20	20
YEAR 7	"	761	1177	630	2568	3000	|	20	20
YEAR 8	"	866	1295	694	2855	3000	|	20	20
YEAR 9	"	978	1427	595	3000	3000	|	20	20
YEAR 10	"	1029	1500	471	3000	3000	|	20	20

		BULL RATIO	CALF RATIO
START		20	27
POST HUNT YR	1	23	62
POST HUNT YR	2	37	54
POST HUNT YR	3	45	55
POST HUNT YR	4	52	55
POST HUNT YR	5	57	55
POST HUNT YR	6	61	55
POST HUNT YR	7	64	54
POST HUNT YR	8	66	54
POST HUNT YR	9	68	42
POST HUNT YR	10	68	32

MENDOCINO TULE ELK MANAGEMENT UNIT (General and PLM) - SIMULATION RUNS, 2016
(INCLUDES PROPOSED MENDOCINO NORTH COAST, MIDDLE FORK, UPPER RUSSIAN RIVER,
LITTLE LAKE, AND SOUTH COAST ZONES)
Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

CURRENT CONDITION: BULL & ANTLERLESS TAGS
HARVEST UP TO 36 BULL & 37 ANTLERLESS
APPROXIMATE SUCCESS RATE: 80% BULL, 75% ANTLERLESS

HERD SIZE	930	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	16.8	%
% OF COWS KILLED BY HUNTERS	7.2	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	218	544	169	930	930	|	36	37
YEAR 1	"	213	520	233	966	1500	|	36	37
YEAR 2	"	235	527	222	984	1500	|	36	37
YEAR 3	"	248	529	225	1002	1500	|	36	37
YEAR 4	"	260	532	226	1018	1500	|	36	37
YEAR 5	"	270	534	227	1032	1500	|	36	37
YEAR 6	"	278	537	229	1044	1500	|	36	37
YEAR 7	"	285	540	230	1056	1500	|	36	37
YEAR 8	"	292	544	231	1067	1500	|	36	37
YEAR 9	"	297	547	233	1078	1500	|	36	37
YEAR 10	"	302	551	235	1088	1500	|	36	37

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	37	48
POST HUNT YR	2	41	45
POST HUNT YR	3	43	46
POST HUNT YR	4	45	46
POST HUNT YR	5	47	46
POST HUNT YR	6	49	46
POST HUNT YR	7	50	46
POST HUNT YR	8	51	46
POST HUNT YR	9	51	46
POST HUNT YR	10	52	46

MENDOCINO NORTH COAST - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

PROPOSED HARVEST: BULL & ANTLERLESS TAGS, INCLUDES COOPERATIVE TAGS
HARVEST UP TO 18 BULL & 20 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	420	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	18	%
% OF COWS KILLED BY HUNTERS	8.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	98	246	76	420	420	|	13	10
YEAR 1	"	99	241	108	448	1000	|	18	20
YEAR 2	"	108	242	101	451	1000	|	18	20
YEAR 3	"	113	239	102	454	1000	|	18	20
YEAR 4	"	117	237	101	455	1000	|	18	20
YEAR 5	"	119	235	100	455	1000	|	18	20
YEAR 6	"	121	234	99	454	1000	|	18	20
YEAR 7	"	122	232	98	452	1000	|	18	20
YEAR 8	"	123	230	97	450	1000	|	18	20
YEAR 9	"	123	228	97	448	1000	|	18	19
YEAR 10	"	123	226	96	445	1000	|	18	19

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	37	49
POST HUNT YR	2	41	46
POST HUNT YR	3	43	46
POST HUNT YR	4	46	46
POST HUNT YR	5	47	46
POST HUNT YR	6	48	46
POST HUNT YR	7	49	46
POST HUNT YR	8	50	46
POST HUNT YR	9	51	46
POST HUNT YR	10	51	46

MENDOCINO NORTH COAST - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

INCREASED HARVEST: BULL & ANTLERLESS TAGS, INCLUDES PLM, AND COOPERATIVE TAGS
HARVEST UP TO 27 BULL & 30 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	420	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	27	%
% OF COWS KILLED BY HUNTERS	12.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	98	246	76	420	420	|	13	10
YEAR 1	"	99	241	108	448	1000	|	27	30
YEAR 2	"	101	233	97	431	1000	|	27	29
YEAR 3	"	98	222	94	414	1000	|	27	28
YEAR 4	"	95	212	89	397	1000	|	27	27
YEAR 5	"	90	203	85	379	1000	|	27	25
YEAR 6	"	85	194	82	361	1000	|	27	24
YEAR 7	"	79	185	78	343	1000	|	21	23
YEAR 8	"	78	177	75	329	1000	|	21	22
YEAR 9	"	75	169	71	315	1000	|	20	21
YEAR 10	"	72	161	68	302	1000	|	20	20

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	34	51
POST HUNT YR	2	36	48
POST HUNT YR	3	37	48
POST HUNT YR	4	37	48
POST HUNT YR	5	36	48
POST HUNT YR	6	34	48
POST HUNT YR	7	36	48
POST HUNT YR	8	37	48
POST HUNT YR	9	37	48
POST HUNT YR	10	37	48

MENDOCINO NORTH COAST - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

HERD GROWTH: BULL & ANTLERLESS TAGS, INCLUDES COOPERATIVE TAGS
HARVEST UP TO 28 BULL & 24 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	550	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	21	%
% OF COWS KILLED BY HUNTERS	7.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	129	322	100	550	550	13	10
YEAR 1	"	132	318	143	594	1000	28	24
YEAR 2	"	141	322	135	598	1000	28	24
YEAR 3	"	145	322	137	603	1000	28	24
YEAR 4	"	148	322	137	607	1000	28	24
YEAR 5	"	151	322	137	611	1000	28	24
YEAR 6	"	154	323	137	614	1000	28	24
YEAR 7	"	155	323	137	616	1000	28	24
YEAR 8	"	157	323	137	618	1000	28	24
YEAR 9	"	158	324	138	620	1000	28	24
YEAR 10	"	160	324	138	621	1000	28	24

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	36	49
POST HUNT YR	2	38	45
POST HUNT YR	3	39	46
POST HUNT YR	4	40	46
POST HUNT YR	5	41	46
POST HUNT YR	6	42	46
POST HUNT YR	7	43	46
POST HUNT YR	8	43	46
POST HUNT YR	9	44	46
POST HUNT YR	10	44	46

MENDOCINO NORTH COAST - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

REDUCED HARVEST: BULL & ANTLERLESS TAGS, INCLUDES COOPERATIVE TAGS
HARVEST UP TO 9 BULL & 10 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	420	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	9	%
% OF COWS KILLED BY HUNTERS	4.2	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	98	246	76	420	420	|	13	10
YEAR 1	"	99	241	108	448	1000	|	9	10
YEAR 2	"	115	251	106	472	1000	|	9	10
YEAR 3	"	127	258	111	497	1000	|	9	10
YEAR 4	"	139	267	114	521	1000	|	9	10
YEAR 5	"	150	277	118	545	1000	|	9	10
YEAR 6	"	160	286	123	569	1000	|	9	10
YEAR 7	"	170	297	127	594	1000	|	9	10
YEAR 8	"	180	308	132	620	1000	|	9	10
YEAR 9	"	190	321	137	647	1000	|	9	10
YEAR 10	"	199	334	143	676	1000	|	9	10

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	39	47
POST HUNT YR	2	44	44
POST HUNT YR	3	48	45
POST HUNT YR	4	51	44
POST HUNT YR	5	53	44
POST HUNT YR	6	55	44
POST HUNT YR	7	56	44
POST HUNT YR	8	57	44
POST HUNT YR	9	58	44
POST HUNT YR	10	59	44

MENDOCINO MIDDLE FORK - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016

Ratio = 40/100/31, Maximum Calf Survival =
46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

PROPOSED HARVEST: BULL & ANTLERLESS TAGS, INCLUDES COOPERATIVE TAGS
HARVEST UP TO 12 BULL & 11 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	250	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	21	%
% OF COWS KILLED BY HUNTERS	8	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	58	146	45	250	250	|	12	9
YEAR 1	"	55	141	63	259	500	|	12	11
YEAR 2	"	60	142	60	261	500	|	12	11
YEAR 3	"	63	141	60	264	500	|	12	11
YEAR 4	"	65	141	60	265	500	|	12	11
YEAR 5	"	66	140	59	266	500	|	12	11
YEAR 6	"	68	139	59	266	500	|	12	11
YEAR 7	"	69	139	59	266	500	|	12	11
YEAR 8	"	69	138	59	266	500	|	12	11
YEAR 9	"	69	138	58	266	500	|	12	11
YEAR 10	"	70	137	58	265	500	|	12	11

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	34	49
POST HUNT YR	2	37	46
POST HUNT YR	3	39	46
POST HUNT YR	4	41	46
POST HUNT YR	5	43	46
POST HUNT YR	6	44	46
POST HUNT YR	7	45	46
POST HUNT YR	8	45	46
POST HUNT YR	9	46	46
POST HUNT YR	10	46	46

MENDOCINO MIDDLE FORK - SIMULATION RUNS, GENERAL, SHARE, AND PLM 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

INCREASED HARVEST: BULL & ANTLERLESS TAGS, INCLUDES COOPERATIVE TAGS
HARVEST UP TO 18 BULL & 16 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	250	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	33	%
% OF COWS KILLED BY HUNTERS	11	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	58	146	45	250	250	|	12	9
YEAR 1	"	55	144	63	262	500	|	18	16
YEAR 2	"	55	144	59	257	500	|	18	16
YEAR 3	"	53	142	59	253	500	|	17	16
YEAR 4	"	52	140	58	250	500	|	17	15
YEAR 5	"	51	138	57	246	500	|	17	15
YEAR 6	"	50	136	57	243	500	|	17	15
YEAR 7	"	50	135	56	240	500	|	16	15
YEAR 8	"	49	133	55	237	500	|	16	15
YEAR 9	"	48	131	54	234	500	|	16	14
YEAR 10	"	48	130	54	231	500	|	16	14

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	29	49
POST HUNT YR	2	29	46
POST HUNT YR	3	28	47
POST HUNT YR	4	28	47
POST HUNT YR	5	28	47
POST HUNT YR	6	28	47
POST HUNT YR	7	28	47
POST HUNT YR	8	28	47
POST HUNT YR	9	28	47
POST HUNT YR	10	28	47

MENDOCINO MIDDLE FORK -SIMULATION RUNS, INCLUDES GENERAL, SHARE, AND PLM 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

HERD GROWTH: BULL & ANTLERLESS TAGS, INCLUDES COOPERATIVE TAGS
HARVEST UP TO 12 BULL & 16 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	350	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	15	%
% OF COWS KILLED BY HUNTERS	7.8	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	82	205	63	350	350	|	12	9
YEAR 1	"	81	200	90	371	500	|	12	16
YEAR 2	"	91	202	85	378	500	|	12	16
YEAR 3	"	97	201	86	384	500	|	12	16
YEAR 4	"	102	201	85	389	500	|	12	16
YEAR 5	"	106	201	85	393	500	|	12	16
YEAR 6	"	109	201	85	395	500	|	12	16
YEAR 7	"	112	200	85	397	500	|	12	16
YEAR 8	"	114	200	85	399	500	|	12	16
YEAR 9	"	115	200	85	400	500	|	12	16
YEAR 10	"	116	199	85	400	500	|	12	16

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	37	49
POST HUNT YR	2	42	46
POST HUNT YR	3	46	46
POST HUNT YR	4	49	46
POST HUNT YR	5	51	46
POST HUNT YR	6	53	46
POST HUNT YR	7	54	46
POST HUNT YR	8	55	46
POST HUNT YR	9	56	46
POST HUNT YR	10	57	46

MENDOCINO MIDDLE FORK - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

REDUCED HARVEST: BULL & ANTLERLESS TAGS, INCLUDES COOPERATIVE TAGS
HARVEST UP TO 6 BULL & 5 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	250	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	11	%
% OF COWS KILLED BY HUNTERS	3.8	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	58	146	45	250	250	12	9
YEAR 1	"	55	141	63	259	500	6	5
YEAR 2	"	65	147	62	274	500	6	5
YEAR 3	"	72	152	65	289	500	6	5
YEAR 4	"	79	158	67	304	500	6	5
YEAR 5	"	85	164	70	319	500	6	5
YEAR 6	"	91	170	73	334	500	6	5
YEAR 7	"	97	177	76	350	500	6	5
YEAR 8	"	103	184	79	367	500	6	5
YEAR 9	"	109	192	82	384	500	6	5
YEAR 10	"	116	201	86	402	500	6	5

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	36	47
POST HUNT YR	2	41	44
POST HUNT YR	3	45	44
POST HUNT YR	4	48	44
POST HUNT YR	5	50	44
POST HUNT YR	6	52	44
POST HUNT YR	7	53	44
POST HUNT YR	8	54	44
POST HUNT YR	9	55	44
POST HUNT YR	10	56	44

MENDOCINO UPPER RUSSIAN - GENERAL, SHARE, & PLM 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

PROPOSED HARVEST: BULL & ANTLERLESS TAGS, INCLUDES PLM & COOPERATIVE TAGS
HARVEST UP TO 12 BULL & 16 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	200	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	25.8	%
% OF COWS KILLED BY HUNTERS	15	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	47	117	36	200	200	|	9	16
YEAR 1	"	45	107	46	198	500	|	12	16
YEAR 2	"	45	103	42	190	500	|	12	15
YEAR 3	"	44	98	40	181	500	|	11	15
YEAR 4	"	42	93	38	173	500	|	11	14
YEAR 5	"	40	88	36	165	500	|	10	13
YEAR 6	"	38	84	34	157	500	|	10	13
YEAR 7	"	37	80	33	149	500	|	9	12
YEAR 8	"	35	76	31	141	500	|	9	11
YEAR 9	"	33	72	30	134	500	|	9	11
YEAR 10	"	31	68	28	127	500	|	8	11

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	36	51
POST HUNT YR	2	38	48
POST HUNT YR	3	39	49
POST HUNT YR	4	39	48
POST HUNT YR	5	40	48
POST HUNT YR	6	40	48
POST HUNT YR	7	40	48
POST HUNT YR	8	40	48
POST HUNT YR	9	41	49
POST HUNT YR	10	41	49

MENDOCINO UPPER RUSSIAN - GENERAL, SHARE, & PLM SIMULATION RUNS, 2016

Ratio = 40/100/31, Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

INCREASED HARVEST: BULL & ANTLERLESS TAGS, INCLUDES PLM & COOPERATIVE TAGS
HARVEST UP TO 18 BULL & 24 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	200	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	39.5	%
% OF COWS KILLED BY HUNTERS	22.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	47	117	36	200	200	|	9	16
YEAR 1	"	45	107	61	212	1000	|	18	24
YEAR 2	"	46	102	50	198	1000	|	18	23
YEAR 3	"	42	94	47	183	1000	|	17	21
YEAR 4	"	39	87	44	170	1000	|	16	19
YEAR 5	"	36	80	40	157	1000	|	14	18
YEAR 6	"	34	74	37	145	1000	|	13	17
YEAR 7	"	31	68	34	134	1000	|	12	15
YEAR 8	"	29	63	32	124	1000	|	11	14
YEAR 9	"	27	58	29	114	1000	|	11	13
YEAR 10	"	25	54	27	106	1000	|	10	12

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	33	73
POST HUNT YR	2	35	63
POST HUNT YR	3	35	65
POST HUNT YR	4	35	65
POST HUNT YR	5	36	65
POST HUNT YR	6	36	65
POST HUNT YR	7	36	65
POST HUNT YR	8	36	65
POST HUNT YR	9	36	65
POST HUNT YR	10	36	65

MENDOCINO UPPER RUSSIAN - GENERAL, SHARE, & PLM SIMULATION RUNS, 2016

Ratio = 40/100/31, Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

HERD GROWTH: BULL & ANTLERLESS TAGS, INCLUDES PLM & COOPERATIVE TAGS
HARVEST UP TO 18 BULL & 25 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	300	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	25.8	%
% OF COWS KILLED BY HUNTERS	15	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	70	175	54	300	300	|	12	16
YEAR 1	"	68	168	96	332	1000	|	18	25
YEAR 2	"	79	172	86	336	1000	|	18	25
YEAR 3	"	83	170	88	341	1000	|	18	25
YEAR 4	"	88	170	87	345	1000	|	18	25
YEAR 5	"	91	170	87	347	1000	|	18	25
YEAR 6	"	93	169	87	349	1000	|	18	25
YEAR 7	"	95	168	86	350	1000	|	18	25
YEAR 8	"	97	168	86	350	1000	|	18	25
YEAR 9	"	98	167	86	350	1000	|	18	25
YEAR 10	"	98	166	85	349	1000	|	18	25

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	35	67
POST HUNT YR	2	42	59
POST HUNT YR	3	45	61
POST HUNT YR	4	48	60
POST HUNT YR	5	51	60
POST HUNT YR	6	53	60
POST HUNT YR	7	54	60
POST HUNT YR	8	55	60
POST HUNT YR	9	56	60
POST HUNT YR	10	57	60

MENDOCINO LITTLE LAKE - SIMULATION RUNS, 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST
RATES.

PROPOSED HARVEST: BULL & ANTLERLESS TAGS, INCLUDES COOPERATIVE TAGS
HARVEST: 0 - NO HARVEST RECOMMONDED - ESTABLISH ZONE BOUNDARIES

APPROXIMATE HARVEST SUCCESS RATES; 0 BULL, 0 ANTLERLESS

HERD SIZE	20	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	0	%
% OF COWS KILLED BY HUNTERS	0	%

	AU	BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	G	5	12	4	20	20	0	0
YEAR 1	"	5	12	5	22	200	0	0
YEAR 2	"	6	13	5	25	200	0	0
YEAR 3	"	7	14	6	27	200	0	0
YEAR 4	"	8	15	6	29	200	0	0
YEAR 5	"	9	16	7	31	200	0	0
YEAR 6	"	10	17	7	34	200	0	0
YEAR 7	"	11	18	8	36	200	0	0
YEAR 8	"	12	19	8	39	200	0	0
YEAR 9	"	13	20	9	42	200	0	0
YEAR 10	"	14	22	9	45	200	0	0

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	44	45
POST HUNT YR	2	49	43
POST HUNT YR	3	53	43
POST HUNT YR	4	56	43
POST HUNT YR	5	58	43
POST HUNT YR	6	59	43
POST HUNT YR	7	60	43
POST HUNT YR	8	61	43
POST HUNT YR	9	62	43
POST HUNT YR	10	62	43

MENDOCINO LITTLE LAKE - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

HERD GROWTH: BULL & ANTLERLESS TAGS, INCLUDES COOPERATIVE TAGS
HARVEST: UP TO 5 BULL AND 5 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80% BULL, 75% ANTLERLESS

HERD SIZE	100	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	17.4	%
% OF COWS KILLED BY HUNTERS	7.7	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	23	58	18	100	100	0	0
YEAR 1	"	26	59	27	112	200	5	5
YEAR 2	"	28	60	25	113	200	5	5
YEAR 3	"	29	60	26	114	200	5	5
YEAR 4	"	29	60	25	114	200	5	5
YEAR 5	"	29	60	25	115	200	5	5
YEAR 6	"	30	60	25	115	200	5	5
YEAR 7	"	30	60	25	115	200	5	5
YEAR 8	"	30	60	25	115	200	5	5
YEAR 9	"	30	60	25	115	200	5	5
YEAR 10	"	30	60	25	115	200	5	5

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	39	49
POST HUNT YR	2	42	45
POST HUNT YR	3	43	46
POST HUNT YR	4	43	46
POST HUNT YR	5	44	46
POST HUNT YR	6	44	46
POST HUNT YR	7	45	46
POST HUNT YR	8	45	46
POST HUNT YR	9	45	46
POST HUNT YR	10	45	46

MENDOCINO SOUTH COAST - SIMULATION RUNS, 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

PROPOSED HARVEST: BULL & ANTLERLESS TAGS,
HARVEST UP TO 1 BULL & 1 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	40	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	6	%
% OF COWS KILLED BY HUNTERS	2.9	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	9	23	7	40	40	1	1
YEAR 1	"	10	23	10	43	200	1	1
YEAR 2	"	11	24	10	46	200	1	1
YEAR 3	"	13	25	11	49	200	1	1
YEAR 4	"	14	26	11	51	200	1	1
YEAR 5	"	15	27	12	54	200	1	1
YEAR 6	"	16	28	12	57	200	1	1
YEAR 7	"	18	30	13	60	200	1	1
YEAR 8	"	19	31	13	63	200	1	1
YEAR 9	"	20	32	14	66	200	1	1
YEAR 10	"	21	34	14	69	200	1	1

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	41	46
POST HUNT YR	2	46	44
POST HUNT YR	3	50	44
POST HUNT YR	4	53	44
POST HUNT YR	5	55	44
POST HUNT YR	6	57	44
POST HUNT YR	7	59	44
POST HUNT YR	8	60	44
POST HUNT YR	9	61	44
POST HUNT YR	10	62	44

MENDOCINO SOUTH COAST - SIMULATION RUNS, 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

INCREASED HARVEST: BULL & ANTLERLESS TAGS,
HARVEST UP TO 2 BULL & 2 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	40	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	16	%
% OF COWS KILLED BY HUNTERS	7	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	9	23	7	40	40	1	1
YEAR 1	"	10	23	10	43	200	2	2
YEAR 2	"	11	23	10	44	200	2	2
YEAR 3	"	11	23	10	44	200	2	2
YEAR 4	"	12	23	10	45	200	2	2
YEAR 5	"	12	24	10	46	200	2	2
YEAR 6	"	12	24	10	46	200	2	2
YEAR 7	"	13	24	10	47	200	2	2
YEAR 8	"	13	24	10	47	200	2	2
YEAR 9	"	13	24	10	48	200	2	2
YEAR 10	"	14	24	10	48	200	2	2

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	38	48
POST HUNT YR	2	42	45
POST HUNT YR	3	44	46
POST HUNT YR	4	46	46
POST HUNT YR	5	48	46
POST HUNT YR	6	50	46
POST HUNT YR	7	51	46
POST HUNT YR	8	52	46
POST HUNT YR	9	52	46
POST HUNT YR	10	53	46

MENDOCINO SOUTH COAST - SIMULATION RUNS, 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

HERD GROWTH: BULL & ANTLERLESS TAGS, INCLUDES COOPERATIVE TAGS
HARVEST UP TO 5 BULL & 5 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	100	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	17.9	%
% OF COWS KILLED BY HUNTERS	7.7	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	23	58	18	100	100	1	1
YEAR 1	"	25	59	26	110	200	5	5
YEAR 2	"	27	59	25	111	200	5	5
YEAR 3	"	28	59	25	112	200	5	5
YEAR 4	"	29	59	25	113	200	5	5
YEAR 5	"	30	59	25	114	200	5	5
YEAR 6	"	30	59	25	114	200	5	5
YEAR 7	"	30	59	25	115	200	5	5
YEAR 8	"	31	59	25	115	200	5	5
YEAR 9	"	31	59	25	115	200	5	5
YEAR 10	"	31	59	25	115	200	5	5

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	38	49
POST HUNT YR	2	41	45
POST HUNT YR	3	43	46
POST HUNT YR	4	45	46
POST HUNT YR	5	46	46
POST HUNT YR	6	47	46
POST HUNT YR	7	48	46
POST HUNT YR	8	48	46
POST HUNT YR	9	49	46
POST HUNT YR	10	49	46

MENDOCINO SOUTH COAST - SIMULATION RUNS, 2016

Ratio = 40/100/31, Maximum Calf Survival = 46%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS
BASED ON VARIOUS HARVEST RATES.

REDUCED HARVEST: BULL & ANTLERLESS TAGS,
HARVEST UP TO 1 BULL & 0 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
APPROXIMATE HARVEST SUCCESS RATES; 80 BULL, 75 ANTLERLESS

HERD SIZE	40	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	6	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	9	23	7	40	40	1	1
YEAR 1	"	10	23	10	43	200	1	0
YEAR 2	"	11	25	11	47	200	1	0
YEAR 3	"	13	26	11	51	200	1	0
YEAR 4	"	14	28	12	55	200	1	0
YEAR 5	"	16	30	13	59	200	1	0
YEAR 6	"	17	32	14	63	200	1	0
YEAR 7	"	19	34	15	68	200	1	0
YEAR 8	"	21	37	16	73	200	1	0
YEAR 9	"	22	39	17	79	200	1	0
YEAR 10	"	24	42	18	85	200	1	0

		BULL RATIO	CALF RATIO
START		40	31
POST HUNT YR	1	39	45
POST HUNT YR	2	44	43
POST HUNT YR	3	46	43
POST HUNT YR	4	49	43
POST HUNT YR	5	51	43
POST HUNT YR	6	52	43
POST HUNT YR	7	54	43
POST HUNT YR	8	55	43
POST HUNT YR	9	55	43
POST HUNT YR	10	56	43

CACHE CREEK TULE ELK HERD - SIMULATION RUNS, GENERAL AND SHARE 2016
Ratio = 25/100/51 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: BULL, COW,
TO HARVEST UP TO 4 BULLS & 3 COWS
Various combination of tags to achieved harvest,
Assuming success rate of 90% bull and 90% antlerless

HERD SIZE	125	ELK
% BULLS LOST TO NON HUNTING CAUSES	40	%
% COWS LOST TO NON HUNTING CAUSES	20	%
% OF BULLS KILLED BY HUNTERS	18.4	%
% OF COWS KILLED BY HUNTERS	4	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	18	71	36	125	125	|	3	2
YEAR 1	"	20	70	41	131	200	|	4	3
YEAR 2	"	22	70	40	132	200	|	4	3
YEAR 3	"	23	70	40	133	200	|	4	3
YEAR 4	"	23	70	40	133	200	|	4	3
YEAR 5	"	23	70	40	133	200	|	4	3
YEAR 6	"	24	70	40	133	200	|	4	3
YEAR 7	"	24	70	40	133	200	|	4	3
YEAR 8	"	24	69	40	133	200	|	4	3
YEAR 9	"	24	69	40	133	200	|	4	3
YEAR 10	"	24	69	40	133	200	|	4	3

		BULL RATIO	CALF RATIO
START		25	51
POST HUNT YR	1	24	62
POST HUNT YR	2	27	60
POST HUNT YR	3	28	60
POST HUNT YR	4	28	60
POST HUNT YR	5	29	60
POST HUNT YR	6	29	60
POST HUNT YR	7	29	60
POST HUNT YR	8	29	60
POST HUNT YR	9	29	60
POST HUNT YR	10	29	60

CACHE CREEK TULE ELK HERD - SIMULATION RUNS, GENERAL AND SHARE 2016
Ratio = 25/100/51 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED: BULL, COW,
TO HARVEST UP TO 4 BULLS & 3 COWS
Various combination of tags to achieved harvest,
Assuming success rate of 90% bull and 90% antlerless

HERD SIZE	125	ELK
% BULLS LOST TO NON HUNTING CAUSES	40	%
% COWS LOST TO NON HUNTING CAUSES	20	%
% OF BULLS KILLED BY HUNTERS	18.4	%
% OF COWS KILLED BY HUNTERS	5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	18	71	36	125	125	3	2
YEAR 1	"	20	70	41	131	200	4	3
YEAR 2	"	22	70	40	131	200	4	3
YEAR 3	"	23	69	40	131	200	4	3
YEAR 4	"	23	68	39	130	200	4	3
YEAR 5	"	23	67	39	129	200	4	3
YEAR 6	"	23	67	38	128	200	4	3
YEAR 7	"	23	66	38	127	200	4	3
YEAR 8	"	23	65	38	126	200	4	3
YEAR 9	"	22	65	37	125	200	4	3
YEAR 10	"	22	64	37	123	200	4	3

		BULL RATIO	CALF RATIO
START		25	51
POST HUNT YR	1	24	63
POST HUNT YR	2	27	60
POST HUNT YR	3	28	61
POST HUNT YR	4	29	61
POST HUNT YR	5	29	61
POST HUNT YR	6	29	61
POST HUNT YR	7	30	61
POST HUNT YR	8	30	61
POST HUNT YR	9	30	61
POST HUNT YR	10	30	61

CACHE CREEK TULE ELK HERD - SIMULATION RUNS, GENERAL AND SHARE 2016
Ratio = 25/100/51 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: BULL, COW,
TO HARVEST UP TO 8 BULLS & 6 COWS
Various combination of tags to achieved harvest,
Assuming success rate of 90% bull and 90% antlerless

HERD SIZE	125	ELK
% BULLS LOST TO NON HUNTING CAUSES	40	%
% COWS LOST TO NON HUNTING CAUSES	20	%
% OF BULLS KILLED BY HUNTERS	39	%
% OF COWS KILLED BY HUNTERS	8	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	18	71	36	125	125	3	2
YEAR 1	"	20	70	41	131	200	8	6
YEAR 2	"	20	68	38	126	200	8	5
YEAR 3	"	19	65	37	122	200	7	5
YEAR 4	"	18	63	36	117	200	7	5
YEAR 5	"	17	61	35	113	200	7	5
YEAR 6	"	17	59	34	109	200	7	5
YEAR 7	"	16	57	32	105	200	6	5
YEAR 8	"	16	55	31	102	200	6	4
YEAR 9	"	15	53	30	98	200	6	4
YEAR 10	"	15	51	29	95	200	6	4

		BULL RATIO	CALF RATIO
START		25	51
POST HUNT YR	1	19	65
POST HUNT YR	2	19	62
POST HUNT YR	3	19	62
POST HUNT YR	4	19	62
POST HUNT YR	5	19	62
POST HUNT YR	6	19	62
POST HUNT YR	7	19	62
POST HUNT YR	8	19	62
POST HUNT YR	9	19	62
POST HUNT YR	10	19	62

CACHE CREEK TULE ELK HERD - SIMULATION RUNS, GENERAL AND SHARE 2016
Ratio = 25/100/51 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: BULL, COW,
TO HARVEST UP TO 5 BULLS & 6 COWS
Various combination of tags to achieved harvest,
Assuming success rate of 90% bull and 90% antlerless

HERD SIZE	175	ELK
% BULLS LOST TO NON HUNTING CAUSES	40	%
% COWS LOST TO NON HUNTING CAUSES	20	%
% OF BULLS KILLED BY HUNTERS	16.8	%
% OF COWS KILLED BY HUNTERS	6.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	25	99	51	175	175	|	3	2
YEAR 1	"	28	98	58	185	200	|	5	6
YEAR 2	"	32	97	55	184	200	|	5	6
YEAR 3	"	32	94	54	181	200	|	5	6
YEAR 4	"	32	92	53	178	200	|	5	6
YEAR 5	"	32	90	52	174	200	|	5	6
YEAR 6	"	32	88	51	171	200	|	5	6
YEAR 7	"	31	86	50	167	200	|	5	6
YEAR 8	"	30	84	48	163	200	|	5	5
YEAR 9	"	30	82	47	159	200	|	5	5
YEAR 10	"	29	81	46	156	200	|	5	5

		BULL RATIO	CALF RATIO
START		25	51
POST HUNT YR	1	26	64
POST HUNT YR	2	29	61
POST HUNT YR	3	30	62
POST HUNT YR	4	31	61
POST HUNT YR	5	32	61
POST HUNT YR	6	32	61
POST HUNT YR	7	32	61
POST HUNT YR	8	32	61
POST HUNT YR	9	32	61
POST HUNT YR	10	32	61

CACHE CREEK TULE ELK HERD - SIMULATION RUNS, GENERAL AND SHARE 2016
Ratio = 25/100/51 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED: BULL, COW,
TO HARVEST UP TO 2 BULLS & 1 COWS
Various combination of tags to achieved harvest,
Assuming success rate of 90% bull and 90% antlerless

HERD SIZE	125	ELK
% BULLS LOST TO NON HUNTING CAUSES	40	%
% COWS LOST TO NON HUNTING CAUSES	20	%
% OF BULLS KILLED BY HUNTERS	7.7	%
% OF COWS KILLED BY HUNTERS	1	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	18	71	36	125	125	|	3	2
YEAR 1	"	20	70	41	131	200	|	2	1
YEAR 2	"	23	72	41	137	200	|	2	1
YEAR 3	"	25	73	43	141	200	|	2	1
YEAR 4	"	27	75	44	146	200	|	2	1
YEAR 5	"	28	77	45	150	200	|	2	1
YEAR 6	"	29	79	46	153	200	|	2	1
YEAR 7	"	30	81	47	157	200	|	2	1
YEAR 8	"	31	83	48	161	200	|	2	1
YEAR 9	"	31	85	49	165	200	|	2	1
YEAR 10	"	32	87	50	169	200	|	2	1

		BULL RATIO	CALF RATIO
START		25	51
POST HUNT YR	1	26	60
POST HUNT YR	2	30	58
POST HUNT YR	3	32	59
POST HUNT YR	4	33	59
POST HUNT YR	5	34	59
POST HUNT YR	6	34	59
POST HUNT YR	7	34	59
POST HUNT YR	8	34	59
POST HUNT YR	9	34	59
POST HUNT YR	10	34	59

LA PANZA - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 26/100/29 - Maximum Calf Survival =67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: BULL & ANTLERLESS (INCLUDES COOPERATIVE)
TO HARVEST UP TO 47 BULL AND 51 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 70% antlerless

HERD SIZE	700	ELK
% BULLS LOST TO NON HUNTING CAUSES	22	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	42	%
% OF COWS KILLED BY HUNTERS	12.1	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	117	452	131	700	700	|	40	40
YEAR 1	"	111	420	276	807	1250	|	47	51
YEAR 2	"	158	446	247	851	1250	|	47	51
YEAR 3	"	183	457	265	905	1250	|	47	51
YEAR 4	"	210	474	272	955	1250	|	47	51
YEAR 5	"	233	492	283	1008	1250	|	47	51
YEAR 6	"	256	513	295	1064	1250	|	47	51
YEAR 7	"	278	537	309	1124	1250	|	47	51
YEAR 8	"	301	564	325	1190	1250	|	47	51
YEAR 9	"	325	594	330	1250	1250	|	47	51
YEAR 10	"	346	624	280	1250	1250	|	47	51

		BULL RATIO	CALF RATIO
START		26	29
POST HUNT YR	1	18	75
POST HUNT YR	2	28	63
POST HUNT YR	3	34	65
POST HUNT YR	4	38	64
POST HUNT YR	5	42	64
POST HUNT YR	6	45	64
POST HUNT YR	7	48	64
POST HUNT YR	8	50	63
POST HUNT YR	9	51	61
POST HUNT YR	10	52	49

LA PANZA - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 26/100/29 - Maximum Calf Survival =67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED: BULL & ANTLERLESS (INCLUDES COOPERATIVE)
TO HARVEST UP TO 50 BULL AND 70 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 70% antlerless

HERD SIZE	700	ELK
% BULLS LOST TO NON HUNTING CAUSES	22	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	45	%
% OF COWS KILLED BY HUNTERS	16.6	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	117	452	131	700	700	|	40	40
YEAR 1	"	111	420	276	807	1250	|	50	70
YEAR 2	"	155	429	235	819	1250	|	50	70
YEAR 3	"	174	420	241	834	1250	|	50	70
YEAR 4	"	190	414	235	839	1250	|	50	70
YEAR 5	"	201	406	231	838	1250	|	50	70
YEAR 6	"	207	398	226	831	1250	|	50	70
YEAR 7	"	211	388	220	819	1250	|	50	70
YEAR 8	"	211	377	213	801	1250	|	50	70
YEAR 9	"	209	364	206	779	1250	|	50	70
YEAR 10	"	204	350	197	751	1250	|	50	70

		BULL RATIO	CALF RATIO
START		26	29
POST HUNT YR	1	18	79
POST HUNT YR	2	29	65
POST HUNT YR	3	35	69
POST HUNT YR	4	41	68
POST HUNT YR	5	45	69
POST HUNT YR	6	48	69
POST HUNT YR	7	50	69
POST HUNT YR	8	52	69
POST HUNT YR	9	54	70
POST HUNT YR	10	55	70

LA PANZA - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 26/100/29 - Maximum Calf Survival =67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: BULL & ANTLERLESS (INCLUDES COOPERATIVE)
TO HARVEST UP TO 75 BULL AND 105 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 70% antlerless

HERD SIZE	700	ELK
% BULLS LOST TO NON HUNTING CAUSES	22	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	67	%
% OF COWS KILLED BY HUNTERS	25	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	117	452	131	700	700	|	40	40
YEAR 1	"	111	420	276	807	1250	|	75	105
YEAR 2	"	136	398	211	746	1250	|	75	100
YEAR 3	"	130	356	200	686	1250	|	75	89
YEAR 4	"	121	323	179	623	1250	|	75	81
YEAR 5	"	106	292	162	560	1250	|	71	73
YEAR 6	"	91	264	147	501	1250	|	61	66
YEAR 7	"	81	239	133	452	1250	|	54	60
YEAR 8	"	72	216	120	408	1250	|	49	54
YEAR 9	"	65	195	109	369	1250	|	44	49
YEAR 10	"	59	177	98	334	1250	|	40	44

		BULL RATIO	CALF RATIO
START		26	29
POST HUNT YR	1	12	88
POST HUNT YR	2	21	71
POST HUNT YR	3	21	75
POST HUNT YR	4	19	74
POST HUNT YR	5	16	74
POST HUNT YR	6	15	74
POST HUNT YR	7	15	74
POST HUNT YR	8	15	74
POST HUNT YR	9	15	74
POST HUNT YR	10	15	74

LA PANZA - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 26/100/29 - Maximum Calf Survival =67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: BULL & ANTLERLESS (INCLUDES COOPERATIVE)
TO HARVEST UP TO 75 BULL AND 100 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 70% antlerless

HERD SIZE	1000	ELK
% BULLS LOST TO NON HUNTING CAUSES	22	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	43.2	%
% OF COWS KILLED BY HUNTERS	16.3	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	168	645	187	1000	1000	|	40	40
YEAR 1	"	173	615	405	1193	1250	|	75	100
YEAR 2	"	235	631	345	1211	1250	|	75	100
YEAR 3	"	259	619	356	1234	1250	|	75	100
YEAR 4	"	283	613	348	1244	1250	|	75	100
YEAR 5	"	298	604	344	1246	1250	|	75	100
YEAR 6	"	308	595	338	1241	1250	|	75	100
YEAR 7	"	314	584	331	1229	1250	|	75	100
YEAR 8	"	316	571	324	1211	1250	|	75	100
YEAR 9	"	315	557	316	1188	1250	|	75	100
YEAR 10	"	310	541	306	1158	1250	|	75	100

		BULL RATIO	CALF RATIO
START		26	29
POST HUNT YR	1	19	79
POST HUNT YR	2	30	65
POST HUNT YR	3	36	69
POST HUNT YR	4	41	68
POST HUNT YR	5	44	68
POST HUNT YR	6	47	68
POST HUNT YR	7	50	69
POST HUNT YR	8	51	69
POST HUNT YR	9	53	69
POST HUNT YR	10	54	69

LA PANZA - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 26/100/29 - Maximum Calf Survival =67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: BULL & ANTLERLESS (INCLUDES COOPERATIVE)
TO HARVEST UP TO 25 BULL AND 35 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 70% antlerless

HERD SIZE	700	ELK
% BULLS LOST TO NON HUNTING CAUSES	22	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	22	%
% OF COWS KILLED BY HUNTERS	8.3	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	117	452	131	700	700	|	40	40
YEAR 1	"	111	420	276	807	1250	|	25	35
YEAR 2	"	175	460	258	893	1250	|	25	35
YEAR 3	"	218	488	285	991	1250	|	25	35
YEAR 4	"	262	524	303	1090	1250	|	25	35
YEAR 5	"	304	564	328	1195	1250	|	25	35
YEAR 6	"	346	610	295	1250	1250	|	25	35
YEAR 7	"	365	636	249	1250	1250	|	25	35
YEAR 8	"	363	638	249	1250	1250	|	25	35
YEAR 9	"	361	640	249	1250	1250	|	25	35
YEAR 10	"	359	642	248	1250	1250	|	25	35

		BULL RATIO	CALF RATIO
START		26	29
POST HUNT YR	1	23	72
POST HUNT YR	2	35	61
POST HUNT YR	3	43	63
POST HUNT YR	4	49	62
POST HUNT YR	5	53	62
POST HUNT YR	6	56	51
POST HUNT YR	7	57	41
POST HUNT YR	8	56	41
POST HUNT YR	9	56	41
POST HUNT YR	10	55	41

BISHOP - SIMULATION RUNS, 2016
Ratio = 75/100/22 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

CURRENT CONDITION: BULL & ANTLERLESS
TO HARVEST UP TO 3 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 70% antlerless

HERD SIZE	25	ELK
% BULLS LOST TO NON HUNTING CAUSES	18	%
% COWS LOST TO NON HUNTING CAUSES	9	%
% OF BULLS KILLED BY HUNTERS	39	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	10	13	3	25	25	3	0
YEAR 1	"	6	13	6	26	150	3	0
YEAR 2	"	6	15	6	27	150	2	0
YEAR 3	"	6	16	7	29	150	2	0
YEAR 4	"	6	18	8	32	150	2	0
YEAR 5	"	6	20	9	35	150	2	0
YEAR 6	"	7	22	10	39	150	3	0
YEAR 7	"	8	25	11	44	150	3	0
YEAR 8	"	8	28	12	49	150	3	0
YEAR 9	"	9	31	14	54	150	3	0
YEAR 10	"	11	34	15	61	150	3	0

		BULL RATIO	CALF RATIO
START		75	22
POST HUNT YR	1	31	50
POST HUNT YR	2	25	44
POST HUNT YR	3	21	45
POST HUNT YR	4	20	45
POST HUNT YR	5	19	45
POST HUNT YR	6	19	45
POST HUNT YR	7	18	45
POST HUNT YR	8	18	45
POST HUNT YR	9	19	45
POST HUNT YR	10	21	45

BISHOP - SIMULATION RUNS, 2016
Ratio = 75/100/22 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

PROPOSED: BULL & ANTLERLESS
TO HARVEST UP TO 3 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull

HERD SIZE	25	ELK
% BULLS LOST TO NON HUNTING CAUSES	18	%
% COWS LOST TO NON HUNTING CAUSES	9	%
% OF BULLS KILLED BY HUNTERS	39	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	10	13	3	25	25	3	0
YEAR 1	"	6	13	6	26	150	3	0
YEAR 2	"	6	15	6	27	150	2	0
YEAR 3	"	6	16	7	29	150	2	0
YEAR 4	"	6	18	8	32	150	2	0
YEAR 5	"	6	20	9	35	150	2	0
YEAR 6	"	7	22	10	39	150	3	0
YEAR 7	"	8	25	11	44	150	3	0
YEAR 8	"	8	28	12	49	150	3	0
YEAR 9	"	9	31	14	54	150	3	0
YEAR 10	"	11	34	15	61	150	3	0

		BULL RATIO	CALF RATIO
START		75	22
POST HUNT YR	1	31	50
POST HUNT YR	2	25	44
POST HUNT YR	3	21	45
POST HUNT YR	4	20	45
POST HUNT YR	5	19	45
POST HUNT YR	6	19	45
POST HUNT YR	7	18	45
POST HUNT YR	8	18	45
POST HUNT YR	9	19	45
POST HUNT YR	10	21	45

BISHOP - SIMULATION RUNS, 2016
Ratio = 75/100/22 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

INCREASED HARVEST: BULL & ANTLERLESS
TO HARVEST UP TO 4 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 70% antlerless

HERD SIZE	25	ELK
% BULLS LOST TO NON HUNTING CAUSES	18	%
% COWS LOST TO NON HUNTING CAUSES	9	%
% OF BULLS KILLED BY HUNTERS	60	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	10	13	3	25	25	3	0
YEAR 1	"	6	13	6	26	150	4	0
YEAR 2	"	5	15	6	26	150	3	0
YEAR 3	"	4	16	7	28	150	3	0
YEAR 4	"	4	18	8	30	150	3	0
YEAR 5	"	5	20	9	34	150	3	0
YEAR 6	"	5	22	10	38	150	3	0
YEAR 7	"	6	25	11	42	150	4	0
YEAR 8	"	6	28	12	47	150	4	0
YEAR 9	"	8	31	14	52	150	4	0
YEAR 10	"	9	34	15	59	150	4	0

		BULL RATIO	CALF RATIO
START		75	22
POST HUNT YR	1	20	50
POST HUNT YR	2	13	44
POST HUNT YR	3	10	45
POST HUNT YR	4	10	45
POST HUNT YR	5	9	45
POST HUNT YR	6	9	45
POST HUNT YR	7	9	45
POST HUNT YR	8	11	45
POST HUNT YR	9	13	45
POST HUNT YR	10	16	45

BISHOP - SIMULATION RUNS, 2016
Ratio = 21/100/21 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

HERD GROWTH: BULL & ANTLERLESS
TO HARVEST UP TO 5 BULL AND 6 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 70% antlerless

HERD SIZE	80	ELK
% BULLS LOST TO NON HUNTING CAUSES	18	%
% COWS LOST TO NON HUNTING CAUSES	9	%
% OF BULLS KILLED BY HUNTERS	40	%
% OF COWS KILLED BY HUNTERS	10	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	12	56	12	80	80	3	0
YEAR 1	"	12	57	28	97	150	5	6
YEAR 2	"	17	59	25	102	150	5	6
YEAR 3	"	21	60	27	108	150	5	6
YEAR 4	"	24	61	27	112	150	5	6
YEAR 5	"	27	63	28	117	150	5	6
YEAR 6	"	29	64	28	121	150	5	6
YEAR 7	"	32	65	29	125	150	5	6
YEAR 8	"	34	66	29	130	150	5	6
YEAR 9	"	36	68	30	134	150	5	6
YEAR 10	"	38	70	31	138	150	5	6

		BULL RATIO	CALF RATIO
START		21	21
POST HUNT YR	1	14	55
POST HUNT YR	2	24	48
POST HUNT YR	3	30	49
POST HUNT YR	4	35	49
POST HUNT YR	5	39	49
POST HUNT YR	6	43	49
POST HUNT YR	7	46	49
POST HUNT YR	8	48	49
POST HUNT YR	9	50	49
POST HUNT YR	10	52	49

BISHOP - SIMULATION RUNS, 2016
Ratio = 75/100/22 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

REDUCED HARVEST: BULL & ANTLERLESS
TO HARVEST UP TO 1 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull

HERD SIZE	25	ELK
% BULLS LOST TO NON HUNTING CAUSES	18	%
% COWS LOST TO NON HUNTING CAUSES	9	%
% OF BULLS KILLED BY HUNTERS	11	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	10	13	3	25	25	|	3	0
YEAR 1	"	6	13	6	26	150	|	1	0
YEAR 2	"	7	15	6	28	150	|	1	0
YEAR 3	"	8	16	7	31	150	|	1	0
YEAR 4	"	9	18	8	35	150	|	1	0
YEAR 5	"	10	20	9	39	150	|	1	0
YEAR 6	"	11	22	10	43	150	|	1	0
YEAR 7	"	12	25	11	48	150	|	1	0
YEAR 8	"	13	28	12	54	150	|	1	0
YEAR 9	"	15	31	14	60	150	|	1	0
YEAR 10	"	17	34	15	67	150	|	1	0

		BULL RATIO	CALF RATIO
START		75	22
POST HUNT YR	1	45	50
POST HUNT YR	2	45	44
POST HUNT YR	3	44	45
POST HUNT YR	4	44	45
POST HUNT YR	5	43	45
POST HUNT YR	6	43	45
POST HUNT YR	7	43	45
POST HUNT YR	8	43	45
POST HUNT YR	9	43	45
POST HUNT YR	10	44	45

INDEPENDENCE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 57/100/47 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: HARVEST 5 BULL TAG 1 ANTLERLESS
NO CHANGE: HARVEST UP TO 5 BULL AND 1 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless
(Proposed project would split zone into Independence and Goodale zones)

HERD SIZE	85	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	18.5	%
% OF COWS KILLED BY HUNTERS	1.2	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	24	42	20	85	85	|	3	0
YEAR 1	"	25	49	21	94	150	|	5	1
YEAR 2	"	25	56	24	105	150	|	5	1
YEAR 3	"	26	64	28	118	150	|	5	1
YEAR 4	"	29	73	32	133	150	|	5	1
YEAR 5	"	32	83	34	150	150	|	5	1
YEAR 6	"	36	95	19	150	150	|	5	1
YEAR 7	"	33	98	18	150	150	|	5	1
YEAR 8	"	31	101	18	150	150	|	5	1
YEAR 9	"	29	104	18	150	150	|	5	1
YEAR 10	"	27	106	17	150	150	|	5	1

		BULL RATIO	CALF RATIO
START		57	47
POST HUNT YR	1	42	43
POST HUNT YR	2	37	44
POST HUNT YR	3	34	44
POST HUNT YR	4	33	44
POST HUNT YR	5	33	41
POST HUNT YR	6	34	20
POST HUNT YR	7	30	19
POST HUNT YR	8	26	18
POST HUNT YR	9	23	17
POST HUNT YR	10	21	16

INDEPENDENCE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 57/100/47 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED PROJECT: BULL & ANTLERLESS
TO HARVEST UP TO 4 BULLS & 2 ANTLERLESS, INCLUDES COOPERATIVE TAGS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	50	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	27	%
% OF COWS KILLED BY HUNTERS	8	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	14	25	12	50	50	|	3	0
YEAR 1	"	14	29	12	55	150	|	4	2
YEAR 2	"	13	31	13	57	150	|	4	2
YEAR 3	"	13	34	14	61	150	|	4	2
YEAR 4	"	13	36	16	65	150	|	4	2
YEAR 5	"	14	40	17	71	150	|	4	2
YEAR 6	"	15	44	19	78	150	|	4	2
YEAR 7	"	17	48	21	86	150	|	4	2
YEAR 8	"	19	54	23	96	150	|	4	2
YEAR 9	"	22	60	26	107	150	|	4	2
YEAR 10	"	25	67	29	121	150	|	4	2

		BULL RATIO	CALF RATIO
START		57	47
POST HUNT YR	1	37	46
POST HUNT YR	2	33	46
POST HUNT YR	3	30	46
POST HUNT YR	4	28	46
POST HUNT YR	5	28	45
POST HUNT YR	6	28	45
POST HUNT YR	7	29	45
POST HUNT YR	8	30	45
POST HUNT YR	9	32	45
POST HUNT YR	10	34	45

INDEPENDENCE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 57/100/47 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: BULL & ANTLERLESS
TO HARVEST UP TO 7 BULLS & 4 ANTLERLESS, INCLUDES COOPERATIVE TAGS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	50	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	50	%
% OF COWS KILLED BY HUNTERS	13	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	14	25	12	50	50	|	3	0
YEAR 1	"	14	29	12	55	150	|	7	4
YEAR 2	"	10	30	13	53	150	|	5	4
YEAR 3	"	9	30	13	53	150	|	5	4
YEAR 4	"	9	31	13	53	150	|	4	4
YEAR 5	"	9	32	14	55	150	|	4	4
YEAR 6	"	9	33	14	56	150	|	5	4
YEAR 7	"	9	34	14	58	150	|	5	4
YEAR 8	"	10	35	15	59	150	|	5	4
YEAR 9	"	10	36	15	61	150	|	5	4
YEAR 10	"	10	37	16	63	150	|	5	4

		BULL RATIO	CALF RATIO
START		57	47
POST HUNT YR	1	27	49
POST HUNT YR	2	20	49
POST HUNT YR	3	18	49
POST HUNT YR	4	17	49
POST HUNT YR	5	16	49
POST HUNT YR	6	16	49
POST HUNT YR	7	16	49
POST HUNT YR	8	16	48
POST HUNT YR	9	16	48
POST HUNT YR	10	16	48

INDEPENDENCE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 57/100/47- Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: BULL & ANTLERLESS
TO HARVEST UP TO 8 BULLS & 9 ANTLERLESS, INCLUDES COOPERATIVE TAGS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HARVEST 3 BULLS (INCLUDING 1 FUND-RAISING TAG
BULL)

HERD SIZE	100	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	27	%
% OF COWS KILLED BY HUNTERS	16	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	28	49	23	100	100	3	0
YEAR 1	"	30	58	25	112	150	8	9
YEAR 2	"	27	58	24	109	150	7	9
YEAR 3	"	26	57	24	108	150	7	9
YEAR 4	"	25	57	24	107	150	7	9
YEAR 5	"	25	57	24	106	150	7	9
YEAR 6	"	24	57	24	105	150	7	9
YEAR 7	"	24	57	24	105	150	7	9
YEAR 8	"	24	57	24	105	150	6	9
YEAR 9	"	24	57	24	104	150	6	9
YEAR 10	"	24	57	24	104	150	6	9

		BULL RATIO	CALF RATIO
START		57	47
POST HUNT YR	1	45	51
POST HUNT YR	2	41	50
POST HUNT YR	3	39	50
POST HUNT YR	4	38	50
POST HUNT YR	5	37	50
POST HUNT YR	6	37	50
POST HUNT YR	7	37	50
POST HUNT YR	8	37	50
POST HUNT YR	9	37	50
POST HUNT YR	10	37	50

INDEPENDENCE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 57/100/47 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: BULL & ANTLERLESS
TO HARVEST UP TO 2 BULLS & 1 ANTLERLESS, INCLUDES COOPERATIVE TAGS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	50	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	14	%
% OF COWS KILLED BY HUNTERS	3	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	14	25	12	50	50	|	3	0
YEAR 1	"	14	29	12	55	150	|	2	1
YEAR 2	"	14	32	14	61	150	|	2	1
YEAR 3	"	16	37	16	68	150	|	2	1
YEAR 4	"	18	41	18	77	150	|	2	1
YEAR 5	"	20	47	20	87	150	|	2	1
YEAR 6	"	23	53	23	99	150	|	2	1
YEAR 7	"	26	61	26	113	150	|	2	1
YEAR 8	"	30	69	30	130	150	|	2	1
YEAR 9	"	35	79	34	149	150	|	2	1
YEAR 10	"	41	91	18	150	150	|	2	1

		BULL RATIO	CALF RATIO
START		57	47
POST HUNT YR	1	42	44
POST HUNT YR	2	40	44
POST HUNT YR	3	39	44
POST HUNT YR	4	39	44
POST HUNT YR	5	39	44
POST HUNT YR	6	40	44
POST HUNT YR	7	41	44
POST HUNT YR	8	42	44
POST HUNT YR	9	42	44
POST HUNT YR	10	43	20

LONE PINE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 83/100/48 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: HARVEST UP TO 3 BULL TAG 1 ANTLERLESS
NO CHANGE: HARVEST UP TO 3 BULL AND 1 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	75	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	13	%
% OF COWS KILLED BY HUNTERS	3	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	27	32	16	75	75	|	2	0
YEAR 1	"	27	38	16	81	150	|	3	1
YEAR 2	"	25	43	19	87	150	|	3	1
YEAR 3	"	25	49	21	95	150	|	3	1
YEAR 4	"	26	55	24	105	150	|	3	1
YEAR 5	"	28	62	27	117	150	|	3	1
YEAR 6	"	31	71	31	132	150	|	3	1
YEAR 7	"	34	81	35	150	150	|	3	1
YEAR 8	"	39	92	19	150	150	|	3	1
YEAR 9	"	36	95	18	150	150	|	3	1
YEAR 10	"	34	98	18	150	150	|	3	1

		BULL RATIO	CALF RATIO
START		83	48
POST HUNT YR	1	62	44
POST HUNT YR	2	52	44
POST HUNT YR	3	46	44
POST HUNT YR	4	42	44
POST HUNT YR	5	40	44
POST HUNT YR	6	39	44
POST HUNT YR	7	39	44
POST HUNT YR	8	39	20
POST HUNT YR	9	35	19
POST HUNT YR	10	32	18

LONE PINE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 83/100/48 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED: HARVEST BULL & ANTLERLESS
HARVEST UP TO 7 BULL AND 5 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	75	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	30	%
% OF COWS KILLED BY HUNTERS	12	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	27	32	16	75	75	|	4	0
YEAR 1	"	25	38	16	79	150	|	7	5
YEAR 2	"	21	40	17	77	150	|	6	5
YEAR 3	"	19	41	17	77	150	|	6	5
YEAR 4	"	18	43	18	78	150	|	5	5
YEAR 5	"	17	44	19	81	150	|	5	5
YEAR 6	"	17	47	20	84	150	|	5	5
YEAR 7	"	18	49	21	88	150	|	5	5
YEAR 8	"	19	52	22	92	150	|	6	5
YEAR 9	"	19	55	23	98	150	|	6	5
YEAR 10	"	20	58	25	104	150	|	6	5

		BULL RATIO	CALF RATIO
START		83	48
POST HUNT YR	1	52	48
POST HUNT YR	2	41	48
POST HUNT YR	3	36	48
POST HUNT YR	4	33	48
POST HUNT YR	5	31	48
POST HUNT YR	6	29	48
POST HUNT YR	7	29	47
POST HUNT YR	8	28	47
POST HUNT YR	9	27	47
POST HUNT YR	10	27	47

LONE PINE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 83/100/48 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: HARVEST BULL & ANTLERLESS
HARVEST UP TO 12 BULL AND 10 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	75	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	50	%
% OF COWS KILLED BY HUNTERS	26	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	27	32	16	75	75	|	4	0
YEAR 1	"	25	38	16	79	150	|	12	10
YEAR 2	"	17	35	14	65	150	|	8	9
YEAR 3	"	12	31	13	56	150	|	6	8
YEAR 4	"	10	28	11	50	150	|	5	7
YEAR 5	"	9	25	10	44	150	|	4	7
YEAR 6	"	8	23	9	40	150	|	4	6
YEAR 7	"	7	20	8	35	150	|	3	5
YEAR 8	"	6	18	7	32	150	|	3	5
YEAR 9	"	6	16	7	29	150	|	3	4
YEAR 10	"	5	15	6	26	150	|	2	4

		BULL RATIO	CALF RATIO
START		83	48
POST HUNT YR	1	44	57
POST HUNT YR	2	33	55
POST HUNT YR	3	27	56
POST HUNT YR	4	25	56
POST HUNT YR	5	24	56
POST HUNT YR	6	23	56
POST HUNT YR	7	23	56
POST HUNT YR	8	23	56
POST HUNT YR	9	23	56
POST HUNT YR	10	23	56

LONE PINE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 83/100/48 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: HARVEST BULL & ANTLERLESS
HARVEST UP TO 10 BULL AND 9 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	120	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	25	%
% OF COWS KILLED BY HUNTERS	15	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	43	52	25	120	120	|	4	0
YEAR 1	"	42	61	26	129	150	|	10	9
YEAR 2	"	36	62	26	124	150	|	9	9
YEAR 3	"	32	62	26	121	150	|	8	9
YEAR 4	"	30	63	26	119	150	|	8	9
YEAR 5	"	29	63	27	119	150	|	7	9
YEAR 6	"	28	64	27	119	150	|	7	9
YEAR 7	"	28	64	27	120	150	|	7	9
YEAR 8	"	28	65	27	120	150	|	7	9
YEAR 9	"	28	66	28	122	150	|	7	9
YEAR 10	"	28	67	28	123	150	|	7	9

		BULL RATIO	CALF RATIO
START		83	48
POST HUNT YR	1	60	50
POST HUNT YR	2	51	50
POST HUNT YR	3	46	50
POST HUNT YR	4	43	50
POST HUNT YR	5	41	50
POST HUNT YR	6	39	50
POST HUNT YR	7	39	49
POST HUNT YR	8	38	49
POST HUNT YR	9	38	49
POST HUNT YR	10	37	49

LONE PINE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 83/100/48 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: HARVEST BULL & ANTLERLESS
HARVEST UP TO 3 BULL AND 3 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	75	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	12	%
% OF COWS KILLED BY HUNTERS	6	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	27	32	16	75	75	|	4	0
YEAR 1	"	25	38	16	79	150	|	3	2
YEAR 2	"	24	42	18	84	150	|	3	3
YEAR 3	"	25	46	20	90	150	|	3	3
YEAR 4	"	26	50	22	97	150	|	3	3
YEAR 5	"	27	55	24	106	150	|	3	3
YEAR 6	"	29	61	26	117	150	|	3	3
YEAR 7	"	31	68	29	129	150	|	3	3
YEAR 8	"	34	76	33	143	150	|	3	3
YEAR 9	"	38	85	26	150	150	|	3	3
YEAR 10	"	39	91	20	150	150	|	3	3

		BULL RATIO	CALF RATIO
START		83	48
POST HUNT YR	1	61	45
POST HUNT YR	2	54	46
POST HUNT YR	3	50	46
POST HUNT YR	4	47	45
POST HUNT YR	5	45	45
POST HUNT YR	6	43	45
POST HUNT YR	7	42	45
POST HUNT YR	8	42	45
POST HUNT YR	9	42	32
POST HUNT YR	10	40	23

Tinemaha - SIMULATION RUNS, 2016
Ratio = 300/100/33 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

CURRENT CONDITION: UP TO 2 BULLS & 0 ANTLERLESS
TO HARVEST UP TO 2 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 50% bull

HERD SIZE	17	ELK
% BULLS LOST TO NON HUNTING CAUSES	21	%
% COWS LOST TO NON HUNTING CAUSES	7	%
% OF BULLS KILLED BY HUNTERS	19	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	12	4	1	17	17	2	0
YEAR 1	"	8	4	2	14	150	2	0
YEAR 2	"	6	5	2	13	150	1	0
YEAR 3	"	5	6	2	13	150	1	0
YEAR 4	"	4	6	3	13	150	1	0
YEAR 5	"	4	7	3	14	150	1	0
YEAR 6	"	4	8	4	15	150	1	0
YEAR 7	"	4	9	4	17	150	1	0
YEAR 8	"	4	10	5	19	150	1	0
YEAR 9	"	4	12	5	21	150	1	0
YEAR 10	"	5	13	6	24	150	1	0

		BULL RATIO	CALF RATIO
START		300	33
POST HUNT YR	1	157	46
POST HUNT YR	2	101	44
POST HUNT YR	3	69	44
POST HUNT YR	4	51	44
POST HUNT YR	5	41	44
POST HUNT YR	6	36	44
POST HUNT YR	7	33	44
POST HUNT YR	8	31	44
POST HUNT YR	9	30	44
POST HUNT YR	10	29	44

Tinemaha - SIMULATION RUNS, 2016
Ratio = 300/100/33 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

PROPOSED: BULLS & ANTLERLESS
TO HARVEST UP TO 1 BULL AND 0ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 50% bull

HERD SIZE	17	ELK
% BULLS LOST TO NON HUNTING CAUSES	21	%
% COWS LOST TO NON HUNTING CAUSES	7	%
% OF BULLS KILLED BY HUNTERS	10	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	12	4	1	17	17	1	0
YEAR 1	"	9	4	2	15	150	1	0
YEAR 2	"	7	5	2	14	150	1	0
YEAR 3	"	6	6	2	14	150	1	0
YEAR 4	"	5	6	3	14	150	1	0
YEAR 5	"	4	7	3	14	150	1	0
YEAR 6	"	4	8	4	15	150	1	0
YEAR 7	"	4	9	4	17	150	1	0
YEAR 8	"	4	10	5	19	150	1	0
YEAR 9	"	4	12	5	21	150	1	0
YEAR 10	"	5	13	6	24	150	1	0

		BULL RATIO	CALF RATIO
START		300	33
POST HUNT YR	1	191	46
POST HUNT YR	2	129	44
POST HUNT YR	3	89	44
POST HUNT YR	4	63	44
POST HUNT YR	5	46	44
POST HUNT YR	6	36	44
POST HUNT YR	7	31	44
POST HUNT YR	8	28	44
POST HUNT YR	9	27	44
POST HUNT YR	10	28	44

Tinemaha - SIMULATION RUNS, 2016
Ratio = 300/100/33 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

INCREASED HARVEST: BULLS & ANTLERLESS
TO HARVEST UP TO 2 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 50% bull

HERD SIZE	17	ELK
% BULLS LOST TO NON HUNTING CAUSES	21	%
% COWS LOST TO NON HUNTING CAUSES	7	%
% OF BULLS KILLED BY HUNTERS	20	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	12	4	1	17	17	1	0
YEAR 1	"	9	4	2	15	150	2	0
YEAR 2	"	6	5	2	13	150	1	0
YEAR 3	"	5	6	2	13	150	1	0
YEAR 4	"	4	6	3	13	150	1	0
YEAR 5	"	4	7	3	14	150	1	0
YEAR 6	"	4	8	4	15	150	1	0
YEAR 7	"	4	9	4	17	150	1	0
YEAR 8	"	4	10	5	19	150	1	0
YEAR 9	"	4	12	5	21	150	1	0
YEAR 10	"	5	13	6	24	150	1	0

		BULL RATIO	CALF RATIO
START		300	33
POST HUNT YR	1	170	46
POST HUNT YR	2	106	44
POST HUNT YR	3	72	44
POST HUNT YR	4	52	44
POST HUNT YR	5	41	44
POST HUNT YR	6	35	44
POST HUNT YR	7	32	44
POST HUNT YR	8	30	44
POST HUNT YR	9	29	44
POST HUNT YR	10	28	44

Tinemaha - SIMULATION RUNS, 2016
Ratio = 300/100/33 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

HERD GROWTH: BULLS & ANTLERLESS
TO HARVEST UP TO 4 BULL AND 1 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 50% bull

HERD SIZE	70	ELK
% BULLS LOST TO NON HUNTING CAUSES	21	%
% COWS LOST TO NON HUNTING CAUSES	7	%
% OF BULLS KILLED BY HUNTERS	10	%
% OF COWS KILLED BY HUNTERS	5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	48	16	5	70	70	|	1	0
YEAR 1	"	40	18	8	65	150	|	4	1
YEAR 2	"	31	19	8	59	150	|	3	1
YEAR 3	"	26	21	9	56	150	|	3	1
YEAR 4	"	22	23	10	55	150	|	2	1
YEAR 5	"	19	25	11	55	150	|	2	1
YEAR 6	"	18	27	12	57	150	|	2	1
YEAR 7	"	18	29	13	60	150	|	2	1
YEAR 8	"	17	32	14	63	150	|	2	1
YEAR 9	"	18	35	15	68	150	|	2	1
YEAR 10	"	19	38	17	73	150	|	2	1

		BULL RATIO	CALF RATIO
START		300	33
POST HUNT YR	1	214	49
POST HUNT YR	2	154	45
POST HUNT YR	3	116	46
POST HUNT YR	4	91	46
POST HUNT YR	5	74	46
POST HUNT YR	6	64	46
POST HUNT YR	7	57	46
POST HUNT YR	8	52	46
POST HUNT YR	9	49	46
POST HUNT YR	10	46	46

Tinemaha - SIMULATION RUNS, 2016
Ratio = 300/100/33 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

REDUCED HARVEST: BULLS & ANTLERLESS
TO HARVEST UP TO 0 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 50% bull

HERD SIZE	17	ELK
% BULLS LOST TO NON HUNTING CAUSES	21	%
% COWS LOST TO NON HUNTING CAUSES	7	%
% OF BULLS KILLED BY HUNTERS	0	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	12	4	1	17	17	|	1	0
YEAR 1	"	9	4	2	15	150	|	0	0
YEAR 2	"	8	5	2	15	150	|	0	0
YEAR 3	"	7	6	2	15	150	|	0	0
YEAR 4	"	7	6	3	16	150	|	0	0
YEAR 5	"	6	7	3	17	150	|	0	0
YEAR 6	"	6	8	4	18	150	|	0	0
YEAR 7	"	6	9	4	19	150	|	0	0
YEAR 8	"	7	10	5	22	150	|	0	0
YEAR 9	"	7	12	5	24	150	|	0	0
YEAR 10	"	8	13	6	27	150	|	0	0

		BULL RATIO	CALF RATIO
START		300	33
POST HUNT YR	1	212	46
POST HUNT YR	2	162	44
POST HUNT YR	3	128	44
POST HUNT YR	4	105	44
POST HUNT YR	5	88	44
POST HUNT YR	6	77	44
POST HUNT YR	7	69	44
POST HUNT YR	8	63	44
POST HUNT YR	9	59	44
POST HUNT YR	10	57	44

Tinemaha Mountain - SIMULATION RUNS, 2016

Ratio = 300/100/40 - Maximum Calf Survival = 50%

THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: BULL
TO HARVEST UP TO 2 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 50% bull

HERD SIZE	40	ELK
% BULLS LOST TO NON HUNTING CAUSES	15	%
% COWS LOST TO NON HUNTING CAUSES	9	%
% OF BULLS KILLED BY HUNTERS	8	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	27	9	4	40	40	0	0
YEAR 1	"	25	10	5	39	100	2	0
YEAR 2	"	21	11	5	37	100	2	0
YEAR 3	"	19	12	6	36	100	2	0
YEAR 4	"	16	14	6	36	100	2	0
YEAR 5	"	15	15	7	37	100	2	0
YEAR 6	"	14	17	8	39	100	2	0
YEAR 7	"	13	19	9	41	100	2	0
YEAR 8	"	13	21	10	44	100	2	0
YEAR 9	"	14	24	11	48	100	2	0
YEAR 10	"	14	26	12	53	100	2	0

		BULL RATIO	CALF RATIO
START		300	40
POST HUNT YR	1	229	46
POST HUNT YR	2	174	45
POST HUNT YR	3	134	45
POST HUNT YR	4	105	45
POST HUNT YR	5	84	45
POST HUNT YR	6	70	45
POST HUNT YR	7	60	45
POST HUNT YR	8	54	45
POST HUNT YR	9	50	45
POST HUNT YR	10	47	45

Tinemaha Mountain - SIMULATION RUNS, 2016
Ratio = 300/100/40 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED: BULL
TO HARVEST UP TO 3 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 50% bull

HERD SIZE	40 ELK
% BULLS LOST TO NON HUNTING CAUSES	15 %
% COWS LOST TO NON HUNTING CAUSES	9 %
% OF BULLS KILLED BY HUNTERS	14 %
% OF COWS KILLED BY HUNTERS	0 %

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	27	9	4	40	40	0	0
YEAR 1	"	25	10	5	39	100	3	0
YEAR 2	"	20	11	5	36	100	3	0
YEAR 3	"	17	12	6	35	100	2	0
YEAR 4	"	15	14	6	35	100	2	0
YEAR 5	"	13	15	7	36	100	2	0
YEAR 6	"	13	17	8	37	100	2	0
YEAR 7	"	13	19	9	40	100	2	0
YEAR 8	"	13	21	10	44	100	2	0
YEAR 9	"	13	24	11	48	100	2	0
YEAR 10	"	14	26	12	52	100	2	0

		BULL RATIO	CALF RATIO
START		300	40
POST HUNT YR	1	214	46
POST HUNT YR	2	155	45
POST HUNT YR	3	116	45
POST HUNT YR	4	91	45
POST HUNT YR	5	74	45
POST HUNT YR	6	64	45
POST HUNT YR	7	56	45
POST HUNT YR	8	52	45
POST HUNT YR	9	49	45
POST HUNT YR	10	47	45

Tinemaha Mountain - SIMULATION RUNS, 2016
Ratio = 300/100/40 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: BULL
TO HARVEST UP TO 6 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 50% bull

HERD SIZE	40	ELK
% BULLS LOST TO NON HUNTING CAUSES	15	%
% COWS LOST TO NON HUNTING CAUSES	9	%
% OF BULLS KILLED BY HUNTERS	23	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	27	9	4	40	40	0	0
YEAR 1	"	25	10	5	39	100	6	0
YEAR 2	"	18	11	5	34	100	4	0
YEAR 3	"	14	12	6	32	100	3	0
YEAR 4	"	12	14	6	31	100	3	0
YEAR 5	"	10	15	7	32	100	2	0
YEAR 6	"	10	17	8	34	100	2	0
YEAR 7	"	10	19	9	37	100	2	0
YEAR 8	"	10	21	10	41	100	2	0
YEAR 9	"	11	24	11	45	100	2	0
YEAR 10	"	11	26	12	50	100	3	0

		BULL RATIO	CALF RATIO
START		300	40
POST HUNT YR	1	192	46
POST HUNT YR	2	126	45
POST HUNT YR	3	87	45
POST HUNT YR	4	64	45
POST HUNT YR	5	51	45
POST HUNT YR	6	43	45
POST HUNT YR	7	39	45
POST HUNT YR	8	36	45
POST HUNT YR	9	34	45
POST HUNT YR	10	33	45

Tinemaha Mountain - SIMULATION RUNS, 2016
Ratio = 200/100/40 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: BULL & ANTLERLESS
TO HARVEST UP TO 6 BULL AND 2 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 50% bull

HERD SIZE	80	ELK
% BULLS LOST TO NON HUNTING CAUSES	15	%
% COWS LOST TO NON HUNTING CAUSES	9	%
% OF BULLS KILLED BY HUNTERS	14	%
% OF COWS KILLED BY HUNTERS	6.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	47	24	9	80	80	0	0
YEAR 1	"	44	26	12	81	100	6	2
YEAR 2	"	37	27	12	76	100	5	2
YEAR 3	"	32	29	13	74	100	5	2
YEAR 4	"	29	30	13	73	100	4	2
YEAR 5	"	27	32	14	73	100	4	2
YEAR 6	"	26	33	15	74	100	4	2
YEAR 7	"	25	35	16	76	100	4	2
YEAR 8	"	25	37	16	78	100	3	2
YEAR 9	"	25	39	17	82	100	4	2
YEAR 10	"	26	41	18	85	100	4	2

		BULL RATIO	CALF RATIO
START		200	40
POST HUNT YR	1	158	49
POST HUNT YR	2	126	47
POST HUNT YR	3	104	48
POST HUNT YR	4	88	47
POST HUNT YR	5	78	47
POST HUNT YR	6	71	47
POST HUNT YR	7	65	47
POST HUNT YR	8	62	47
POST HUNT YR	9	59	47
POST HUNT YR	10	57	47

Tinemaha Mountain - SIMULATION RUNS, 2016
Ratio = 300/100/40 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: BULL
TO HARVEST UP TO 1 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 50% bull

HERD SIZE	40 ELK
% BULLS LOST TO NON HUNTING CAUSES	15 %
% COWS LOST TO NON HUNTING CAUSES	9 %
% OF BULLS KILLED BY HUNTERS	6 %
% OF COWS KILLED BY HUNTERS	0 %

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	27	9	4	40	40	0	0
YEAR 1	"	25	10	5	39	100	1	0
YEAR 2	"	22	11	5	38	100	1	0
YEAR 3	"	19	12	6	37	100	1	0
YEAR 4	"	18	14	6	38	100	1	0
YEAR 5	"	17	15	7	39	100	1	0
YEAR 6	"	16	17	8	41	100	1	0
YEAR 7	"	16	19	9	44	100	1	0
YEAR 8	"	17	21	10	47	100	1	0
YEAR 9	"	17	24	11	52	100	1	0
YEAR 10	"	18	26	12	57	100	1	0

		BULL RATIO	CALF RATIO
START		300	40
POST HUNT YR	1	234	46
POST HUNT YR	2	184	45
POST HUNT YR	3	148	45
POST HUNT YR	4	122	45
POST HUNT YR	5	104	45
POST HUNT YR	6	90	45
POST HUNT YR	7	81	45
POST HUNT YR	8	74	45
POST HUNT YR	9	69	45
POST HUNT YR	10	66	45

West Tinemaha - SIMULATION RUNS, 2016
Ratio = 100/100/57 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

CURRENT CONDITION: UP TO 2 BULLS & 0 ANTLERLESS
TO HARVEST UP TO 2 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 50% bull

HERD SIZE	20	ELK
% BULLS LOST TO NON HUNTING CAUSES	21	%
% COWS LOST TO NON HUNTING CAUSES	7	%
% OF BULLS KILLED BY HUNTERS	25	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	8	8	4	20	20	2	0
YEAR 1	"	6	9	4	20	150	2	0
YEAR 2	"	5	10	5	20	150	2	0
YEAR 3	"	5	12	5	22	150	2	0
YEAR 4	"	5	13	6	24	150	2	0
YEAR 5	"	5	15	7	27	150	2	0
YEAR 6	"	5	17	8	30	150	2	0
YEAR 7	"	6	20	9	34	150	2	0
YEAR 8	"	7	22	10	39	150	2	0
YEAR 9	"	8	25	11	45	150	2	0
YEAR 10	"	10	29	13	51	150	2	0

		BULL RATIO	CALF RATIO
START		100	57
POST HUNT YR	1	51	42
POST HUNT YR	2	35	44
POST HUNT YR	3	27	44
POST HUNT YR	4	22	44
POST HUNT YR	5	20	44
POST HUNT YR	6	21	44
POST HUNT YR	7	22	44
POST HUNT YR	8	23	44
POST HUNT YR	9	25	44
POST HUNT YR	10	27	44

West Tinemaha - SIMULATION RUNS, 2016
Ratio = 100/100/57 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

PROPOSED: BULLS & ANTLERLESS
TO HARVEST UP TO 2 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull AND 60% antlerless

HERD SIZE	20	ELK
% BULLS LOST TO NON HUNTING CAUSES	21	%
% COWS LOST TO NON HUNTING CAUSES	7	%
% OF BULLS KILLED BY HUNTERS	28	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	8	8	4	20	20	|	2	0
YEAR 1	"	6	9	4	20	150	|	2	0
YEAR 2	"	5	10	5	20	150	|	1	0
YEAR 3	"	5	12	5	22	150	|	1	0
YEAR 4	"	5	13	6	24	150	|	1	0
YEAR 5	"	5	15	7	27	150	|	1	0
YEAR 6	"	6	17	8	31	150	|	2	0
YEAR 7	"	6	20	9	35	150	|	2	0
YEAR 8	"	7	22	10	39	150	|	2	0
YEAR 9	"	8	25	11	44	150	|	2	0
YEAR 10	"	9	29	13	50	150	|	2	0

		BULL RATIO	CALF RATIO
START		100	57
POST HUNT YR	1	49	42
POST HUNT YR	2	35	44
POST HUNT YR	3	29	44
POST HUNT YR	4	25	44
POST HUNT YR	5	24	44
POST HUNT YR	6	23	44
POST HUNT YR	7	23	44
POST HUNT YR	8	22	44
POST HUNT YR	9	22	44
POST HUNT YR	10	22	44

West Tinemaha - SIMULATION RUNS, 2016
Ratio = 100/100/57 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

INCREASED HARVEST: BULLS & ANTLERLESS
TO HARVEST UP TO 4 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull

HERD SIZE	20	ELK
% BULLS LOST TO NON HUNTING CAUSES	18	%
% COWS LOST TO NON HUNTING CAUSES	7	%
% OF BULLS KILLED BY HUNTERS	55	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	8	8	4	20	20	2	0
YEAR 1	"	7	9	4	20	150	4	0
YEAR 2	"	4	10	5	19	150	2	0
YEAR 3	"	3	12	5	21	150	2	0
YEAR 4	"	3	13	6	23	150	2	0
YEAR 5	"	4	15	7	26	150	2	0
YEAR 6	"	4	17	8	29	150	2	0
YEAR 7	"	5	20	9	33	150	3	0
YEAR 8	"	5	22	10	38	150	3	0
YEAR 9	"	6	25	11	43	150	3	0
YEAR 10	"	7	29	13	48	150	4	0

		BULL RATIO	CALF RATIO
START		100	57
POST HUNT YR	1	32	42
POST HUNT YR	2	17	44
POST HUNT YR	3	13	44
POST HUNT YR	4	11	44
POST HUNT YR	5	11	44
POST HUNT YR	6	11	44
POST HUNT YR	7	11	44
POST HUNT YR	8	11	44
POST HUNT YR	9	11	44
POST HUNT YR	10	11	44

West Tinemaha - SIMULATION RUNS, 2016
Ratio = 19/100/21 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

HERD GROWTH: BULLS & ANTLERLESS
TO HARVEST UP TO 5 BULL AND 8 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull AND 60% antlerless

HERD SIZE	80	ELK
% BULLS LOST TO NON HUNTING CAUSES	21	%
% COWS LOST TO NON HUNTING CAUSES	7	%
% OF BULLS KILLED BY HUNTERS	42	%
% OF COWS KILLED BY HUNTERS	14	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	11	57	12	80	80	|	2	0
YEAR 1	"	12	59	29	99	150	|	5	8
YEAR 2	"	17	60	25	102	150	|	5	8
YEAR 3	"	19	60	26	105	150	|	5	8
YEAR 4	"	22	60	26	107	150	|	5	8
YEAR 5	"	23	60	26	109	150	|	5	8
YEAR 6	"	25	60	26	110	150	|	5	8
YEAR 7	"	26	60	26	111	150	|	5	8
YEAR 8	"	27	60	26	112	150	|	5	8
YEAR 9	"	27	60	26	112	150	|	5	8
YEAR 10	"	28	59	26	113	150	|	5	8

		BULL RATIO	CALF RATIO
START		19	21
POST HUNT YR	1	13	57
POST HUNT YR	2	23	49
POST HUNT YR	3	28	50
POST HUNT YR	4	32	50
POST HUNT YR	5	36	50
POST HUNT YR	6	38	50
POST HUNT YR	7	41	50
POST HUNT YR	8	42	50
POST HUNT YR	9	44	50
POST HUNT YR	10	45	50

West Tinemaha - SIMULATION RUNS, 2016
Ratio = 100/100/57 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

REDUCED HARVEST: BULLS & ANTLERLESS
TO HARVEST UP TO 1 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull AND 60% antlerless

HERD SIZE	20	ELK
% BULLS LOST TO NON HUNTING CAUSES	21	%
% COWS LOST TO NON HUNTING CAUSES	7	%
% OF BULLS KILLED BY HUNTERS	12	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	8	8	4	20	20	2	0
YEAR 1	"	6	9	4	20	150	1	0
YEAR 2	"	6	10	5	21	150	1	0
YEAR 3	"	6	12	5	23	150	1	0
YEAR 4	"	6	13	6	26	150	1	0
YEAR 5	"	7	15	7	29	150	1	0
YEAR 6	"	7	17	8	32	150	1	0
YEAR 7	"	8	20	9	36	150	1	0
YEAR 8	"	9	22	10	41	150	1	0
YEAR 9	"	10	25	11	47	150	1	0
YEAR 10	"	12	29	13	53	150	1	0

		BULL RATIO	CALF RATIO
START		100	57
POST HUNT YR	1	60	42
POST HUNT YR	2	50	44
POST HUNT YR	3	44	44
POST HUNT YR	4	41	44
POST HUNT YR	5	38	44
POST HUNT YR	6	37	44
POST HUNT YR	7	36	44
POST HUNT YR	8	36	44
POST HUNT YR	9	35	44
POST HUNT YR	10	35	44

WHITNEY TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 40/100/16 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: HARVEST UP TO 2 BULL
NO CHANGE: HARVEST UP TO 2 BULL
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull

HERD SIZE	20	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	50	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	5	13	2	20	20	2	0
YEAR 1	"	3	13	6	23	150	2	0
YEAR 2	"	4	16	7	26	150	2	0
YEAR 3	"	5	18	8	30	150	2	0
YEAR 4	"	5	21	9	35	150	2	0
YEAR 5	"	7	24	10	41	150	2	0
YEAR 6	"	8	28	12	48	150	2	0
YEAR 7	"	10	32	14	56	150	2	0
YEAR 8	"	12	37	16	65	150	2	0
YEAR 9	"	15	43	18	76	150	2	0
YEAR 10	"	18	49	21	89	150	2	0

		BULL RATIO	CALF RATIO
START		40	16
POST HUNT YR	1	13	49
POST HUNT YR	2	15	42
POST HUNT YR	3	16	43
POST HUNT YR	4	18	43
POST HUNT YR	5	21	43
POST HUNT YR	6	24	43
POST HUNT YR	7	26	43
POST HUNT YR	8	29	43
POST HUNT YR	9	32	43
POST HUNT YR	10	34	43

WHITNEY TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 40/100/16 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED: HARVEST BULL
HARVEST UP TO 2 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull

(INCLUDING 1 FUND-RAISING TAG BULL)

HERD SIZE	20	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	45	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	5	13	2	20	20	2	0
YEAR 1	"	3	13	6	23	150	2	0
YEAR 2	"	4	16	7	26	150	2	0
YEAR 3	"	5	18	8	30	150	2	0
YEAR 4	"	6	21	9	35	150	2	0
YEAR 5	"	7	24	10	41	150	2	0
YEAR 6	"	9	28	12	48	150	2	0
YEAR 7	"	11	32	14	56	150	2	0
YEAR 8	"	13	37	16	66	150	2	0
YEAR 9	"	16	43	18	77	150	2	0
YEAR 10	"	19	49	21	90	150	2	0

		BULL RATIO	CALF RATIO
START		40	16
POST HUNT YR	1	14	49
POST HUNT YR	2	17	42
POST HUNT YR	3	18	43
POST HUNT YR	4	21	43
POST HUNT YR	5	23	43
POST HUNT YR	6	26	43
POST HUNT YR	7	29	43
POST HUNT YR	8	31	43
POST HUNT YR	9	33	43
POST HUNT YR	10	36	43

WHITNEY TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 40/100/16 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: HARVEST BULL & ANTLERLESS
HARVEST UP TO 4 BULL AND 1 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

(INCLUDING 1 FUND-RAISING TAG BULL)

HERD SIZE	20	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	75	%
% OF COWS KILLED BY HUNTERS	10	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	5	13	2	20	20	|	2	0
YEAR 1	"	3	13	6	23	150	|	3	1
YEAR 2	"	3	14	6	23	150	|	2	1
YEAR 3	"	3	15	6	25	150	|	2	1
YEAR 4	"	3	16	7	26	150	|	2	1
YEAR 5	"	3	17	7	28	150	|	3	1
YEAR 6	"	4	18	8	30	150	|	3	1
YEAR 7	"	4	20	8	32	150	|	3	1
YEAR 8	"	4	21	9	35	150	|	3	1
YEAR 9	"	5	23	10	38	150	|	3	1
YEAR 10	"	5	26	11	41	150	|	3	1

		BULL RATIO	CALF RATIO
START		40	16
POST HUNT YR	1	7	54
POST HUNT YR	2	6	46
POST HUNT YR	3	6	47
POST HUNT YR	4	6	47
POST HUNT YR	5	5	47
POST HUNT YR	6	5	46
POST HUNT YR	7	5	46
POST HUNT YR	8	5	46
POST HUNT YR	9	5	46
POST HUNT YR	10	6	45

WHITNEY TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 40/100/16 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: HARVEST BULL & ANTLERLESS
HARVEST UP TO 6 BULL AND 8 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

(INCLUDING 1 FUND-RAISING TAG BULL)

HERD SIZE	80	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	31	%
% OF COWS KILLED BY HUNTERS	15	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	21	51	8	80	80	|	2	0
YEAR 1	"	18	53	26	97	150	|	6	8
YEAR 2	"	21	55	22	98	150	|	6	8
YEAR 3	"	21	55	23	99	150	|	6	8
YEAR 4	"	21	55	23	99	150	|	6	8
YEAR 5	"	21	56	23	100	150	|	6	8
YEAR 6	"	21	56	24	101	150	|	6	8
YEAR 7	"	22	57	24	102	150	|	6	8
YEAR 8	"	22	57	24	103	150	|	6	8
YEAR 9	"	22	58	24	104	150	|	6	8
YEAR 10	"	23	58	25	105	150	|	6	8

		BULL RATIO	CALF RATIO
START		40	16
POST HUNT YR	1	28	57
POST HUNT YR	2	31	48
POST HUNT YR	3	30	50
POST HUNT YR	4	31	50
POST HUNT YR	5	31	50
POST HUNT YR	6	32	50
POST HUNT YR	7	32	50
POST HUNT YR	8	32	50
POST HUNT YR	9	33	49
POST HUNT YR	10	33	49

WHITNEY TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 40/100/16 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: HARVEST BULL
HARVEST UP TO 1 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull

(INCLUDING 1 FUND-RAISING TAG BULL)

HERD SIZE	20	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	20	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	5	13	2	20	20	|	2	0
YEAR 1	"	3	13	6	23	150	|	1	0
YEAR 2	"	5	16	7	27	150	|	1	0
YEAR 3	"	6	18	8	32	150	|	1	0
YEAR 4	"	7	21	9	37	150	|	1	0
YEAR 5	"	9	24	10	43	150	|	1	0
YEAR 6	"	11	28	12	51	150	|	1	0
YEAR 7	"	13	32	14	59	150	|	1	0
YEAR 8	"	16	37	16	69	150	|	1	0
YEAR 9	"	19	43	18	80	150	|	1	0
YEAR 10	"	22	49	21	93	150	|	1	0

		BULL RATIO	CALF RATIO
START		40	16
POST HUNT YR	1	20	49
POST HUNT YR	2	26	42
POST HUNT YR	3	30	43
POST HUNT YR	4	33	43
POST HUNT YR	5	35	43
POST HUNT YR	6	37	43
POST HUNT YR	7	39	43
POST HUNT YR	8	41	43
POST HUNT YR	9	42	43
POST HUNT YR	10	43	43

GOODALE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 27/100/53 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: HARVEST UP TO 2 BULL (CURRENTLY PART OF INDPENDENCE ZONE)
NO CHANGE: HARVEST UP TO 2 BULL AND 0 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HARVEST 2 BULLS (INCLUDING 1 FUND-RAISING TAG
BULL)

HERD SIZE	35	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	35	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	5	19	10	35	35	|	2	0
YEAR 1	"	7	23	10	40	150	|	2	0
YEAR 2	"	8	27	12	46	150	|	2	0
YEAR 3	"	9	31	13	53	150	|	2	0
YEAR 4	"	11	36	16	62	150	|	2	0
YEAR 5	"	13	41	18	72	150	|	2	0
YEAR 6	"	16	48	21	84	150	|	2	0
YEAR 7	"	19	55	24	99	150	|	2	0
YEAR 8	"	23	64	28	115	150	|	2	0
YEAR 9	"	28	74	32	134	150	|	2	0
YEAR 10	"	34	85	31	150	150	|	2	0

		BULL RATIO	CALF RATIO
START		27	53
POST HUNT YR	1	19	42
POST HUNT YR	2	19	44
POST HUNT YR	3	21	43
POST HUNT YR	4	23	43
POST HUNT YR	5	26	43
POST HUNT YR	6	28	43
POST HUNT YR	7	31	43
POST HUNT YR	8	33	43
POST HUNT YR	9	35	43
POST HUNT YR	10	37	36

GOODALE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 27/100/53- Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED: HARVEST BULL & ANTLERLESS
HARVEST UP TO 3 BULL AND 2 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

(INCLUDING 1 FUND-RAISING TAG BULL)

HERD SIZE	35	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	37	%
% OF COWS KILLED BY HUNTERS	10	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	5	19	10	35	35	|	2	0
YEAR 1	"	7	23	10	40	150	|	3	2
YEAR 2	"	7	25	11	43	150	|	3	2
YEAR 3	"	8	26	11	45	150	|	3	2
YEAR 4	"	9	28	12	48	150	|	3	2
YEAR 5	"	9	30	13	51	150	|	3	2
YEAR 6	"	10	32	14	55	150	|	3	2
YEAR 7	"	11	34	15	59	150	|	3	2
YEAR 8	"	12	37	16	65	150	|	3	2
YEAR 9	"	13	40	17	71	150	|	3	2
YEAR 10	"	15	44	19	78	150	|	3	2

		BULL RATIO	CALF RATIO
START		27	53
POST HUNT YR	1	20	46
POST HUNT YR	2	21	48
POST HUNT YR	3	21	47
POST HUNT YR	4	21	47
POST HUNT YR	5	21	47
POST HUNT YR	6	22	46
POST HUNT YR	7	23	46
POST HUNT YR	8	24	46
POST HUNT YR	9	26	46
POST HUNT YR	10	28	45

GOODALE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 27/100/53 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: HARVEST BULL & ANTLERLESS
HARVEST UP TO 4 BULL AND 4 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

(INCLUDING 1 FUND-RAISING TAG BULL)

HERD SIZE	35	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	53	%
% OF COWS KILLED BY HUNTERS	18	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	5	19	10	35	35	|	2	0
YEAR 1	"	7	23	10	40	150	|	4	4
YEAR 2	"	7	23	10	39	150	|	3	4
YEAR 3	"	6	22	9	38	150	|	3	4
YEAR 4	"	6	22	9	37	150	|	3	4
YEAR 5	"	6	21	9	36	150	|	3	4
YEAR 6	"	6	21	9	36	150	|	3	4
YEAR 7	"	6	20	9	35	150	|	3	4
YEAR 8	"	6	20	8	34	150	|	3	4
YEAR 9	"	6	20	8	33	150	|	3	4
YEAR 10	"	5	19	8	33	150	|	3	3

		BULL RATIO	CALF RATIO
START		27	53
POST HUNT YR	1	17	51
POST HUNT YR	2	16	51
POST HUNT YR	3	16	51
POST HUNT YR	4	16	51
POST HUNT YR	5	16	51
POST HUNT YR	6	16	51
POST HUNT YR	7	16	51
POST HUNT YR	8	16	51
POST HUNT YR	9	16	51
POST HUNT YR	10	16	51

GOODALE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 27/100/53 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: HARVEST BULL & ANTLERLESS
HARVEST UP TO 6 BULL AND 10 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

(INCLUDING 1 FUND-RAISING TAG BULL)

HERD SIZE	80	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	32	%
% OF COWS KILLED BY HUNTERS	19	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	12	44	24	80	80	|	2	0
YEAR 1	"	18	53	22	93	150	|	6	10
YEAR 2	"	19	52	22	92	150	|	6	10
YEAR 3	"	19	50	21	90	150	|	6	10
YEAR 4	"	19	48	20	88	150	|	6	9
YEAR 5	"	19	47	20	85	150	|	6	9
YEAR 6	"	18	45	19	83	150	|	6	9
YEAR 7	"	18	44	18	80	150	|	6	8
YEAR 8	"	17	43	18	78	150	|	6	8
YEAR 9	"	17	41	17	75	150	|	5	8
YEAR 10	"	16	40	17	73	150	|	5	8

		BULL RATIO	CALF RATIO
START		27	53
POST HUNT YR	1	28	51
POST HUNT YR	2	30	52
POST HUNT YR	3	32	52
POST HUNT YR	4	33	52
POST HUNT YR	5	33	52
POST HUNT YR	6	34	52
POST HUNT YR	7	34	52
POST HUNT YR	8	34	52
POST HUNT YR	9	34	52
POST HUNT YR	10	34	52

GOODALE TULE ELK SUBHERD - SIMULATION RUNS, 2016
Ratio = 27/100/53- Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: HARVEST BULL & ANTLERLESS
HARVEST UP TO 2 BULL AND 1 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

(INCLUDING 1 FUND-RAISING TAG BULL)

HERD SIZE	35	ELK
% BULLS LOST TO NON HUNTING CAUSES	19	%
% COWS LOST TO NON HUNTING CAUSES	5	%
% OF BULLS KILLED BY HUNTERS	23	%
% OF COWS KILLED BY HUNTERS	3	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	5	19	10	35	35	|	2	0
YEAR 1	"	7	23	10	40	150	|	2	1
YEAR 2	"	8	26	11	46	150	|	2	1
YEAR 3	"	10	29	13	52	150	|	2	1
YEAR 4	"	11	33	14	59	150	|	2	1
YEAR 5	"	13	38	16	67	150	|	2	1
YEAR 6	"	15	43	18	77	150	|	2	1
YEAR 7	"	18	49	21	88	150	|	2	1
YEAR 8	"	21	55	24	101	150	|	2	1
YEAR 9	"	25	63	27	116	150	|	2	1
YEAR 10	"	30	72	31	133	150	|	2	1

		BULL RATIO	CALF RATIO
START		27	53
POST HUNT YR	1	23	43
POST HUNT YR	2	25	45
POST HUNT YR	3	26	44
POST HUNT YR	4	28	44
POST HUNT YR	5	29	44
POST HUNT YR	6	31	44
POST HUNT YR	7	33	44
POST HUNT YR	8	35	44
POST HUNT YR	9	37	44
POST HUNT YR	10	38	44

GRIZZLY ISLAND - SIMULATION RUNS, 2016
Ratio = 50/100/50 - Maximum Calf Survival =70%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

CURRENT CONDITION: BULL, SPIKE, & ANTLERLESS
TO HARVEST UP TO 18 BULL AND 40 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 95% bull and 95% antlerless

HERD SIZE	300	ELK
% BULLS LOST TO NON HUNTING CAUSES	5	%
% COWS LOST TO NON HUNTING CAUSES	2	%
% OF BULLS KILLED BY HUNTERS	19.5	%
% OF COWS KILLED BY HUNTERS	28	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	75	150	75	300	300	18	40
YEAR 1	"	90	145	77	311	400	18	40
YEAR 2	"	105	140	73	318	400	18	39
YEAR 3	"	118	134	70	323	400	18	38
YEAR 4	"	129	129	68	326	400	18	36
YEAR 5	"	138	124	65	327	400	18	35
YEAR 6	"	145	120	63	328	400	18	34
YEAR 7	"	151	115	60	327	400	18	32
YEAR 8	"	156	111	58	325	400	18	31
YEAR 9	"	159	107	56	321	400	18	30
YEAR 10	"	161	103	54	317	400	18	29

		BULL RATIO	CALF RATIO
START		50	50
POST HUNT YR	1	69	74
POST HUNT YR	2	87	72
POST HUNT YR	3	104	73
POST HUNT YR	4	120	73
POST HUNT YR	5	134	73
POST HUNT YR	6	148	73
POST HUNT YR	7	161	73
POST HUNT YR	8	173	73
POST HUNT YR	9	184	73
POST HUNT YR	10	194	73

GRIZZLY ISLAND - SIMULATION RUNS, 2016

Ratio = 50/100/50 - Maximum Calf Survival =70%

THIS PROGRAM CALCULATES CHANGES IN HERD CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

CURRENT CONDITION: BULL, SPIKE, & ANTLERLESS
TO HARVEST UP TO 18 BULL AND 40 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 95% bull and 95% antlerless

HERD SIZE	300	ELK
% BULLS LOST TO NON HUNTING CAUSES	5	%
% COWS LOST TO NON HUNTING CAUSES	2	%
% OF BULLS KILLED BY HUNTERS	19.5	%
% OF COWS KILLED BY HUNTERS	28	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	75	150	75	300	300	18	40
YEAR 1	"	90	145	77	311	400	18	40
YEAR 2	"	105	140	73	318	400	18	40
YEAR 3	"	118	133	69	320	400	18	40
YEAR 4	"	128	125	65	318	400	18	40
YEAR 5	"	136	114	59	309	400	18	40
YEAR 6	"	141	101	52	294	400	18	28
YEAR 7	"	142	97	51	289	400	18	27
YEAR 8	"	142	93	49	284	400	18	26
YEAR 9	"	141	90	47	278	400	18	25
YEAR 10	"	140	86	45	272	400	18	24

		BULL RATIO	CALF RATIO
START		50	50
POST HUNT YR	1	69	74
POST HUNT YR	2	88	73
POST HUNT YR	3	109	75
POST HUNT YR	4	132	77
POST HUNT YR	5	161	80
POST HUNT YR	6	169	71
POST HUNT YR	7	178	73
POST HUNT YR	8	186	73
POST HUNT YR	9	192	73
POST HUNT YR	10	197	73

GRIZZLY ISLAND - SIMULATION RUNS,
GENERAL, SHARE, & PLM 2016
Ratio = 50/100/50 - Maximum Calf Survival =70%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

PROPOSED HARVEST: BULL, SPIKE, & ANTLERLESS
TO HARVEST UP TO 32 BULL AND 70 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 95% bull and 95% antlerless

HERD SIZE	300	ELK
% BULLS LOST TO NON HUNTING CAUSES	5	%
% COWS LOST TO NON HUNTING CAUSES	2	%
% OF BULLS KILLED BY HUNTERS	35.5	%
% OF COWS KILLED BY HUNTERS	48.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	75	150	75	300	300	|	18	40
YEAR 1	"	90	145	77	311	400	|	32	70
YEAR 2	"	92	111	52	254	400	|	32	54
YEAR 3	"	81	81	40	203	400	|	29	39
YEAR 4	"	69	61	29	159	400	|	24	29
YEAR 5	"	56	45	22	123	400	|	20	22
YEAR 6	"	45	33	16	94	400	|	16	16
YEAR 7	"	35	25	12	72	400	|	12	12
YEAR 8	"	27	18	9	55	400	|	10	9
YEAR 9	"	21	14	7	41	400	|	7	7
YEAR 10	"	16	10	5	31	400	|	6	5

		BULL RATIO	CALF RATIO
START		50	50
POST HUNT YR	1	78	103
POST HUNT YR	2	105	91
POST HUNT YR	3	125	95
POST HUNT YR	4	142	94
POST HUNT YR	5	156	94
POST HUNT YR	6	168	94
POST HUNT YR	7	177	94
POST HUNT YR	8	185	94
POST HUNT YR	9	192	94
POST HUNT YR	10	197	94

GRIZZLY ISLAND - SIMULATION RUNS,
GENERAL, SHARE, & PLM 2016
Ratio = 50/100/50 - Maximum Calf Survival =70%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

INCREASED HARVEST: BULL, SPIKE, & ANTLERLESS
TO HARVEST UP TO 48 BULL AND 72 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 95% bull and 95% antlerless

HERD SIZE	300	ELK
% BULLS LOST TO NON HUNTING CAUSES	5	%
% COWS LOST TO NON HUNTING CAUSES	2	%
% OF BULLS KILLED BY HUNTERS	53	%
% OF COWS KILLED BY HUNTERS	50	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	75	150	75	300	300	|	18	40
YEAR 1	"	90	145	77	311	400	|	48	72
YEAR 2	"	77	109	51	236	400	|	41	54
YEAR 3	"	58	78	38	174	400	|	31	39
YEAR 4	"	44	57	27	128	400	|	23	28
YEAR 5	"	33	41	20	94	400	|	17	21
YEAR 6	"	24	30	14	68	400	|	13	15
YEAR 7	"	18	22	10	50	400	|	9	11
YEAR 8	"	13	16	8	36	400	|	7	8
YEAR 9	"	9	11	6	26	400	|	5	6
YEAR 10	"	7	8	4	19	400	|	4	4

		BULL RATIO	CALF RATIO
START		50	50
POST HUNT YR	1	58	107
POST HUNT YR	2	66	93
POST HUNT YR	3	70	97
POST HUNT YR	4	73	96
POST HUNT YR	5	74	97
POST HUNT YR	6	75	96
POST HUNT YR	7	76	96
POST HUNT YR	8	76	96
POST HUNT YR	9	77	96
POST HUNT YR	10	77	96

GRIZZLY ISLAND - SIMULATION RUNS,
GENERAL, SHARE, & PLM 2016
Ratio = 50/100/50 - Maximum Calf Survival =70%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

HERD GROWTH: BULL, SPIKE, & ANTLERLESS
TO HARVEST UP TO 50 BULL AND 113 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 95% bull and 95% antlerless

HERD SIZE	450	ELK
% BULLS LOST TO NON HUNTING CAUSES	5	%
% COWS LOST TO NON HUNTING CAUSES	2	%
% OF BULLS KILLED BY HUNTERS	35	%
% OF COWS KILLED BY HUNTERS	48	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	113	225	113	450	450	|	18	40
YEAR 1	"	143	236	70	450	450	|	50	113
YEAR 2	"	122	155	86	363	450	|	43	74
YEAR 3	"	116	121	56	294	450	|	41	58
YEAR 4	"	98	89	44	232	450	|	34	43
YEAR 5	"	82	67	33	181	450	|	29	32
YEAR 6	"	66	50	24	141	450	|	23	24
YEAR 7	"	52	38	18	108	450	|	18	18
YEAR 8	"	41	28	14	83	450	|	14	13
YEAR 9	"	32	21	10	63	450	|	11	10
YEAR 10	"	24	16	8	48	450	|	9	8

		BULL RATIO	CALF RATIO
START		50	50
POST HUNT YR	1	76	57
POST HUNT YR	2	98	107
POST HUNT YR	3	120	90
POST HUNT YR	4	138	95
POST HUNT YR	5	152	93
POST HUNT YR	6	164	94
POST HUNT YR	7	174	94
POST HUNT YR	8	182	94
POST HUNT YR	9	189	94
POST HUNT YR	10	195	94

GRIZZLY ISLAND - SIMULATION RUNS,
GENERAL, SHARE, & PLM 2016
Ratio = 50/100/50 - Maximum Calf Survival =70%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST
RATES.

REDUCED HARVEST: BULL, SPIKE, & ANTLERLESS
TO HARVEST UP TO 16 BULL AND 32 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 95% bull and 95% antlerless

HERD SIZE	300	ELK
% BULLS LOST TO NON HUNTING CAUSES	5	%
% COWS LOST TO NON HUNTING CAUSES	2	%
% OF BULLS KILLED BY HUNTERS	17.5	%
% OF COWS KILLED BY HUNTERS	24	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	75	150	75	300	300	18	40
YEAR 1	"	90	145	77	311	400	16	35
YEAR 2	"	107	145	77	329	400	16	35
YEAR 3	"	123	146	77	347	400	16	35
YEAR 4	"	139	147	78	364	400	16	35
YEAR 5	"	154	149	79	381	400	16	35
YEAR 6	"	169	150	80	399	400	16	35
YEAR 7	"	183	152	64	400	400	16	35
YEAR 8	"	190	147	63	400	400	16	35
YEAR 9	"	196	141	64	400	400	16	35
YEAR 10	"	201	135	64	400	400	16	35

		BULL RATIO	CALF RATIO
START		50	50
POST HUNT YR	1	67	70
POST HUNT YR	2	82	69
POST HUNT YR	3	96	70
POST HUNT YR	4	109	69
POST HUNT YR	5	122	69
POST HUNT YR	6	133	69
POST HUNT YR	7	143	55
POST HUNT YR	8	155	57
POST HUNT YR	9	169	60
POST HUNT YR	10	184	63

FORT HUNTER LIGGETT BASE ONLY - SIMULATION RUNS, 2016
Ratio = 41/100/40 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: UP TO 17 BULL AND 43 ANTLERLESS
NO CHANGE: HARVEST UP TO 17 BULL AND 43 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull and 50% antlerless

HERD SIZE	450	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	7	%
% OF BULLS KILLED BY HUNTERS	16	%
% OF COWS KILLED BY HUNTERS	16	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	102	249	99	450	450	|	10	8
YEAR 1	"	106	270	124	500	500	|	17	43
YEAR 2	"	113	268	118	500	500	|	17	43
YEAR 3	"	117	265	119	500	500	|	17	42
YEAR 4	"	119	262	119	500	500	|	17	42
YEAR 5	"	121	260	119	500	500	|	17	42
YEAR 6	"	123	258	119	500	500	|	17	41
YEAR 7	"	124	257	119	500	500	|	17	41
YEAR 8	"	125	256	119	500	500	|	17	41
YEAR 9	"	125	255	119	500	500	|	17	41
YEAR 10	"	126	255	119	500	500	|	17	41

		BULL RATIO	CALF RATIO
START		41	40
POST HUNT YR	1	39	55
POST HUNT YR	2	43	52
POST HUNT YR	3	45	53
POST HUNT YR	4	46	54
POST HUNT YR	5	48	54
POST HUNT YR	6	49	55
POST HUNT YR	7	50	55
POST HUNT YR	8	50	55
POST HUNT YR	9	51	55
POST HUNT YR	10	51	56

FORT HUNTER LIGGETT CENTRAL COAST - SIMULATION RUNS, GENERAL AND PLM, 2016
Ratio = 41/100/40 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED: BULL, ANTLERLESS, EITHER-SEX (INCLUDING COOPERATIVE)
TO HARVEST UP TO 40 BULL AND 70 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull and 50% antlerless

HERD SIZE	825	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	22	%
% OF COWS KILLED BY HUNTERS	15	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	187	456	182	825	825	|	37	27
YEAR 1	"	181	468	257	906	1000	|	40	70
YEAR 2	"	202	474	239	915	1000	|	40	70
YEAR 3	"	211	471	242	924	1000	|	40	70
YEAR 4	"	219	469	240	929	1000	|	40	70
YEAR 5	"	225	467	239	932	1000	|	40	70
YEAR 6	"	229	465	238	932	1000	|	40	70
YEAR 7	"	231	463	237	931	1000	|	40	70
YEAR 8	"	232	460	236	928	1000	|	40	70
YEAR 9	"	233	457	234	923	1000	|	40	70
YEAR 10	"	232	453	232	917	1000	|	40	70

		BULL RATIO	CALF RATIO
START		41	40
POST HUNT YR	1	35	65
POST HUNT YR	2	40	59
POST HUNT YR	3	43	60
POST HUNT YR	4	45	60
POST HUNT YR	5	47	60
POST HUNT YR	6	48	60
POST HUNT YR	7	49	60
POST HUNT YR	8	49	60
POST HUNT YR	9	50	60
POST HUNT YR	10	50	61

FORT HUNTER LIGGETT CENTRAL COAST - SIMULATION RUNS, GENERAL AND PLM, 2016
Ratio = 41/100/40 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: BULL, ANTLERLESS, EITHER-SEX (INCLUDING COOPERATIVE)
TO HARVEST UP TO 60 BULL AND 105 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull and 50% antlerless

HERD SIZE	825	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	33	%
% OF COWS KILLED BY HUNTERS	22.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	187	456	182	825	825	|	37	27
YEAR 1	"	181	468	257	906	1000	|	60	105
YEAR 2	"	187	442	218	847	1000	|	62	99
YEAR 3	"	176	406	206	788	1000	|	58	91
YEAR 4	"	165	376	189	730	1000	|	55	85
YEAR 5	"	154	347	175	676	1000	|	51	78
YEAR 6	"	143	321	161	625	1000	|	47	72
YEAR 7	"	132	296	149	578	1000	|	44	67
YEAR 8	"	122	274	138	534	1000	|	40	62
YEAR 9	"	113	253	127	494	1000	|	37	57
YEAR 10	"	105	234	118	456	1000	|	35	53

		BULL RATIO	CALF RATIO
START		41	40
POST HUNT YR	1	33	71
POST HUNT YR	2	37	63
POST HUNT YR	3	37	65
POST HUNT YR	4	38	65
POST HUNT YR	5	38	65
POST HUNT YR	6	39	65
POST HUNT YR	7	39	65
POST HUNT YR	8	39	65
POST HUNT YR	9	39	65
POST HUNT YR	10	39	65

FORT HUNTER LIGGETT CENTRAL COAST - SIMULATION RUNS, GENERAL AND PLM, 2016
Ratio = 41/100/40 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: BULL, ANTLERLESS, EITHER-SEX (INCLUDING COOPERATIVE)
TO HARVEST UP TO 50 BULL AND 86 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull and 50% antlerless

HERD SIZE	1000	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	22	%
% OF COWS KILLED BY HUNTERS	15	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	227	552	221	1000	1000	|	37	27
YEAR 1	"	225	572	203	1000	1000	|	50	86
YEAR 2	"	208	529	263	1000	1000	|	46	79
YEAR 3	"	220	523	257	1000	1000	|	48	78
YEAR 4	"	225	516	259	1000	1000	|	50	77
YEAR 5	"	229	511	260	1000	1000	|	50	77
YEAR 6	"	231	508	261	1000	1000	|	51	76
YEAR 7	"	233	506	259	998	1000	|	51	76
YEAR 8	"	234	504	258	995	1000	|	51	76
YEAR 9	"	233	501	257	992	1000	|	51	75
YEAR 10	"	233	499	256	988	1000	|	51	75

		BULL RATIO	CALF RATIO
START		41	40
POST HUNT YR	1	36	42
POST HUNT YR	2	36	59
POST HUNT YR	3	39	58
POST HUNT YR	4	40	59
POST HUNT YR	5	41	60
POST HUNT YR	6	42	60
POST HUNT YR	7	42	60
POST HUNT YR	8	43	60
POST HUNT YR	9	43	60
POST HUNT YR	10	43	60

FORT HUNTER LIGGETT CENTRAL COAST - SIMULATION RUNS, GENERAL AND PLM, 2016
Ratio = 41/100/40 - Maximum Calf Survival = 60%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: BULL, ANTLERLESS, EITHER-SEX (INCLUDING COOPERATIVE)
TO HARVEST UP TO 20 BULL AND 35 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull and 50% antlerless

HERD SIZE	825	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	11	%
% OF COWS KILLED BY HUNTERS	7.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	187	456	182	825	825	|	37	27
YEAR 1	"	181	468	257	906	1000	|	20	35
YEAR 2	"	217	505	260	982	1000	|	20	35
YEAR 3	"	245	540	215	1000	1000	|	20	35
YEAR 4	"	250	551	199	1000	1000	|	20	35
YEAR 5	"	247	554	199	1000	1000	|	20	35
YEAR 6	"	245	557	198	1000	1000	|	20	35
YEAR 7	"	243	559	198	1000	1000	|	20	35
YEAR 8	"	242	560	198	1000	1000	|	20	35
YEAR 9	"	241	562	198	1000	1000	|	20	35
YEAR 10	"	240	563	197	1000	1000	|	20	35

		BULL RATIO	CALF RATIO
START		41	40
POST HUNT YR	1	37	59
POST HUNT YR	2	42	55
POST HUNT YR	3	45	42
POST HUNT YR	4	45	39
POST HUNT YR	5	44	38
POST HUNT YR	6	43	38
POST HUNT YR	7	43	38
POST HUNT YR	8	42	38
POST HUNT YR	9	42	38
POST HUNT YR	10	42	37

EAST PARK RESERVOIR TULE ELK HERD - SIMULATION RUNS,
GENERAL, SHARE, & PLM 2016

Ratio = 25/100/36 - Maximum Calf Survival = 67%

THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

CURRENT CONDITION: BULL, COW,
TO HARVEST UP TO 2 BULLS & 4 COWS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 90% bull and 75% antlerless

HERD SIZE	120	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	10	%
% OF COWS KILLED BY HUNTERS	4.8	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	19	75	27	120	120	2	2
YEAR 1	"	21	73	49	143	200	2	4
YEAR 2	"	30	80	47	157	200	2	4
YEAR 3	"	36	85	51	172	200	2	4
YEAR 4	"	42	91	54	187	200	2	4
YEAR 5	"	47	97	56	200	200	2	4
YEAR 6	"	51	103	46	200	200	2	4
YEAR 7	"	50	104	46	200	200	2	4
YEAR 8	"	50	105	45	200	200	2	4
YEAR 9	"	49	106	45	200	200	2	4
YEAR 10	"	49	106	45	200	200	2	4

		BULL RATIO	CALF RATIO
START		25	36
POST HUNT YR	1	27	70
POST HUNT YR	2	37	61
POST HUNT YR	3	42	63
POST HUNT YR	4	45	62
POST HUNT YR	5	48	60
POST HUNT YR	6	49	46
POST HUNT YR	7	48	45
POST HUNT YR	8	47	45
POST HUNT YR	9	46	44
POST HUNT YR	10	45	44

EAST PARK RESERVOIR TULE ELK HERD - SIMULATION RUNS,
GENERAL, SHARE, & PLM 2016
Ratio = 25/100/36 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

PROPOSED: BULL, COW,
TO HARVEST UP TO 4 BULLS & 10 COWS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 90% bull and 75% antlerless

HERD SIZE	120	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	20	%
% OF COWS KILLED BY HUNTERS	13.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	19	75	27	120	120	2	2
YEAR 1	"	21	73	49	143	200	4	10
YEAR 2	"	29	74	42	145	200	4	10
YEAR 3	"	32	73	43	148	200	4	10
YEAR 4	"	35	72	42	149	200	4	10
YEAR 5	"	36	71	42	148	200	4	10
YEAR 6	"	37	69	41	147	200	4	10
YEAR 7	"	37	68	40	145	200	4	10
YEAR 8	"	37	66	39	142	200	4	10
YEAR 9	"	37	64	38	139	200	4	10
YEAR 10	"	36	62	37	135	200	4	10

		BULL RATIO	CALF RATIO
START		25	36
POST HUNT YR	1	27	77
POST HUNT YR	2	38	66
POST HUNT YR	3	44	69
POST HUNT YR	4	49	68
POST HUNT YR	5	52	68
POST HUNT YR	6	55	68
POST HUNT YR	7	57	69
POST HUNT YR	8	58	69
POST HUNT YR	9	59	69
POST HUNT YR	10	60	70

EAST PARK RESERVOIR TULE ELK HERD - SIMULATION RUNS,
GENERAL, SHARE, & PLM 2016
Ratio = 25/100/36 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

INCREASED HARVEST: BULL, COW, INCLUDES COOPERATIVE TAGS
TO HARVEST UP TO 6 BULLS & 15 COWS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 90% bull and 75% antlerless

HERD SIZE	120	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	27	%
% OF COWS KILLED BY HUNTERS	20	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	19	75	27	120	120	|	2	2
YEAR 1	"	21	73	49	143	200	|	6	15
YEAR 2	"	28	70	39	137	200	|	6	15
YEAR 3	"	29	64	37	131	200	|	6	15
YEAR 4	"	30	58	33	120	200	|	6	15
YEAR 5	"	28	51	29	108	200	|	6	15
YEAR 6	"	26	43	24	93	200	|	6	15
YEAR 7	"	23	35	19	76	200	|	6	15
YEAR 8	"	19	25	13	57	200	|	6	15
YEAR 9	"	14	15	7	35	200	|	6	15
YEAR 10	"	8	3	0	11	200	|	6	15

		BULL RATIO	CALF RATIO
START		25	36
POST HUNT YR	1	26	83
POST HUNT YR	2	40	70
POST HUNT YR	3	48	76
POST HUNT YR	4	55	77
POST HUNT YR	5	62	80
POST HUNT YR	6	71	85
POST HUNT YR	7	85	96
POST HUNT YR	8	124	128
POST HUNT YR	9	-8983	-7821
POST HUNT YR	10	-20	1

EAST PARK RESERVOIR TULE ELK HERD - SIMULATION RUNS,
GENERAL, SHARE, & PLM 2016
Ratio = 25/100/36 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

HERD GROWTH: BULL, COW TAGS
TO HARVEST UP TO 8 BULLS & 15 COWS
Various combination of tags to achieved harvest,includes cooperative tags
Assuming success rate of 90% bull and 75% antlerless

HERD SIZE	200	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	22	%
% OF COWS KILLED BY HUNTERS	11.9	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	31	124	45	200	200	2	2
YEAR 1	"	36	123	82	241	250	8	15
YEAR 2	"	48	127	73	248	250	8	15
YEAR 3	"	54	126	70	250	250	8	15
YEAR 4	"	57	125	69	250	250	8	15
YEAR 5	"	58	123	69	250	250	8	15
YEAR 6	"	59	121	69	250	250	8	15
YEAR 7	"	60	120	70	250	250	8	15
YEAR 8	"	61	119	70	250	250	8	15
YEAR 9	"	62	119	70	250	250	8	15
YEAR 10	"	62	118	70	250	250	8	15

		BULL RATIO	CALF RATIO
START		25	36
POST HUNT YR	1	26	76
POST HUNT YR	2	36	65
POST HUNT YR	3	41	63
POST HUNT YR	4	44	63
POST HUNT YR	5	46	64
POST HUNT YR	6	48	65
POST HUNT YR	7	50	66
POST HUNT YR	8	51	67
POST HUNT YR	9	52	67
POST HUNT YR	10	52	67

EAST PARK RESERVOIR TULE ELK HERD - SIMULATION RUNS,
GENERAL, SHARE, & PLM 2016
Ratio = 25/100/36 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

REDUCED HARVEST: BULL, COW,
TO HARVEST UP TO 2 BULLS & 5 COWS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 90% bull and 75% antlerless

HERD SIZE	120	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	10	%
% OF COWS KILLED BY HUNTERS	7	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	19	75	27	120	120	2	2
YEAR 1	"	21	73	49	143	200	2	5
YEAR 2	"	30	78	46	154	200	2	5
YEAR 3	"	36	82	49	166	200	2	5
YEAR 4	"	41	86	51	178	200	2	5
YEAR 5	"	45	90	54	190	200	2	5
YEAR 6	"	49	96	55	200	200	2	5
YEAR 7	"	52	100	47	200	200	2	5
YEAR 8	"	52	101	47	200	200	2	5
YEAR 9	"	51	102	47	200	200	2	5
YEAR 10	"	51	102	47	200	200	2	5

		BULL RATIO	CALF RATIO
START		25	36
POST HUNT YR	1	28	72
POST HUNT YR	2	38	62
POST HUNT YR	3	44	64
POST HUNT YR	4	48	63
POST HUNT YR	5	50	63
POST HUNT YR	6	52	61
POST HUNT YR	7	53	50
POST HUNT YR	8	52	49
POST HUNT YR	9	51	49
POST HUNT YR	10	50	48

SAN LUIS RESERVOIR - SIMULATION RUNS, GENERAL,
SHARE, & PLM 2016
Ratio = 22/100/32 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: EITHER-SEX
TO HARVEST UP TO 5 BULL/ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull and 50% antlerless

HERD SIZE	390	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	6	%
% OF COWS KILLED BY HUNTERS	0.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	56	253	81	390	390	|	5	0
YEAR 1	"	68	264	127	459	800	|	4	1
YEAR 2	"	96	294	132	521	800	|	4	1
YEAR 3	"	118	322	146	587	800	|	4	1
YEAR 4	"	140	355	161	656	800	|	4	1
YEAR 5	"	162	390	177	729	800	|	4	1
YEAR 6	"	185	430	185	800	800	|	4	1
YEAR 7	"	205	469	126	800	800	|	4	1
YEAR 8	"	198	477	124	800	800	|	4	1
YEAR 9	"	192	485	123	800	800	|	4	1
YEAR 10	"	187	490	122	800	800	|	4	1

		BULL RATIO	CALF RATIO
START		22	32
POST HUNT YR	1	24	48
POST HUNT YR	2	31	45
POST HUNT YR	3	35	46
POST HUNT YR	4	39	45
POST HUNT YR	5	41	45
POST HUNT YR	6	42	43
POST HUNT YR	7	43	27
POST HUNT YR	8	41	26
POST HUNT YR	9	39	26
POST HUNT YR	10	37	25

SAN LUIS RESERVOIR - SIMULATION RUNS.
General, SHARE,& PLM 2016
Ratio = 22/100/32 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED: BULL, ANTLERLESS, EITHER-SEX (INCLUDES COOPERATIVE TAGS)
TO HARVEST UP TO 15 BULL AND 30 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull and 50% antlerless

HERD SIZE	390	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	22	%
% OF COWS KILLED BY HUNTERS	11.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	56	253	81	390	390	|	5	0
YEAR 1	"	68	264	127	459	800	|	15	30
YEAR 2	"	88	268	117	472	800	|	15	30
YEAR 3	"	98	266	119	483	800	|	15	30
YEAR 4	"	107	265	118	490	800	|	15	30
YEAR 5	"	113	265	118	495	800	|	15	30
YEAR 6	"	118	264	117	498	800	|	15	30
YEAR 7	"	121	263	117	500	800	|	15	30
YEAR 8	"	123	261	116	501	800	|	15	30
YEAR 9	"	125	260	116	500	800	|	15	30
YEAR 10	"	125	259	115	499	800	|	15	30

		BULL RATIO	CALF RATIO
START		22	32
POST HUNT YR	1	23	54
POST HUNT YR	2	31	49
POST HUNT YR	3	35	50
POST HUNT YR	4	39	50
POST HUNT YR	5	42	50
POST HUNT YR	6	44	50
POST HUNT YR	7	46	50
POST HUNT YR	8	47	50
POST HUNT YR	9	48	50
POST HUNT YR	10	48	50

SAN LUIS RESERVOIR - SIMULATION RUNS,
General, SHARE,& PLM 2016 2016
Ratio = 22/100/32 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HAREST: BULL, ANTLERLESS, EITHER-SEX
TO HARVEST UP TO 22 BULL & 45 ANTLERLESS (INCLUDES COOPERATIVE)
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull and 50% antlerless

HERD SIZE	390	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	32	%
% OF COWS KILLED BY HUNTERS	17	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	56	253	81	390	390	|	5	0
YEAR 1	"	68	264	127	459	800	|	22	45
YEAR 2	"	82	254	110	447	800	|	22	43
YEAR 3	"	87	239	106	432	800	|	22	41
YEAR 4	"	88	226	99	414	800	|	22	38
YEAR 5	"	87	214	94	395	800	|	22	36
YEAR 6	"	84	202	89	375	800	|	22	34
YEAR 7	"	80	191	84	355	800	|	22	32
YEAR 8	"	75	180	79	334	800	|	22	31
YEAR 9	"	69	170	75	315	800	|	22	29
YEAR 10	"	63	161	71	295	800	|	20	27

		BULL RATIO	CALF RATIO
START		22	32
POST HUNT YR	1	21	58
POST HUNT YR	2	29	52
POST HUNT YR	3	33	53
POST HUNT YR	4	35	53
POST HUNT YR	5	37	53
POST HUNT YR	6	37	53
POST HUNT YR	7	37	53
POST HUNT YR	8	35	53
POST HUNT YR	9	33	53
POST HUNT YR	10	32	53

SAN LUIS RESERVOIR - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 22/100/32 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: BULL, ANTLERLESS, EITHER-SEX
TO HARVEST UP TO 24 BULL & 45 ANTLERLESS (INCLUDES COOPERATIVE)
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull and 50% antlerless

HERD SIZE	600	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	22	%
% OF COWS KILLED BY HUNTERS	11	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	86	390	125	600	600	|	5	0
YEAR 1	"	107	407	195	709	800	|	24	45
YEAR 2	"	136	413	181	730	800	|	24	45
YEAR 3	"	152	413	184	749	800	|	24	45
YEAR 4	"	165	413	184	762	800	|	24	45
YEAR 5	"	175	414	184	773	800	|	24	45
YEAR 6	"	183	414	184	781	800	|	24	45
YEAR 7	"	188	415	184	787	800	|	24	45
YEAR 8	"	193	415	185	793	800	|	24	45
YEAR 9	"	196	416	185	797	800	|	24	45
YEAR 10	"	199	417	185	800	800	|	24	45

		BULL RATIO	CALF RATIO
START		22	32
POST HUNT YR	1	23	54
POST HUNT YR	2	30	49
POST HUNT YR	3	35	50
POST HUNT YR	4	39	50
POST HUNT YR	5	41	50
POST HUNT YR	6	43	50
POST HUNT YR	7	45	50
POST HUNT YR	8	46	50
POST HUNT YR	9	47	50
POST HUNT YR	10	47	50

SAN LUIS RESERVOIR - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 22/100/32 - Maximum Calf Survival = 50%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: BULL, ANTLERLESS, EITHER-SEX (INCLUDES COOPERATIVE TAGS)
TO HARVEST UP TO 7 BULL AND 15 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 70% bull and 50% antlerless

HERD SIZE	390	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	10	%
% OF BULLS KILLED BY HUNTERS	10.5	%
% OF COWS KILLED BY HUNTERS	5.6	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	56	253	81	390	390	5	0
YEAR 1	"	68	264	127	459	800	7	15
YEAR 2	"	93	282	125	500	800	7	15
YEAR 3	"	111	296	133	541	800	7	15
YEAR 4	"	128	313	141	582	800	7	15
YEAR 5	"	144	332	149	625	800	7	15
YEAR 6	"	158	353	159	670	800	7	15
YEAR 7	"	173	375	169	717	800	7	15
YEAR 8	"	188	401	180	768	800	7	15
YEAR 9	"	203	428	169	800	800	7	15
YEAR 10	"	210	448	142	800	800	7	15

		BULL RATIO	CALF RATIO
START		22	32
POST HUNT YR	1	25	51
POST HUNT YR	2	32	47
POST HUNT YR	3	37	47
POST HUNT YR	4	41	47
POST HUNT YR	5	43	47
POST HUNT YR	6	45	47
POST HUNT YR	7	46	47
POST HUNT YR	8	47	47
POST HUNT YR	9	47	41
POST HUNT YR	10	47	33

Bear Valley TULE ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 25/100/51 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: BULL, COW,
TO HARVEST UP TO 3 BULLS & 2 COWS
Various combination of tags to achieved harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	225	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	20	%
% OF BULLS KILLED BY HUNTERS	8	%
% OF COWS KILLED BY HUNTERS	1.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	32	128	65	225	225	|	3	2
YEAR 1	"	43	127	84	254	350	|	3	2
YEAR 2	"	57	134	84	275	350	|	3	2
YEAR 3	"	67	139	88	294	350	|	3	2
YEAR 4	"	75	145	92	312	350	|	3	2
YEAR 5	"	82	151	96	329	350	|	3	2
YEAR 6	"	89	158	100	346	350	|	3	2
YEAR 7	"	95	165	91	350	350	|	3	2
YEAR 8	"	96	166	88	350	350	|	3	2
YEAR 9	"	95	167	88	350	350	|	3	2
YEAR 10	"	95	167	88	350	350	|	3	2

		BULL RATIO	CALF RATIO
START		25	51
POST HUNT YR	1	32	68
POST HUNT YR	2	41	64
POST HUNT YR	3	46	64
POST HUNT YR	4	50	64
POST HUNT YR	5	53	64
POST HUNT YR	6	55	64
POST HUNT YR	7	56	56
POST HUNT YR	8	56	53
POST HUNT YR	9	56	53
POST HUNT YR	10	55	53

Bear Valley TULE ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 25/100/51 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED PROJECT: BULL, COW,
TO HARVEST UP TO 8 BULLS & 11 COWS, INCLUDES COOPERATIVE TAGS
Various combination of tags to achieved harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	225	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	20	%
% OF BULLS KILLED BY HUNTERS	18	%
% OF COWS KILLED BY HUNTERS	8.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	32	128	65	225	225	3	2
YEAR 1	"	43	127	84	254	350	8	11
YEAR 2	"	54	127	78	258	350	8	11
YEAR 3	"	60	124	78	261	350	8	11
YEAR 4	"	64	121	76	261	350	8	11
YEAR 5	"	66	119	74	258	350	8	11
YEAR 6	"	66	116	72	255	350	8	11
YEAR 7	"	66	113	70	250	350	8	11
YEAR 8	"	66	110	69	244	350	8	11
YEAR 9	"	65	107	67	238	350	8	11
YEAR 10	"	63	103	64	231	350	8	11

		BULL RATIO	CALF RATIO
START		25	51
POST HUNT YR	1	30	73
POST HUNT YR	2	40	67
POST HUNT YR	3	46	69
POST HUNT YR	4	50	68
POST HUNT YR	5	54	69
POST HUNT YR	6	56	69
POST HUNT YR	7	57	69
POST HUNT YR	8	58	69
POST HUNT YR	9	59	69
POST HUNT YR	10	60	69

Bear Valley TULE ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 25/100/51 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: BULL, COW,
TO HARVEST UP TO 12 BULLS & 16 COWS. INCLUDES COOPERATIVE TAGS
Various combination of tags to achieved harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	225	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	20	%
% OF BULLS KILLED BY HUNTERS	27	%
% OF COWS KILLED BY HUNTERS	13	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	32	128	65	225	225	|	3	2
YEAR 1	"	43	127	84	254	350	|	12	16
YEAR 2	"	52	122	74	247	350	|	12	16
YEAR 3	"	54	114	71	238	350	|	12	16
YEAR 4	"	54	106	65	226	350	|	12	16
YEAR 5	"	53	98	60	211	350	|	12	16
YEAR 6	"	50	89	55	194	350	|	12	16
YEAR 7	"	46	80	49	175	350	|	12	16
YEAR 8	"	41	70	43	154	350	|	12	16
YEAR 9	"	35	60	36	132	350	|	12	16
YEAR 10	"	29	49	29	108	350	|	12	16

		BULL RATIO	CALF RATIO
START		25	51
POST HUNT YR	1	29	76
POST HUNT YR	2	38	70
POST HUNT YR	3	43	73
POST HUNT YR	4	47	73
POST HUNT YR	5	50	74
POST HUNT YR	6	52	75
POST HUNT YR	7	54	77
POST HUNT YR	8	54	79
POST HUNT YR	9	55	83
POST HUNT YR	10	54	89

Bear Valley TULE ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 25/100/51 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: BULL, COW,
TO HARVEST UP TO 9 BULLS & 14 COWS. INCLUDES COOPERATIVE TAGS
Various combination of tags to achieved harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	300	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	20	%
% OF BULLS KILLED BY HUNTERS	15	%
% OF COWS KILLED BY HUNTERS	8.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	43	170	87	300	300	|	3	2
YEAR 1	"	58	170	113	341	350	|	9	14
YEAR 2	"	74	169	104	347	350	|	9	14
YEAR 3	"	82	165	102	350	350	|	9	14
YEAR 4	"	87	162	101	350	350	|	9	14
YEAR 5	"	90	158	99	347	350	|	9	14
YEAR 6	"	92	155	96	343	350	|	9	14
YEAR 7	"	92	151	94	336	350	|	9	14
YEAR 8	"	91	147	91	329	350	|	9	14
YEAR 9	"	90	142	89	320	350	|	9	14
YEAR 10	"	88	138	86	311	350	|	9	14

		BULL RATIO	CALF RATIO
START		25	51
POST HUNT YR	1	32	73
POST HUNT YR	2	42	67
POST HUNT YR	3	49	68
POST HUNT YR	4	53	69
POST HUNT YR	5	57	69
POST HUNT YR	6	59	69
POST HUNT YR	7	61	69
POST HUNT YR	8	62	69
POST HUNT YR	9	63	69
POST HUNT YR	10	64	69

Bear Valley TULE ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 25/100/51 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: BULL, COW,
TO HARVEST UP TO 4 BULLS & 5 COWS, INCLUDES COOPERATIVE TAGS
Various combination of tags to achieved harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	225	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	20	%
% OF BULLS KILLED BY HUNTERS	9	%
% OF COWS KILLED BY HUNTERS	4	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	32	128	65	225	225	3	2
YEAR 1	"	43	127	84	254	350	4	5
YEAR 2	"	57	131	82	270	350	4	5
YEAR 3	"	66	133	84	284	350	4	5
YEAR 4	"	73	136	86	295	350	4	5
YEAR 5	"	78	139	88	306	350	4	5
YEAR 6	"	83	143	90	316	350	4	5
YEAR 7	"	87	146	92	325	350	4	5
YEAR 8	"	90	150	95	335	350	4	5
YEAR 9	"	94	154	97	344	350	4	5
YEAR 10	"	97	158	96	350	350	4	5

		BULL RATIO	CALF RATIO
START		25	51
POST HUNT YR	1	32	69
POST HUNT YR	2	42	65
POST HUNT YR	3	48	66
POST HUNT YR	4	52	65
POST HUNT YR	5	55	65
POST HUNT YR	6	57	65
POST HUNT YR	7	59	65
POST HUNT YR	8	60	65
POST HUNT YR	9	60	65
POST HUNT YR	10	61	63

LAKE PILLSBURY TULE ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 35/100/51 - Maximum Calf Survival = 53%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: HARVEST UP TO 2 BULL TAG 4 ANTLERLESS
NO CHANGE: HARVEST UP TO 2 BULL AND 4 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	150	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	4.1	%
% OF COWS KILLED BY HUNTERS	4.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	28	81	41	150	150	|	2	4
YEAR 1	"	37	83	41	161	200	|	2	4
YEAR 2	"	45	84	42	171	200	|	2	4
YEAR 3	"	51	86	43	180	200	|	2	4
YEAR 4	"	57	88	44	189	200	|	2	4
YEAR 5	"	62	90	45	197	200	|	2	4
YEAR 6	"	66	92	42	200	200	|	2	4
YEAR 7	"	68	93	39	200	200	|	2	4
YEAR 8	"	69	92	39	200	200	|	2	4
YEAR 9	"	70	91	39	200	200	|	2	4
YEAR 10	"	70	91	39	200	200	|	2	4

		BULL RATIO	CALF RATIO
START		35	51
POST HUNT YR	1	45	51
POST HUNT YR	2	54	52
POST HUNT YR	3	61	52
POST HUNT YR	4	66	52
POST HUNT YR	5	70	52
POST HUNT YR	6	73	48
POST HUNT YR	7	76	44
POST HUNT YR	8	77	45
POST HUNT YR	9	78	45
POST HUNT YR	10	79	45

LAKE PILLSBURY TULE ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 35/100/51 - Maximum Calf Survival = 53%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED PROJECT: BULL & ANTLERLESS
TO HARVEST UP TO 6 BULL AND 7 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 90% bull and 90% antlerless

HERD SIZE	150	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	15	%
% OF COWS KILLED BY HUNTERS	9	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	28	81	41	150	150	|	2	4
YEAR 1	"	37	83	41	161	200	|	6	7
YEAR 2	"	42	81	40	163	200	|	6	7
YEAR 3	"	45	80	39	164	200	|	6	7
YEAR 4	"	47	78	38	164	200	|	6	7
YEAR 5	"	49	77	38	163	200	|	6	7
YEAR 6	"	49	76	37	162	200	|	6	7
YEAR 7	"	50	74	36	161	200	|	6	7
YEAR 8	"	50	73	36	159	200	|	6	7
YEAR 9	"	50	72	35	157	200	|	6	6
YEAR 10	"	49	70	35	154	200	|	6	6

		BULL RATIO	CALF RATIO
START		35	51
POST HUNT YR	1	42	54
POST HUNT YR	2	49	54
POST HUNT YR	3	54	54
POST HUNT YR	4	58	54
POST HUNT YR	5	61	54
POST HUNT YR	6	64	54
POST HUNT YR	7	66	54
POST HUNT YR	8	67	54
POST HUNT YR	9	68	54
POST HUNT YR	10	68	54

LAKE PILLSBURY TULE ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 35/100/51 - Maximum Calf Survival = 53%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: BULL & ANTLERLESS
TO HARVEST UP TO 9 BULL AND 10 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 90% bull and 90% antlerless

HERD SIZE	150	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	23	%
% OF COWS KILLED BY HUNTERS	12.2	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	28	81	41	150	150	|	2	4
YEAR 1	"	37	86	41	164	200	|	9	10
YEAR 2	"	39	84	40	163	200	|	9	10
YEAR 3	"	40	82	39	162	200	|	9	10
YEAR 4	"	40	81	38	160	200	|	9	10
YEAR 5	"	40	79	38	157	200	|	9	10
YEAR 6	"	40	78	37	155	200	|	9	9
YEAR 7	"	39	76	36	152	200	|	9	9
YEAR 8	"	39	75	36	149	200	|	9	9
YEAR 9	"	38	74	35	147	200	|	9	9
YEAR 10	"	37	72	34	144	200	|	9	9

		BULL RATIO	CALF RATIO
START		35	51
POST HUNT YR	1	38	54
POST HUNT YR	2	41	54
POST HUNT YR	3	43	54
POST HUNT YR	4	44	54
POST HUNT YR	5	44	54
POST HUNT YR	6	45	54
POST HUNT YR	7	45	54
POST HUNT YR	8	45	54
POST HUNT YR	9	45	54
POST HUNT YR	10	45	54

LAKE PILLSBURY TULE ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 35/100/51 - Maximum Calf Survival = 53%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: BULL & ANTLERLESS
TO HARVEST UP TO 8 BULL AND 10 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 90% bull and 90% antlerless

HERD SIZE	200	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	15	%
% OF COWS KILLED BY HUNTERS	9	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	38	108	55	200	200	|	2	4
YEAR 1	"	50	111	38	200	200	|	8	10
YEAR 2	"	50	102	48	200	200	|	8	9
YEAR 3	"	53	100	48	200	200	|	8	9
YEAR 4	"	55	97	48	200	200	|	8	9
YEAR 5	"	57	95	47	199	200	|	8	9
YEAR 6	"	58	94	46	198	200	|	8	8
YEAR 7	"	59	92	45	196	200	|	8	8
YEAR 8	"	59	90	44	194	200	|	8	8
YEAR 9	"	59	89	44	192	200	|	8	8
YEAR 10	"	59	87	43	189	200	|	8	8

		BULL RATIO	CALF RATIO
START		35	51
POST HUNT YR	1	42	38
POST HUNT YR	2	45	52
POST HUNT YR	3	50	52
POST HUNT YR	4	54	54
POST HUNT YR	5	57	54
POST HUNT YR	6	60	54
POST HUNT YR	7	62	54
POST HUNT YR	8	63	54
POST HUNT YR	9	64	54
POST HUNT YR	10	64	54

LAKE PILLSBURY TULE ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 35/100/51 - Maximum Calf Survival = 53%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: BULL & ANTLERLESS
TO HARVEST UP TO 3 BULL AND 3 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 90% bull and 90% antlerless

HERD SIZE	150	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	7.5	%
% OF COWS KILLED BY HUNTERS	3.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	28	81	41	150	150	|	2	4
YEAR 1	"	37	83	41	161	200	|	3	3
YEAR 2	"	44	85	42	171	200	|	3	3
YEAR 3	"	50	88	43	181	200	|	3	3
YEAR 4	"	55	90	45	190	200	|	3	3
YEAR 5	"	60	93	46	199	200	|	3	3
YEAR 6	"	64	96	40	200	200	|	3	3
YEAR 7	"	65	96	39	200	200	|	3	3
YEAR 8	"	65	95	39	200	200	|	3	3
YEAR 9	"	66	95	39	200	200	|	3	3
YEAR 10	"	66	95	39	200	200	|	3	3

		BULL RATIO	CALF RATIO
START		35	51
POST HUNT YR	1	43	51
POST HUNT YR	2	50	51
POST HUNT YR	3	56	51
POST HUNT YR	4	60	51
POST HUNT YR	5	63	51
POST HUNT YR	6	66	43
POST HUNT YR	7	67	43
POST HUNT YR	8	68	43
POST HUNT YR	9	69	43
POST HUNT YR	10	69	43

Santa Clara (PLM, SHARE, & GENERAL) - SIMULATION RUNS, 2016
Ratio = 43/100/40 - Maximum Calf Survival = 65%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: UP TO 10 BULL AND 8 ANTLERLESS
NO CHANGE: HARVEST UP TO 10 BULL AND 8 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	160	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	25	%
% OF COWS KILLED BY HUNTERS	8.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	37	85	38	160	160	|	0	0
YEAR 1	"	39	89	55	183	200	|	10	8
YEAR 2	"	40	92	53	185	200	|	10	8
YEAR 3	"	39	94	55	189	200	|	10	8
YEAR 4	"	40	97	56	193	200	|	10	8
YEAR 5	"	41	99	58	197	200	|	10	8
YEAR 6	"	42	101	57	200	200	|	10	8
YEAR 7	"	42	103	55	200	200	|	10	8
YEAR 8	"	42	104	55	200	200	|	10	8
YEAR 9	"	41	104	54	200	200	|	10	8
YEAR 10	"	41	105	54	200	200	|	10	8

		BULL RATIO	CALF RATIO
START		43	45
POST HUNT YR	1	36	68
POST HUNT YR	2	35	62
POST HUNT YR	3	34	64
POST HUNT YR	4	34	63
POST HUNT YR	5	34	63
POST HUNT YR	6	34	61
POST HUNT YR	7	34	58
POST HUNT YR	8	33	57
POST HUNT YR	9	33	57
POST HUNT YR	10	32	57

Santa Clara (PLM, SHARE & GENERAL) - SIMULATION RUNS, 2016
Ratio = 43/100/40 - Maximum Calf Survival = 65%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED: BULL AND ANTLERLESS (INCLUDES COOPERATIVE)
HARVEST UP TO: 10 BULL AND 10 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	160	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	25	%
% OF COWS KILLED BY HUNTERS	11	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	37	85	38	160	160	|	0	0
YEAR 1	"	39	89	55	183	200	|	10	10
YEAR 2	"	40	91	51	182	200	|	10	10
YEAR 3	"	39	90	52	182	200	|	10	10
YEAR 4	"	39	91	52	182	200	|	10	10
YEAR 5	"	39	91	52	182	200	|	10	10
YEAR 6	"	39	91	52	182	200	|	10	10
YEAR 7	"	39	91	53	182	200	|	10	10
YEAR 8	"	39	91	53	183	200	|	10	10
YEAR 9	"	39	91	53	183	200	|	10	10
YEAR 10	"	39	92	53	183	200	|	10	10

		BULL RATIO	CALF RATIO
START		43	45
POST HUNT YR	1	37	70
POST HUNT YR	2	37	64
POST HUNT YR	3	36	65
POST HUNT YR	4	36	65
POST HUNT YR	5	36	65
POST HUNT YR	6	36	65
POST HUNT YR	7	36	65
POST HUNT YR	8	36	65
POST HUNT YR	9	36	65
POST HUNT YR	10	36	65

Santa Clara PLM, SHARE, & GENERAL) - SIMULATION RUNS,
2016

Ratio = 43/100/40 - Maximum Calf Survival = 65%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: BULL AND ANTLERLESS (INCLUDES COOPERATIVE)
HARVEST UP TO: 15 BULL AND 15 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	160	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	13	%
% OF BULLS KILLED BY HUNTERS	38	%
% OF COWS KILLED BY HUNTERS	16	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	37	85	38	160	160	0	0
YEAR 1	"	39	91	55	185	200	15	15
YEAR 2	"	36	90	50	176	200	14	14
YEAR 3	"	33	88	49	170	200	13	14
YEAR 4	"	32	85	48	165	200	12	14
YEAR 5	"	30	83	47	160	200	12	13
YEAR 6	"	30	81	45	156	200	11	13
YEAR 7	"	29	79	44	152	200	11	13
YEAR 8	"	28	77	43	148	200	11	12
YEAR 9	"	27	75	42	144	200	10	12
YEAR 10	"	27	73	41	141	200	10	12

		BULL RATIO	CALF RATIO
START		43	45
POST HUNT YR	1	32	73
POST HUNT YR	2	30	65
POST HUNT YR	3	28	67
POST HUNT YR	4	27	67
POST HUNT YR	5	27	67
POST HUNT YR	6	27	67
POST HUNT YR	7	27	67
POST HUNT YR	8	27	67
POST HUNT YR	9	27	67
POST HUNT YR	10	27	67

Santa Clara (PLM, SHARE & GENERAL) - SIMULATION RUNS, 2016
Ratio = 43/100/40 - Maximum Calf Survival = 65%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: BULL AND ANTLERLESS (INCLUDES COOPERATIVE)
HARVEST UP TO: 11 BULL AND 13 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	200	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	23	%
% OF COWS KILLED BY HUNTERS	12	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	46	106	48	200	200	|	0	0
YEAR 1	"	49	111	65	225	225	|	11	13
YEAR 2	"	49	111	63	223	225	|	11	13
YEAR 3	"	49	110	63	222	225	|	11	13
YEAR 4	"	48	109	63	220	225	|	11	13
YEAR 5	"	48	108	62	219	225	|	11	13
YEAR 6	"	48	107	62	217	225	|	11	13
YEAR 7	"	47	107	61	215	225	|	11	13
YEAR 8	"	47	106	61	214	225	|	11	13
YEAR 9	"	47	105	61	212	225	|	11	13
YEAR 10	"	46	104	60	211	225	|	11	13

		BULL RATIO	CALF RATIO
START		43	45
POST HUNT YR	1	39	67
POST HUNT YR	2	39	65
POST HUNT YR	3	39	66
POST HUNT YR	4	39	65
POST HUNT YR	5	39	65
POST HUNT YR	6	39	65
POST HUNT YR	7	39	65
POST HUNT YR	8	39	65
POST HUNT YR	9	39	65
POST HUNT YR	10	39	65

Santa Clara (PLM, SHARE, & GENERAL) - SIMULATION RUNS, 2016
Ratio = 43/100/40 - Maximum Calf Survival = 65%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: BULL AND ANTLERLESS (INCLUDES COOPERATIVE)
HARVEST UP TO: 5 BULL AND 5 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	160	ELK
% BULLS LOST TO NON HUNTING CAUSES	30	%
% COWS LOST TO NON HUNTING CAUSES	15	%
% OF BULLS KILLED BY HUNTERS	12	%
% OF COWS KILLED BY HUNTERS	5.1	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	37	85	38	160	160	|	0	0
YEAR 1	"	39	89	55	183	200	|	5	5
YEAR 2	"	43	95	55	193	200	|	5	5
YEAR 3	"	46	100	54	200	200	|	5	5
YEAR 4	"	47	104	49	200	200	|	5	5
YEAR 5	"	47	104	49	200	200	|	5	5
YEAR 6	"	46	105	49	200	200	|	5	5
YEAR 7	"	46	105	49	200	200	|	5	5
YEAR 8	"	45	106	49	200	200	|	5	5
YEAR 9	"	45	106	49	200	200	|	5	5
YEAR 10	"	45	106	49	200	200	|	5	5

		BULL RATIO	CALF RATIO
START		43	45
POST HUNT YR	1	41	66
POST HUNT YR	2	42	61
POST HUNT YR	3	43	57
POST HUNT YR	4	43	50
POST HUNT YR	5	42	49
POST HUNT YR	6	41	49
POST HUNT YR	7	40	49
POST HUNT YR	8	40	49
POST HUNT YR	9	39	48
POST HUNT YR	10	39	48

ALAMEDA TULE ELK HERD , GENERAL, SHARE, & PLM - SIMULATION RUNS, 2016
Ratio = 43/100/40 - Maximum Calf Survival = 55%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

CURRENT CONDITION: UP TO 3 BULL AND 2 ANTLERLESS
NO CHANGE: HARVEST UP TO 3 BULL AND 2 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	100	ELK
% BULLS LOST TO NON HUNTING CAUSES	32	%
% COWS LOST TO NON HUNTING CAUSES	16.6	%
% OF BULLS KILLED BY HUNTERS	11	%
% OF COWS KILLED BY HUNTERS	2.9	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	23	55	22	100	100	|	0	0
YEAR 1	"	23	55	30	108	150	|	3	2
YEAR 2	"	24	57	29	110	150	|	3	2
YEAR 3	"	25	58	30	113	150	|	3	2
YEAR 4	"	25	60	31	116	150	|	3	2
YEAR 5	"	26	61	32	119	150	|	3	2
YEAR 6	"	27	63	33	122	150	|	3	2
YEAR 7	"	27	65	34	126	150	|	3	2
YEAR 8	"	28	66	35	129	150	|	3	2
YEAR 9	"	29	68	35	132	150	|	3	2
YEAR 10	"	29	70	36	136	150	|	3	2

		BULL RATIO	CALF RATIO
START		43	40
POST HUNT YR	1	39	57
POST HUNT YR	2	39	53
POST HUNT YR	3	39	54
POST HUNT YR	4	39	54
POST HUNT YR	5	39	54
POST HUNT YR	6	39	54
POST HUNT YR	7	39	54
POST HUNT YR	8	38	54
POST HUNT YR	9	38	54
POST HUNT YR	10	38	54

ALAMEDA TULE ELK HERD GENERAL, SHARE, & PLM - SIMULATION RUNS, 2016
Ratio = 43/100/40 - Maximum Calf Survival = 55%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

PROPOSED: BULL AND ANTLERLESS
HARVEST UP TO 3 BULL AND 2 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	100	ELK
% BULLS LOST TO NON HUNTING CAUSES	32	%
% COWS LOST TO NON HUNTING CAUSES	16.6	%
% OF BULLS KILLED BY HUNTERS	11	%
% OF COWS KILLED BY HUNTERS	2.9	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	23	55	22	100	100	|	0	0
YEAR 1	"	23	55	30	108	150	|	3	2
YEAR 2	"	24	57	29	110	150	|	3	2
YEAR 3	"	25	58	30	113	150	|	3	2
YEAR 4	"	25	60	31	116	150	|	3	2
YEAR 5	"	26	61	32	119	150	|	3	2
YEAR 6	"	27	63	33	122	150	|	3	2
YEAR 7	"	27	65	34	126	150	|	3	2
YEAR 8	"	28	66	35	129	150	|	3	2
YEAR 9	"	29	68	35	132	150	|	3	2
YEAR 10	"	29	70	36	136	150	|	3	2

		BULL RATIO	CALF RATIO
START		43	40
POST HUNT YR	1	39	57
POST HUNT YR	2	39	53
POST HUNT YR	3	39	54
POST HUNT YR	4	39	54
POST HUNT YR	5	39	54
POST HUNT YR	6	39	54
POST HUNT YR	7	39	54
POST HUNT YR	8	38	54
POST HUNT YR	9	38	54
POST HUNT YR	10	38	54

ALAMEDA TULE ELK HERD GENERAL, SHARE, & PLM - SIMULATION RUNS, 2016
Ratio = 43/100/40 - Maximum Calf Survival = 55%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

INCREASED HARVEST: BULL AND ANTLERLESS
HARVEST UP TO 6 BULL AND 4 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	100	ELK
% BULLS LOST TO NON HUNTING CAUSES	32	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	24	%
% OF COWS KILLED BY HUNTERS	6.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	23	55	22	100	100	0	0
YEAR 1	"	23	58	30	111	150	6	4
YEAR 2	"	22	61	30	113	150	5	4
YEAR 3	"	22	63	31	116	150	5	4
YEAR 4	"	22	66	32	120	150	5	4
YEAR 5	"	22	68	34	124	150	5	4
YEAR 6	"	23	71	35	129	150	6	4
YEAR 7	"	24	74	37	134	150	6	4
YEAR 8	"	25	77	38	140	150	6	4
YEAR 9	"	26	81	40	147	150	6	4
YEAR 10	"	27	85	38	150	150	6	4

		BULL RATIO	CALF RATIO
START		43	40
POST HUNT YR	1	33	56
POST HUNT YR	2	30	52
POST HUNT YR	3	28	53
POST HUNT YR	4	27	53
POST HUNT YR	5	27	53
POST HUNT YR	6	26	53
POST HUNT YR	7	26	53
POST HUNT YR	8	26	52
POST HUNT YR	9	26	52
POST HUNT YR	10	25	47

ALAMEDA TULE ELK HERD GENERAL, SHARE, & PLM - SIMULATION RUNS, 2016
Ratio = 43/100/40 - Maximum Calf Survival = 55%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

HERD GROWTH: BULL AND ANTLERLESS
HARVEST UP TO 4 BULL AND 6 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	150	ELK
% BULLS LOST TO NON HUNTING CAUSES	32	%
% COWS LOST TO NON HUNTING CAUSES	16.6	%
% OF BULLS KILLED BY HUNTERS	11	%
% OF COWS KILLED BY HUNTERS	7	%
	7	

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	35	82	33	150	150	|	0	0
YEAR 1	"	35	82	33	150	150	|	4	6
YEAR 2	"	32	77	40	150	150	|	4	5
YEAR 3	"	33	77	40	150	150	|	4	5
YEAR 4	"	34	76	39	149	150	|	4	5
YEAR 5	"	34	75	39	148	150	|	4	5
YEAR 6	"	34	75	39	147	150	|	4	5
YEAR 7	"	33	74	38	146	150	|	4	5
YEAR 8	"	33	73	38	144	150	|	4	5
YEAR 9	"	33	73	37	143	150	|	4	5
YEAR 10	"	33	72	37	142	150	|	4	5

		BULL RATIO	CALF RATIO
START		43	40
POST HUNT YR	1	41	43
POST HUNT YR	2	40	56
POST HUNT YR	3	42	55
POST HUNT YR	4	42	56
POST HUNT YR	5	43	56
POST HUNT YR	6	43	56
POST HUNT YR	7	43	56
POST HUNT YR	8	43	56
POST HUNT YR	9	43	56
POST HUNT YR	10	43	56

ALAMEDA TULE ELK HERD GENERAL, SHARE, & PLM - SIMULATION RUNS, 2016
Ratio = 43/100/40 - Maximum Calf Survival = 55%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS
HARVEST
RATES.

REDUCED HARVEST: BULL AND ANTLERLESS
HARVEST UP TO 2 BULL AND 1 ANTLERLESS
Various combination of tags to achieve harvest,
Assuming success rate of 80% bull and 60% antlerless

HERD SIZE	100	ELK
% BULLS LOST TO NON HUNTING CAUSES	32	%
% COWS LOST TO NON HUNTING CAUSES	16.6	%
% OF BULLS KILLED BY HUNTERS	6	%
% OF COWS KILLED BY HUNTERS	1.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	23	55	22	100	100	0	0
YEAR 1	"	23	55	30	108	150	1	1
YEAR 2	"	25	57	30	112	150	2	1
YEAR 3	"	26	60	31	117	150	2	1
YEAR 4	"	27	62	32	121	150	2	1
YEAR 5	"	28	64	34	126	150	2	1
YEAR 6	"	30	67	35	131	150	2	1
YEAR 7	"	31	69	36	136	150	2	1
YEAR 8	"	32	72	38	142	150	2	1
YEAR 9	"	33	75	39	147	150	2	1
YEAR 10	"	35	78	38	150	150	2	1

		BULL RATIO	CALF RATIO
START		43	40
POST HUNT YR	1	41	56
POST HUNT YR	2	42	52
POST HUNT YR	3	42	53
POST HUNT YR	4	42	53
POST HUNT YR	5	42	53
POST HUNT YR	6	42	53
POST HUNT YR	7	42	53
POST HUNT YR	8	42	53
POST HUNT YR	9	42	53
POST HUNT YR	10	42	49

SAN EMIGDIO ELK HERD - SIMULATION RUNS, 2016
Ratio = 52/100/20 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

CURRENT CONDITION: NO HUNTING

HERD SIZE	360	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	0	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	109	209	42	360	360	|	0	0
YEAR 1	"	97	203	140	440	600	|	0	0
YEAR 2	"	126	240	136	501	600	|	0	0
YEAR 3	"	145	271	161	577	600	|	0	0
YEAR 4	"	169	309	122	600	600	|	0	0
YEAR 5	"	172	326	102	600	600	|	0	0
YEAR 6	"	168	331	101	600	600	|	0	0
YEAR 7	"	164	336	100	600	600	|	0	0
YEAR 8	"	160	340	100	600	600	|	0	0
YEAR 9	"	158	343	99	600	600	|	0	0
YEAR 10	"	155	346	99	600	600	|	0	0

		BULL RATIO	CALF RATIO
START		52	20
POST HUNT YR	1	48	69
POST HUNT YR	2	52	57
POST HUNT YR	3	54	59
POST HUNT YR	4	55	39
POST HUNT YR	5	53	31
POST HUNT YR	6	51	30
POST HUNT YR	7	49	30
POST HUNT YR	8	47	29
POST HUNT YR	9	46	29
POST HUNT YR	10	45	29

SAN EMIGDIO ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 52/100/20 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

PROPOSED PROJECT: BULL, COW, INCLUDING COOPERATIVE
TAGS
TO HARVEST UP TO 10 BULLS & 24 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	360	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	10	%
% OF COWS KILLED BY HUNTERS	12	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	109	209	42	360	360	|	0	0
YEAR 1	"	97	203	140	440	600	|	10	24
YEAR 2	"	118	219	119	456	600	|	10	24
YEAR 3	"	126	224	130	480	600	|	10	24
YEAR 4	"	136	233	133	502	600	|	10	24
YEAR 5	"	145	242	140	526	600	|	10	24
YEAR 6	"	154	253	146	553	600	|	10	24
YEAR 7	"	163	265	153	581	600	|	10	24
YEAR 8	"	172	280	148	600	600	|	10	24
YEAR 9	"	177	290	133	600	600	|	10	24
YEAR 10	"	176	292	132	600	600	|	10	24

		BULL RATIO	CALF RATIO
START		52	20
POST HUNT YR	1	49	79
POST HUNT YR	2	56	61
POST HUNT YR	3	58	65
POST HUNT YR	4	61	64
POST HUNT YR	5	62	64
POST HUNT YR	6	63	64
POST HUNT YR	7	63	64
POST HUNT YR	8	64	58
POST HUNT YR	9	63	50
POST HUNT YR	10	62	49

SAN EMIGDIO ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 52/100/20 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

INCREASED HARVEST: BULL, COW, EITHER SEX TAGS; INCLUDING COOPERATIVE TAGS
TO HARVEST UP TO 15 BULLS & 36 COWS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	360	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	15	%
% OF COWS KILLED BY HUNTERS	17.7	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	109	209	42	360	360	|	0	0
YEAR 1	"	97	203	140	440	600	|	15	36
YEAR 2	"	115	208	112	435	600	|	15	36
YEAR 3	"	117	201	116	434	600	|	15	36
YEAR 4	"	120	196	111	427	600	|	15	36
YEAR 5	"	121	190	107	418	600	|	15	36
YEAR 6	"	120	183	103	406	600	|	15	36
YEAR 7	"	118	175	98	391	600	|	15	36
YEAR 8	"	114	165	93	373	600	|	15	36
YEAR 9	"	110	155	87	351	600	|	15	36
YEAR 10	"	104	143	80	326	600	|	15	36

		BULL RATIO	CALF RATIO
START		52	20
POST HUNT YR	1	50	84
POST HUNT YR	2	58	65
POST HUNT YR	3	62	70
POST HUNT YR	4	66	69
POST HUNT YR	5	69	70
POST HUNT YR	6	72	70
POST HUNT YR	7	74	71
POST HUNT YR	8	77	72
POST HUNT YR	9	80	73
POST HUNT YR	10	83	74

SAN EMIGDIO ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 52/100/20 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

HERD GROWTH: BULL, COW, EITHER SEX TAGS; INCLUDING COOPERATIVE TAGS
TO HARVEST UP TO 25 BULLS & 42 COWS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	600	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	15.5	%
% OF COWS KILLED BY HUNTERS	12.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	181	349	70	600	600	|	0	0
YEAR 1	"	162	338	100	600	600	|	25	42
YEAR 2	"	140	304	156	600	600	|	25	42
YEAR 3	"	145	299	156	600	600	|	25	42
YEAR 4	"	148	295	157	600	600	|	25	42
YEAR 5	"	151	291	157	600	600	|	25	42
YEAR 6	"	154	288	158	600	600	|	25	42
YEAR 7	"	156	286	158	600	600	|	25	42
YEAR 8	"	157	284	159	600	600	|	25	42
YEAR 9	"	158	283	159	600	600	|	25	42
YEAR 10	"	160	282	159	600	600	|	25	42

		BULL RATIO	CALF RATIO
START		52	20
POST HUNT YR	1	46	34
POST HUNT YR	2	44	59
POST HUNT YR	3	47	61
POST HUNT YR	4	49	62
POST HUNT YR	5	51	63
POST HUNT YR	6	52	64
POST HUNT YR	7	53	65
POST HUNT YR	8	55	65
POST HUNT YR	9	55	66
POST HUNT YR	10	56	66

SAN EMIGDIO ELK HERD - SIMULATION RUNS, GENERAL, SHARE, & PLM 2016
Ratio = 52/100/20 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

REDUCED HARVEST: BULL, COW, INCLUDING COOPERATIVE TAGS
TO HARVEST UP TO 5 BULLS & 12 ANTLERLESS
Various combination of tags to achieved harvest, includes cooperative tags
Assuming success rate of 80% bull and 75% antlerless

HERD SIZE	360	ELK
% BULLS LOST TO NON HUNTING CAUSES	25	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	5	%
% OF COWS KILLED BY HUNTERS	6	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	109	209	42	360	360	0	0
YEAR 1	"	97	203	140	440	600	5	12
YEAR 2	"	122	229	128	479	600	5	12
YEAR 3	"	136	247	145	528	600	5	12
YEAR 4	"	153	271	157	581	600	5	12
YEAR 5	"	170	297	133	600	600	5	12
YEAR 6	"	174	309	117	600	600	5	12
YEAR 7	"	171	313	117	600	600	5	12
YEAR 8	"	168	316	116	600	600	5	12
YEAR 9	"	166	318	116	600	600	5	12
YEAR 10	"	164	320	115	600	600	5	12

		BULL RATIO	CALF RATIO
START		52	20
POST HUNT YR	1	49	74
POST HUNT YR	2	54	59
POST HUNT YR	3	56	62
POST HUNT YR	4	57	61
POST HUNT YR	5	58	47
POST HUNT YR	6	57	39
POST HUNT YR	7	55	39
POST HUNT YR	8	54	38
POST HUNT YR	9	53	38
POST HUNT YR	10	52	37

CAMP ROBERTS ELK HERD - SIMULATION RUNS, GENERAL AND MILITARY 2016
Ratio = 30/100/30 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

CURRENT CONDITION:
NO HARVEST

HERD SIZE	300	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	0	%
% OF COWS KILLED BY HUNTERS	0	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	56	188	56	300	300	|	0	0
YEAR 1	"	68	190	126	383	1000	|	0	0
YEAR 2	"	104	222	127	454	1000	|	0	0
YEAR 3	"	134	252	149	535	1000	|	0	0
YEAR 4	"	167	287	169	622	1000	|	0	0
YEAR 5	"	201	327	192	720	1000	|	0	0
YEAR 6	"	238	372	219	828	1000	|	0	0
YEAR 7	"	278	424	249	950	1000	|	0	0
YEAR 8	"	322	482	196	1000	1000	|	0	0
YEAR 9	"	336	511	154	1000	1000	|	0	0
YEAR 10	"	330	517	153	1000	1000	|	0	0

		BULL RATIO	CALF RATIO
START		30	30
POST HUNT YR	1	36	66
POST HUNT YR	2	47	57
POST HUNT YR	3	53	59
POST HUNT YR	4	58	59
POST HUNT YR	5	62	59
POST HUNT YR	6	64	59
POST HUNT YR	7	66	59
POST HUNT YR	8	67	41
POST HUNT YR	9	66	30
POST HUNT YR	10	64	30

CAMP ROBERTS ELK HERD - SIMULATION RUNS, GENERAL, SHARE, AND MILITARY 2016
Ratio = 30/100/30 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

PROPOSED: BULL, COW, EITHER SEX TAGS; MILITARY AND
GENERAL
HARVEST UP TO 15 BULL & 30 ANTLERLESS
Various combination of tags to achieved harvest
Approximate success rate of 70% bull and 60% antlerless

HERD SIZE	300	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	22	%
% OF COWS KILLED BY HUNTERS	16	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	56	188	56	300	300	0	0
YEAR 1	"	68	190	126	383	1000	15	30
YEAR 2	"	92	196	107	395	1000	15	30
YEAR 3	"	105	192	111	408	1000	15	30
YEAR 4	"	116	191	109	416	1000	15	30
YEAR 5	"	124	189	108	422	1000	15	30
YEAR 6	"	131	187	107	425	1000	15	30
YEAR 7	"	135	185	105	426	1000	15	30
YEAR 8	"	138	182	104	424	1000	15	30
YEAR 9	"	140	179	102	422	1000	15	30
YEAR 10	"	141	176	100	417	1000	15	30

		BULL RATIO	CALF RATIO
START		30	30
POST HUNT YR	1	33	79
POST HUNT YR	2	47	65
POST HUNT YR	3	55	68
POST HUNT YR	4	63	67
POST HUNT YR	5	69	68
POST HUNT YR	6	74	68
POST HUNT YR	7	78	68
POST HUNT YR	8	81	68
POST HUNT YR	9	84	68
POST HUNT YR	10	87	69

CAMP ROBERTS ELK HERD - SIMULATION RUNS, GENERAL, SHARE, AND MILITARY 2016
Ratio = 30/100/30 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

INCREASED HARVEST: BULL, COW, EITHER SEX TAGS; MILITARY AND GENERAL
HARVEST UP TO 22 BULL & 45 ANTLERLESS
Various combination of tags to achieved harvest,
Approximate success rate of 70% bull and 60% antlerless

HERD SIZE	300	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	32	%
% OF COWS KILLED BY HUNTERS	23.5	%

		BULLS	COWS	SURV. CALVES	TOTAL	K	BULLS HARVEST	COWS HARVEST
START	AUG	56	188	56	300	300	0	0
YEAR 1	"	68	190	126	383	1000	22	45
YEAR 2	"	87	183	97	367	1000	22	45
YEAR 3	"	91	165	93	349	1000	22	45
YEAR 4	"	93	146	80	320	1000	22	45
YEAR 5	"	89	125	68	282	1000	22	45
YEAR 6	"	81	101	54	236	1000	22	45
YEAR 7	"	69	73	38	180	1000	22	45
YEAR 8	"	53	42	19	114	1000	22	45
YEAR 9	"	33	6	-2	37	1000	22	45
YEAR 10	"	8	-35	-26	-53	1000	22	45

		BULL RATIO	CALF RATIO
START		30	30
POST HUNT YR	1	32	87
POST HUNT YR	2	47	70
POST HUNT YR	3	58	77
POST HUNT YR	4	70	79
POST HUNT YR	5	84	85
POST HUNT YR	6	106	96
POST HUNT YR	7	167	132
POST HUNT YR	8	-1087	-658
POST HUNT YR	9	-29	5
POST HUNT YR	10	17	33

CAMP ROBERTS ELK HERD - SIMULATION RUNS, GENERAL, SHARE, AND MILITARY 2016
Ratio = 30/100/30 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

HERD GROWTH: BULL, COW, EITHER SEX TAGS; MILITARY AND GENERAL
HARVEST UP TO 28 BULL & 47 ANTLERLESS
Various combination of tags to achieved harvest,
Approximate success rate of 70% bull and 60% antlerless

HERD SIZE	500	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	25	%
% OF COWS KILLED BY HUNTERS	15	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	94	313	94	500	500	|	0	0
YEAR 1	"	113	316	209	638	1000	|	28	47
YEAR 2	"	151	329	180	660	1000	|	28	47
YEAR 3	"	171	327	188	686	1000	|	28	47
YEAR 4	"	189	329	187	705	1000	|	28	47
YEAR 5	"	204	330	188	722	1000	|	28	47
YEAR 6	"	216	331	189	737	1000	|	28	47
YEAR 7	"	226	333	190	749	1000	|	28	47
YEAR 8	"	234	335	191	761	1000	|	28	47
YEAR 9	"	242	337	193	772	1000	|	28	47
YEAR 10	"	248	340	194	782	1000	|	28	47

		BULL RATIO	CALF RATIO
START		30	30
POST HUNT YR	1	31	78
POST HUNT YR	2	44	64
POST HUNT YR	3	51	67
POST HUNT YR	4	57	67
POST HUNT YR	5	62	67
POST HUNT YR	6	66	67
POST HUNT YR	7	69	67
POST HUNT YR	8	72	67
POST HUNT YR	9	74	66
POST HUNT YR	10	75	66

CAMP ROBERTS ELK HERD - SIMULATION RUNS, GENERAL, SHARE, AND MILITARY 2016
Ratio = 30/100/30 - Maximum Calf Survival = 67%
THIS PROGRAM CALCULATES CHANGES IN
HERD
CHARACTERISTICS BASED ON VARIOUS HARVEST RATES.

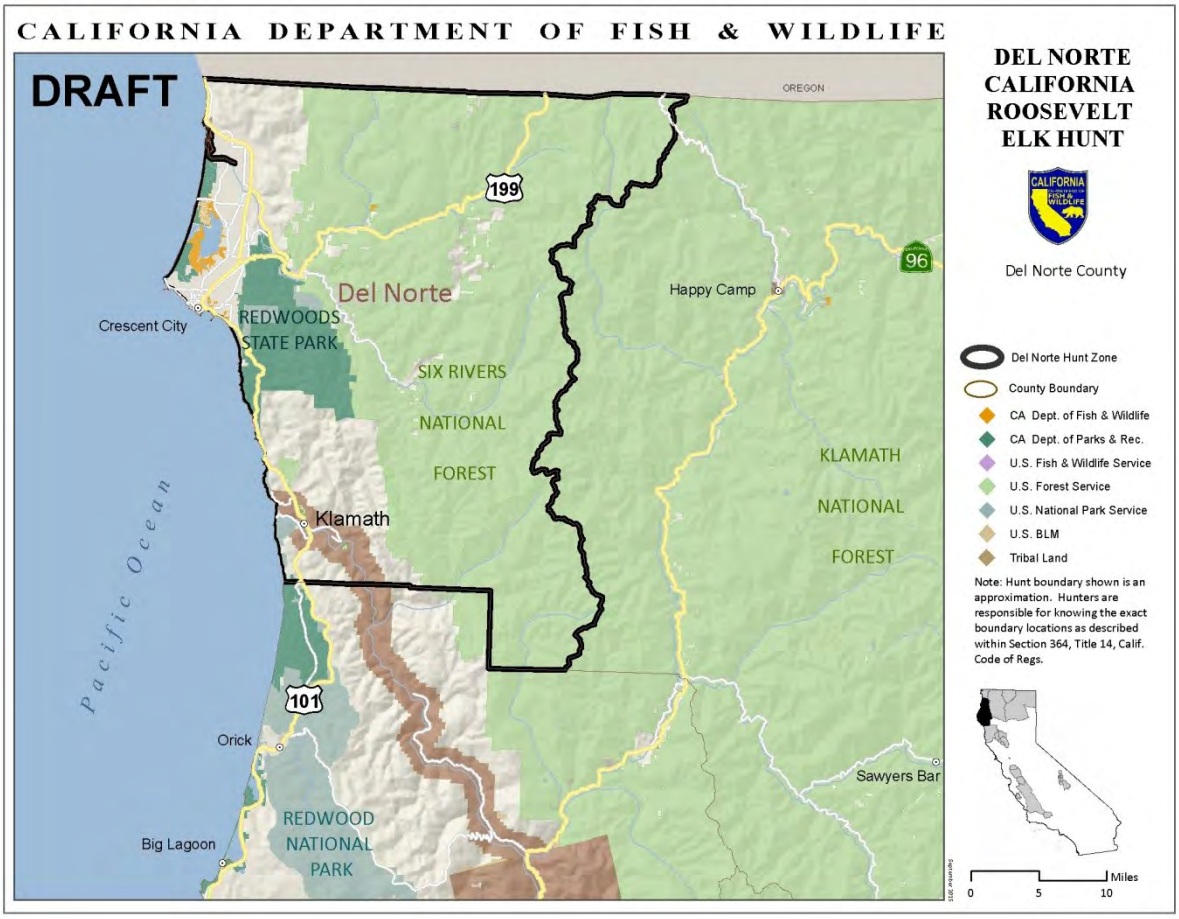
REDUCED HARVEST: BULL, COW, EITHER SEX TAGS; MILITARY AND GENERAL
HARVEST UP TO 7 BULL & 15 ANTLERLESS
Various combination of tags to achieved harvest
Approximate success rate of 70% bull and 60% antlerless

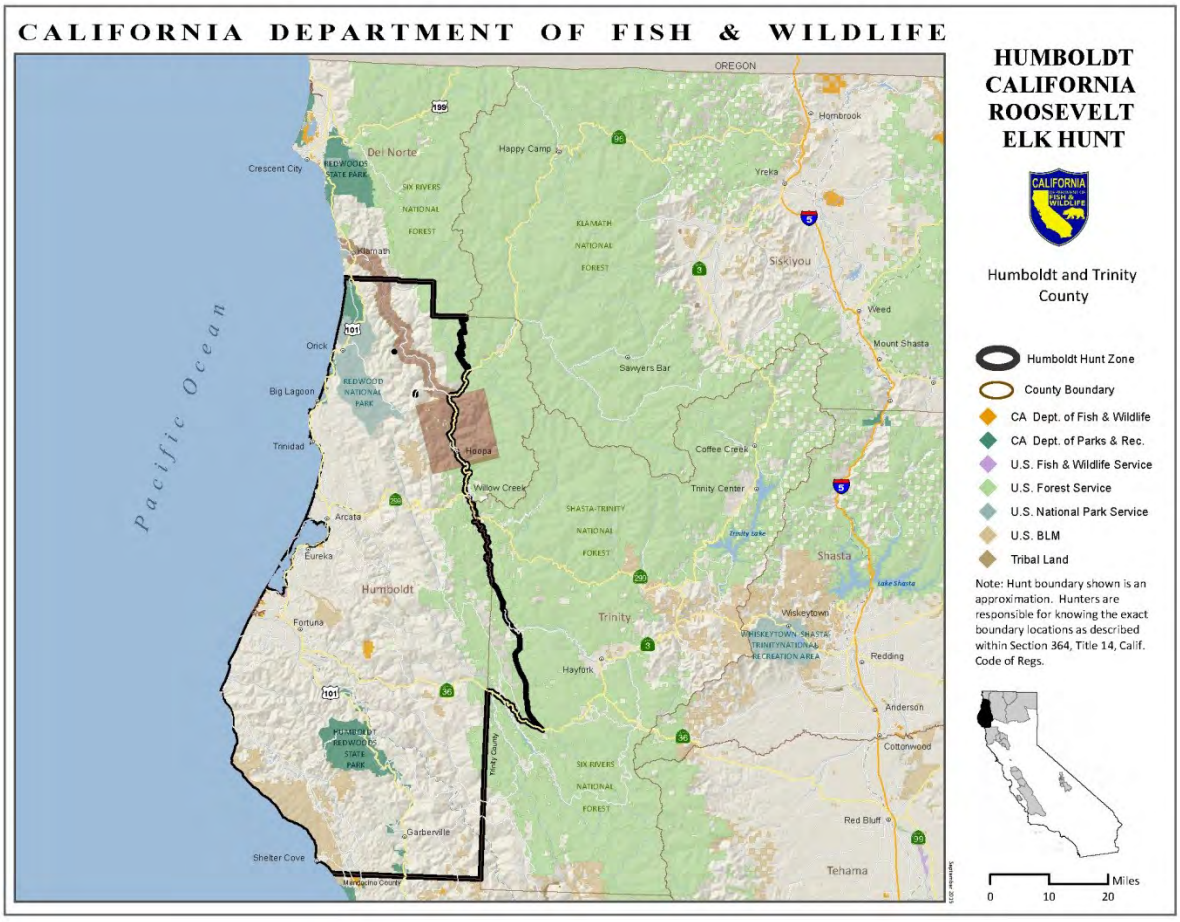
HERD SIZE	300	ELK
% BULLS LOST TO NON HUNTING CAUSES	20	%
% COWS LOST TO NON HUNTING CAUSES	12	%
% OF BULLS KILLED BY HUNTERS	11	%
% OF COWS KILLED BY HUNTERS	8	%

		BULLS	COWS	SURV. CALVES	TOTAL	K		BULLS HARVEST	COWS HARVEST
START	AUG	56	188	56	300	300	|	0	0
YEAR 1	"	68	190	126	383	1000	|	7	15
YEAR 2	"	98	209	117	424	1000	|	7	15
YEAR 3	"	119	222	130	471	1000	|	7	15
YEAR 4	"	142	239	139	519	1000	|	7	15
YEAR 5	"	163	258	150	571	1000	|	7	15
YEAR 6	"	184	280	163	627	1000	|	7	15
YEAR 7	"	207	304	177	688	1000	|	7	15
YEAR 8	"	230	332	194	756	1000	|	7	15
YEAR 9	"	256	364	213	833	1000	|	7	15
YEAR 10	"	284	401	234	918	1000	|	7	15

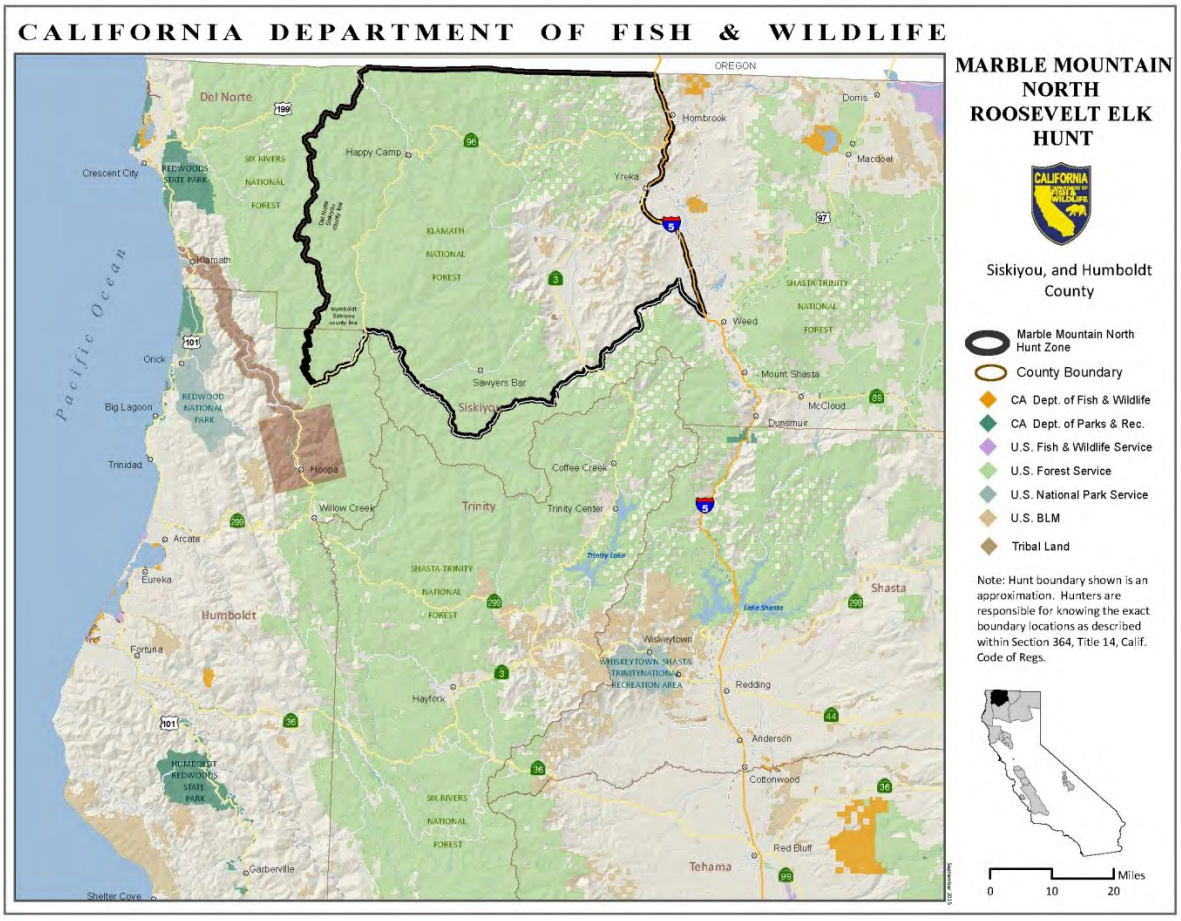
		BULL RATIO	CALF RATIO
START		30	30
POST HUNT YR	1	34	72
POST HUNT YR	2	47	60
POST HUNT YR	3	54	63
POST HUNT YR	4	60	62
POST HUNT YR	5	64	62
POST HUNT YR	6	67	62
POST HUNT YR	7	69	61
POST HUNT YR	8	70	61
POST HUNT YR	9	71	61
POST HUNT YR	10	72	61

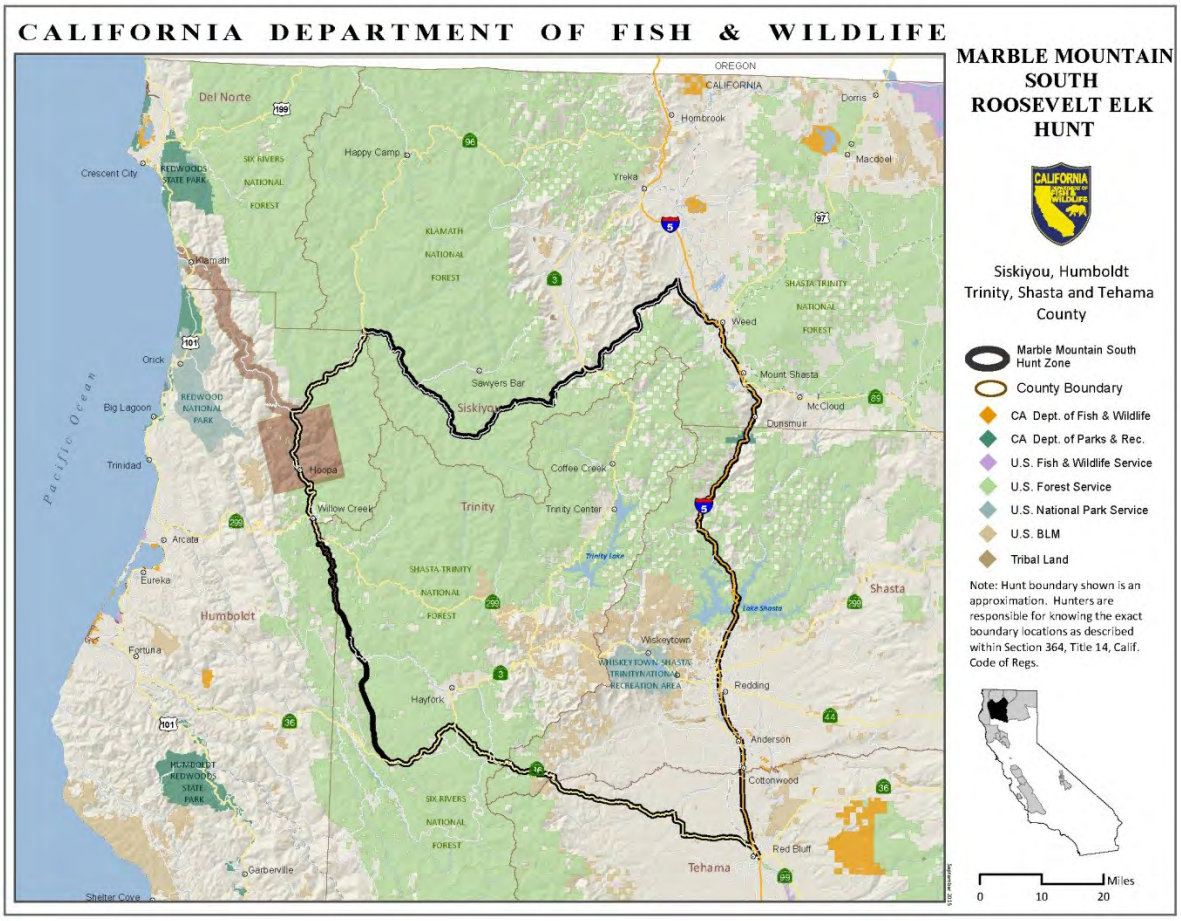
Appendix 5. Hunt Boundary Maps for Del Norte and Humboldt Roosevelt Elk Zones



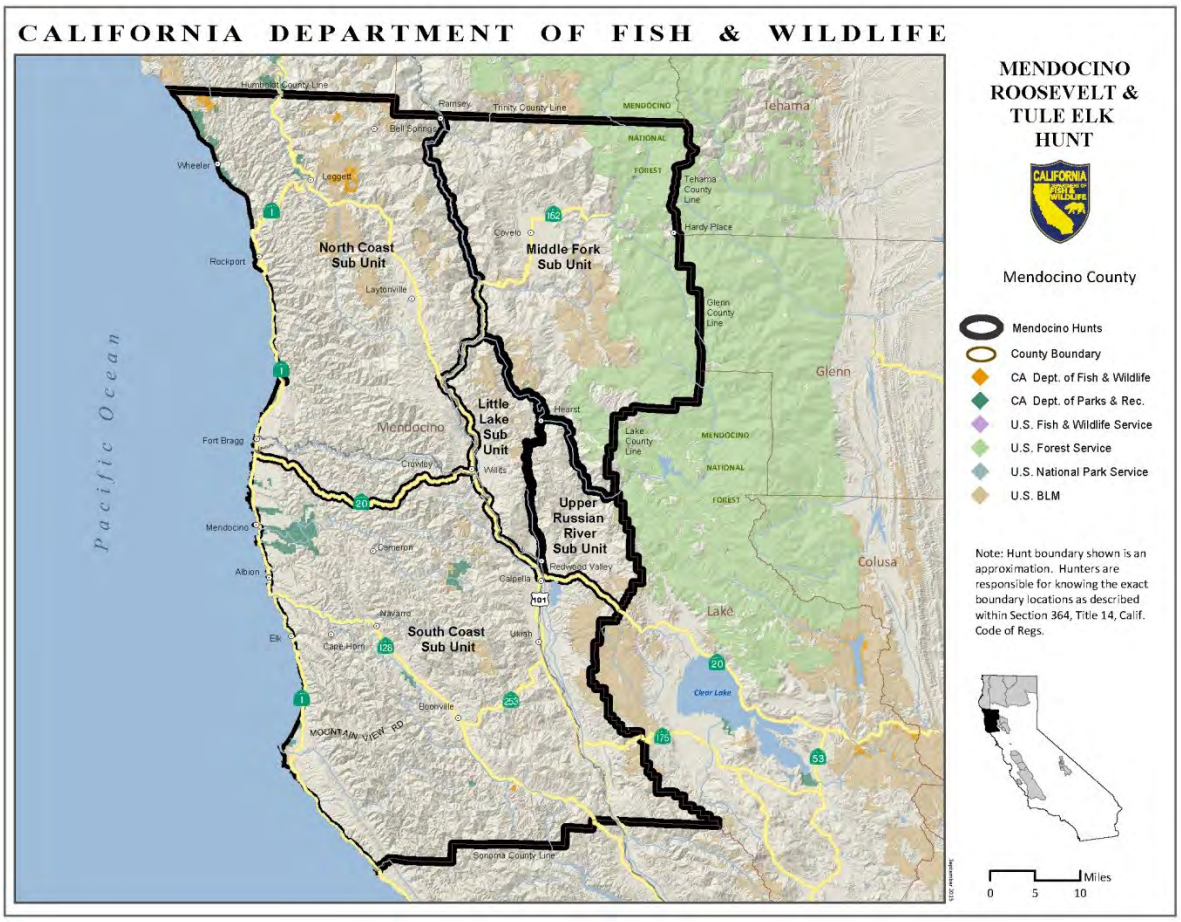

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE
OREGON
Pacific Ocean
Del Norte
Crescent City
Happy Camp
Hornbrook
Yreka
Siskiyou
Weed
Mount Shasta
Sawyers Bar
Orick
Big Lagoon
Trinidad
Hoopa
Willow Creek
Coffee Creek
Trinity Center
Arcata
Eureka
Humboldt
Fortuna
Trinity
Hayfork
Shasta
Lake Shasta
Trinity Lake
Wiskeytown
Redding
Anderson
Cottonwood
Red Bluff
Tehama
Garberville
Shelter Cove
Trinity County
Mendocino County
HUMBOLDT CALIFORNIA ROOSEVELT ELK HUNT
Humboldt and Trinity County
Humboldt Hunt Zone
County Boundary
CA Dept. of Fish & Wildlife
CA Dept. of Parks & Rec.
U.S. Fish & Wildlife Service
U.S. Forest Service
U.S. National Park Service
U.S. BLM
Tribal Land
Note: Hunt boundary shown is an approximation. Hunters are responsible for knowing the exact boundary locations as described within Section 364, Title 14, Calif. Code of Regs.
Miles
0
10
20

Appendix 6. New Hunt Boundary Maps for Marble Mountain North and South

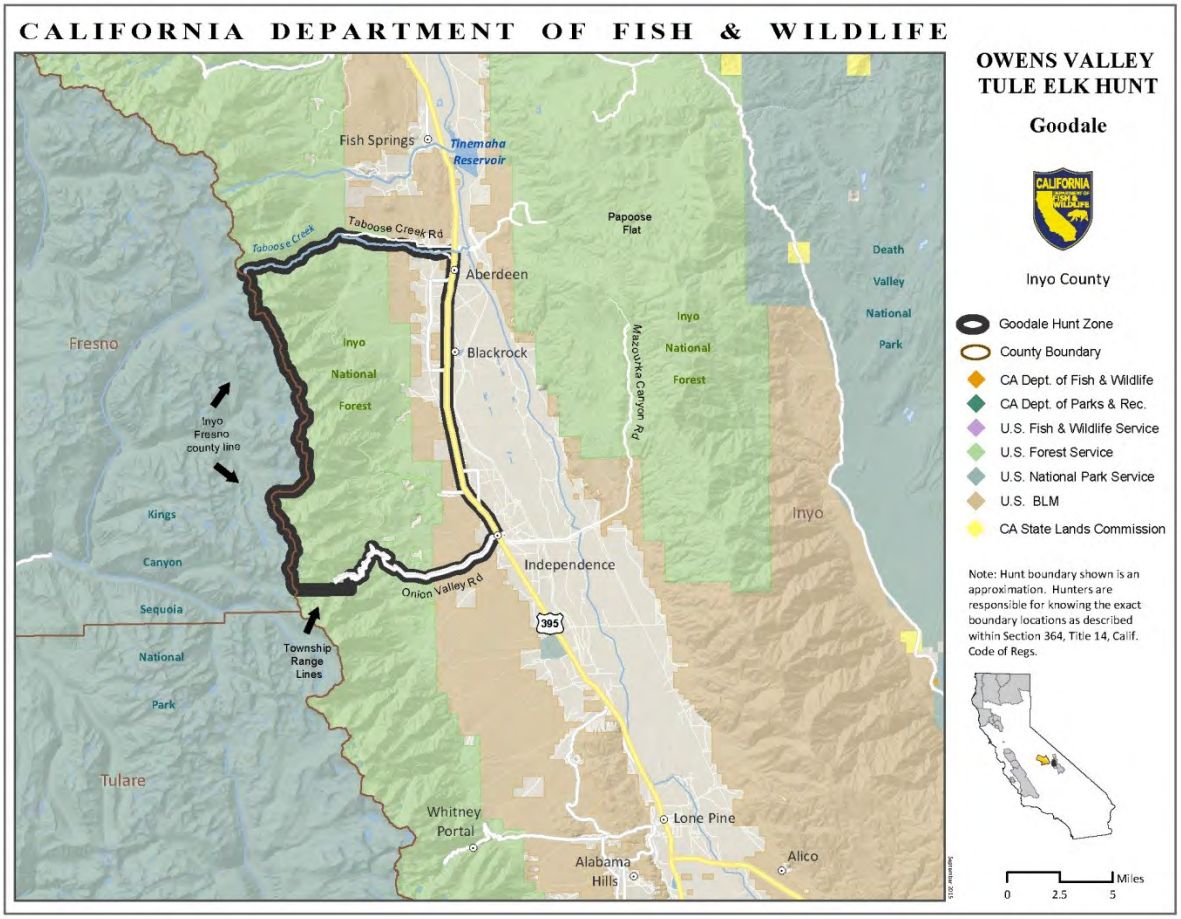


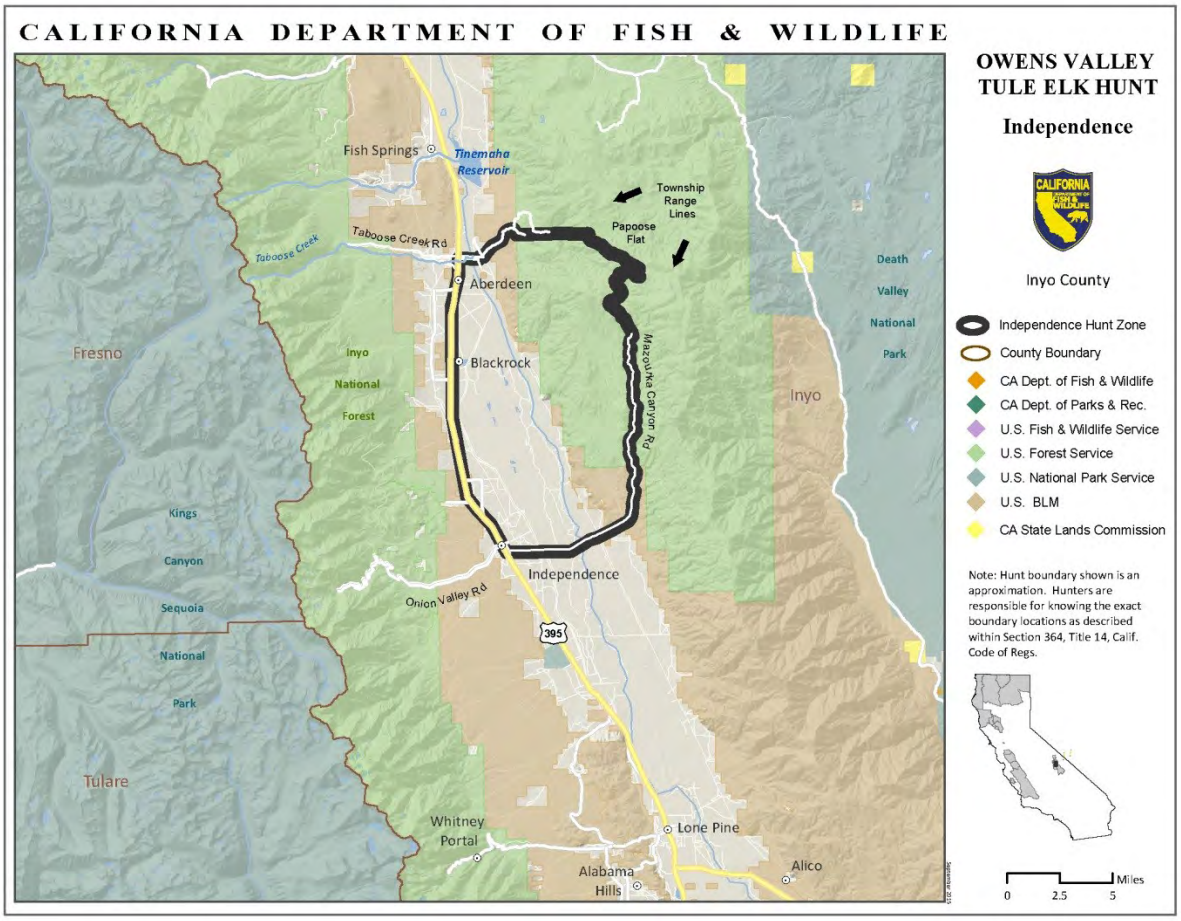

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE
MARBLE MOUNTAIN SOUTH ROOSEVELT ELK HUNT
Siskiyou, Humboldt Trinity, Shasta and Tehama County
Marble Mountain South Hunt Zone
County Boundary
CA Dept. of Fish & Wildlife
CA Dept. of Parks & Rec.
U.S. Fish & Wildlife Service
U.S. Forest Service
U.S. National Park Service
U.S. BLM
Tribal Land
Note: Hunt boundary shown is an approximation. Hunters are responsible for knowing the exact boundary locations as described within Section 364, Title 14, Calif. Code of Regs.
Miles
0
10
20
OREGON
CALIFORNIA
Del Norte
Humboldt
Trinity
Siskiyou
Shasta
Tehama
Pacific Ocean
Crescent City
Orick
Trinidad
Eureka
Arcata
Fortuna
Hoopa
Willow Creek
Happy Camp
Yreka
Hornbrook
Dorris
Macdoel
Weed
Mount Shasta
McCloud
Dunsmuir
Sawyers Bar
Coffee Creek
Trinity Center
Trinity Lake
Lake Shasta
Hayfork
Weaverville
Redding
Anderson
Cottonwood
Red Bluff
Garberville
Shelter Cove
Big Lagoon
Klamath
Orleans
Wiskeytown
REDWOODS STATE PARK
REDWOOD NATIONAL PARK
HUMBOLDT REDWOODS STATE PARK
SIX RIVERS NATIONAL FOREST
KLAMATH NATIONAL FOREST
SHASTA-TRINITY NATIONAL FOREST
WHISKEYTOWN-SHASTA-TRINITY NATIONAL RECREATION AREA

Appendix 7. New Hunt Boundary Maps for Mendocino (Mendocino North Coast, Mendocino Middle Fork, Mendocino Upper Russian River, Mendocino Little Lake, and Mendocino South Coast elk hunts)

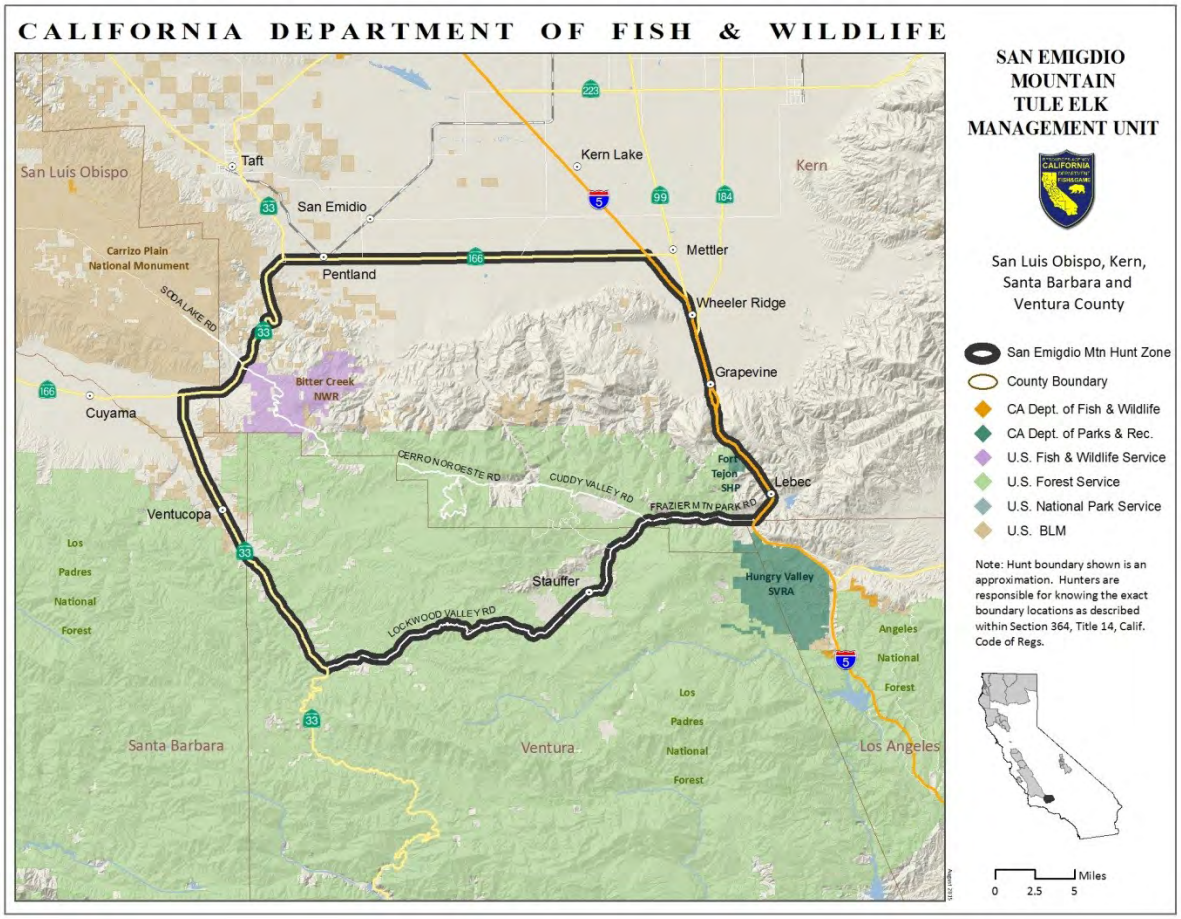


Appendix 8. New Hunt Boundary Maps for Independence and Goodale

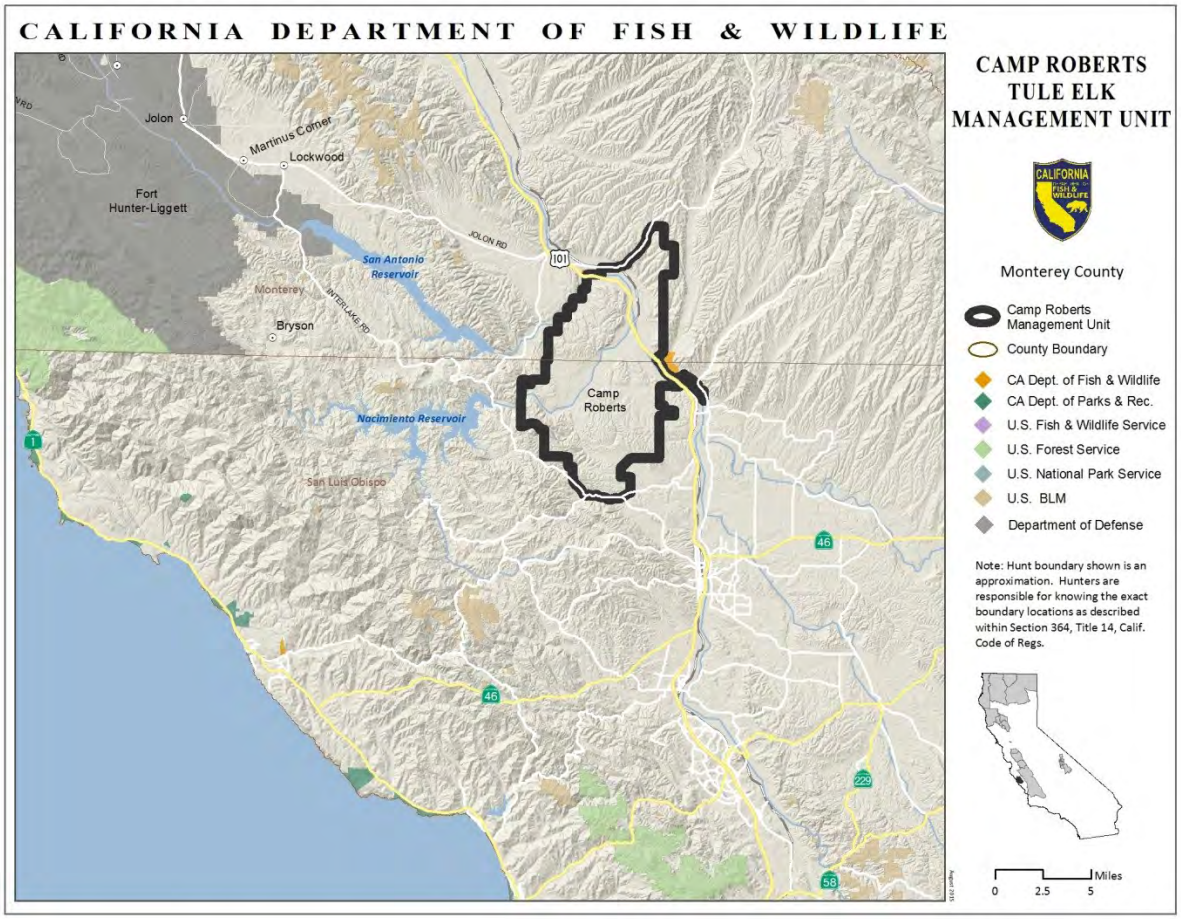



CALIFORNIA DEPARTMENT OF FISH & WILDLIFE
OWENS VALLEY
TULE ELK HUNT
Independence
Inyo County
Independence Hunt Zone
County Boundary
CA Dept. of Fish & Wildlife
CA Dept. of Parks & Rec.
U.S. Fish & Wildlife Service
U.S. Forest Service
U.S. National Park Service
U.S. BLM
CA State Lands Commission
Note: Hunt boundary shown is an approximation. Hunters are responsible for knowing the exact boundary locations as described within Section 364, Title 14, Calif. Code of Regs.
Miles
0
2.5
5
Fish Springs
Tinemaha Reservoir
Township Range Lines
Papoose Flat
Taboose Creek Rd
Taboose Creek
Aberdeen
Blackrock
Mazourka Canyon Rd
Death Valley National Park
Fresno
Inyo National Forest
Inyo
Kings Canyon
Sequoia National Park
Tulare
Independence
Onion Valley Rd
395
Whitney Portal
Lone Pine
Alabama Hills
Alico

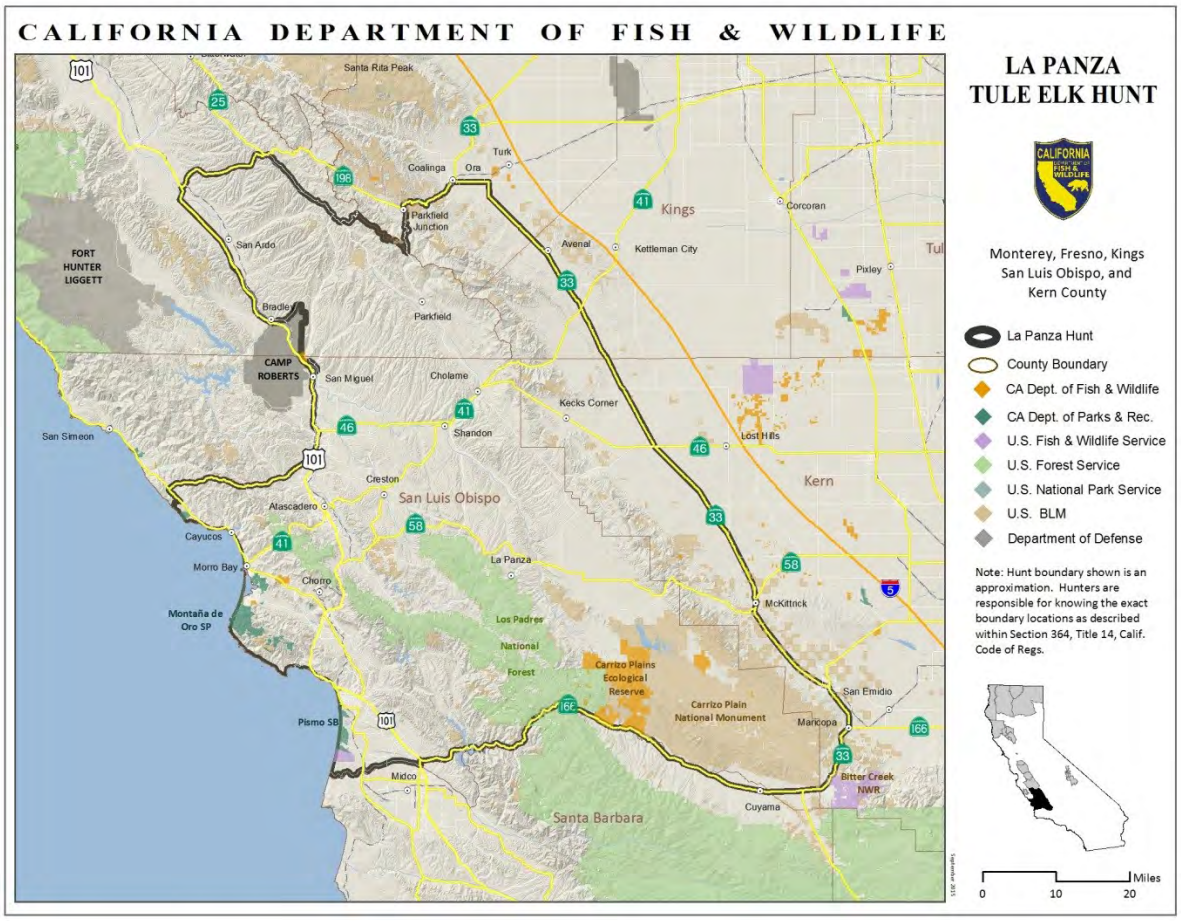
Appendix 9. Hunt Boundary Map for San Emigdio Mountain



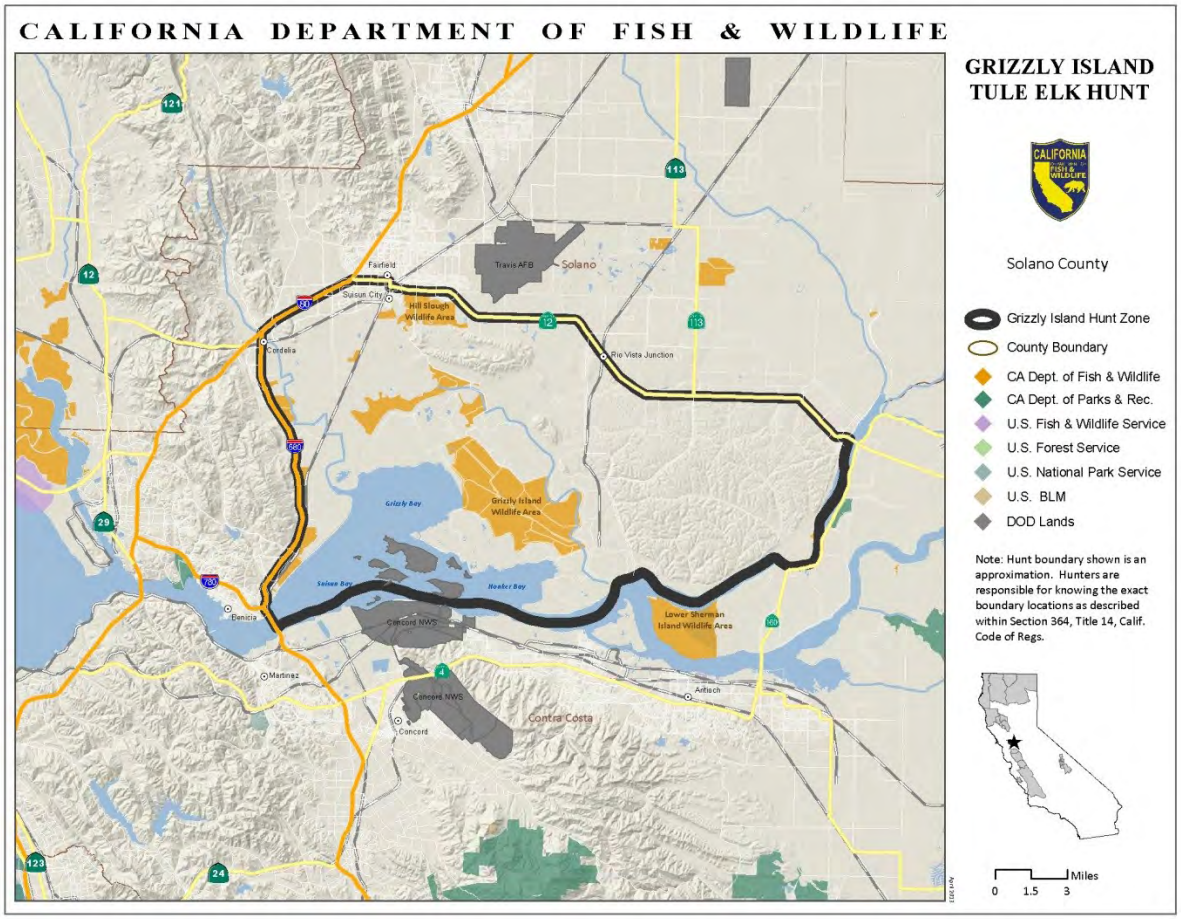
Appendix 10. Hunt Boundary Map for Camp Roberts



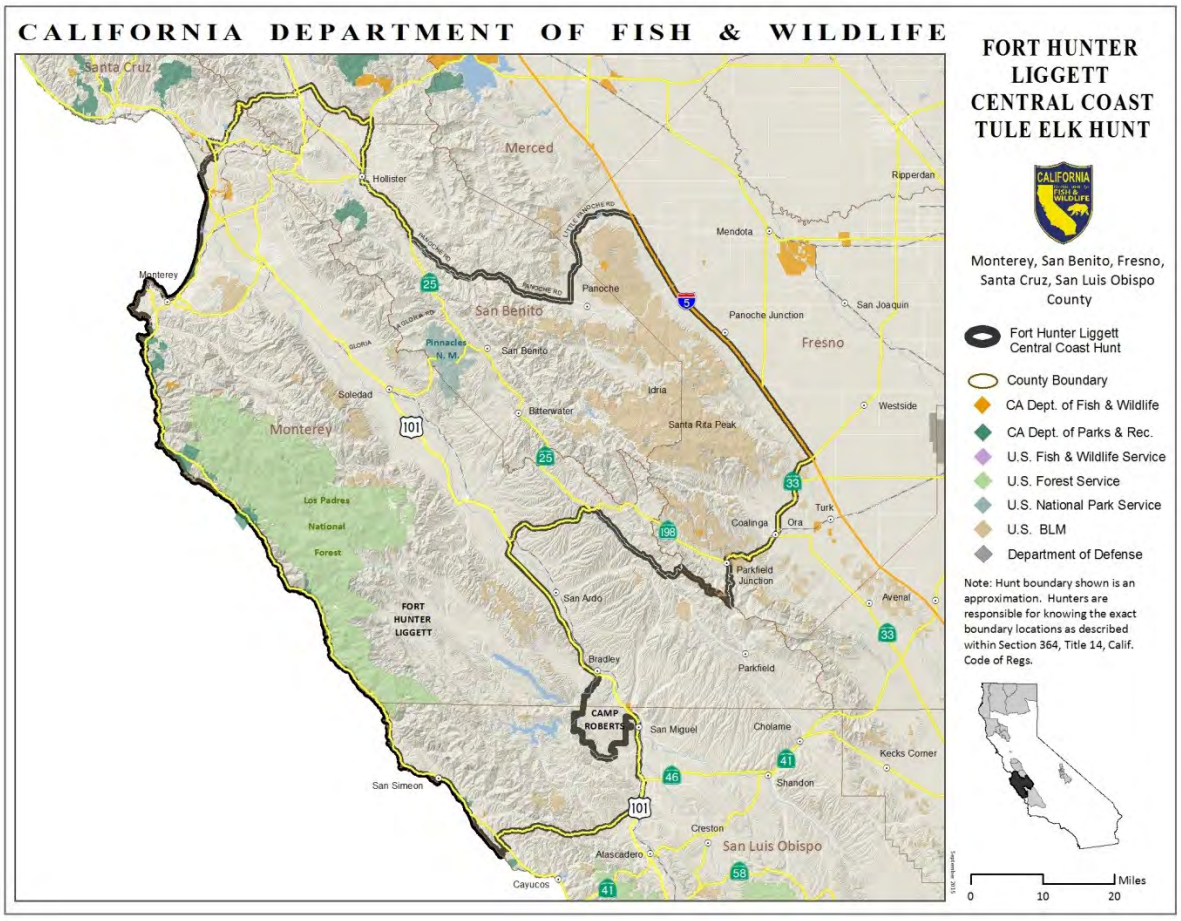
Appendix 11. New Hunt Boundary Map for La Panza



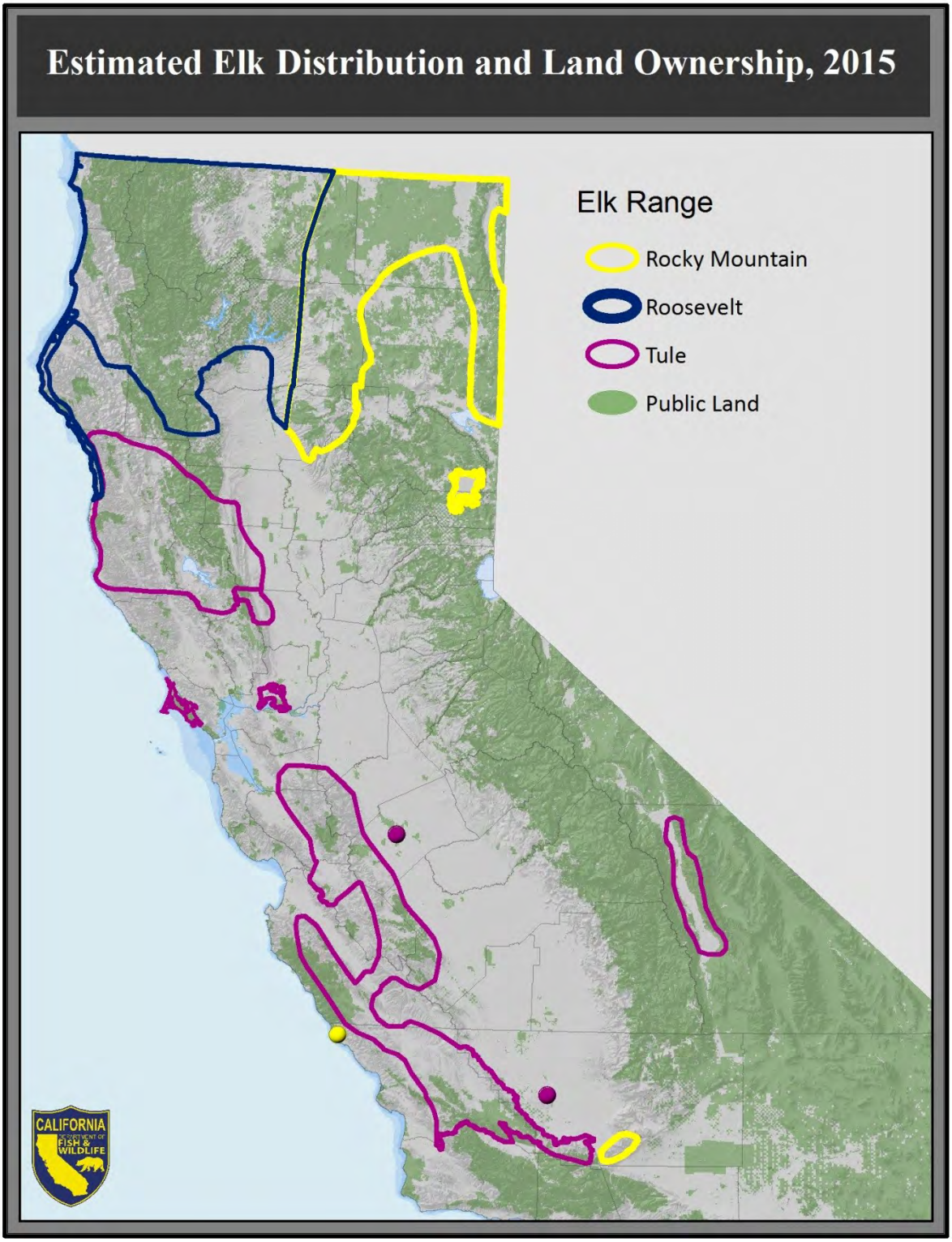
Appendix 12. New Hunt Boundary Map for Grizzly Island



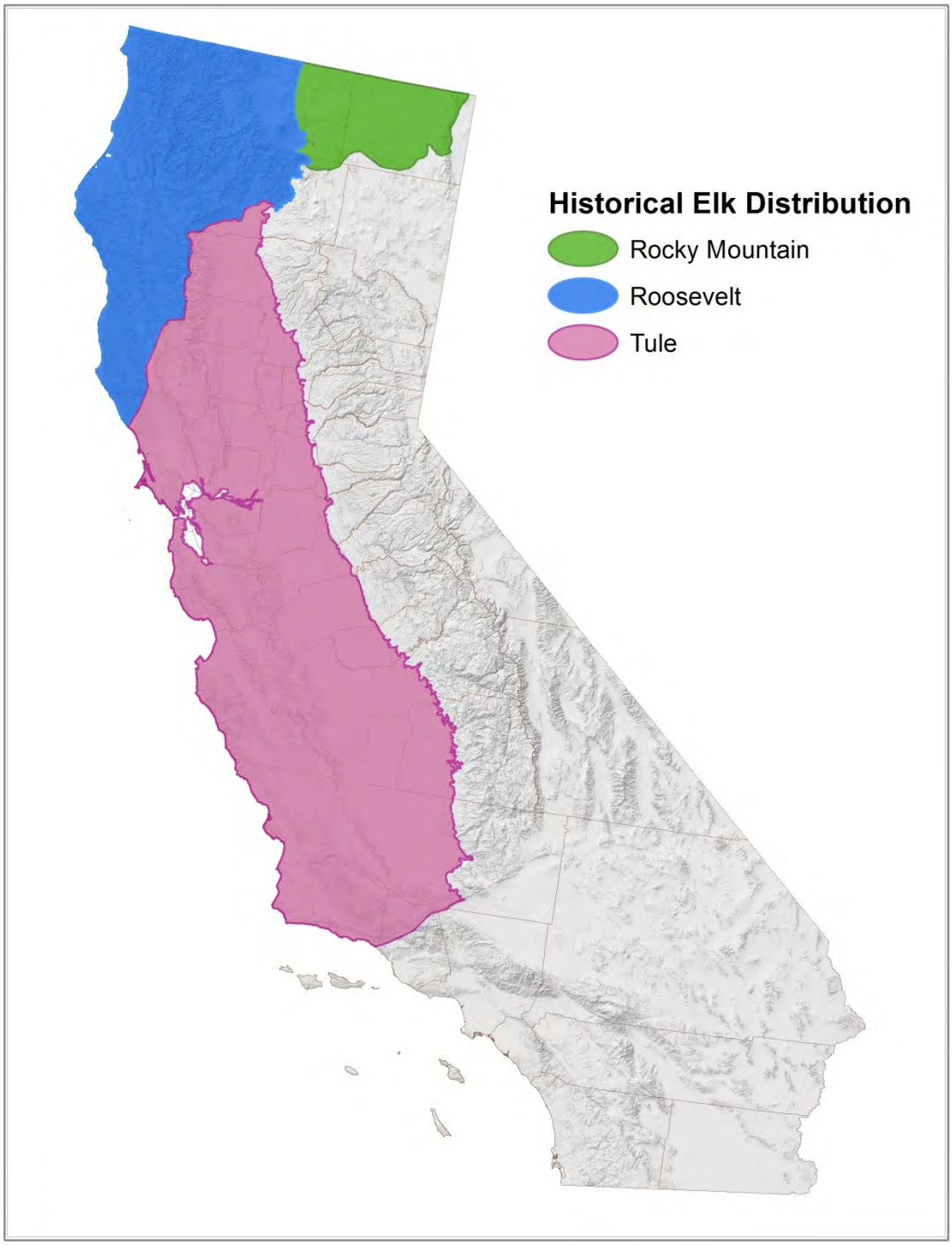
Appendix 13. New Hunt Boundary Map for Fort Hunter Liggett Central Coast



Appendix 14. Estimated Elk Distribution and Land Ownership, 2015



Appendix 15. Historic Elk Distribution within California



Appendix 16. Tule Elk Relocation Criteria

1. Free-roaming - Herds will be free-roaming and managed as part of the ecosystem.
2. Historical Range - Translocations are limited to historic range.
3. Habitat Quality - The site must contain suitable conditions for providing year-long elk habitat. This includes natural vegetation capable of providing forage and cover, adequate perennial water and relatively moderate climatic conditions receiving only moderate snow.
4. Hybridization with Other Elk - The site should provide no chance of contact with other subspecies of elk.
5. Potential for Public Use - Preference shall be given to sites which increase opportunities for public use of tule elk, including hunting. Preferred sites will be on or adjacent to accessible public lands.
6. Conflicts with Humans - Tule elk will not be translocated to areas with a potential for significant conflicts with humans (agriculture, highways, and subdivisions); the rights of private landowners must be respected. A site should have low potential for elk damage to private property. This includes livestock competition and damage to agricultural and silvicultural crops as well as other property such as fences and irrigation systems. Adjacent landowners should understand and support the proposed relocation of tule elk. Private landownership is dynamic, and acceptable conditions may become depredation problems with a change in land use or the sale of neighboring parcel. Written agreements with neighboring landowners are recommended.
7. Population Management - Practical means of regulating population size should be available for translocated tule elk herds.
8. Competition with Other Wildlife - The status of other native ungulates and threatened and endangered species in the area of a proposed tule elk translocation should be considered as well as the potential for adverse impacts from competition.
9. Disease - Elk should not be relocated from or to areas with a chronic disease history where disease may affect elk or other ungulates.
10. Existing Populations - Tule elk will not be relocated to sites with or immediately adjacent to existing populations, unless additional elk are needed to improve the status of a population.

Appendix 17. Existing Regulations
§364. Elk
(a) Department Administered General Methods Roosevelt Elk Hunts:
(1) Siskiyou Roosevelt Elk Hunt:
(A) Area: In that portion of Siskiyou County beginning at the junction of Interstate Highway 5 with the California-Oregon state line; east along the state line to Hill Road at Ainsworth Corner; south along Hill Road to Lava Beds National Monument Road; south along Lava Beds National Monument Road to USDA Forest Service Road 49; south along USDA Forest Service Road 49 to USDA Forest Service Road 77; west along USDA Forest Service Road 77 to USDA Forest Service Road 15 (Harris Spring Road); south along USDA Forest Service Road 15 to USDA Forest Service Road 13 (Pilgrim Creek Road); southwest along USDA Forest Service Road 13 to Highway 89; northwest along Highway 89 to Interstate Highway 5; north along Interstate Highway 5 to the point of beginning.
(B) Season: The season shall open on the Wednesday preceding the second Saturday in September and continue for 12 consecutive days.
(C) Number of License Tags: 20 bull tags and 20 antlerless tags.
(2) Big Lagoon Roosevelt Elk Hunt:
(A) Area: In that portion of Humboldt County owned or leased by the California Redwood Company and the Green Diamond Resource Company within a line beginning at the intersection of Highway 101 and Hiltons Road; south on Hiltons Road to the western boundary of Redwood National Park; south and east along the western to its southern tip; north and east along the eastern boundary of Redwood National Park to Redwood Creek; south along Redwood Creek to Highway 299; east along Highway 299 to Forest Service Road 1; south along Forest Service Road 1 to Roddiscraft Road; west along Roddiscraft Road to the intersection of Snow Camp Road and the power line road within the right-of-way of Humboldt-Trinity 115 Line and Trinity-Maple Creek 60 Line power line; west along the power line road within the right-of-way of the Humboldt-Trinity 115 Line and Trinity-Maple Creek 60 Line to Maple Creek Road; south along Maple Creek Road to Butler Valley Road; west along Butler Valley Road to Fickle Hill Road; north along Fickle Hill Road to Bayside Road; west along Bayside Road and 7th Street to Highway 101; north along Highway 101 to point of beginning.
(B) Season: The season shall open the last Wednesday in August and continue for 10 consecutive days.
(C) Number of License Tags: 0 bull tags and 0 antlerless tags.
(D) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
(3) Northwestern California Roosevelt Elk Hunt:
(A) Area: In those portions of Humboldt and Del Norte counties within a line beginning at the intersection of Highway 299 and Highway 96, north along Highway 96 to the Del Norte-Siskiyou county line, north along the Del Norte-Siskiyou county line to the California-Oregon state line, west along the state line to the Pacific Coastline, south along the Pacific coastline to the Humboldt-Mendocino county line, east along the Humboldt-Mendocino county line to the Humboldt-Trinity county line, north along the

Humboldt-Trinity county line to Highway 299, west along Highway 299 to the point of beginning, excluding those areas owned or leased by the California Redwood Company and the Green Diamond Resource Company within existing elk hunt boundaries as described in subsections 364(a)(2)(A), (a)(4)(A), and (a)(5)(A).
(B) Season: The season shall open on the first Wednesday in September and continue for 23 consecutive days.
(C) Number of License Tags: 0 bull tags, 0 antlerless tags, and 45 either-sex tags.
(4) Klamath Roosevelt Elk Hunt:
(A) Area: Those portions of Humboldt and Del Norte counties owned or leased by the Green Diamond Resource Company within a line beginning at the intersection of Highway 101 and the Klamath River; south on Highway 101 to South Klamath Beach Road; west on South Klamath Beach Road to the Redwood National Park boundary; southwest and south along the Redwood National Park boundary to Highway 101; south on Highway 101 to the Redwood National Park boundary; southeast along the Redwood National Park boundary to the Bald Hills Road; southeast along the Bald Hills Road to the Klamath River; northwest along the Klamath River to the point of beginning.
(B) Season: The season shall open on the first Wednesday in September and continue for 10 consecutive days.
(C) Number of License Tags: 0 bull tags and 0 antlerless tags.
(D) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
(5) Del Norte Roosevelt Elk Hunt:
(A) Area: Those portions of Del Norte County owned or leased by the Green Diamond Resource Company within a line beginning at the intersection of Highway 101 and the California-Oregon state line; south along Highway 101 to North Bank Road; southeast along North Bank Road to High Divide Road; northeast along High Divide Road to North Fork Smith River/Wimer Road; north along North Fork Smith River/Wimer Road to the California Oregon state line; west along the California-Oregon state line to the point of beginning.
(B) Season: The season shall open on the last Wednesday in August and continue for 10 consecutive days.
(C) Number of License Tags: 0 bull tags and 0 antlerless tags.
(D) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting upon receipt of their elk license tags.
(6) Marble Mountains Roosevelt Elk Hunt
(A) Area: In those portions of Humboldt, Tehama, Trinity, Shasta and Siskiyou counties beginning at the intersection of Interstate Highway 5 and the California-Oregon state line; west along the state line to the Del Norte County line; south along the Del Norte County line to the intersection of the Siskiyou-Humboldt county lines; east along the Siskiyou-Humboldt county lines to Highway 96; south along Highway 96 to Highway 299; south along Highway 299 to the Intersection of the Humboldt/Trinity County line; south along the Humboldt Trinity County Line to the intersection of Highway 36; east along Highway 36 to the intersection of Interstate 5;north on Interstate Highway 5 to the point of beginning.

(B) Season: The season shall open on the Wednesday preceding the second Saturday in September and continue for 12 consecutive days.
(C) Number of License Tags: General Season: 35 bull tags and 10 antlerless tags.
(b) Department Administered General Methods Rocky Mountain Elk Hunts:
(1) Northeastern California Rocky Mountain Elk Hunt:
(A) Area: Those portions of Siskiyou, Modoc, Lassen, and Shasta counties within a line beginning in Siskiyou County at the junction of the California-Oregon state line and Hill Road at Ainsworth Corner; east along the California-Oregon state line to the California-Nevada state line; south along the California-Nevada state line to the Tuledad-Red Rock-Clarks Valley Road (Lassen County Roads 506, 512 and 510); west along the Tuledad-Red Rock-Clarks Valley Road to Highway 395 at Madeline; west on USDA Forest Service Road 39N08 to the intersection of Highway 139/299 in Adin; south on Highway 139 to the intersection of Highway 36 in Susanville; west on Highway 36 to the intersection of Interstate 5 in Red Bluff; north on Interstate 5 to Highway 89; southeast along Highway 89 to USDA Forest Service Road 13 (Pilgrim Creek Road); northeast along USDA Forest Service Road 13 to USDA Forest Service Road 15 (Harris Spring Road); north along USDA Forest Service Road to USDA Forest Service Road 77; east along USDA Forest Service Road 77 to USDA Forest Service Road 49; north along USDA Forest Service Road 49 to Lava Beds National Monument Road; north along Lava Beds National Monument Road to Hill Road; north along Hill Road to the point of beginning.
(B) Season: The season shall open on the Wednesday preceding the third Saturday in September and continue for 12 consecutive days.
(C) Number of License Tags: 15 bull tags and 10 antlerless tags.
(c) Department Administered General Methods Roosevelt/Tule Elk Hunts:
(1) Mendocino Elk Hunt:
(A) Area: Those portions in Mendocino County within a line beginning at the Pacific Coastline and the Mendocino/Humboldt County line south of Shelter Cove; east along the Mendocino/Humboldt County line to the intersection of the Humboldt, Mendocino, and Trinity County lines; south and east along the Mendocino/Trinity County line to the intersection of the Mendocino, Trinity, and Tehama County lines; south along the Mendocino County line to the intersection of Highway 20; north and west along Highway 20 to the intersection of Highway 101 near Calpella; south along Highway 101 to the intersection of Highway 253; southwest along Highway 253 to the intersection of Highway 128; north along Highway 128 to the intersection of Mountain View Road near the town of Boonville; west along Mountain View Road to the intersection of Highway 1; south along Highway 1 to the intersection of the Garcia River; west along the Garcia River to the Pacific Coastline; north along the Pacific Coastline to the point of beginning.
(B) Season: The season shall open on the Wednesday preceding the fourth Saturday in September and continue for 12 consecutive days.
(C) Number of License Tags: 2 bull tags and 2 antlerless tags.
(d) Department Administered General Methods Tule Elk Hunts:
(1) Cache Creek Tule Elk Hunt:
(A) Area: Those portions of Lake, Colusa and Yolo counties within the following line: beginning at the junction of Highway 20 and Highway 16; south on Highway 16 to Reiff-Rayhouse Road; west on Reiff-Rayhouse Road to Morgan Valley Road; west on

Morgan Valley Road to Highway 53; north on Highway 53 to Highway 20; east on Highway 20 to the fork of Cache Creek; north on the north fork of Cache Creek to Indian Valley Reservoir; east on the south shore of Indian Valley Reservoir to Walker Ridge-Indian Valley Reservoir Access Road; east on Walker Ridge-Indian Valley Reservoir Access Road to Walker Ridge Road; south on Walker Ridge Road to Highway 20; east on Highway 20 to the point of beginning.
(B) Season:
1. The Bull season shall open on the second Saturday in October and continue for 16 consecutive days.
2. The Antlerless season shall open on the third Saturday in October and continue for 16 consecutive days.
(C) Number of License Tags: 3 bull tags and 3 antlerless tags.
(D) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
(2) La Panza Tule Elk Hunt:
(A) Area: In those portions of San Luis Obispo, Kern, Monterey, Kings, Fresno, San Benito, and Santa Barbara counties within a line beginning in San Benito County at the junction of Highway 25 and County Highway J1 near the town Pacines, south along Highway 25 to La Gloria road, west along La Gloria road, La Gloria road becomes Gloria road, west along Gloria road to Highway 101 near Gonzales, south along Highway 101 to Highway 166 in San Luis Obispo County; east along Highway 166 to Highway 33 at Maricopa in Kern County; north and west along Highway 33 to Highway 198 at Coalinga in Fresno County, north along Highway 33 to Interstate 5 in Fresno County, north along Interstate 5 to Little Panoche road/County Highway J1, southwest along Little Panoche road/County Highway J1 to the intersection of Little Panoche road/County Highway J1 and Panoche road/County Highway J1 in San Benito County, northwest along Panoche road/County Highway J1 to the point of beginning.
(B) Season:
1. Period One: The season shall open on the second Saturday in October and extend for 23 consecutive days.
2. For Period Two: the season shall open on the second Saturday in November and extend for 23 consecutive days.
(C) Number of License Tags:
1. Period One: 6 bull tags and 5 antlerless tags.
2. Period Two: 6 bull tags and 6 antlerless tags.
(D) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting upon receipt of their elk license tags.
(3) Bishop Tule Elk Hunt:
(A) Area: In that portion of Inyo County beginning at the junction of Highway 395 and Highway 6 in the town of Bishop; north and east along Highway 6 to the junction of Silver Canyon Road; east along Silver Canyon Road to the White Mountain Road (Forest Service Road 4S01); south along the White Mountain Road to Highway 168 at Westgard Pass; south and west along Highway 168 to the junction of Highway 395; north on Highway 395 to the point of beginning.

(B) Season:
1. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.
2. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.
3. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.
(C) Number of License Tags:
1. Period Three: 2 bull tags and 0 antlerless tags.
2. Period Four: 0 bull tags and 0 antlerless tags.
3. Period Five: 0 bull tags and 0 antlerless tags.
(4) Independence Tule Elk Hunt:
(A) Area: In that portion of Inyo County beginning at the junction of Highway 395 and Aberdeen Station Road; east on Aberdeen Station Road to its terminus at the southern boundary of Section 5, Township 11S, Range 35E; east along the southern boundary of sections 5, 4, 3, and 2, Township 11S, Range 35E to the Papoose Flat Road at Papoose Flat; south and east on Papoose Flat Road to Mazourka Canyon Road; south and then west on Mazourka Canyon Road to Highway 395; west along Onion Valley Road to the intersection of the Section 25 Township 13S, Range 33E; south along the eastern boundary of Section 25 Township 13S, Range 33E to the southern boundary of Section 25 Township 13S, Range 33E; west along the southern boundary of sections 27, 26, 25 Township 13S, Range 33E to the Inyo County line; North along the Inyo County Line to Taboose Creek; east along Taboose Creek to the intersection of Highway 395; south along Highway 395 to the point of beginning.
(B) Season:
1. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.
2. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.
3. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.
4. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.
(C) Number of License Tags:
1. Period Two: 2 bull tags and 0 antlerless tags.
2. Period Three: 0 bull tags and 0 antlerless tags.
3. Period Four: 0 bull tags and 0 antlerless tags.
4. Period Five: 0 bull tags and 0 antlerless tags.
(5) Lone Pine Tule Elk Hunt:
(A) Area: In that portion of Inyo County beginning at the junction of Highway 395 and Mazourka Canyon Road; east and then north on Mazourka Canyon Road to the Inyo National Forest Boundary at the junction of the southern boundary of Township 12S and the northern boundary of Township 13S; east along the southern boundary of Township 12S to Saline Valley Road; south on Saline Valley Road to Highway 190; north and then southwest on Highway 190 to the junction of Highway 395 at Olancha; north on Highway 395 to the point of beginning.

(B) Season:
1. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.
2. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.
3. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.
4. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.
(C) Number of License Tags:
1. Period Two: 0 bull tags and 0 antlerless tags.
2. Period Three: 2 bull tags and 0 antlerless tags.
3. Period Four: 2 bull tags and 0 antlerless tags.
4. Period Five: 0 bull tags and 0 antlerless tags.
(6) Tinemaha Tule Elk Hunt:
(A) Area: In that portion of Inyo County beginning at the junction of Highway 395 and Highway 168 in the town of Big Pine; north and east along Highway 168 to the junction of the Death Valley Road; south and east along the Death Valley Road to the junction of the Papoose Flat Road; south along the Papoose Flat Road to the southern boundary of Section 2, Township 11S, Range 35E; west along the southern boundaries of sections 2, 3, 4 and 5 to the terminus of the Aberdeen Station Road in Section 5, Township 11S, Range 35E; south and west along the Aberdeen Station Road to Highway 395; north along Highway 395 to the point of beginning.
(B) Season:
1. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.
2. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.
3. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.
4. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.
(C) Number of License Tags:
1. Period Two: 1 bull tag and 0 antlerless tags.
2. Period Three: 0 bull tags and 0 antlerless tags.
3. Period Four: 0 bull tags and 0 antlerless tags.
4. Period Five: 0 bull tags and 0 antlerless tags.
(7) West Tinemaha Tule Elk Hunt:
(A) Area: In that portion of Inyo County beginning at the junction of Highway 395 and Highway 168 in the town of Big Pine; south along Highway 395 to the north junction of Fish Springs Road; south along Fish Springs Road to the junction of Highway 395; south along Highway 395 to Taboose Creek in Section 14, Township 11S, Range 34E; west along Taboose Creek to the Inyo County line; north and west along the Inyo County line to the intersection of Tinemaha Creek; east along Tinemaha Creek to the intersection of McMurray Meadow Road; north on McMurray Meadow Road to the intersection of Glacier Lodge Road; north and east on Glacier Lodge Road to Crocker

Avenue; east along Crocker Avenue to Highway 395; north along Highway 395 to the point of beginning.
(B) Season:
1. Period One: The season shall open on the second Saturday in September and extend for 16 consecutive days.
2. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.
3. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.
4. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.
5. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.
(C) Number of License Tags:
1. Period One: 0 bull tags and 0 antlerless tags.
2. Period Two: 0 bull tags and 0 antlerless tags.
3. Period Three: 0 bull tags and 0 antlerless tags.
4. Period Four: 0 bull tags and 0 antlerless tags.
5. Period Five: 0 bull tags and 0 antlerless tags.
(8) Tinemaha Mountain Tule Elk Hunt:
(A) Area: In that portion of Inyo County with a line beginning at the intersection of Glacier Lodge Road (9S21) and McMurray Meadow Road (9S03); south on McMurray Meadow Road to Tinemaha Creek; west along Tinemaha Creek to the Inyo County line; north and west along the Inyo County line to the southeast corner of Section 23, Township 10S, Range 32E; north along the eastern boundaries of sections 23, 14, 11, 2, Township 10S, Range 32E, and the eastern boundary of Section 36, Township 9S, Range 32E to Glacier Lodge Road; east along Glacier Lodge Road to the beginning.
(B) Season:
1. Period One: The season shall open on the second Saturday in September and extend for 16 consecutive days.
2. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.
3. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.
4. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.
5. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.
(C) Number of License Tags:
1. Period One: 0 bull tags.
2. Period Two: 0 bull tags.
3. Period Three: 1 bull tag.
4. Period Four: 1 bull tag.
5. Period Five: 0 bull tags.
(9) Whitney Tule Elk Hunt:

(A) Area: In that portion of Inyo County with a line beginning at the intersection of Highway 395 and Onion Valley Road; south on Highway 395 to the intersection of Whitney Portal Road; west along Whitney Portal Road to the northern boundary of Section 36, Township 15S, Range 34E; west along the northern boundary of sections 36, 35, 34 and 33 Township 15S, Range 34 E to the Inyo County Line; north along the Inyo County Line to the intersection of Section 27 Township 13S, range 33E; east along the southern boundary of sections 27, 26 and 25 Township 13S, Range 33E; north along the eastern boundary of Section 25 Township 13S, Range 33E to the intersection of Onion Valley Road; east along Onion Valley Road to the point of beginning.
(B) Season:
1. Period Two: The season shall open on the first Saturday in October and extend for 9 consecutive days.
2. Period Three: The season shall open on the third Saturday in October and extend for 9 consecutive days.
3. Period Four: The season shall open on the first Saturday in November and extend for 9 consecutive days.
4. Period Five: The season shall open on the first Saturday in December and continue for 9 consecutive days.
(C) Number of License Tags:
1. Period Two: 1 bull tag and 0 antlerless tags.
2. Period Three: 1 bull tag and 0 antlerless tags.
3. Period Four: 0 bull tags and 0 antlerless tags.
4. Period Five: 0 bull tags and 0 antlerless tags.
(10) Grizzly Island Tule Elk Hunt:
(A) Area: Those lands owned and managed by the Department of Fish and Game as the Grizzly Island Wildlife Area.
(B) Season:
1. Period One: The season for antlerless elk shall open on the Tuesday after the second Saturday in August and continue for 4 consecutive days, whereas the season for bulls and spike bulls shall open on the Thursday after the second Saturday in August and continue for 4 consecutive days.
2. Period Two: The season for antlerless elk shall open on the Tuesday after the third Saturday in August and continue for 4 consecutive days, whereas the season for bulls and spike bulls shall open on the Thursday after the third Saturday in August and continue for 4 consecutive days.
3. Period Three: The season for antlerless elk shall open on the Tuesday after the fourth Saturday in August and continue for 4 consecutive days, whereas the season for bulls and spike bulls shall open on the Thursday after the first Monday in September and continue for 4 consecutive days.
4. Period Four: The season for antlerless elk shall open on the second Tuesday in September and continue for 4 consecutive days, whereas the season for bulls and spike bulls shall open on Thursday following the second Tuesday in September and continue for 4 consecutive days.
5. Period Five: The season for antlerless elk shall open on the third Tuesday in September and continue for 4 consecutive days, whereas the season for bulls and spike

bulls shall open on the Thursday following the third Tuesday in September and continue for 4 consecutive days.
(C) Number of License Tags:
1. Period One: 0 bull tags, 4 spike bull tags, and 5 antlerless tags.
2. Period Two: 0 bull tags, 3 spike bull tags, and 8 antlerless tags.
3. Period Three: 0 bull tags, 2 spike bull tags, and 8 antlerless tags.
4. Period Four: 2 bull tags, 0 spike bull tags, and 8 antlerless tags.
5. Period Five: 2 bull tags, 2 spike bull tags, and 8 antlerless tags.
(D) Special Conditions: All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
(11) Fort Hunter Liggett General Public Tule Elk Hunt:
(A) Area: That portion of Monterey County lying within the exterior boundaries of Fort Hunter Liggett, except as restricted by the Commanding Officer.
(B) Season:
1. Period One: The season shall open on the first Tuesday in November and continue for 9 consecutive days.
2. Period Two: The season shall open on the Tuesday preceding the fourth Thursday in November and continue for 9 consecutive days.
3. Period Three: The season shall open on the Saturday preceding December 25 and continue for 14 consecutive days.
(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.
(D) Number of License Tags:
1. Period One: 4 antlerless tags.
2. Period Two: 4 antlerless tags.
3. Period Three: 4 bull tags.
(E) Special Conditions:
1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.
3. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.
4. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.
(12) East Park Reservoir Tule Elk Hunt:
(A) Area: In those portions of Glenn and Colusa counties within a line beginning in Glenn County at the junction of Interstate Highway 5 and Highway 162 at Willows; west along Highway 162 (Highway 162 becomes Alder Springs Road) to the Glenn-Mendocino County line; south along the Glenn-Mendocino County line to the Glenn-Lake County line; east and then south along the Glenn-Lake County line to the Colusa-Lake County line; west, and then southeast along the Colusa-Lake County line to Goat Mountain Road; north and east along Goat Mountain Road to the Lodoga-Stonyford

Road; east along the Lodoga-Stonyford Road to the Sites-Lodoga Road at Lodoga; east along the Sites-Lodoga Road to the Maxwell-Sites Road at Sites; east along the Maxwell-Sites Road to Interstate Highway 5 at Maxwell; north along Interstate Highway 5 to the point of beginning.
(B) Season: The season shall open the first Saturday in September and continue for 27 consecutive days.
(C) Number of License Tags: 2 bull tags and 2 antlerless tags.
(D) Special Conditions:
1. All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
2. Access to private land may be restricted or require payment of an access fee.
3. A Colusa County ordinance prohibits firearms on land administered by the USDI Bureau of Reclamation in the vicinity of East Park Reservoir. A variance has been requested to allow use of muzzleloaders (as defined in Section 353) on Bureau of Reclamation land within the hunt zone.
(13) San Luis Reservoir Tule Elk Hunt:
(A) Area: In those portions of Merced, Fresno, San Benito, and Santa Clara counties within a line beginning in Merced County at the junction of Highway 152 and Interstate 5 near the town of Santa Nella, west along Highway 152 to Highway 156 in Santa Clara County, southwest along Highway 156 to Highway 25 near the town of Hollister in San Benito County, south along Highway 25 to the town of Paicine, south and east along J1 to Little Panoche Road, North and east along Little Panoche Road to Interstate 5 in Fresno County, north along Interstate 5 to the point of beginning.
(B) Season: The season shall open on the first Saturday in October and continue for 23 consecutive days.
(C) Number of License Tags: 0 bull tags, 0 antlerless tags, and 5 either-sex tags.
(14) Bear Valley Tule Elk Hunt:
(A) Area: in those portions of Colusa, Lake, and Yolo counties within a line beginning in Colusa County at the junction of Interstate Highway 5 and Maxwell Sites Road at Maxwell; west along Maxwell Sites Road to the Sites Lodoga Road; west along the Sites Lodoga Road to Lodoga Stonyford Road; west along Lodoga Stonyford Road to Goat Mountain Road; west and south along Goat Mountain Road to the Colusa-Lake County line; south and west along the Colusa-Lake County line to Forest Route M5; south along Forest Route M5 to Bartlett Springs Road; east along Bartlett Springs Road to Highway 20; east on Highway 20 to the fork of Cache Creek; north on the north fork of Cache Creek to Indian Valley Reservoir to Walker Ridge-Indian Valley Reservoir Access Road; east on Walker Ridge-Indian Valley Reservoir Access Road to Walker Ridge Road; south on Walker Ridge Road to Highway 20; east on Highway 20 to Highway 16; south on Highway 16 to Rayhouse Road; south and west on Rayhouse Road to the Yolo-Napa County line; east and south along the Yolo-Napa County line to Road 8053; east on Road 8053 to County Road 78A; east on County Road 78A to Highway 16; east on Highway 16 to Route E4 at Capay; north and east on Route E4 to Interstate Highway 5; north on Interstate Highway 5 to the point of beginning.
(B) Season: The season shall open on the second Saturday in October and continue for 9 consecutive days.

(C) Number of License Tags: 3 bull tags and 2 antlerless tags.
(15) Lake Pillsbury Tule Elk Hunt:
(A) Area: in those portions of Lake County within a line beginning at the junction of the Glenn-Lake County line and the Mendocino County line; south and west along the Mendocino-Lake County line to Highway 20; southeast on Highway 20 to the intersection of Bartlett Springs Road; north and east along Bartlett Springs Road to the intersection of Forest Route M5; northwest on Forest Route M5 to the Colusa-Lake County Line; northwest and east on the Colusa-Lake County Line to the junction of the Glenn-Colusa County Line and the Lake-Glenn County Line; north and west on the Lake-Glenn County Line to the point of beginning.
(B) Season:
1. Antlerless Season. The antlerless season shall open on the Wednesday preceding the second Saturday in September and continue for 10 consecutive days.
2. Bull Season. The bull season shall open Monday following the fourth Saturday in September and continue for 10 consecutive days.
(C) Number of License Tags: 2 bull tags and 4 antlerless tags.
(16) Santa Clara Tule Elk Hunt:
(A) Area: Those portions of Merced, Santa Clara, and Stanislaus Counties within the following line: beginning at the intersection of the Interstate 5 and the San Joaquin/Stanislaus County line; southeast along Interstate 5 to the intersection of Highway 152; west along Highway 152 to the intersection of Highway 101 near the town of Gilroy; north along Highway 101 to the intersection of Interstate 680 near San Jose; north along Interstate 680 to the intersection of the Alameda/Santa Clara County line; east along the Alameda/Santa Clara County line to the intersection of the San Joaquin, Stanislaus, Alameda, Santa Clara County lines; northeast along the San Joaquin/Stanislaus County line to the point of beginning.
(B) Season: The season shall open on the second Saturday in October and continue for 16 consecutive days.
(C) Number of License Tags: 0 bull tags.
(17) Alameda Tule Elk Hunt:
(A) Area: Those portions of Alameda and San Joaquin Counties within the following line: beginning at the intersection of the Interstate 5 and the San Joaquin/Stanislaus County line; southwest along the San Joaquin/Stanislaus County line to the intersection of the San Joaquin, Stanislaus, Alameda, Santa Clara County lines; west along the Alameda/Santa Clara County Line to the intersection of Interstate 680; north along Interstate 680 to the intersection of Interstate 580; east and south along Interstate 580 to the intersection of Interstate 5; south along Interstate 5 to the point of beginning.
(B) Season: The season shall open on the second Saturday in October and continue for 16 consecutive days.
(C) Number of License Tags: 0 bull tags.
(e) Department Administered General Methods Apprentice Elk Hunts:
(1) Marble Mountains Roosevelt Apprentice Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(a)(6)(A).
(B) Season: The season shall open on the Wednesday preceding the second Saturday in September and continue for 12 consecutive days.
(C) Number of License Tags: 2 either-sex tags.

(D) Special Conditions: Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
(2) Northeastern California Rocky Mountain Apprentice Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(b)(1)(A).
(B) Season: The season shall open on the Wednesday preceding the third Saturday in September and continue for 12 consecutive days.
(C) Number of License Tags: Apprentice Season: 2 either-sex tags.
(D) Special Conditions: Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt License tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
(3) Cache Creek Tule Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(1)(A).
(B) Season: The season shall open on the second Saturday in October and continue for 16 consecutive days.
(C) Number of License Tags: Apprentice Season: 1 bull tag.
(D) Special Conditions:
1. All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting upon receipt of their elk license tags.
2. Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
(4) La Panza Tule Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(2)(A).
(B) Season: Period One shall open on the second Saturday in October and extend for 23 consecutive days.
(C) Number of License Tags: Period One: 1 antlerless tag and 0 bull tags.
(D) Special Conditions:
1. All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
2. Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunter tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
(5) Bishop Tule Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(3)(A).
(B) Season: Period Two shall open on the first Saturday in October and extend for 9 consecutive days.
(C) Number of License Tags: Period Two: 0 bull tags and 0 antlerless tags.
(D) Special Conditions: Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.

(6) Grizzly Island Tule Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(10)(A).
(B) Season:
1. Period One Season for antlerless elk shall open on the Tuesday after the second Saturday in August and continue for 4 consecutive days, whereas the season for spike bulls shall open on the Thursday after the second Saturday in August and continue for 4 consecutive days.
2. Period Two Season for spike bulls shall open on the Thursday after the third Saturday in August and continue for 4 consecutive days.
(C) Number of License Tags:
1. Period One: 3 antlerless tags and 1 spike bull tag.
2. Period Two: 2 spike bull tags.
(D) Special Conditions:
1. All tagholders will be required to attend a mandatory orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
2. Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
(7) Fort Hunter Liggett General Public Tule Elk Apprentice Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(11)(A).
(B) Season: The season shall open on the Saturday preceding December 25 and continue for 14 consecutive days.
(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.
(D) Number of License Tags: 1 bull tag and 1 antlerless tags.
(E) Special Conditions:
1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.
3. Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
4. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.
5. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.
(f) Department Administered Archery Only Elk Hunts:
(1) Northeastern California Rocky Mountain Archery Only Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(b)(1)(A).
(B) Season: The season shall open on the Wednesday preceding the first Saturday in September and continue for 12 consecutive days
(C) Number of License Tags: 10 either-sex tags.

(E) Special Conditions: Elk may be taken with Archery Equipment only as specified in Section 354.
(2) Owens Valley Multiple Zone Tule Elk Archery Only Hunt:
(A) Area: The tag shall be valid in areas described in subsections 364(d)(3)(A), (d)(4)(A), (d)(5)(A), (d)(8)(A), and (d)(9)(A).
(B) Season: The season shall open on the second Saturday in August and extend for 9 consecutive days.
(C) Number of License Tags: 5 bull tags and 0 antlerless tags.
(D) Special Conditions: Elk may be taken with Archery Equipment only as specified in Section 354.
(3) Lone Pine Tule Elk Archery Only Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(5)(A).
(B) Season: Period One Season shall open on the second Saturday in September and extend for 16 consecutive days.
(C) Number of License Tags: Period One: 0 bull tags and 0 antlerless tags.
(D) Special Conditions: Elk may be taken with Archery Equipment only as specified in Section 354.
(4) Tinemaha Tule Elk Archery Only Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(6)(A).
(B) Season: Period One Season shall open on the second Saturday in September and extend for 16 consecutive days.
(C) Number of License Tags: Period One: 1 bull tag and 0 antlerless tags.
(D) Special Conditions: Elk may be taken with Archery Equipment only as specified in Section 354.
(5) Whitney Tule Elk Archery Only Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(9)(A).
(B) Season: Period One Season shall open on the second Saturday in September and extend for 16 consecutive days.
(C) Bag and Possession Limit: 1 elk per season.
(D) Number of License Tags: Period One: 0 bull tags and 0 antlerless tags.
(E) Special Conditions: Elk may be taken with Archery Equipment only as specified in Section 354.
(6) Fort Hunter Liggett General Public Tule Elk Archery Only Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(11)(A).
(B) Season:
1. Either-sex season shall open on the last Wednesday in July and continue for 9 consecutive days.
2. Antlerless Season shall open on the last Wednesday in September and continue for 9 consecutive days.
(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.
(D) Number of License Tags: 2 either-sex tags and 4 antlerless tags.
(E) Special Conditions:
1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.

2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.
3. Elk may be taken with Archery Equipment only as specified in Section 354.
4. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.
5. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.
(g) Department Administered Muzzleloader Only Elk Hunts:
(1) Bishop Tule Elk Hunt Muzzleloader Only Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(3)(A).
(B) Season: Period One Season shall open on the second Saturday in September and extend for 16 consecutive days.
(C) Number of License Tags: Period One: 1 bull tag and 0 antlerless tags.
(D) Special Conditions: Elk may be taken with muzzleloader equipment only as specified in Section 353.
(2) Independence Tule Elk Muzzleloader Only Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(4)(A).
(B) Season: Period One Season shall open on the second Saturday in September and extend for 16 consecutive days.
(C) Number of License Tags: Period One: 1 bull tag and 0 antlerless tags.
(D) Special Conditions: Elk may be taken with muzzleloader equipment only as specified in Section 353.
(3) Fort Hunter Liggett General Public Tule Elk Muzzleloader Only Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(11)(A).
(B) Season: The season shall open on the Wednesday preceding the fourth Thursday in November and continue for 9 consecutive days.
(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.
(D) Number of License Tags: 0 bull tags.
(E) Special Conditions:
1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.
3. Elk may be taken with Muzzleloader Equipment only as specified in Section 353.
4. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.
5. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.
(h) Department Administered Muzzleloader/Archery Only Elk Hunts:
(1) Marble Mountains Roosevelt Elk Muzzleloader/Archery Only Elk Hunt.
(A) Area: The tag shall be valid in the area described in subsection 364(a)(6)(A).

(B) Season: The Season shall open on the last Saturday in October and extend for 9 consecutive days.
(C) Number of License Tags: 5 either-sex tags.
(D) Special Conditions: Elk may be taken with archery or muzzleloader equipment only as specified in Sections 353 and 354.
(i) Fund Raising Elk Tags:
(1) Multi-zone Fund Raising License Tag.
(A) Area: The tag shall be valid in the areas described in subsections 364(a)(1)(A), (a)(3)(A), (a)(6)(A), (b)(1)(A), and (d)(2)(A).
(B) Season: The tag shall be valid during the following seasons.
1. Siskiyou and Marble Mountains Roosevelt Elk Season shall open on the Wednesday preceding the first Saturday in September and continue for 19 consecutive days.
2. Northwestern Roosevelt Elk Season shall open on last Wednesday in August and continue for 30 consecutive days.
3. Northeastern Rocky Mountain Elk Season shall open on the Wednesday preceding the last Saturday in August and continue for 33 consecutive days.
4. La Panza Tule Elk Season shall open on the first Saturday in October and extend for 65 consecutive days.
(C) Number of License Tags: 1 bull tag.
(2) Grizzly Island Fund Raising License Tag.
(A) Area: The tag shall be valid in the area described in subsection 364(d)(10)(A).
(B) Season: The Season shall open on the first Saturday in August and continue for 30 consecutive days, with advance reservations required by contacting the Grizzly Island Wildlife Area by telephone at (707) 425-3828.
(C) Number of License Tags: 1 bull tag.
(3) Owens Valley Fund Raising License Tag.
(A) Area: The tag shall be valid in areas described in subsections 364(d)(3)(A), (d)(4)(A), (d)(5)(A), (d)(6)(A), (d)(7)(A), (d)(8)(A), and (d)(9)(A).
(B) Season: The Season shall open on the last Saturday in July and extend for 30 consecutive days.
(C) Number of License Tags: 1 bull tag.
(j) Military Only Elk Tags. These hunts are sponsored and tag quotas are set by the Department. The tags are assigned and the hunts are administered by the Department of Defense.
(1) Fort Hunter Liggett Military General Methods Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(11)(A).
(B) Season:
1. The Early Season shall open on the third Monday in August and continue for 5 consecutive days and reopen on the fourth Monday in August and continue for 5 consecutive days.
2. Period One: The season shall open on the first Tuesday in November and continue for 9 consecutive days.
3. Period Two: The season shall open on the Tuesday preceding the fourth Thursday in November and continue for 9 consecutive days.
4. Period Three: The season shall open on the Saturday preceding December 25 and continue for 14 consecutive days.

(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.
(D) Number of License Tags:
1. Early Season: 2 bull tags and 1 antlerless tag.
2. Period One: 4 antlerless tags.
3. Period Two: 4 antlerless tags.
4. Period Three: 4 bull tags.
(E) Special Conditions:
1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.
3. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.
4. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.
(2) Fort Hunter Liggett Military Apprentice Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(11)(A).
(B) Season: The season shall open on the Saturday preceding December 25 and continue for 14 consecutive days.
(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.
(D) Number of License Tags: 1 bull tag and 1 antlerless tags.
(E) Special Conditions:
1. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting after receipt of their elk license tags.
2. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.
3. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.
4. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.
5. Only persons possessing valid junior hunting licenses may apply for Apprentice Hunt license tags. Apprentice Hunt tagholders shall be accompanied by a nonhunting, licensed adult chaperon 18 years of age or older while hunting.
(3) Fort Hunter Liggett Military Archery Only Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(11)(A).
(B) Season:
1. Either-sex season shall open on the last Wednesday in July and continue for 9 consecutive days.
2. Antlerless Season shall open on the last Wednesday in September and continue for 9 consecutive days.

(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.
(D) Number of License Tags: 2 either-sex tags and 4 antlerless tags.
(E) Special Conditions:
1. Elk may be taken with Archery Equipment only as specified in Section 354.
2. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting upon receipt of their elk license tags.
3. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.
4. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.
5. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.
(4) Fort Hunter Liggett Military Muzzleloader Only Tule Elk Hunt:
(A) Area: The tag shall be valid in the area described in subsection 364(d)(11)(A).
(B) Season: The season shall open on the Wednesday preceding the fourth Thursday in November and continue for 9 consecutive days.
(C) Due to military operations, season dates are subject to further restriction, or may be rescheduled between August 1 and January 31 by the Commanding Officer.
(D) Number of License Tags: 0 bull tags.
(E) Special Conditions:
1. Elk may be taken with Muzzleloader Equipment only as specified in Section 353.
2. All tagholders will be required to attend a mandatory hunter orientation. Tagholders will be notified of the time and location of the orientation meeting upon receipt of their elk license tags.
3. Tagholders shall be required to purchase an annual hunting pass available from Fort Hunter Liggett.
4. All successful tagholders will be required to have their tags validated on Fort Hunter Liggett prior to leaving. All unsuccessful tag holders will be required to turn in their unfilled tags to Fort Hunter Liggett immediately upon completion of their hunt.
5. Season dates and hunt areas are subject to restriction by the Commanding Officer of Fort Hunter Liggett based on military training.
(k) Bag and Possession Limit: Each elk tag is valid only for one elk per season and only in the hunt area drawn. Hunt areas are described in subsections 364(a), (b), (c), (d), (e), (f), (g), (h), and (j) and persons shall only be eligible for one elk tag per season.
(*l*) Definitions:
(1) Bull elk: Any elk having an antler or antlers at least four inches in length as measured from the top of the skull.
(2) Spike bull: A bull elk having no more than one point on each antler. An antler point is a projection of the antler at least one inch long and longer than the width of its base.
(3) Antlerless elk: Any elk, with the exception of spotted calves, with antlers less than four inches in length as measured from the top of the skull.

(4) Either-sex elk: For the purposes of these regulations, either-sex is defined as bull elk, as described in subsection 364(*l*)(1), or antlerless elk as, described in subsection 364(*l*)(3).
(m) Method of Take: Only methods for taking elk as defined in Sections 353 and 354 may be used.
(n) General Method of take are those methods defined in Sections 353 and 354.
(o) Tagholder Responsibilities:
(1) No tagholder shall take or possess any elk or parts thereof governed by the regulations except herein provided.
(2) The department reserves the right to use any part of the tagholder's elk for biological analysis as long as the amount of edible meat is not appreciably decreased.
(3) Any person taking an elk which has a collar or other marking device attached to it shall provide the department with such marking device within 10 days of taking the elk.
(p) The use of dogs to take or attempt to take elk is prohibited.
Note: Authority cited: Sections 200, 202, 203, 332 and 1050, Fish and Game Code. Reference: Sections 203, 203.1, 332, 713 and 1050, Fish and Game Code.

§ 364.1. SHARE Elk Hunts.
(a) Department Administered Shared Habitat Alliance for Recreational Enhancement (SHARE) Elk Hunts:
(1) Siskiyou Roosevelt Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(a)(1)(A). Individual property boundaries will be identified in the SHARE application package.
(2) Big Lagoon Roosevelt Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(a)(2)(A). Individual property boundaries will be identified in the SHARE application package.
(3) Northwestern California Roosevelt Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(a)(3)(A). Individual property boundaries will be identified in the SHARE application package.
(4) Klamath Roosevelt Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(a)(4)(A). Individual property boundaries will be identified in the SHARE application package.
(5) Del Norte Roosevelt Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(a)(5)(A). Individual property boundaries will be identified in the SHARE application package.
(6) Marble Mountains Roosevelt Elk SHARE Hunt
(A) Area: Within the boundaries identified in 364(a)(6)(A). Individual property boundaries will be identified in the SHARE application package.
(7) Northeastern California Rocky Mountain Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(b)(1)(A). Individual property boundaries will be identified in the SHARE application package.
(8) Mendocino Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(c)(1)(A). Individual property boundaries will be identified in the SHARE application package.
(9) Cache Creek Tule Elk SHARE Hunt:

(A) Area: Within the boundaries identified in 364(d)(1)(A). Individual property boundaries will be identified in the SHARE application package.
(10) La Panza Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(2)(A). Individual property boundaries will be identified in the SHARE application package.
(11) Bishop Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(3)(A). Individual property boundaries will be identified in the SHARE application package.
(12) Independence Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(4)(A). Individual property boundaries will be identified in the SHARE application package.
(13) Lone Pine Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(5)(A). Individual property boundaries will be identified in the SHARE application package.
(14) Tinemaha Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(6)(A). Individual property boundaries will be identified in the SHARE application package.
(15) West Tinemaha Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(7)(A). Individual property boundaries will be identified in the SHARE application package.
(16) Tinemaha Mountain Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(8)(A). Individual property boundaries will be identified in the SHARE application package.
(17) Whitney Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(9)(A). Individual property boundaries will be identified in the SHARE application package.
(18) Grizzly Island Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(10)(A). Individual property boundaries will be identified in the SHARE application package.
(19) Fort Hunter Liggett General Public Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(11)(A). Individual property boundaries will be identified in the SHARE application package.
(20) East Park Reservoir Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(12)(A). Individual property boundaries will be identified in the SHARE application package.
(21) San Luis Reservoir Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(13)(A). Individual property boundaries will be identified in the SHARE application package.
(22) Bear Valley Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(14)(A). Individual property boundaries will be identified in the SHARE application package.
(23) Lake Pillsbury Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(15)(A). Individual property boundaries will be identified in the SHARE application package.
(24) Santa Clara Tule Elk SHARE Hunt:

(A) Area: Within the boundaries identified in 364(d)(16)(A). Individual property boundaries will be identified in the SHARE application package.
(25) Alameda Tule Elk SHARE Hunt:
(A) Area: Within the boundaries identified in 364(d)(17)(A). Individual property boundaries will be identified in the SHARE application package.
(b) Season: The overall season shall open on the August 15 through January 31. Individual SHARE properties will be assigned seasons corresponding with management goals.
(c) Number of SHARE Elk License Tags

364.1	2015 Final SHARE Elk Tag Allocation				
§	Hunt Name	Bull	Antlerless	Either-sex	Spike
(1)	Siskiyou	10	10		
(2)	Big Lagoon	0	0		
(3)	Northwestern California	0	0	0	
(4)	Klamath	0	0		
(5)	Del Norte	0	0		
(6)	Marble Mountains	5	10		
(7)	Northeastern California	0	0		
(8)	Mendocino	2	2		
(9)	Cache Creek	1	1		
(10)	La Panza	12	11		
(11)	Bishop	0	0		
(12)	Independence	0	0		
(13)	Lone Pine	0	0		
(14)	Tinemaha	0	0		
(15)	West Tinemaha	0	0		
(16)	Tinemaha Mountain	0			
(17)	Whitney	0	0		
(18)	Grizzly Island	0	0		0
(19)	Fort Hunter Liggett	0	0	0	
(20)	East Park Reservoir	2	4		
(21)	San Luis Reservoir	0	0	5	
(22)	Bear Valley	1	0		
(23)	Lake Pillsbury	0	0		
(24)	Santa Clara	0			
(25)	Alameda	0			

(d) Bag and Possession Limit: Each elk tag is valid only for one elk per season and only in the SHARE hunt area drawn, and persons shall only be eligible for one elk tag per season.
(e) Definitions:

(1) Bull elk: Any elk having an antler or antlers at least four inches in length as measured from the top of the skull.
(2) Spike bull: A bull elk having no more than one point on each antler. An antler point is a projection of the antler at least one inch long and longer than the width of its base.
(3) Antlerless elk: Any elk, with the exception of spotted calves, with antlers less than four inches in length as measured from the top of the skull.
(4) Either-sex elk: For the purposes of these regulations, either-sex is defined as bull elk or antlerless elk.
(f) Method of Take: Only methods for taking elk as defined in Sections 353 and 354 may be used.
(g) Tagholder Responsibilities:
(1) No tagholder shall take or possess any elk or parts thereof governed by the regulations except herein provided.
(2) The department reserves the right to use any part of the tagholder's elk for biological analysis as long as the amount of edible meat is not appreciably decreased.
(3) Any person taking an elk which has a collar or other marking device attached to it shall provide the department with such marking device within 10 days of taking the elk.
(h) The use of dogs to take or attempt to take elk is prohibited.
(i) Applicants shall apply for a SHARE Access Permit, and pay a nonrefundable application fee as specified in Section 602, through the department’s Automated License Data System terminals at any department license agent, department license sales office or online.
(j) Upon receipt of winner notification successful applicants shall submit the appropriate tag fee as specified in Section 702 through any department license sales office or online through the department’s Automated License Data System.

Note: Authority Cited: Sections 200, 203, 203.1, 204, 332, and 1050,Fish and Game Code. Reference: Sections 332, 1050, 1570, 1571, 1572, 1573, and 1574, Fish and Game Code.

Appendix 18. 2015 PLM List and Authorized Harvest

PLM Name	Authorized Bull Harvest	Authorized Antlerless Harvest
ALEXANDER RANCH	1	2
ALEXANDER DAIRY	2	2
AMANN RANCH	1	
AVENALES RANCH	3	
BARDIN RANCH	2	4
BIG LAGOON	3	
BLACK RANCH	1	1
CAMP 5 OUTFITTERS (MORISOLI)	3	3
CAPISTRAN RANCH	2	2
CARNAZA WILDLIFE MGT AREA	3	3
CARRIZO RANCH	3	4
CHIMNEY ROCK RANCH	2	2
CLARK AND WHITE RANCH	3	2
D-RAFTER L RANCH	1	1
CONNOLLY/CORRAL HOLLOW RANCH	1	1
COTTRELL RANCH	1	1
DEFRANCESCO AND EATON	2	1
EDEN VALLEY RANCH	8	7
FULTON RANCH	1	
GABILAN RANCH	3	1
HARTNELL RANCH	1	2
HEARST RANCH	6	6
HUNTER RANCH	1	
INDIAN VALLEY CATTLE CO.	3	2
ISABEL VALLEY RANCH	1	
JS RANCH	1	
KLAMATH RANCH	2	
LEWIS RANCH	1	1
LONE RANCH	3	2
MILLER-ERIKSEN RANCH	1	
PBM FARMS	1	
PEACHTREE RANCH	4	2
POTTER VALLEY WMA	6	10
RANCHO LA CUESTA	3	1
REDWOOD HOUSE RANCH	1	
ROOSTER COMB RANCH	1	
ROSEBERG RESOURCES PONDOSA	2	2
R-R RANCH	3	6
SHAMROCK RANCH	8	10
SLICK ROCK RANCH	1	
SMITH RIVER	3	6
SPRING VALLEY RANCH	4	
STOVER RANCH	4	2
SUMMER CAMP RANCH	1	
SWEETWATER RANCH	1	
TEJON RANCH	12	3
TEMBLOR WMA	7	12
TRINCHERO RANCH	2	
WIGGINS RANCH	2	2
WORK RANCH	2	4
TOTALS	**134**	**110**

Appendix 19. Modification to Existing Regulations

Change	Proposed Tag Range	2015 Tag Quota	Proposed Season	2015 Season Dates	Change in # of days
Establish new San Emigdio Mountain tule elk hunt	0-15 bull 0-40 antlerless	N/A	Oct. 8 - 21	N/A	N/A
Establish new Camp Roberts tule elk hunt	0-10 bull 0-20 antlerless in 3 periods	N/A	**Period 1** Sept 17 - Oct 3 **Period 2** Nov. 12 - 27 **Period 3** Dec. 17- Jan 1	N/A	N/A
Split Mendocino tule elk hunt - establish 5 zones (North Coast)	0-10 bull 0-40 antlerless	4 bull 4 antlerless in total for all Mendocino	**bull** Aug. 10-19 **Antlerless** Nov. 5-14	Sept. 23 - Oct. 4	-2
Middle Fork	0-10 bull 0-40 antlerless	N/A	**bull** Aug. 10-19 **Antlerless** Nov. 5-14	Sept. 23 - Oct. 4	-2
Upper Russian	0-10 bull 0-40 antlerless	N/A	**bull** Aug. 10-19 **Antlerless** Nov. 5-14	Sept. 23 - Oct. 4	-2
Little Lake	0-5 bull 0-10 antlerless	N/A	**bull** Aug. 10-19 **Antlerless** Nov. 5-14	Sept. 23 - Oct. 4	-2
South Coast	0-5 bull 0-10 antlerless	N/A	**bull** Aug. 10-19 **Antlerless** Nov. 5-14	Sept. 23 - Oct. 4	-2
Split Independence tule elk hunt- establish Goodale tule elk hunt	0-10 bull 0-10 antlerless in five periods	5 bull	No change	N/A	N/A
Split Northwestern Roosevelt elk hunt -establish Del Norte and Humboldt County Roosevelt elk hunts	N/A	N/A	N/A	N/A	N/A
Modify tag ranges and season dates for Northwestern (Proposed Del Norte and Humboldt) Roosevelt elk hunt	**Del Norte** 0-15 bull 0-25 antlerless 0-10 either-sex in 5 periods **Humboldt** 0-20 bull 0-50 antlerless 0-10 either-sex in 5 periods	45 either-sex	Sept. 1-20 Oct. 1-20 Nov. 1-20 Dec. 1-20 Jan. 1-20 Sept. 1-20 Oct. 1-20 Nov. 1-20 Dec. 1-20 Jan. 1-20	Sept 2. - 24	78
Split Marble Mountain Roosevelt elk hunt - establish Marble Mountain South and Marble Mountain North Roosevelt elk hunts.	N/A	N/A	N/A	N/A	N/A

Modify tag ranges and season dates for the Marble Mountain (proposed Marble Mountain North and South) Roosevelt elk hunt.	**Archery/ Muzzle loader** 0-20 either-sex **Period 1** 0-50 bull 0-20 antlerless **Period 2** 0-10 bull 0-40 antlerless **Period 3** 0-5 bull 0-15 antlerless for both Marble Mountain North and South	5 **Arch/Muzzleloader** either-sex **General Season** 35 bull 10 antlerless	**Arch/Muzz** Aug. 31 - Sept. 8 **Period 1** Sept 10-21 **Period 2** Sept. 24 -Oct. 5 **Period 3** Nov. 2-17 for both Marble Mountain North and South	**Arch/Muzz** Oct. 31-Nov. 8 **General Season** Sept. 9-20	19
Modify tag ranges and season dates for Northeastern Rocky Mountain elk hunts	**Archery** 0-10 bull, 0-10 antlerless, & 0-20 either-sex **Gen. Method** 0-30 bull 0-20 antlerless	**Archery** 10 either-sex. **General Method** 15 bull 10 antlerless	**Archery** Aug. 31-Sept. 11 **General Method** bull Sept. 19-30 antlerless Nov. 12-23	**Archery** Sept. 2-13 **General Methods** Sept. 16-27	12
Modify Fort Hunter Liggett tule elk hunt boundaries - Change name to Fort Hunter Liggett Central Coast	N/A	N/A	N/A	N/A	N/A
Modify season tag ranges and season dates for Fort Hunter Liggett tule elk hunts.	**Public and Military Apprentice** 0-4 bull 0-16 antlerless **Archery** 0-20 either-sex 0-20 antlerless **Muzzleloader** 0-12 bull 0-20 antlerless **General Method Per.** 1 0-14 bull 0-32 antlerless **Per. 2** 0-16 bull 0-30 antlerless **Per. 3** 0-28 bull 0-14 antlerless **Military Only early season** 0-2 bull 0-2 antlerless	**Public and Military Apprentice** 2 bull 2 antlerless **Archery** 4 either-sex 8 antlerless **Muzzleloader** 0 bull 0 antlerless **General Method Per. 1** 0 bull 8 antlerless **Per. 2** 0 bull 8 antlerless **Per. 3** 8 bull 0 antlerless **Military Only early season** 2 bull 1 antlerless	**Public and Military Apprentice** Dec. 17-Jan. 1 **Archery either-sex** July 27 Aug. 4 **antlerless** Sept. 28-Oct. 6 **Muzzleloader** Oct. 8-19 **General Method Per.** 1 Nov. 3-11 **Per. 2** Nov. 22-30 **Per. 3** Dec. 17-Jan. 1 **Military Only early season** Aug 17-21 & Aug 24-28	**Public and Military Apprentice** Dec. 19-Jan. 1 **Archery either-sex** July 29 Aug. 6 **antlerless** Sept. 30-Oct. 8 **Muzzleloader** Oct. 10-21 **General Method Per.** 1 Nov. 3-11 **Per. 2** Nov. 22-30 **Per. 3** Dec. 19-Jan. 1 **Military Only early season** Aug 8-12 & Aug 22-26	0 2 0
Modify Grizzly Island tule elk hunt boundaries	N/A	N/A	N/A	N/A	N/A

Modify tag ranges and season dates for Grizzly Island tule elk hunts.	**13 General Periods** 0-3 bull 0-12 antlerless 0-10 spike in each period **Apprentice** 0-4 antlerless 0-4 spike in first four periods	**General Method** **Per 1.** 5 antlerless 4 spike **Per. 2** 8 antlerless 3 spike **Per. 3** 8 antlerless 2 spike **Per. 4** 2 bull 8 antlerless **Per. 5** 2 bull 8 antlerless 2 spike **Apprentice** **Per 1.** 3 antlerless 1 spike **Per. 2** 2 spike	**General Method Per. 1** Aug. 16-19 **Per. 2** Aug. 18-21 **Per. 3** Aug. 23-26 **Per. 4** Aug 25-28 **Per. 5** Aug. 30-Sept. 3 **Per. 6** Sept. 1-4 **Per. 7** Sept. 6-9 **Per. 8** Sept. 8-11 **Per. 9** Sept. 13-16 **Per. 10** Sept. 15-18 **Per. 11** Sept. 20-23 **Per. 12** Sept. 22-25 **Per. 13** Sept. 27-30 **Apprentice** **Per. 1** Aug. 16-19 **Per. 2** Aug. 18-21 **Per. 3** Aug. 23-26 **Per. 4** Aug 25-28	**General Method** **Per. 1 antlerless** Aug. 11-14 **spike** Aug. 13-16 **Per. 2** **antlerless** Aug. 18-21 **spike** Aug. 20-23 **Per. 3** **antlerless** Aug. 25-28 **spike** Sept. 10-13 **Per. 4** **antlerless** Sept. 8-11 **bull** Sept. 10-13 **Per. 5** **antlerless** Sept. 15-18 **bull** Sept. 17-20 **spike** Sept. 17-20 **Apprentice** **Per 1.** **Antlerless** Aug. 11-14 **spike** Aug. 13-16 **Per. 2 spike** Aug. 20-23	8
Modify La Panza tule elk zone boundaries	N/A	N/A	N/A	N/A	N/A
Modify tag ranges for La Panza tule elk hunts.	**Period 1** 0-20 bull 0-30 antlerless **Period 2** 0-20 bull 0-30 antlerless **Apprentice** 0-2 bull 0-2 antlerless	**Period 1** 6 bull 5 antlerless **Period 2** 6 bull 6 antlerless **Apprentice** **Per. 1** 1 antlerless	N/A	N/A	N/A
Modify tag ranges and season dates for Lake Pillsbury tule elk hunt.	0-10 bull 0-10 antlerless for 3 periods	2 bull 4 antlerless	**Per. 1** Sept. 26-Oct. 5 **Per. 2** Oct. 12-21 **Per. 3** Oct. 26-Nov 4	**antlerless** Sept. 9-18 **bull** Sept. 28-Oct. 7	10
Modify San Luis Reservoir tule elk hunt tag ranges and season dates	0-10 bull 0-20 antlerless 0-10 either-sex	5 either-sex	**Period 1** Oct. 1-23 **Period 2** Nov. 12-23 **Period 3** Dec. 17-28	Oct. 3-25	24
Modify Bear Valley tule elk hunt tag ranges	0-10 antlerless 0-10 bull	2 antlerless 3 bull	No change	Oct. 10-18	N/A
Modify Santa Clara tule elk tag ranges	0-15 bull 0-20 antlerless	0	No change	Oct. 10-25	N/A
Modify Alameda tule elk tag ranges	0-4 bull 0-10 antlerless	0	No Change	Oct. 10-25	N/A

Modify season dates for the Multi-zone fund raising elk tag	1 bull	1 bull	Aug. 13-Nov. 10	Varied by hunt area. Opened 7 days prior to earliest season for each zone	Varies from 25 to 71
Modify Siskiyou tag ranges and season dates	**Period 1** 0-40 bull 0-40 antlerless **Period 2** 0-10 bull 0-40 antlerless **Period 3** 0-5 bull 0-20 antlerless **Archery/ Muzzleloade**r 0-20 either-sex	20 bull 20 antlerless	**Period 1** Sept. 12-21 **Period 2** Sept. 24 - Oct. 5 **Period 3** Nov. 2-17 **Archery/ Muzzleloade**r Aug. 31-Sept. 8	Sept. 9-20	37
SHARE Elk	Correspond to tag ranges in identified zones	Correspond to tag ranges in identified zones. 3 bull 3 antlerless issued	No change	Between Aug. 15-Jan 31. Seasons are assigned to properties	0

Appendix 20. Impacts of Proposed Regulation Modification

	Impacts of Hunting Elk						
	Impacts on the gene pool	**Impacts on social structure**	**Effects on habitat**	**Effects on Recreational Opportunities**	**Effects on other wildlife species**	**Effects on economics**	**Effects on public safety**
Establish new San Emigdio Mountain tule elk hunt	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Establish new Camp Roberts tule elk hunt	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Split Mendocino tule elk hunt - establish 5 zones	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Split Independence tule elk hunt- establish Goodale tule elk hunt	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Split Northwestern Roosevelt elk hunt - establish Del Norte and Humboldt County Roosevelt elk hunts	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify tag ranges and season dates for Northwestern (Proposed Del Norte and Humboldt) Roosevelt elk hunt	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Split Marble Mountain Roosevelt elk hunt - establish Marble Mountain South and Marble Mountain North Roosevelt elk hunts.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify tag ranges and season dates for the Marble Mountain (proposed Marble Mountain North and South) Roosevelt elk hunt.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify tag ranges and season dates for Northeastern Rocky Mountain elk hunts	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Fort Hunter Liggett tule elk hunt boundaries - Change name to Fort Hunter Liggett Central Coast	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify season tag ranges and season dates for Fort Hunter Liggett tule elk hunts.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Grizzly Island tule elk hunt boundaries	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

Modify tag ranges and season dates for Grizzly Island tule elk hunts.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify La Panza tule elk zone boundaries	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify tag ranges for La Panza tule elk hunts.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify tag ranges and season dates for Lake Pillsbury tule elk hunt.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify San Luis Reservoir tule elk hunt tag ranges and season dates	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Bear Valley tule elk hunt tag ranges	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Santa Clara tule elk tag ranges	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Alameda tule elk tag ranges	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify season dates for the Multi-zone fund raising elk tag	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Siskiyou tag ranges and season dates	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
SHARE Elk	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

	Impacts of Hunting Elk				
	Growth-Inducing impacts	**Short-term uses and long term productivity**	**Significant irreversible environmental changes**	**Welfare of Individual animal**	**Cumulative Impacts**
Establish new San Emigdio Mountain tule elk hunt	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Establish new Camp Roberts tule elk hunt	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Split Mendocino tule elk hunt - establish 5 zones	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Split Independence tule elk hunt- establish Goodale tule elk hunt	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Split Northwestern Roosevelt elk hunt - establish Del Norte and Humboldt County Roosevelt elk hunts	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify tag ranges and season dates for Northwestern (Proposed Del Norte and Humboldt) Roosevelt elk hunt	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Split Marble Mountain Roosevelt elk hunt - establish Marble Mountain South and Marble Mountain North Roosevelt elk hunts.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify tag ranges and season dates for the Marble Mountain (proposed Marble Mountain North and South) Roosevelt elk hunt.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify tag ranges and season dates for Northeastern Rocky Mountain elk hunts	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Fort Hunter Liggett tule elk hunt boundaries - Change name to Fort Hunter Liggett Central Coast	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify season tag ranges and season dates for Fort Hunter Liggett tule elk hunts.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Grizzly Island tule elk hunt boundaries	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify tag ranges and season dates for Grizzly Island tule elk hunts.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify La Panza tule elk zone boundaries	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify tag ranges for La Panza tule elk hunts.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify tag ranges and season dates for Lake Pillsbury tule elk hunt.	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify San Luis Reservoir tule elk hunt tag ranges and season dates	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Bear Valley tule elk hunt tag ranges	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Santa Clara tule elk tag ranges	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Alameda tule elk tag ranges	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify season dates for the Multi-zone fund raising elk tag	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Modify Siskiyou tag ranges and season dates	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
SHARE Elk	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

From:	Phoebe
To:	FGC
Subject:	Hearing Dec. 9 and 10, 2015: Public forum comment regarding Roosevelt elk
Date:	Sunday, November 08, 2015 2:55:25 PM

To: Fish and Game Commission at fgc@fgc.ca.gov

From: Phoebe Lenhart

Date: Nov. 8, 2015

Regarding: Hearing Dec. 9 and 10, 2015: Public forum comment reference to Roosevelt elk

This E-mail is sent for your consideration as I am unable to attend the meeting next month in San Diego, CA.

I understand that Joe Hobbs, CA Department of Fish and Wildlife (DFW), is planning to recommend to the fgc an increase in the number of hunting tags for Roosevelt elk.

I have spent over one year extensively studying the Roosevelt elk in Del Norte County and consider myself an authority on the Roosevelt elk here. I have monitored closely three herds in the county that I refer to as: Endert's Beach herd, Lake Earl herd, and Smith River herd. Each of these herds has @ 50 elk in them.

I am opposed to any increase in hunting of the Roosevelt elk based upon my research. The DFW admits that they do not have an accurate count of Roosevelt elk in Del Norte County. The DFW also admits that they do not know how many herds exist, nor the composition of the herds.

The Roosevelt elk became almost extinct in 1925 when tens of thousands of elk where killed to a remnant of 15 elk. Now, 90 years later, the DFW still does not know about the Roosevelt elk in Del Norte County, yet, irresponsibly wants to increase the number of hunting tags.

The DFW is citing an environmental report dated April, 2010 to justify killing more elk under the SHARE program, particularly on Green Diamond properties. I sincerely question the appropriateness of DFW using this report under today's circumstances. I would like proof that the Roosevelt elk are damaging the forests owned by Green Diamond.

[redacted]

From:	Aimee Bolender
To:	FGC; Hobbs, Joe@Wildlife; Callas, Richard@Wildlife; Loft, Eric@Wildlife
Subject:	Roosevelt Elk
Date:	Saturday, November 14, 2015 4:25:02 PM

As a photographer of wildlife in Crescent City, California, I am often touched by the beauty and grace of the Roosevelt Elk. The elk should be protected, but they should not be allowed to damage people's property. I think must be away to achieve both these goals, short of killing these striking animals.

Aimee Bolender
[redacted]

CENTER for BIOLOGICAL DIVERSITY Because life is good.

Sent via electronic mail

November 15, 2015

President Jack Baylis
Vice President Jim Kellogg
Commissioner Jacque Hostler-Carmesin
Commissioner Eric Sklar
Commissioner Anthony Williams
Director Sonke Mastrup

California Fish and Game Commission ("the Commission")
1416 Ninth Street, Room 1320
Sacramento, CA 95814
Fax: (916) 653-5040
fgc@fgc.ca.gov

Re: Elk Hunting Regulations – December 9-10, 2015 Commission Meeting in San Diego

Dear Commissioners Baylis, Kellogg, Hostler-Carmesin, Sklar and Williams and Director Mastrup:

On behalf of the Center for Biological Diversity ("the Center") and its over 100,000 members and supporters in California, we submit to the Commission the attached scoping comments on potential impacts resulting from the implementation of elk hunting regulations. We submitted these comments to the Department of Fish and Wildlife in August 2015 and are re-submitting them here to ensure their consideration at the December 9-10, 2015 Commission meeting in San Diego.

Thank you for your consideration of these comments. If you have any questions, please feel free to contact me directly.

Sincerely,

Jean Su
Staff Attorney
Center for Biological Diversity
1212 Broadway Street, Suite 800
Oakland, California 94612
Phone: (510) 844-7139
jsu@biologicaldiversity.org

Exhibit A

[*See attached*.]

CENTER for BIOLOGICAL DIVERSITY Because life is good.

August 26, 2015

Sent via Email

Attn: Joe Hobbs
California Department of Fish and Wildlife
1812 9th Street
Sacramento, CA 95811

Re: Scoping on Implementation of Elk Hunting Regulations

Dear Mr. Hobbs:

On behalf of the Center for Biological Diversity, I submit these scoping comments on potential impacts resulting from the implementation of elk hunting regulations. The Center is a national, nonprofit organization with over 900,000 members and online activists whose mission is to protect and restore rare animals and their habitats through science, policy, education, advocacy, and environmental law. The Center is concerned about how implementation of the elk hunting regulations will affect elk recovery in California.

We understand that the Department of Fish and Wildlife is proposing to adjust tag quotas on existing elk hunts, establish new hunt zones, modify season dates and existing hunt boundaries, and add additional hunts within existing zones. We ask that the Department address the following issues in the draft environmental document.

To begin, we are concerned about the Department's failure to first finalize a statewide elk management plan, as the statute has long required. Section 3952 of the Fish and Game Code provides:

> The department shall develop a statewide elk management plan, consistent with the state's wildlife policy as set forth in Section 1801. The statewide elk management plan shall emphasize maintaining sufficient elk populations in perpetuity, while considering all of the following:
>
> (a) Characteristics and geographic range of each elk subspecies within the state, including Roosevelt elk, Rocky Mountain elk, and tule elk.
> (b) Habitat conditions and trends within the state.
> (c) Major factors affecting elk within the state, including, but not limited to, conflicts with other land uses.
> (d) Management activities necessary to achieve the goals of the plan and to alleviate property damage.
> (e) Identification of high priority areas for elk management.

(f) Methods for determining population viability and the minimum population level needed to sustain local herds.
(g) Description of the necessary contents for individual herd management plans prepared for high priority areas.

A statewide elk management plan would inform the Department's elk hunting regulations. For example, the required management plan must consider "population viability and the minimum population level needed to sustain local herds." Such information is necessary before making any upward adjustment in existing elk quotas or opening up new areas to elk hunting.

Moreover, Section 3951 of the California Fish and Game Code provides that any hunting of tule elk must be "in accordance with the statewide elk management plan developed pursuant to Section 3952." Without such a management plan, the Department should not be authorizing the killing of these rare elk. Although much progress toward recovery has been made in the last 50 years, the statewide tule elk population is still just a fraction of its historical numbers. Indeed, scientists estimate that approximately half a million tule elk once roamed California, while today the Department in 2007 estimated the population at approximately 3800 elk in 21 herds.[1] Furthermore, the population has likely declined since then because of the drought; this past year 250 tule elk perished in just one herd at Point Reyes National Seashore.

We are concerned that the Department is moving forward with increased hunting of small elk herds without adequate information on population status and trends. The 2015 Final Elk Quota[2] allocates tags for more than 350 elk, too often from herds with small numbers, and even for some small herds with demonstrated declining populations. In its environmental analysis, the Department should explain how it determined the quota for each herd and document whether such level of hunting is consistent with the state's goal of "maintaining sufficient elk populations in perpetuity."

It is our understanding that (during seasons open to targeting of bulls) hunters usually seek the largest elk they can shoot, preferably one of the large "primary bulls," which are responsible for most of the breeding. The Department needs to consider the impact of shooting the largest elk on population dynamics and whether each herd has adequate numbers to support the annual killing of primary bulls.

California's elk face many threats, particularly habitat loss, extended drought, and impacts from being hemmed in by urban development. Without sound and clearly-defined management policies, cumulative impacts from hunting could impede elk recovery or even cause permanent declines in the population. As such, we ask that the Department consider closing certain existing elk hunting areas based on the following considerations: promoting elk recovery, providing opportunities for non-consumptive wildlife uses such as photography and wildlife watching, and mitigating for impacts from California's severe drought.

[1] http://www.dfg.ca.gov/wildlife/hunting/elk/tule/about/distribution.html
[2] https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=95629&inline

California's elk must be considered a public resource for everyone to enjoy, not just hunters. We ask that the Department not make any increases to the number of elk that can be killed until elk population numbers can be thoroughly analyzed in conjunction with a statewide elk management plan. Our concern here is with recovering elk in California through sound wildlife management driven by science.

Sincerely,

Collette Adkins, Senior Attorney
8640 Coral Sea Street Northeast
Minneapolis, MN 55449
651-955-3821
cadkins@biologicaldiversity.org

Friends of Del Norte

Conserving our Natural Heritage Since 1973

Protecting the Wildlands, Waters and Wildlife of Del Norte County

P.O. Box 229 Gasquet, CA 95543 707 954-1634 707 465-8904

November 18, 2015

Transmitted by Eileen Cooper, Vice President by email to fgc@fgc.ca.gov and intended for Fish and Game Commission meeting Dec. 9-10, 2015

California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Dear Esteemed Commissioners:

Re: Proposed Continuance/ Increase in Tags to be Issued in 2016 for Shooting of Roosevelt Elk in Del Norte County and northern Humboldt lands

Commissioners, we welcome this opportunity to start engaging with your process, which we expect to be thoughtful and thorough. Thank you for that, and for many other decisions made by your Commission during the past year.

The Friends of Del Norte is the only Del Norte non-profit citizen environmental organization dedicated to the long-term protection and enhancement of all natural resources of Del Norte County, and the surrounding bioregion. We have continued to speak out for wildlife and on other issues for more than four decades.

We regret that Del Norte citizens did not hear about the scoping comments deadline back in August, for this matter before you Dec. 9 & 10th, as it was not noticed in our one local newspaper or on the CEQAnet website. We have since learned that DFW staff were emailing about the August deadline/issues with the county Board of Supervisors, and that local ranchers were informed.

One of our board members is Theodore Souza, who has been "buying hunting and fishing licenses in California since 1946." He is not on the internet (although as stated we did not find this matter on there), and Mr. Souza "wants to know how tax payers like him are supposed to receive notification."[1] He is an avid deer hunter, and notes with some humor that what is happening here is not elk hunting, but simply "elk *shooting*." Tangentially, Souza served in the U.S. Army during World War II, and was recently inducted into the French Legion of Honor for risking his life to liberate a Nazi-occupied France.

[1] Personal communication, Ted Souza, October 22, 2015.

A) **Background: Recent Recovery and Re-emergence of Roosevelt Elk Herds in Del Norte county.**

First, we would like you to understand that many Del Norte residents are thrilled to see these majestic animals in our midst again, being aware that we nearly lost this species about 100 years ago. Indeed it is only in recent years that Del Norte has enjoyed ANY elk viewing opportunities, only as elk numbers have grown, because previously we could only see them in the vicinity of Prairie Creek State Park while traveling through northern Humboldt County, where their earliest recovery was focused. As you might know, there is a popular spot near the Little Red Schoolhouse near Stone Lagoon where tourists are almost invariably pulled over and photographing the elk. However, back up farther north in Del Norte, tourism is also a critical and rapidly growing part of our economy. Redwood National & State Parks estimates that we draw more than 1 million visitors annually, with more than a 20% jump in this nature tourism in the last three years.[2] (Contrast this to a resident population of less than 30,000 people in this county.) Some indefinable but quite real percentage of these growing visitation numbers has to do with the growing elk herds.

Visitors love majestic large wild animals, as do we. Indeed elk are among the most "viewable" wildlife, unlike for example birds, as in this region of many state and national parks elk appear trustingly unafraid of humans and are often easily approached. Recently a visitor from Washington state took the time to write a letter to our local paper, chiding the Board of Supervisors: "We hope your board members will reconsider their plan to reduce the size of what appears to me as a very small herd of elk. So few areas have elk that are so accessible to the visitors."[3]

Later in September, faced with a large photo of a slaughtered bloody bull elk on the front page of the paper, a local person wrote: "I saw this bull and his harem a few days ago crossing from Endert's Beach to a meadow and pulled over to the side of the road to watch them. I was awed by their presence — so graceful and beautiful. Now, this bull will be packed away as meat in the hunter's freezer and I will never see him again. ... The killing of this bull has ended the passing on of successful genes forever — a loss that can never be replaced. Forever is permanent."[4]

Finally, it is only within the last 3-4 years that Roosevelt elk have returned to the 11,000 acres of coastal Tolowa Dunes State Park and the State Lake Earl Wildlife Area, in Del Norte county. These almost entirely intact and contiguous public lands front the ocean, and provide abundant forest, meadows, dune ponds and the West's largest estuarine coastal lagoon, Lake Earl, with its adjacent wetlands. Local people have witnessed the return of elk, and signs of almost continually roaming herds, throughout this large territory, as well as the birth of young elk on these lands for the first time in about 100 years. Clearly the elk are regularly using this habitat, as they do the coastal Redwood Parks lands, and ranging from its southern to northern extent.[5] Indeed the Elk are beneficial to Tolowa Dunes State Park and the State Wildlife Area in maintaining open grasslands, and early successional habitat that benefits many endangered plants and animals, for example early blue violets (Viola adunca) for the federally listed Threatened Oregon silverspot butterfly. At present State Parks and DFW have no plans or funds for general vegetation management, and so having a growing elk presence on those lands would be particularly helpful.

[2] Pers. communication, Michael Glore, Supervisory Ranger, Redwood National & State Parks, Nov. 18, 2015.
[3] See Appendix A) at end of these comments.
[4] See Appendix B)
[5] Pers. communication, Sandra Jerabek, Tolowa Dunes Stewards, Nov. 10, 2015. Also referenced Jeff Bomke, State Parks Regional Manager, Amber Transou, and other staff sightings, Eureka, California.

B) **The Board Should Consider Local Challenges of our Specific Topography and Geography**

One of the problems that elk herds in Del Norte county face is that the extensive ranch lands lie on, and human populations are concentrated on, the county's relatively flat coastal plain. (Undoubtedly flat, as well as full of tempting pasture, because the land was filled and flattened by humans.) So for the elk to travel between hospitable public lands lying on the coast and over to sheltering, extensive upland forest public lands, the elk must travel "the gauntlet" of private lands. Indeed during hunting season this was the specific challenge faced by the bull elk mourned in the letter just cited, and the opportunity for his demise.

C) **Request for Actions.**

First of all, we are concerned about the Department's failure to finalize a statewide elk management plan. A statewide elk management plan should be the first step taken, and would inform the Department's elk hunting regulations. Yet DFW states that they are prioritizing staff time for the 2016 elk hunting regulations over completion of the management plan. They state that the management plan is moving forward on a separate track.

We respectfully request that you consider our views, and taking adopting/directing the following at your December 2015 meeting:

- Before elk hunting continues or increases, we first need the management plan.
- Before any specific plans or regulations are developed, we also need population counts, data, and analysis. The goal of data gathering should be the sustainability and strong genetic health of these herds. Specifically the State should survey: how many elk are in Del Norte and northern Humboldt county herds; how many herds; the distribution of bulls, cows and calves in the herds; total numbers; what corridors elk are already using to travel from coastal public land to upland forested public land, and genetics of herds. The State should explain in a transparent fashion what numbers are considered sustainable, how they arrive at those numbers, i.e. exactly how the State calculates an assessment of "sustainability" and strong "genetic viability."
- We are opposed to the Trophy hunting that is the current focus. Taking the largest bull elk with the biggest trophy rack is taking the best genetic material from the herd. These elk were almost extinguished by hunting 100 years ago, and the herds we see today have recovered from only a few individuals with limited genetic material. What is the current genetic status of these herds?
- As an alternative to trophy hunting of the biggest male elk leading their herds, the State should consider instead shooting of females and some younger males. Perhaps the biggest bull harem leader could be tagged for no take.
- As an alternative to hunting, elk might be hazed onto public lands and into wildlife corridors (see comment below about studying and establishing such corridors).
- Another alternative could be to provide grant money to smaller ranch/food growing operations to construct elk proof fencing. A small operation such as The Dutch Gardener, where reportedly the bull elk mourned in the Letter to the Editor was shot, is immediately adjacent to upland forested Redwood National & State Park lands, might solve their conflicts with such fencing. We cannot

blame the elk for not knowing about the boundary, and The Dutch Gardener greenhouses and beds lie right in the path of elk migrating down to coastal *public* lands and beach.

- As an alternative to hunting any elk on the coast, the State should consider moving some elk inland to the extensive Smith River National Recreation Area (SRNRA) habitat. While more than 80% of Del Norte County is public land (hence the critical importance of growth in tourism), most of that public land is actually on *national* lands in the NRA – where the elk don't seem to be. Nor do the elk have many safe ways to travel from the coast, where the conflicts are, over to those national lands. If someday elk herds were re-established on the NRA, where currently deer are hunted, that might lead to additional viewing as well as hunting opportunities. The Elk would also be beneficial to controlling understory that contributes to vulnerability to large forest fires.
- As elk viewing is part of our rapidly growing Tourism economy, we believe that the State agencies should work together to establish safe Elk Viewing Areas for visitors and locals alike.
- In particular, just before Highway 101 enters Crescent City from the south, there are often elk viewing opportunities on private lands near the intersection where 101 intersects with Humboldt and Enderts Beach roads. This might be one good place to consider establishing a safe elk viewing area, with safe pull outs for cars – as the cars are stopping on the narrow edge of the road anyway. Elk have been killed by cars here recently; it is only a matter of time before people are injured. We continue to advocate as well for constructing a safe wildlife crossing in this same area, where elk must cross from the Parks through open private meadows and across Highway 101, to reach coastal Park lands where they have long-established use.
- State should study, propose and enforce wildlife corridors so that the elk can move safely between their public grazing lands on the coast to public forests inland. Currently elk are being killed on the private ranch/farm land that lies in between the public lands. Elk appear to move from coastal Tolowa Dunes State Park/Lake Earl Wildlife Area and Redwood National & State Parks to upland, inland forest in the Redwood Parks.
- Wildlife corridors are also needed for interaction between herds, within the entire region including northern Humboldt county, to build and strengthen diversity in the gene pool.

D) <u>Concern about Lack of Funding for California Department of Fish & Wildlife (DFW).</u>

We are deeply concerned about the diminishing funding and attention for this critical agency. For example, our County once had an on-site DFW Lake Earl Wildlife Area manager, and now that manager is located two hours south in Humboldt County, and overseen by staff many more hours away in the Redding/Yreka corridor. We continue to hear about new staff cuts in this region. Moreover with so few wardens, DFW will never be able to enforce any elk hunting regulations in a daunting patchwork of private and public lands.

It seems to us that inadvertently a value is being established for a bull elk, and that it is a one-sided value. What about the value to the community of those same elk, such as tourism dollars and local quality of life? The value being established requires that an elk dies, whereas the value of a live bull elk over its lifetime may be far greater. We also question what the rationale is for allowing ranchers to sell elk tags for whatever price they wish and potentially profit, if that is indeed happening, from the sale of elk tags – when DFW is going broke. This seems backwards to us. We have heard the local rumors that ranchers have sold off their elk tags for varying amounts up to $5,000 each, and possibly more. We have no way of knowing what the truth of this is without a public accounting of these programs, and we ask you to:

- Give the public a full, transparent accounting of how public trust wildlife (the elk) are being used to generate income for private businesses, and the value to the public of benefits ranchers are providing in exchange.
- Re-consider at least your elk hunting programs, when and if these are resumed, and through any other avenues available to you, to better fund this troubled agency DFW with critical regulatory, enforcement and land management responsibilities.
- Consider setting aside funding from the sale of elk tags for the construction of safe elk viewing areas, and other options.

We plan to stay engaged in this process. Thank you so much for considering our input.

Sincerely,

Don Gillespie

Don Gillespie
President
Friends of Del Norte

cc:
Governor Brown
Resources Secretary John Laird
California State Senator Mike McGuire
California State Assembly Member Jim Wood
Joe Hobbs; Eric Loft; Richard Callas, California Department of Fish & Wildlife (DFW)

Appendices:

A) from Del Norte Triplicate Letters to the Editor Sept. 1, 2015 *(emphasis ours)*

Dear Editor:

My wife and I recently visited Del Norte County. Along with the beautiful coastline and redwood trees, we especially enjoyed the opportunity to see a herd of elk from Highway 101 in an area near the town of Smith River.

We were able to get close enough to take pictures, something we have never been able to do before.

I was astonished to read an article in your newspaper that your Board of Supervisors is asking for more tags to allow an increase in the number of elk to be hunted. One of the reasons we drive along the coast is to be able to enjoy the wildlife and ocean views in your area when we travel. I believe that other tourists may also choose your area for the same reason.

We hope your board members will reconsider their plan to reduce the size of what appears to me as a very small herd of elk. So few areas have elk that are so accessible to the visitors.

Web Weber, Pe Ell, Washington

B) from Del Norte Triplicate Letters to the Editor Sept. 12, 2015 *(emphasis ours)*

Magnificent bull's death a blow to herd, humans

I am shocked and broken hearted regarding the news that this bull elk was killed by a hunter. This is not news that I am celebrating, rather I am grieving over the tragic death of this magnificent bull.

I saw this bull and his harem a few days ago crossing from Endert's Beach to a meadow and pulled over to the side of the road to watch them. I was awed by their presence — so graceful and beautiful. Now, this bull will be packed away as meat in the hunter's freezer and I will never see him again.

This herd, from which this bull was killed, is a very small herd of about 50 elk. This bull, no doubt, was a prime breeder who passed on the fittest genes to the next generations of elk. That would ensure the elk's survival in an era becoming more challenging as the elk's needs are infringed upon by people.

The killing of this bull has ended the passing on of successful genes forever — a loss that can never be replaced. Forever is permanent.

According to the latest weather predictions, the rain that we are hoping for this winter will not materialize; the front is weakening. That means California will be in the fifth year of a drought.

Elk need good nutrition for rutting and calving. This approaching year will bring more stress to the already dry vegetation and that means more difficult survival for the elk. The elk are innocent and are suffering do to human's adverse impact on the environment. I'd like to suggest to those who are fortunate to be property owners to consider supporting wildlife, not collaborating to kill it.

As a nature lover, I have rights, too. I have the right to enjoy the Roosevelt elk wandering in my neighborhood.

Phoebe Lenhart, Crescent City

From: [redacted]
To: FGC
Date: Tuesday, November 24, 2015 11:42:57 AM

Attention California Fish and Game Commissioners

These comments are being submitted after several meetings and conversations with our Resource Conservation District members, Lake Earl Grange members, Del Norte County Farm Bureau members and a great number of other private property owners who are aware or have experienced the Roosevelt Elk and their conflict with our citizens. This last year we presented a letter of request to our County Board of Supervisors asking for their help and support in addressing the Roosevelt Elk problems in our County. Additionally, a petition was presented with several hundred signatures of our local citizens requesting their help to work with the California Fish and Wildlife to find a solution for Elk Damages and threats to our public health and safety.

These comments are made with the fact in mind that DEPREDATION PERMITS are next to impossible to obtain for major elk damages to our property. Elk damages have been carefully documented over the past few years---and damages the past 2 years have rapidly increased due to the explosion of the elk population.

We ARE NOT able to protect our health and safety, our livestock, crops, fences, gardens, orchards or any other aspects of our private property from these DISPLACED elk. We have had the local County sheriff and the California Highway Patrol involved on many occasions.

1. Public Health and Safety

*the California Highway Patrol has completed a document on elk vs vehicles in Del Norte Co. The elk have become a highway HAZARD. Just this last week 2 Elk were hit and killed on HWY 101.

*CHILDREN AT THE BUS STOPS through out the Bertch area and Elk Valley are within a few feet of bull elk and cows with their calves throughout the year.

2. HEARD HEALTH

*Absolutely NO TESTING FOR diseases has taken place regarding the elk population in Del Norte County. This "lack of management" poses a constant threat for diseases to be spread to all domestic livestock. This is verified by a letter from Ben Gonzales (State Vet for Ca Fish and Wildlife). At this time, nearly all herds (dairy and beef) are subject to elk contact on a daily basis here in Del Norte County. We also have documented cases of bull Elk goring horses and
breaking the legs of beef cattle.

3. Examples of Direct Damages (documented by Dave Lancaster)

Destruction of the following: Small organic vegetable crops

Lilly crops
Nurseries
Orchards
Backyard gardens
Yard decorative plants
Septic mound systems
Lawn Sprinkler systems
Yard fences
Backyard pets
Severe damages to horses
Severe damages to livestock
Constant livestock STRESS

4. 80-90% of Del Norte County is in State or Federal ownership. Plus there are additional Tribal Land. There is very little PRIVATE PROPERTY left in our County yet we are supporting the bulk of the elk population on our private property.

* NO COOPERATION or engaged habitat planning with the US Forest Service, National Parks, California State Parks or the California Department of Fish and Wildlife is taking place for elk management. (this information was gained from recently conducted California Public Request Act requests and Federal Agency information requests)

AS A RESULT>>>>>>>We have DISPLACED elk searching for food with great intensity to keep from starving. Their quest for food places tremendous demand on ADJACENT PRIVATE PROPERTY. The elk are in constant conflict with ag enterprises and residential housing areas. (documented by Dave Lancaster).

Our local County government, Farm Bureau, Lake Earl Grange, Resource Conservation District and many private citizens have met with the California Department of Fish and Wildlife representatives and have concluded that a curb in population numbers is the only solution to our Elk problem.(Due to the fact that no State or Federal are actively addressing habitat to support the vast numbers we have.) Several property owners will be opening up their lands in an effort to implement the SHARE Program with extended hunting seasons.

We are in favor of increased tag numbers for both sexes of Roosevelt Elk in Del Norte County.

I would welcome any questions any of you may have. I can be contacted at

Sincerely,
Helen Ferguson
Chair
Lake Earl Grange #577 Environmental

Policy and Procedure Committee

Sent from Windows Mail

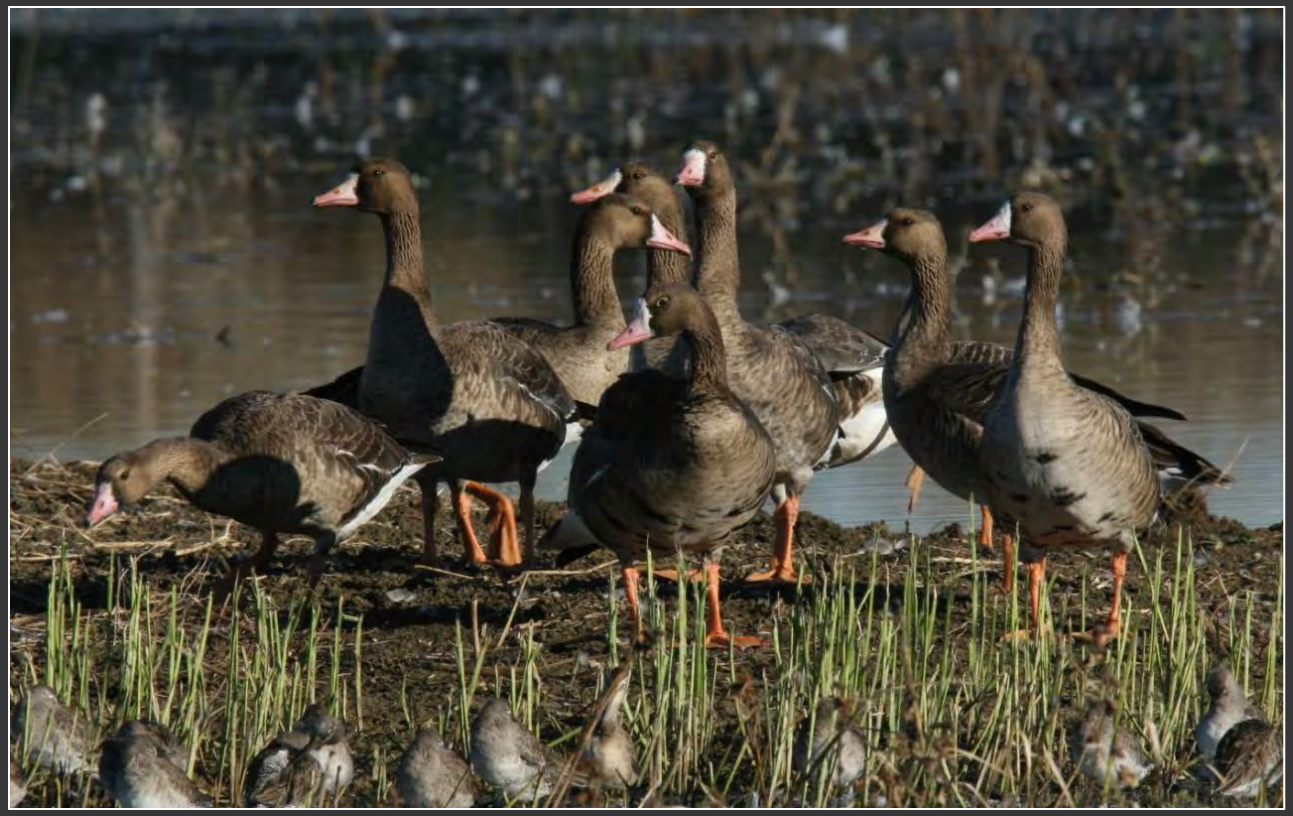
2016-17 Waterfowl Hunting Regulation Notice

Fish and Game Commission Meeting
December 10, 2015
Melanie Weaver, Waterfowl Program Lead
Wildlife Branch

Recommendations

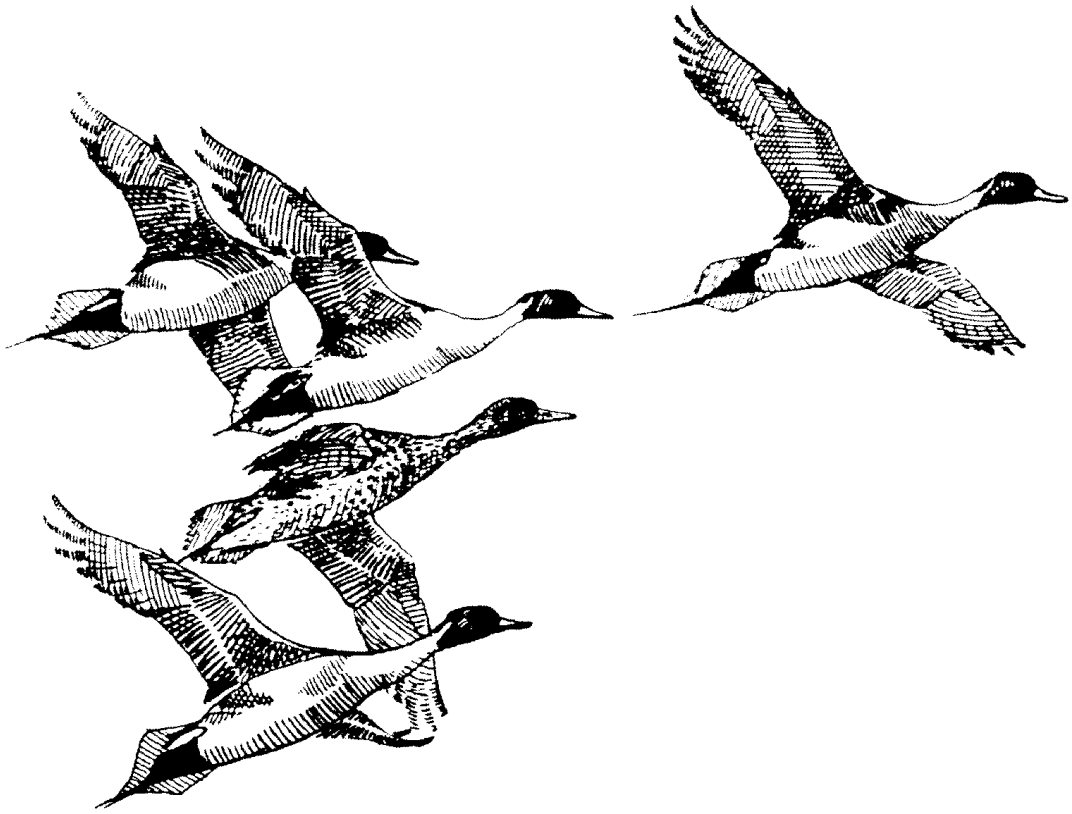
- Federal frameworks allow liberal season, no change from 2015-16
  - New schedule based on Fish and Wildlife Service
  - Season length and bag limit range provided to FGC for flexibility
  - Dept will provide formal recommendation at Feb meeting
- Increase white goose bag limit from 15 to 20.

Questions?



DRAFT
ENVIRONMENTAL DOCUMENT
Section 502, Title 14
California Code of Regulations

MIGRATORY GAME BIRD HUNTING
(WATERFOWL, COOTS, MOORHENS)



November 9, 2015

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND WILDLIFE

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CHAPTER 1 - SUMMARY

PROPOSED PROJECT AND ALTERNATIVES

The project discussed in this document (the proposed project) involves modifications to the current waterfowl hunting regulations for the 2016-17 waterfowl hunting season. Specifically, the Department is proposing to:

- Increase the white goose daily bag limit from 15 to 20 in the Northeastern, Balance of State, Southern San Joaquin Valley, and the Southern California zones, and the Imperial Special Management Area. As a result of increasing the white goose daily bag limit, the total daily bag limit for all geese will increase from 18 to 23 in the Southern California Zone and from 25 to 30 in the Northeastern, Balance of State, and Southern San Joaquin Valley zones.

- Increase the age requirement to participate in the Youth Waterfowl Hunting Days from 15 years of age and younger to 17 years of age and younger.

The U.S. Fish and Wildlife Service (Service) established the frameworks in late October. The Federal frameworks specify the outside dates, total number of hunting days, bag limits, shooting hours, and methods of take authorized for migratory game birds. States must set waterfowl hunting regulations within the federal frameworks. The Department of Fish and Wildlife (Department) will recommend specific season dates and bag limits to the Fish and Game Commission (Commission) that are within the federal frameworks.

The Commission may not select more liberal season dates or bag limits than those set by the Federal frameworks. Therefore, the decisions of the Commission and the recommendations of the Department to the Commission center on the question of whether to adopt the proposed changes or to consider more restrictive or protective State regulations to keep migratory game bird populations in California in a healthy and productive condition.

The Department is providing the Commission with a range of alternatives to the proposed project. Table 1 summarizes the Department findings that there are no significant long-term adverse impacts associated with the proposed project or any of the project alternatives considered for the 2016-17 waterfowl hunting regulations.

SUMMARY OF IMPACTS AND MITIGATION

Table 1. Summary of Alternatives and Their Impacts

Alternative	Description	Significant Impact	Mitigation
Proposed Project	Increase the white goose daily bag limit from 15 to 20 in the Northeastern, Balance of State, Southern San Joaquin Valley, and the Southern California zones, and the Imperial Special Management Area. As a result of increasing the white goose daily bag limit, the total daily bag limit for all geese will increase from 18 to 23 in the Southern California Zone and from 25 to 30 in the Northeastern, Balance of State, and Southern San Joaquin Valley zones. Increase the age requirement to participate in the Youth Waterfowl Hunting Days from 15 years of age and younger to 17 years of age and younger	No	N/A
Alternative 1. No Project	No change from the 2015-16 hunting regulations.	No	N/A
Alternative 2. Reduced Season Lengths, Timing and Bag Limits	Reduce season lengths, timing, and/or bag limits by up to 50 percent.	No	N/A
Alternative 3. Elimination of All Mechanical Decoys.	Eliminate mechanical decoys as a method of take.	No	N/A

The Department concludes that the regulated harvest of migratory game birds within the Federal guidelines does not result in a significant adverse impact to their

populations as analyzed in the 2006 Final Environmental Document for Migratory Game Bird Hunting of Waterfowl, Coots, and Moorhens (incorporated by reference, State Clearinghouse Number 2006042115, available at 1812 9th Street, Sacramento 95811). This is because the size of a wildlife population at any point in time is the result of the interaction between population (reproductive success and mortality rates) and its environment (habitat). Declines in habitat quality and quantity result in reduced carrying capacity, which results in corresponding declines in populations.

State and Federal roles in establishing waterfowl hunting regulations

Migratory birds are managed under the provisions of the Migratory Bird Treaty Act of July 3, 1918 (40. Stat. 755:16 U.S.C. 703 et seq.), Federal regulations [50 CFR 20 (K)(L)], as well as California statutes (Fish and Game Code sections 355 and 356) and regulations selected by the Commission.

The regulations governing the take of migratory game birds in California are selected by the Commission and forwarded to the Service each year. The regulations selected by the Commission must be within frameworks established by the Service through the following generalized three-step process:

1. The Service, with assistance from the states, assesses the status of migratory game bird populations.

2. The Service establishes regulatory frameworks;

3. The Commission makes and forwards season selections to the Service regarding regulations for California; and

4. The Service and the State publish the final regulations.

The Federal frameworks specify the outside dates, total number of hunting days, bag limits, shooting hours, and methods of take authorized for migratory game birds. Proposals selected by the Commission cannot be more liberal than the frameworks established by the Service (Fish and Game Code, Section 355).

In selecting hunting regulations, the Commission is governed by the State's Conservation of Wildlife Resources Policy (Fish and Game Code, Section 1801). This policy contains, among other things, objectives to maintain sufficient populations of wildlife resources in the State and to provide public hunting opportunities through regulated harvest where such harvest is consistent with maintaining healthy wildlife populations (Section 1801 California Fish and Game Code).

In August the Service provided notice to establish hunting regulations for the 2016-17 hunting season; see Federal Register 80 FR 47388-47398. The notice also solicits public comments and establishes the annual schedule for meetings.

The Department is recommending 2 changes to the existing hunting regulations. The frameworks for the 2016-17 season have been approved by the Flyway Councils and adopted by the Service Regulation's Committee meeting October 20-21, 2015. The proposed frameworks allow for a liberal duck season which includes a 107 day season, 7 daily duck limit including 7 mallards but only 2 hen mallards, 2 pintail, 2 canvasback, 2 redheads, and 3 scaup (during an 86 day season). The Department's proposals for the 2016-2017 hunting season for waterfowl, coots, and moorhens are based on these adopted Federal frameworks.

The 2016-17 Proposed Federal Frameworks Pertaining to California

Ducks, Mergansers, Coots, Common Moorhens, and Purple Gallinules
Hunting Seasons and Duck Limits: Concurrent 107 days. The daily bag limit is 7 ducks and mergansers, including no more than 2 female mallards, 2 pintail, 3 scaup (86-day season), 2 canvasback, and 2 redheads. The season on coots and common moorhens may be between the outside dates for the season on ducks, but not to exceed 107 days. Coot, Common Moorhen, and Purple Gallinule Limits: The daily bag limits of coots, common moorhens, and purple gallinules are 25, singly or in the aggregate. Possession limits for all species are triple the daily bag limit.

Outside Dates: Between the Saturday nearest September 24 (September 24) and the last Sunday in January (January 29).

Zoning and Split Seasons: Arizona, California, Idaho, Nevada, Oregon, Utah, Washington, and Wyoming may select hunting seasons by zones. Arizona, California, Idaho, Nevada, Oregon, Utah, Washington, and Wyoming may split their seasons into two segments. Colorado, Montana, and New Mexico may split their seasons into two segments.

Colorado River Zone, California: Seasons and limits shall be the same as seasons and limits selected in the adjacent portion of Arizona (South Zone).

Geese
Season Lengths, Outside Dates, and Limits

Canada geese and brant: Except as subsequently noted, 107-day seasons may be selected with outside dates between the Saturday nearest September 24 (September 24) and the last Sunday in January (January 29). In California, Oregon, and Washington, the daily bag limit is 4 Canada geese. For brant, Oregon and

Washington may select a 16-day season and California a 37-day season. Days must be consecutive. Washington and California may select hunting seasons for up to two zones. The daily bag limit is 2 brant and is in addition to other goose limits. In Oregon and California, the brant season must end no later than December 15.

White-fronted geese: Except as subsequently noted, 107-day seasons may be selected with outside dates between the Saturday nearest September 24 (September 24) and March 10. The daily bag limit is 10.

Light geese: Except as subsequently noted, 107-day seasons may be selected with outside dates between the Saturday nearest September 24 (September 24) and March 10. The daily bag limit is 20.

Split Seasons: Unless otherwise specified, seasons for geese may be split into up to 3 segments. Three-way split seasons for Canada geese and white-fronted geese require Pacific Flyway Council and U.S. Fish and Wildlife Service approval and a 3-year evaluation by each participating State.

California: The daily bag limit for Canada geese is 10.

Balance of State Zone (includes Southern San Joaquin Valley Zone): A Canada goose season may be selected with outside dates between the Saturday nearest September 24 (September 24) and March 10. In the Sacramento Valley Special Management Area, the season on white-fronted geese must end on or before December 28, and the daily bag limit is 3 white-fronted geese. In the North Coast Special Management Area, hunting days that occur after the last Sunday in January should be concurrent with Oregon's South Coast Zone.

Shooting Hours – From One-half hour before sunrise to sunset.

AREAS OF CONTROVERSY

A public scoping session regarding the preparation of environmental documents for hunting waterfowl was held on October 22, 2015, at the Wildlife Branch office located at 1812 9th Street, Sacramento. No areas of controversy regarding migratory bird hunting were identified at the meeting. However, members of the public have expressed concern regarding the following: 1) mechanical spinning wing decoys in the use of taking waterfowl during past hunting seasons. Specifically, since 2002 about 100 letters and or public testimony has been received by the Fish and Game Commission to ban mechanically spinning wing decoys while only about 12 letters of support or public testimony in favor of mechanically spinning wing decoys during the same time period (Department files); 2) the Commission has received numerous letters both supporting and opposing the continued hunting in Morro and Tomales

bays; and 3) opposition to the continued restrictions on bag limit and season length for white-fronted geese in the Sacramento Valley Special Management Area.

Concerns about the effect of climate change since the 2006 Final Environmental Document for Migratory Game Bird Hunting of Waterfowl, Coots, and Moorhens (incorporated by reference, State Clearinghouse Number 2006042115, available at 1812 9th Street, Sacramento 95811) was published led to a discussion of this topic in Appendix F.

ISSUES TO BE RESOLVED

As provided by existing law, the Commission is the decision-making body (lead agency) considering the proposed project, while the Department has responsibility for conducting management activities such as resource assessments, preparing management plans, operating public hunting opportunities and enforcing laws and regulations. The primary issue for the Commission to resolve is whether to change waterfowl hunting regulations, within the federal framework, as an element of waterfowl management. If such changes are authorized, the Commission will specify the areas, season lengths, and bag and possession limits and other appropriate special conditions.

FUNCTIONAL EQUIVALANCY

The California Environmental Quality Act (CEQA) requires all public agencies in the State to evaluate the environmental impacts of projects they approve, including regulations, which may have a potential to significantly affect the environment. CEQA review of the proposed project will be conducted in accordance with the Commission's certified regulatory program (CRP) approved by the Secretary for the California Resources Agency pursuant to Public Resources Code section 21080.5 (See generally Cal. Code Regs., tit. 14, §§ 781.5, and 15251, subd. (b).). The Department has prepared this Environmental Document (ED) which is the functional equivalent of an Environmental Impact Report, on behalf of the Commission in compliance with this requirement. The ED provides the Commission, other agencies, and the general public with an objective assessment of the potential effects.

In addition, pursuant to Section 15087 of the CEQA Guidelines, this environmental document is available for public review for 45 days. During the review period, the public is encouraged to provide written comments regarding the environmental document to the Department of Fish and Wildlife, Wildlife Branch, 1812 9th Street, Sacramento, California 95811. Comments must be received by the Department by 5:00 p.m. on December 28, 2015.

CHAPTER 2 - THE PROPOSED ACTION

The proposed project being considered consists of the following modifications to existing migratory game bird hunting regulations:

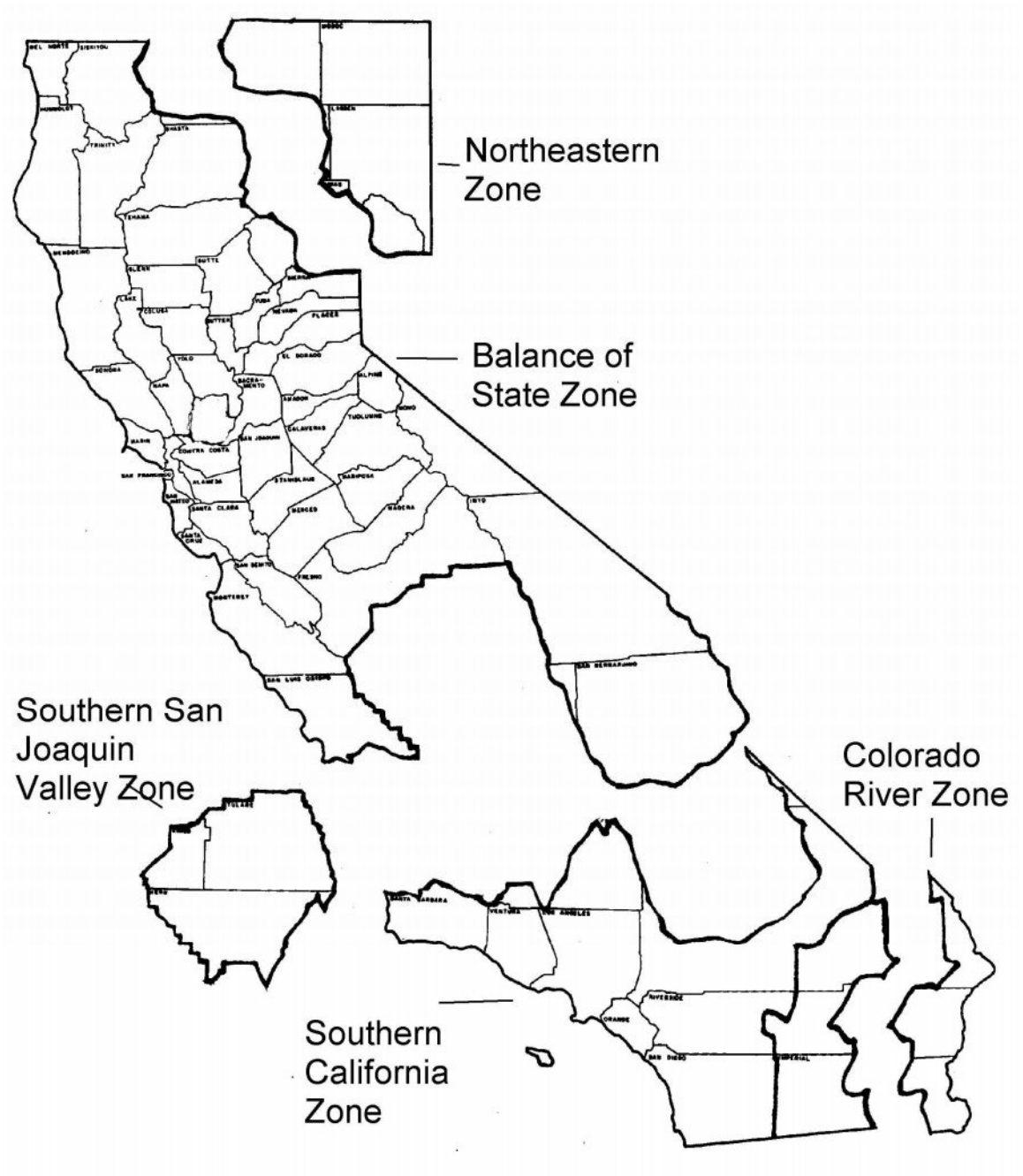
1. Increase the white goose daily bag limit from 15 to 20 in the Northeastern, Balance of State, Southern San Joaquin Valley, and the Southern California zones, and the Imperial Special Management Area. As a result of increasing the white goose daily bag limit, the total daily bag limit for all geese will increase from 18 to 23 in the Southern California Zone and from 25 to 30 in the Northeastern, Balance of State, and Southern San Joaquin Valley zones.

2. Increase the age requirement to participate in the Youth Waterfowl Hunting Days from 15 years of age and younger to 17 years of age and younger.

Table 2. Proposed Changes to Season Dates and Bag Limits for 2016-17.

Species by Zone	Daily Bag Limit	Possession limit	Season Length
COOTS AND MOORHENS			
Northeastern CA	no change	no change	no change
So. San Joaquin Valley	no change	no change	no change
So. California	no change	no change	no change
Colorado River	no change	no change	no change
Balance of State	no change	no change	no change
DUCKS			
Statewide	no change	no change	
EXCEPTIONS			
Mallard (max.)	no change	no change	no change
Mallard Hen (max.)	no change	no change	no change
Pintail (max.)	no change	no change	no change
Redhead (max.)	no change	no change	no change
Scaup (max.)	no change	no change	no change
Canvasbacks (max.)	no change	no change	no change
Northeastern Calif.	no change	no change	no change
So. San Joaquin Valley	no change	no change	no change
Southern California	no change	no change	no change
Colorado River	no change	no change	no change
Balance of State	no change	no change	no change
GEESE			
Northeastern Calif.		no change	no change
EXCEPTIONS			
Large Canada Geese (max.)	no change	no change	
White-Front (max.)	no change	no change	no change
Small Canada Geese (max.)	no change	no change	
White Geese (max.)	20	no change	no change
So. San Joaquin Valley	no change	no change	no change
EXCEPTIONS			
Large Canada Geese (max.)	no change	no change	
White-Front (max.)	no change	no change	
Small Canada Geese (max)	no change	no change	
White Geese (max.)	20	no change	
Southern Calif.	no change	no change	no change
EXCEPTIONS			
Large Canada Goose (max.)	no change	no change	
White-Front Geese (max.)	no change	no change	
Small Canada Geese (max)	no change	no change	
White Geese (max.)	20	no change	
Colorado River	no change	no change	no change
EXCEPTIONS			
White Geese (max.)	no change	no change	
Dark Geese (max.)	no change	no change	
Balance of State	no change	no change	no change
EXCEPTIONS			
Large Canada Geese (max.)	no change	no change	
White-Front (max.)	no change	no change	
Small Canada Geese (max)	no change	no change	
White Geese (max.)	20	no change	
Special Management Areas	**Species**		**Season**
North Coast	no change		no change
Humboldt Bay South Spit	no change		no change
Sacramento Valley (West)	no change		no change
Morro Bay	no change		no change
Martis Lake	no change		no change
North Coast Brant	no change		no change
Balance of State Brant	no change		no change
Imperial County	20		no change

Figure 1. Waterfowl Zones in California



BACKGROUND AND EXISTING CONDITIONS

Background

Waterfowl, coots and moorhens are migratory game birds that use varied habitat types in different geographical areas of North America. Many individuals of these species reproduce in other states and countries and migrate in the fall and winter to California, although there are substantial resident populations of some species.

There are 36 species of migratory game birds from two of the taxonomic families that occur in California, listed below. Migratory game birds are defined by convention and law as belonging to the following taxonomic families (USDI 1988a:1):

Anatidae (ducks, geese, brant, and swans);
Columbidae (doves and pigeons);
Gruidae (cranes);
Rallidae (rails, coots, and gallinules);
Scolopacidae (woodcock and snipe);
Corvidae (crows).

The two families discussed in this ED are *Anatidae* and *Rallidae*. These families are combined herein due to similarities in basic life-history characteristics. These characteristics include: (1) the use of California as a migration and wintering area (Palmer 1976, Bellrose 1980, Zeiner *et al*. 1990); (2) the use of seasonal wetlands as roosting and foraging habitats (Bellrose 1980, Heitmeyer and Raveling 1988, USDI 1988a:31-56); and (3) for most duck species, similarities in nesting areas, habitat types, age at reproduction, and clutch sizes (Palmer 1976, Bellrose 1980, USDI 1988). Some differences among the species in these families exist. Geese and some duck species breed at an older age than do most ducks (Palmer 1976, Bellrose 1980). Deepwater and estuarine habitats are more important to some species (Palmer 1976, Bellrose 1980), and the use of dry and wet agricultural fields are more important to other species (Bellrose 1980, Zeiner *et al*. 1990).

Individuals and populations of migratory birds spend parts of the year in different geographical areas. Due to this geographic distribution and migratory nature, management for these species is based on geographic units, or flyways, (USDI 1975, USDI 1988a:63) comprised of several states (Figure 2).

These units, or flyways, incorporate populations that are generally discrete from populations in other units. Therefore, an analysis of the environmental effects of

Figure 2. Administrative Waterfowl Flyways

the proposed project in California must consider the status of the affected species at a flyway level.

Adaptive Harvest Management

In March 1995 (60 FR 15642 -15648), the Service implemented a general harvest strategy for setting duck framework regulations and the process will be used again in 2015 (80 FR 19851-19863). The regulatory process for migratory birds has evolved since the early 1900s from one that included little or no monitoring of populations and the establishment of regulations based on traditions, to today's more data-driven process (Johnson *et al*. 1993). The current process, known as Adaptive Harvest Management (AHM)(USFWS 2014a) establishes explicit harvest objectives and a single regulatory package is selected from a limited array of options. This single package is evaluated based on mathematical models, with the goal of ensuring that duck populations are healthy over the long-term while providing hunting opportunity consistent with the long-term health while learning more about the effect of hunting mortality on population parameters (See Final Environmental Document for Migratory Game Bird Hunting August 2006, incorporated by reference, State Clearinghouse Number 2006042115, available at 1812 9th Street, Sacramento 95811)

AHM balances hunting opportunities with the desire to achieve the duck population goals identified in the North American Waterfowl Management Plan (NAWMP). Currently, a set of four regulatory options, each containing flyway-specific season lengths, bag limits, and dates are being used. The selection of a specific option is recommended each year from a decision matrix based on mid-continent mallard breeding populations and habitat conditions in the current year, although the State continues to have the option to establish more restrictive regulations.

For the Pacific Flyway, the proposed regulatory packages vary primarily in season length (closed, 60, 86, or 107 days) and total duck bag limit (either four or seven ducks per day). Species- (e.g. mallard) and sex- (e.g. mallard) specific limits are contained within the AHM packages. Additionally, prescriptive regulation processes for pintail, canvasback and scaup have been adopted by the Service that determine daily bag limits depending on breeding population size, habitat conditions, and the season length established through the AHM process (see below).

In March 2008, the Pacific Flyway Council recommended that the Service set duck season frameworks in the Pacific Flyway based on a separate modeling approach that uses data from western mallards rather than mallards from the mid-continent region. This is because most of the mallards harvested in the Pacific Flyway originate from within the Flyway. The Service adopted the separate mallard model in August 2008 and plans to continue the use of that approach in 2015 (80 FR 19851-19863).

The western mallard approach uses the same regulatory packages as currently in use under continental AHM. Instead of a harvest objective constrained by the population goal in the NAWMP plan, the harvest objective for western mallards is based on a "shoulder approach", or a proportion of maximum sustained yield. Current modeling suggests that western mallards have been harvested at about 80% of their maximum potential, compared to about 90% for mid-continent mallards under the continental AHM approach.

As in mid-continent AHM, daily bag limits and season length will be set based on the status of the mallard breeding population. Bag limits for other species, including those for which individual harvest strategies have been adopted (pintail, canvasbacks, scaup) are based on mid-continent AHM and will be used in the Pacific Flyway. The State continues to have the option to establish more restrictive regulations.

Pintail Harvest Strategy

In 1997 a prescribed harvest strategy was developed (62 FR 39721 and 50662) with several modifications since inception. The harvest strategy was revised in 2002 when Flyway-specific harvest models were updated (67 FR 40131). In 2002 and 2003, the Service set pintail regulations that deviated from the strict prescriptions of the harvest strategy (i.e., partial season), but remained true to the intent of the strategy (67 FR 53694 and 59111; 68 FR 50019 and 55786). In 2004, the harvest strategy was modified to include a partial season option (69 FR 43696 and 52971). In adopting those changes, the USFWS and others called for review of the pintail strategy (69 FR 57142) and consideration of technical modifications that could be made to improve it. As a result of this review, the strategy was revised in 2006 to include updated flyway-specific harvest models, an updated recruitment model, and the addition of a procedure for removing bias in the breeding population size estimate based on its mean latitude (71 FR 50227 and 55656). Pursuant to requests from flyways and other stakeholders, a compensatory model was added to the strategy in 2007 (72 FR 18334, 31791, and 40198) as an alternative to the existing additive harvest model, and this update made the harvest strategy adaptive on an annual basis. The current strategy was developed in 2010 (75 FR 32873) and designed to maximize long-term cumulative harvest, which inherently requires perpetuation of a viable population. Hunting will be allowed when the observed breeding population is above 1.75 million birds (based on the lowest observed breeding population size since 1985 of 1.79 million birds in 2002).

The adaptive management protocol considers a range of regulatory alternatives for pintail harvest management that includes a closed season, 1-bird daily bag limit, or 2-bird daily bag limit. The maximum pintail season length depends on the general duck season framework (characterized as liberal, moderate, or restrictive and varying by Flyway) specified by mallard AHM.

An optimal pintail regulation is calculated under the assumption of a liberal mallard season length in all Flyways. However, if the season length of the general duck

season determined by mallard AHM is less than liberal in any of the Flyways, then an appropriate pintail daily bag limit would be substituted for that Flyway. Thus, a shorter season length dictated by mallard AHM would result in an equivalent season length for pintails, but with increased bag limit if the expected harvest remained within allowable limits.

Canvasback Harvest Strategy

Since 1994 the Service has followed a harvest strategy that if canvasback population status and production are sufficient to permit a harvest of 1-bird daily bag limit nationwide for the entire length of the regular duck season, while still attaining a projected spring population objective of 500,000 birds. In 2008 (73 FR 43290), the strategy was modified to incorporate the option for a 2-bird daily bag limit for canvasbacks when the predicted breeding population the subsequent year exceeds 725,000 birds. A partial season would be permitted if the estimated allowable harvest was within the projected harvest for a shortened season. If neither of these conditions can be met, the harvest strategy calls for a closed season.

Scaup Harvest Strategy

The scaup population has experienced a significant long-term decline. The 2007 population estimate was the third lowest on record. Recent population estimates have been more than 30 percent below the 55 year average with the biggest decline occurring over the last 25 years. There is evidence that the long-term scaup decline may be related to changes in scaup habitat. Several different ideas have been proposed to explain the decline, including a change in migration habitat conditions and food availability, effects of contaminants on scaup survival and reproduction and changing conditions on the breeding grounds possibly related to warming trends in portions of northern North America. Hunting has not been implicated as a cause of the past scaup decline, but the Service is committed to ensuring that harvest levels remain commensurate with the ability of the declining population to sustain harvest. In 2008 the Service implemented a new scaup harvest strategy (73 FR 43290) that used restrictive, moderate, and liberal regulatory alternatives. The scaup harvest strategy prescribes optimal harvest levels given an observed breeding population size and an explicit harvest management objective; maximize 95% of long-term cumulative harvest.

Service Changes in the Timing of Annual Migratory Bird Hunting Adoption

Historically, the Service published preliminary federal frameworks in mid-August and states adopted hunting regulations in early August based on the decisions of the Service Regulation Committee (SRC) in late July. The Service then published final frameworks, which contained the state-selected seasons in September. Beginning with the 2016 hunting seasons (79 FR 56864) a new schedule is now used for setting annual migratory bird hunting regulations. The new schedule will establish migratory

bird hunting seasons much earlier than the historic system. Under the new process, proposed hunting season frameworks for a given year will be developed in early fall of the prior year. Those frameworks will be finalized in October, thereby enabling the state agencies to select their seasons by late April and the Service will publish final frameworks in early summer.

Biological data (spring and summer surveys) for the following year will not be available in the fall, when the Flyway Councils and the Service will be developing hunting regulations for the next year. Thus, regulation development will be based on predictions derived from long-term biological information and established harvest strategies (as described above). This process will continue to use the best science available and will balance hunting opportunities with long-term migratory game bird conservation, while fulfilling all administrative requirements. Existing individual harvest strategies have been modified using either data from the previous year(s) or model predictions to fit this new schedule. Many existing regulatory prescriptions used for Canada Goose, Sandhill Cranes, Mourning Doves, and American Woodcock currently work on this basis. Uncertainty associated with these population status predictions has been accounted for and incorporated into the decision-making process. The Service concluded (Boomer, *et al.* 2015) that this uncertainty should not result in a disproportionately higher harvest rate for any stock, nor substantially diminish harvest opportunities, either annually or on a cumulative basis.

There will be a one-time overlap in the regulatory processes for the 2015-16 and 2016-17 hunting seasons. The regulatory schedule for the 2016-17 seasons began in mid-June 2015 with the first SRC meeting. Flyway technical committees and Councils met in September 2015 following the release of the 2015 population status reports (breeding population surveys) and harvest reports in mid-August and the 2015 AHM report in early September. After Flyway Council meetings, the SRC and Flyway Council Consultants will meet October 20-21, 2015 to review information on the status of migratory birds and consider recommendations for the 2016–17 seasons. Proposed season frameworks, a 30-day public comment period, and final season frameworks will then follow with ultimate publication of all 2016-17 migratory game bird hunting seasons in late May to mid-June of 2016.

Existing Conditions

Northeastern Zone: In that portion of California lying east and north of a line beginning at the intersection of Interstate 5 with the California-Oregon line; south along Interstate 5 to its junction with Walters Lane south of the town of Yreka; west along Walters Lane to its junction with Easy Street; south along Easy Street to the junction with Old Highway 99; south along Old Highway 99 to the point of intersection with Interstate 5 north of the town of Weed; south along Interstate 5 to

its junction with Highway 89; east and south along Highway 89 to Main Street in Greenville; north and east to its junction with North Valley Road; south to its junction of Diamond Mountain Road; north and east to its junction with North Arm Road; south and west to the junction of North Valley Road; south to the junction with Arlington Road (A22); west to the junction of Highway 89; south and west to the junction of Highway 70; east on Highway 70 to Highway 395; south and east on Highway 395 to the point of intersection with the California-Nevada state line; north along the California-Nevada state line to the junction of the California-Nevada-Oregon state lines west along the California-Oregon state line to the point of origin.

Ducks: From the second Saturday in October extending for 105 days, 7/day which may include 7 mallards, 2 hen mallard, 2 pintail, 2 canvasback, 2 redheads, 3 scaup during the 86-day season. Possession limit triple the daily bag.

Geese: From the second Saturday in October extending for 100 days, 25/day, up to 15 white geese and up to 10 dark geese, but not more than 2 Large Canada geese. Possession limit triple the daily bag.

Coots and Moorhens: Concurrent with Duck Season. 25/day. Possession limit triple the daily bag.

Youth Hunting Days: The Saturday fourteen days before the opening of waterfowl season extending for 2 days. To participate in these youth hunts hunters must be 15 years of age or younger and must be accompanied by a non-hunting adult 18 years of age or older.

Falconry Take of Ducks: Open concurrently with duck season extending for 105 days. 3/day. Possession limit triple the daily bag.

Southern San Joaquin Valley Zone: All of Kings and Tulare counties and that portion of Kern County north of the Southern California Zone.

Ducks: From the fourth Saturday in October extending for 100 days, 7/day which may include, 7 mallards, 2 hen mallards, 2 pintail, 2 canvasback, 2 redheads, 3 scaup during the 86-day season. Possession limit triple the daily bag.

Geese: From the fourth Saturday in October extending for 100 days, 25/day, up to 15 white geese and up to 10 dark geese. Possession limit triple the daily bag.

Coots and Moorhens: Concurrent with Duck Season, 25/day. Possession limit triple the daily bag.

Youth Hunting Days: The Saturday following the closing of waterfowl season extending for 2 days. To participate in these youth hunts hunters must be 15 years of age or younger and must be accompanied by a non-hunting adult 18 years of age or older.

Falconry Take of Ducks: Ducks only, concurrent with duck season and February 1-3, 2016. 3/day. Possession limit triple the daily bag.

Southern California Zone: In that portion of southern California (but excluding the Colorado River zone) lying south and east of a line beginning at the mouth of the Santa Maria River at the Pacific Ocean; east along the Santa Maria River to where it crosses Highway 166 near the City of Santa Maria; east on Highway 166 to the junction with Highway 99; south on Highway 99 to the crest of the Tehachapi Mountains at Tejon Pass; east and north along the crest of the Tehachapi Mountains to where it intersects Highway 178 at Walker Pass; east on Highway 178 to the junction of Highway 395 at the town of Inyokern; south on Highway 395 to the junction of Highway 58; east on Highway 58 to the junction of Interstate 15; east on Interstate 15 to the junction with Highway 127; north on Highway 127 to the point of intersection with the California-Nevada state line.

Ducks: From the fourth Saturday in October extending for 100 days, 7/day which may include, 7 mallards, 2 hen mallards, 2 pintail, 2 canvasback, 2 redheads, 3 scaup during the 86-day season. Possession limit triple the daily bag.

Geese: From the fourth Saturday in October extending for 100 days, 18/day, up to 15 white geese, up to 3 dark geese. Possession limit triple the daily bag.

Coots and Moorhens: Concurrent with duck season, 25/day. Possession limit triple the daily bag.

Youth Hunting Days: The Saturday following the closing of waterfowl season extending for 2 days. To participate in these youth hunts hunters must be 15 years of age or younger and must be accompanied by a non-hunting adult 18 years of age or older.

Falconry Take of Ducks: Concurrent with duck season and February 1–5, 2016. 3/day. Possession limit triple the daily bag.

Colorado River Zone: In those portions of San Bernardino, Riverside, and Imperial counties lying east of the following lines: Beginning at the intersection of Highway

95 with the California-Nevada state line; south along Highway 95 to Vidal Junction; south through the town of Rice to the San Bernardino-Riverside county line on a road known as “Aqueduct Road” in San Bernardino County; south from the San Bernardino-Riverside county line on road known in Riverside County as the “Desert Center to Rice Road” to the town of Desert Center; east 31 miles on Interstate 10 to its intersection with the Wiley Well Road; south on this road to Wiley Well; southeast along the Army-Milpitas Road to the Blythe, Brawley, Davis Lake intersections; south on the Blythe-Brawley paved road to its intersection with the Ogilby and Tumco Mine Road; south on this road to Highway 80; east seven miles on Highway 80 to its intersection with the Andrade-Algodones Road; south on this paved road to the intersection of the Mexican boundary line at Algodones, Mexico.

Ducks: From the third Friday in October extending for 101 days, 7/day which may include 7 mallards, 2 hen mallards or Mexican-like ducks, 2 pintail, 2 canvasback, 2 redheads, 3 scaup during the 86-day season. Possession limit triple the daily bag.

Geese: From the third Friday in October extending for 101 days, 10/day, up to 10 white geese, up to 4 dark geese. Possession limit triple the daily bag.

Coots and Moorhens: Concurrent with Duck Season, 25/day, 25 in possession.

Youth Hunting Days: The Saturday following the closing for waterfowl season. To participate in these youth hunts hunters must be 15 years of age or younger and must be accompanied by a non-hunting adult 18 years of age or older.

Falconry Take of Ducks: Ducks only. Concurrent with duck season and from January 25 – 28, 2016. 3/day. Possession limit triple the daily bag.

*Balance of State Zone***:** That portion of the state not included in Northeastern California, Southern California, Colorado River or the Southern San Joaquin Valley zones.

Ducks: From the fourth Saturday in October extending for 100 days, 7/day which may include 7 mallards, 2 hen mallards, 2 pintail, 2 canvasback, 2 redheads, 3 scaup during the 86-day season. Possession limit triple the daily bag.

Geese: Early Season: Large Canada only from the Saturday closest to October 1 for a period of 5 days EXCEPT in the North Coast Management Area where Large Canada geese are closed during the early season. Regular Season: Dark and white geese from the fourth Saturday in October extending for 100 days EXCEPT in the Sacramento Valley Special Management Area where the white-fronted goose season will close after December 21. Late Season: White-fronted

geese and white geese from the second Saturday in February extending for a period of 5 days EXCEPT in the Sacramento Valley Special Management Area where the white-fronted geese is closed. During the Late Season, hunting is not permitted on wildlife areas listed in Sections 550 – 552 EXCEPT on Type C wildlife areas in the North Central Region. 25/day, up to 15 white geese and up to 10 dark geese, but not more than 3 white-fronted geese in the Sacramento Valley Special Management Area. Possession limit triple the daily bag. Possession limit triple the daily bag.

Coots and Moorhens: Concurrent with Duck Season, 25/day. Possession limit triple the daily bag.

Youth Hunting Days: The Saturday following the closing of waterfowl season extending for 2 days. To participate in these youth hunts hunters must be 15 years of age or younger and must be accompanied by a non-hunting adult 18 years of age or older.

Falconry Take of Ducks: Open concurrently with duck season and February 6–7, 2016. 3/day. Possession limit triple the daily bag.

North Coast Special Management Area: All of Del Norte and Humboldt counties.

All Canada Geese: From the second Sunday in November extending for a period of 85 days (Regular Season) and from the third Saturday in February extending for a period of 20 days (Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016. Up to 10/day Canada geese of which only 1 may be a Large Canada goose, EXCEPT during the Late Season the bag limit on Large Canada geese is 0/day. Possession limit triple the daily bag.

Falconry Take of Ducks: Geese only. Concurrent with Small Canada goose season. 3/day. Possession limit triple the daily bag.

Humboldt Bay South Spit (West Side) Special Management Area: Beginning at the intersection of the north boundary of Table Bluff County Park and the South Jetty Road; north along the South Jetty Road to the South Jetty; west along the South Jetty to the mean low water line of the Pacific Ocean; south along the mean low water line to its intersection with the north boundary of the Table Bluff County Park; east along the north boundary of the Table Bluff County Park to the point of origin.

All species: Closed during brant season

Sacramento Valley (West) Special Management Area: Beginning at the town of Willows; south on Interstate 5 to the junction with Hahn Road; east on Hahn Road

and the Grimes-Arbuckle Road to the town of Grimes; north on Highway 45 to its junction with Highway 162; north on Highway 45-162 to the town of Glenn; west on Highway 162 to the point of beginning.

White-fronted geese: Closed after Dec 21, 3/day. Possession limit triple the daily bag.

*Morro Bay Special Management Area***:** Beginning at a point where the high tide line intersects the State Park boundary west of Cuesta by the Sea; northeasterly to a point 200 yards offshore of the high tide line at the end of Mitchell Drive in Baywood Park; northeasterly to a point 200 yards offshore of the high tide line west of the Morro Bay State Park Boundary, adjacent to Baywood Park; north to a point 300 yards south of the high tide line at the end of White Point; north along a line 400 yards offshore of the south boundary of the Morro Bay City limit to a point adjacent to Fairbanks Point; northwesterly to the high tide line on the sand spit; southerly along the high tide line of the sand spit to the south end of Morro Bay; easterly along the Park boundary at the high tide line to the beginning point.

All species: Open in designated areas only

Martis Creek Lake Special Management Area: The waters and shoreline of Martis Creek Lake, Placer and Nevada counties.

All species: Closed until Nov 16

*Northern Brant Special Management Area***:** Del Norte, Humboldt and Mendocino Counties.

Black Brant: From November 8 extending for 37 days. Possession limit triple the daily bag.

Balance of State Brant Special Management Area: That portion of the state not included in the Northern Brant Special Management Area.

Black Brant: From November 9 extending for 37 days. Possession limit triple the daily bag.

Imperial County Special Management Area: Beginning at Highway 86 and the Navy Text Base Road; south on Highway 86 to the town of Westmoreland; continue through the town of Westmoreland to Route S26; east on Route S26 to Highway 115; north on Highway 115 to Weist Rd.; north on Weist Rd. to Flowing Wells Rd.; northeast on

Flowing Wells Rd. to the Coachella Canal; northwest on the Coachella Canal to Drop 18; a straight line from Drop 18 to Frink Rd.; south on Frink Rd. to Highway 111; north on Highway 111 to Niland Marina Rd.; southwest on Niland Marina Rd. to the old Imperial County boat ramp and the water line of the Salton Sea; from the water line of the Salton Sea, a straight line across the Salton Sea to the Salinity Control Research Facility and the Navy Test Base Road; southwest on the Navy Test Base Road to the point of beginning.

White geese: From the first Saturday in November extending for a period of 86 days (Regular Season) and from the first Saturday in February extending for 16 days (Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016. Up to 15 geese. Possession limit triple the daily bag.

Proposed Changes and Analysis

- Increase the white goose daily bag limit from 15 to 20 in the Northeastern, Balance of State, Southern San Joaquin Valley, and the Southern California zones, and the Imperial Special Management Area. As a result of increasing the white goose daily bag limit, the total daily bag limit for all geese will increase from 18 to 23 in the Southern California Zone and from 25 to 30 in the Northeastern, Balance of State, and Southern San Joaquin Valley zones.

- Increase the age requirement to participate in the Youth Waterfowl Hunting Days from 15 years of age and younger to 17 years of age and younger.

The bag limit increase for white geese: Both Ross' geese and lesser snow geese populations in the Pacific Flyway are about 1,000,000 birds and are above their population goals (100,000 and 200,000 respectively). The Canadian Wildlife Service has proposed to designate both populations as overabundant because of the rapid population growth since 2003 and concern for the potential impacts to the breeding grounds in the Western Canadian Arctic. The Service and Pacific Flyway recognized that reducing the population is needed and in 2013 increased the daily bag limit to 20 in the federal frameworks. CA increased the daily bag limit to 15 in 2015 and would like to increase the bag limit to 20 as allowed in federal frameworks. Achieving a population reduction through hunting alone is not likely given the low numbers of hunters.

The age requirement change to participate in the federal Youth Waterfowl Hunting Days is administrative in nature. Many states in the Pacific Flyway have a youth license and define youth as 17 or younger. Allowing individuals 17 years of age and younger to participate in the special youth hunting season would align with most

states current definition of youth in the Pacific Flyway. States would still have the option to adopt an age restriction younger than 17 if they so choose. Youth hunters will still be required to have an adult accompany them on their hunts to maintain the mentoring aspect. Youth hunters 16 years old and older will also be required to adhere to federal duck stamp requirements. The special youth season may help recruit non-hunters and novice hunters into the sport. Youth only hunts can be very exciting for young hunters, and allowing them to participate for several more years may increase the likelihood of their participation in hunting-related activities in the future. In the long-term, participation of youth in this special season may result in support for waterfowl and wetland conservation by fostering a more knowledgeable public, continued support for waterfowl hunting, and continued support for the protection and enhancement of wetland ecosystems.

POLICY CONSIDERATIONS

The legislature formulates laws and policies regulating the management of fish and wildlife in California. The general wildlife conservation policy of the State is to encourage the conservation and maintenance of wildlife resources under the jurisdiction and influence of the State (Section 1801, Fish and Game Code). The policy includes several objectives, as follows:

1. To provide for the beneficial use and enjoyment of wildlife by all citizens of the State;
2. To perpetuate all species of wildlife for their intrinsic and ecological values, as well as for their direct benefits to man;
3. To provide for aesthetic, educational, and non-appropriative uses of the various wildlife species;
4. To maintain diversified recreational uses of wildlife, including hunting, as proper uses of certain designated species of wildlife, subject to regulations consistent with public safety, and a quality outdoor experience;
5. To provide for economic contributions to the citizens of the State through the recognition that wildlife is a renewable resource of the land by which economic return can accrue to the citizens of the State, individually and collectively, through regulated management. Such management shall be consistent with the maintenance of healthy and thriving wildlife resources and the public ownership status of the wildlife resource;
6. To alleviate economic losses or public health and safety problems caused by wildlife; and
7. To maintain sufficient populations of all species of wildlife and the habitat necessary to achieve the above-state objectives.

With respect to migratory game birds, Sections 355 and 356 of the Fish and Game Code provides that the Commission may adopt migratory game bird hunting regulations as long as they are within the federal frameworks.

The Department has concluded that the proposed project will not have a significant adverse effect on the environment. No mitigation measures or alternatives to the proposed project are needed.

POTENTIAL FOR SIGNIFICANT EFFECTS

Previous reviews of other potential environmental effects were analyzed extensively in previous environmental documents. The analysis of these fifteen factors regarding migratory game bird hunting were examined in the prior year environmental document (incorporated by reference, August 2006, State Clearinghouse Number 2006042115, available at 1812 9th Street, Sacramento 95811) and certified by the Fish and Game Commission. The modifications proposed are to increase hunter opportunity and reduce depredation of some goose populations that winter in California. The Department concludes that the proposed project and existing hunting regulations will not cause significant adverse effects on the factors analyzed in the 2006 FED and summarized below.

EFFECTS OF HABITAT DEGRADATION

Breeding Areas

The 2006 analysis was presented on page 100 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The primary impacts on breeding waterfowl from agriculture are the cultivation or tillage of nesting cover (Higgins 1977, Kirsch 1969, Milonski 1958). A secondary effect of the agricultural process is the tillage of lands right up to the edges of ponds or other water sources, which effectively eliminates brood rearing habitat. These activities in the prairies are especially prevalent in years of drought where farmers are able to intensively farm all of a wetland basin.

In the primary duck production areas of Canada, there is greater opportunity during drought periods for intensive farming and greater demand for available forage for cattle. Unfortunately, waterfowl must compete for the same resources. Agriculture does not generally impact breeding habitats for the majority of goose populations, because most goose nesting occurs in undeveloped areas of the arctic.

Wintering Areas

The 2006 analysis was presented on page 101 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Wetland habitats in California have been reduced from an estimated five million acres to less than 450,000 acres at present. Most of these wetlands have been converted to agricultural uses, but urban developments have also reduced the wetland acreage in California. In the critically important Central Valley,

about 70 percent of the remaining acreage is in private ownership and managed primarily as duck hunting clubs.

Some of the agricultural areas continue to provide habitat of value to waterfowl through the availability of waste grains and the provision of nesting cover. However, certain agricultural activities, such as fall plowing, can reduce food availability for waterfowl.

Habitat conversions by humans have reduced the habitat available for waterfowl. These conversions take place over a period of time, such that substantial habitat losses during the period of the proposed project are not likely to occur and act in a cumulative manner with the hunting of waterfowl, coots and moorhens in California that would result in significant adverse effects to the environment.

EFFECTS OF DISEASES, PESTICIDES, AND OTHER CONTAMINANTS

The 2006 analysis was presented on page 101 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Diseases, pesticides and other contaminants will likely cause the death of waterfowl, coots, moorhens, and common snipe in California. Even though some losses to disease can be in the tens of thousands of individual birds, these losses are small relative to the populations present in the State. Accordingly, the Department concludes that the combination of the proposed project and existing regulations and potential losses to diseases and other contaminants will not result in a significant adverse impact to waterfowl, coot and moorhen populations in California in 2016-17.

EFFECTS OF ILLEGAL HARVEST

The 2006 analysis was presented on pages 110 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The Department currently has a staff of about 350 game wardens stationed throughout the State. The Department analyzed waterfowl-related citations to estimate the extent of waterfowl mortality occurring as a result of illegal take of waterfowl in California. The level of illegal harvest is difficult to determine (USDI 1988a:29-30). In an attempt to model the possible extent of illegal harvest, the Service compared known survival rates of mallards against known hunting mortality (USDI 1988a). Estimated average annual survival rates are 66 percent and estimated hunting mortality is 18 percent (based on recoveries of banded birds), all other forms of mortality would thus equal 16 percent of the population. Since other mortality factors are known to exist (disease, predation, starvation, weather), it would seem that illegal harvest is considerably less than 16 percent and is probably not a significant portion of the annual mortality of mallards (USDI 1988a).

EFFECTS OF SUBSISTENCE HARVEST

The 2006 analysis was presented on page 112 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Native and nonnative peoples living in remote areas of Alaska and Canada are dependent on migratory birds and other wildlife for subsistence. They take birds and eggs during spring and summer for food (USDI 1988a:26). These levels of harvest do not appear to be acting as a cumulative effect in conjunction with current hunting, because in general, the populations of migratory birds that are being monitored continue to increase. In particular, goose populations affected by this project are growing and some are at or near record levels.

EFFECTS OF HARVEST OUTSIDE UNITED STATES

The 2006 analysis was presented on page 113 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The harvest of waterfowl in areas outside of California is easier to quantify than to determine what specific effects it has on California's migratory and resident populations because of mixing of different populations on the winter grounds. Harvest in two areas, Canada, where the majority of California's waterfowl originate, and Mexico, where segments of some populations winter, could act in addition to the harvest in California.

This information identifies the need for migratory game bird management to be conducted on a flyway, multi-flyway, or population basis. The total harvest of waterfowl throughout North America results in a decrease in the number of waterfowl in that year. Issues, such as subsistence harvest in Alaska and Canada and the harvest of birds outside the United States, clearly identify the need for a comprehensive perspective. The establishment of framework regulations by the Service addresses this issue by modifying hunting regulations in response to long-term population fluctuations. The Department concludes that the combination of the increased California harvest from this proposed project and harvest outside the State will not result in significant adverse impacts to migratory bird populations.

EFFECTS OF MAJOR DEVELOPMENT PROJECTS

The 2006 analysis was presented on page 115 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Migratory game bird habitat will continue to be altered in California as the human population increases. However, strong enforcement of State and Federal laws, such as the Clean Water Act, as well as Commission policy of no net

loss of wetlands, will help to minimize any adverse effect. Changes in agricultural policies at the national level may also affect the quantities of waste grain available to some species of migratory game birds. Competitive urban needs for water, especially as it relates to rice production, may affect waterfowl food supplies in the future. This will be especially prevalent when drought conditions return.

EFFECTS ON LISTED SPECIES

The 2006 analysis was presented on page 91 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The Department is charged with the responsibility to determine if any hunting regulations will impact threatened and endangered species. It complies with this mandate by consulting internally and with the Commission when establishing migratory game bird regulations to ensure that the implementation of the proposed project and existing hunting regulations do not affect these species. The Department has concluded that, based on conditions of the proposed project and existing hunting regulations, differences in size, coloration, distribution, and habitat use between the listed species and legally harvested migratory game birds, the proposed project will not jeopardize these species.

EFFECTS ON MIGRATORY BIRD HABITATS

Habitat Protection Effects

The 2006 analysis was presented on page 93 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Waterfowl, coot and moorhen hunting in California provide a positive incentive for private individuals to acquire, develop, and maintain habitat that might otherwise be converted to other uses. Habitat provided by hunters is entirely available at night as a roosting site and is partially available during the day during hunting season (during days when private wetlands are not hunted or on portions of private wetlands that are not hunted). Long-term vegetative changes may occur in areas that are managed specifically for wintering waterfowl foods. This may affect species more dependent upon climax vegetation than waterfowl, coots and moorhens, which favor early successional stages of vegetation.

Short-term Effects on Habitat

The 2006 analysis was presented on pages 93 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Some short-term impacts of the proposed project, and existing hunting regulations such as vegetative trampling and litter in the form of spent shell

casings, occur. These impacts are considered minor, and the effects on vegetation are generally reversed in the next growing season (USDI 1975:205).

EFFECTS ON RECREATIONAL OPPORTUNITIES

The 2006 analysis was presented on page 96 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The implementation of the proposed project and existing regulations will result in the presence of hunters, their vehicles, and their dogs in migratory bird habitats throughout the State. The enjoyment of observing waterfowl by those opposed to hunting may be reduced by some degree by the knowledge or observation of hunters in the field. Because the proposed project and existing regulations occurs for no more than 107 days in largely unpopulated areas of the State, this will not result in significant adverse environmental impacts.

EFFECTS OF METHODS OF TAKE AND IMPACTS ON INDIVIDUAL ANIMALS

The 2006 analysis was presented on page 88 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Section 20.21, subpart C, of Part 20, Title 50, CFR, and Section 507, Title 14, CCR, stipulate the methods of hunting that are allowed by the Service for migratory game birds. The Commission, in concert with Federal law, has authorized the use of shotguns 10-gauge or smaller, muzzle-loading shotguns, falconry, bow and arrow and crossbows, and dogs for retrieval or take. Historically, these methods of take have been used on a variety of migratory game birds throughout North America. In previous regulation-setting processes, both the Service and the Commission have stipulated restrictions on equipment and methods of take which attempt to provide for reasonably efficient and effective taking of waterfowl, coots and moorhens.

EFFECTS FROM DROUGHT

Drought cycles are part of the ecological system in California and waterfowl are well adapted to dealing with low water years e.g., delaying nest initiation, re-nesting capability, and reduced clutch size. Still, multi-year droughts can reduce waterfowl populations on a local scale and a much broader continental scale. Drought conditions impact waterfowl in a variety of ways including: degraded habitat quality which creates poor breeding habitat conditions (McLandress *et al*. 1996), lower food production (both natural and agricultural) which can limit the ability of birds to migrate and breed successfully (McWilliams *et al.* 2004), as well as expose large

portions of waterfowl populations to disease. This section summarize potential impacts that drought may have on waterfowl throughout the annual cycle in California.

California is an area of continental importance for waterfowl during various annual life history events (CVJV 2009). Winter is more significant than breeding due to the abundance of waterfowl that migrate here from northern breeding areas (Bellrose 1980). Stresses encountered on wintering areas can have carry over effects during spring migration or the breeding season, which ultimately can limit populations (Klaassen 2002, Inger *et al.* 2008). It is critical that adequate habitat for waterfowl is provided during winter.

Breeding

Female ducks find a mate on wintering areas and breed where they were hatched because of high natal fidelity (Rowher and Anderson 1988). Critical components to when and where a hen will nest are available brood water and adjacent upland habitat. In dry years females may leave their natal area and migrate to areas with better quality habitat (Johnson and Grier 1988). Females need time in a location to build energy stores such as protein which is typically associated with aquatic invertebrates (Krapu 1974). Egg formation and laying will be delayed until conditions are adequate (Ankney and Alisauskas 1991). Early in the breeding season many species of ducks delay nest-initiation in response to drought. During periods of severe drought many species of waterfowl may not breed at all. If a rapid decline in water levels occurs midway into nesting or during incubation females may desert their nests (Smith, 1971). By not breeding when conditions are poor, birds enhance their survival and their probability of reproducing later when habitat conditions improve (Krapu *et al.* 1983).

Reduced recruitment can occur when ducks travel great distances to find adequate habitat conditions for nesting or re-nesting because energy reserves have been depleted. Reduced recruitment can result from: choosing not to nest, smaller clutch sizes, a lower likelihood of laying a second clutch (Grand and Flint 1991) and later laying date which has been shown to reduce nest success and brood survival in some species (Dzus and Clark 1998). Further, females that migrate out of their natal area may also have a higher mortality rate due to increase susceptibility to predation in unfamiliar areas. Reduced recruitment and adult survival could decrease short-term population levels and if poor habitat conditions persist for subsequent years, reduce long term population levels. An adaptation to drought is in years of good habitat conditions, hens can raise numerous broods giving waterfowl populations the ability to recover quickly (McLandress *et al.* 1996).

Critical breeding areas for ducks in California as identified by the Department's breeding population survey for waterfowl (Figure 3-A) are the Sacramento Valley, San Joaquin Valley Grasslands, Suisun Marsh and high desert region of Northeastern California. Figures are for mallards because they make up the majority of the breeding duck population in California (see Figure D-4). Breeding population numbers in the Central Valley (i.e. Sacramento and San Joaquin valleys) are correlated to precipitation as well as recruitment from previous years (Figure 3-

B and C). Breeding mallard populations in northeastern California however, do not follow precipitation trends (Figure 3-D) indicating that other factors may be impacting duck production and breeding population trends in that region. The statewide breeding population of mallards has remained relatively stable except for northeastern California where the population trends are decreasing. The cause of this decline is unknown but speculated to be the lack of adequate brood water in early spring and the increase in invasive plant species (e.g. *Lepidium sp*.) throughout the area (Dave Mauser, Klamath Basin NWR personal communication).

Another breeding population indicating a decline is Canada geese that nest in northeastern California. Historically, Canada geese nested in this region in larger numbers but have declined considerably (Figure 4). Climate change is speculated (i.e. dry conditions over the long term; NOAA unpublished data) to play a significant role in the decline but no analysis or studies has been conducted (Melanie Weaver CDFW personal communication). The Department will include an analysis of possible climate change impacts as well as a survival analysis from Department leg banding data in an upcoming management plan for this population.

Molting

During late July, male ducks will typically migrate to a large permanent water marsh to molt while females follow soon after nesting in August. Like nest site fidelity, ducks will molt in the same location as previous years (Yarris *et al.* 1994). One study has indicated that 60 percent of mallards that breed in the Central Valley will migrate 280 miles to northeastern California to molt while 25% molt in marshes in the Central Valley (Yarris *et al.* 1994). Molt is an extremely vulnerable time for ducks because they become completely flightless for 30 – 40 days. Marsh water levels are critically important during the molting period and must be maintained or birds could be subject to depredation by mammalian and avian predators (Arnold *et al.* 1987).

Avian botulism

Botulism outbreaks typically occur in marshes with warm water, little flow, high organic load (rotting vegetation) and high amounts of algae (Rocke and Samuel 1999). Botulism is a bacterium that naturally occurs in wetland environments and persists in marshes with histories of outbreaks due to the release of spores into the environment. Ducks are infected by ingesting the bacterium and become paralyzed, eventually dying. Duck carcasses attract flies which lay eggs that produce maggots that in-turn eat the flesh of the carcass and consume botulism spore. Maggots drop into the water and are eaten by ducks in the marsh thereby escalating mortality events (Rocke and Samuel 1999). Outbreaks of avian botulism (Fleskes *et al.* 2010) often coincide with the molt cycle of ducks and the brood rearing stages of late nesting duck species. Many studies have been conducted to better understand the cycle of botulism and inform managers of how to prevent or minimize outbreaks

In California botulism outbreaks have been reported in every region of the state however, frequency is not well known due to reporting inconsistencies (Figure 5;

USGS National Wildlife Health Center personal communication). A robust analysis on this disease data is not possible because of the reporting inconsistences and the numerous factors possible that may have caused the outbreaks. In some years die-offs can be quite severe (Figure 5). Botulism outbreaks can kill large numbers of hens, broods and molting ducks (Fleskes *et al.* 2010).

During drought summer water allocation is reduced for managed wetlands in the Central Valley and the Klamath Basin in northeastern California. Decreasing the number of flooded wetlands increases concentrations of waterfowl, thus raising the chance of an outbreak and more birds being affected. Breeding mallards throughout California molt in the Klamath Basin. The Klamath Basin experiences botulism annually, even during normal water years (Figure 5-C). During drought years the potential for a high mortality event is great.

Wintering Waterfowl

Waterfowl migrate from northern latitudes to California beginning in August. Multiple stopover sites are used during migration to rebuild energy reserves. The Klamath Basin in northeastern California is one of the most important waterfowl stopover sites during fall and spring for waterfowl in the Pacific Flyway (Bellrose 1980). Peak numbers of waterfowl are seen on major wintering areas south of the Klamath Basin by December.

During early January, the Department and the Service and conduct the Midwinter Waterfowl Survey. This survey has been conducted since 1953 and has provided managers with midwinter indices of waterfowl species. During midwinter California supports 66 percent of all ducks (excluding mergansers; based on long term average 1955 – 2014) in the Pacific Flyway, 40 percent of which occur in the Sacramento Valley. Of total waterfowl in the Pacific Flyway (i.e. geese, ducks, swans, coots and cranes), California supports 73 percent, the Sacramento Valley alone supports 43 percent (Olson 2014, Department unpublished data). California waterfowl distribution based on this survey indicates the Sacramento Valley harbors 60 percent of total waterfowl, the San Joaquin has 20 percent, and the Delta, Suisun Marsh, northeastern California combined hold 10 percent of total waterfowl.

Sensitive wintering populations

Sensitive waterfowl subspecies also occur in California during winter. Tule greater white-fronted geese are monitored by the Department and Service through telemetry and population surveys throughout the winter in the Sacramento Valley, the Delta and northeastern California. This subspecies of white-fronted goose uses permanent marshes early in winter and begins to feed in rice fields during midwinter. The bulk of the Tule population overwinters (November to February) adjacent to and on the Sacramento National Wildlife Refuge Complex. A special management area that has a reduced season length and bag limit has been maintained in the Sacramento Valley for this population compared to the rest of the state. Department staff monitor harvest by actively measuring all greater white-fronted geese at check stations on the Sacramento National Wildlife Refuge Complex.

This population could be negatively impacted by poor body condition caused by limited habitat, particularly reduced rice decomposition flooding.

Wintering waterfowl habitat

Since the implementation of the NAWMP (USFWS 1986) and the subsequent initiation of the Central Valley Joint Venture (CVJV 1990), the wetlands of the Central Valley have fluctuated in size and quality (Fleskes *et al*. 2005, CVJV 2009). Wetland acres as of 2006 were estimated to be 205,900. Current wetland acres are being calculated as there have been a number of large easement properties acquired since 2006. The amount of wetland acres as well as the quality have increased since the last update (i.e. moist soil management and infrastructure).

Additionally, since 1996 changes in post-harvest rice straw decomposition have added an estimated 209,000 acres of flooded rice for wintering waterfowl in the Sacramento Valley (Garr 2014). Increased post-harvest flooded rice and increased wetland area is speculated to be the cause for the increasing densities of waterfowl seen in the Sacramento Valley relative to other areas on the midwinter survey (Fleskes and Yee 2005). Recent body condition studies of numerous wintering waterfowl species have improved significantly (Ely and Raveling 1989, Miller 1986, Thomas et al. 2008, Skalos *et al*. 2011) particularly within the Sacramento Valley. Numerous duck and goose species have changed their roosting and feeding habits considerably because of the increase in water on the landscape (Fleskes et al. 2005). For example, prior to post-harvest flooded rice Pacific greater white-fronted geese traveled an average of 17.5 miles from roost to forage areas. This distance has been reduced to 15 miles (14%) because the proximity of undisturbed roost areas (Ackerman et al. 2006). Increased body condition (Skalos *et al*. 2011) combined with undisturbed roost areas (Ackerman et al. 2006) has probably been a major contributor to the recovery of Pacific greater white-fronted geese since the record low in the mid 1970's (USFWS 2014b; Pacific greater white-fronted goose population indices). Waterfowl and non-game waterbird species have been known to use flooded agriculture in the Sacramento/San Joaquin Delta region (Shuford 1998) as well as the Tulare Basin in the San Joaquin Valley (Fleskes *et al*. 2013). Reduction of post-harvest agricultural field flooding because of drought in these regions could have a large impact on wintering waterfowl populations because most of the natural marsh habitat has been eliminated (Gilmer et al. 1982).

The CVJV has modeled the food resource needs of wintering ducks in California. The CVJV estimated that California currently has an adequate supply of food resources for all waterfowl species during winter. The drought model scenario decreased the total winter flooded wetlands from an estimated 197,200 to 148,000 acres and flooded rice from 305,000 to 135,000 acres in the Central Valley. Flooding rice for decomposition was assumed to be limited and at least 136,000 acres of the dry acreage would be harvested and not deep tilled post-harvest (therefore accessible). In this scenario energy available to ducks would be reduced to below adequate levels by mid-January (CVJV 2014).

Waterfowl can make up energetic shortfalls from limited food resources (Skalos et al. 2011) on wintering areas during migration if the adequate food resources are provided on stopover sites (Bauer *et al*. 2008). If the Central Valley has limited food resources for waterfowl, the CVJV speculates that further stress would be applied to waterfowl populations migrating through the Klamath Basin during spring due to the ongoing water allocation issues in that region (CVJV 2014).

Avian cholera

Avian cholera (*Pasturella multocida*) is a common winter bacterial infection in waterfowl. This disease agent occurs naturally in waterfowl populations and particular species (e.g. Lesser snow geese, Ross's geese, mute swans) tend to be reservoirs for cholera (Samuel et al. 2005, Pedersen *et al*. 2014). Environmental and physiological conditions that stress (e.g. prolonged cold temperatures, wind, precipitation, inadequate food resources and injury) birds tend to influence the expression of this disease. Blanchong et al. (2006) found that highly eutrophic water conditions are correlated to cholera abundance in wetlands. These conditions would be promoted in years of drought due to slow flow-through in wetlands. Eutrophic conditions would also be exacerbated by large concentrations of waterfowl defecating in wetlands, agricultural runoff (i.e. cattle and fertilizer) or other upstream sources of nutrients. This study also cited the increased abundance of cholera in wetlands with higher protein concentrations. Increased protein concentrations were correlated with the number of dead bird carcasses found emphasizing the need for monitoring and removal to stem outbreaks.

Figure 6 indicates the frequency and intensity of avian cholera mortality events in California as reported to the USGS Wildlife Health Center. Cholera outbreaks tend to be more common in the Sacramento Valley and northeastern California. This may be from colder temperatures experienced during winter but more likely from the high densities of waterfowl (particularly *Chen sp*.) at the time of the outbreak. Cholera outbreaks have the potential to be very severe; an outbreak in the Salton Sea during 1991 claimed an estimated 155,000 birds.

Concerning sensitive waterfowl populations Greater white-fronted geese (i.e.Tule geese) seem to be resistant to outbreaks of avian cholera (Blanchong 2006).

Hunter harvest impacts on waterfowl populations

Wintering numbers of mallards are relatively low compared to other wintering species and the population of mallards that breed in the state. A ten year average from the California midwinter survey indicate 1,217,000 Northern pintail, 575,500 Northern shoveler, 471,700 American wigeon, 415,000 American green-winged teal, compared to 298,800 mallards counted on the survey. Nonetheless, mallards are the most sought after species by hunters by proportion of population (USFWS 2014c).

Currently, little evidence supports hunter harvest having an additive effect on duck population trends (Afton and Anderson 2001). Rather, available breeding habitat (i.e. nesting habitat and brood habitat) is the driving factor behind most duck

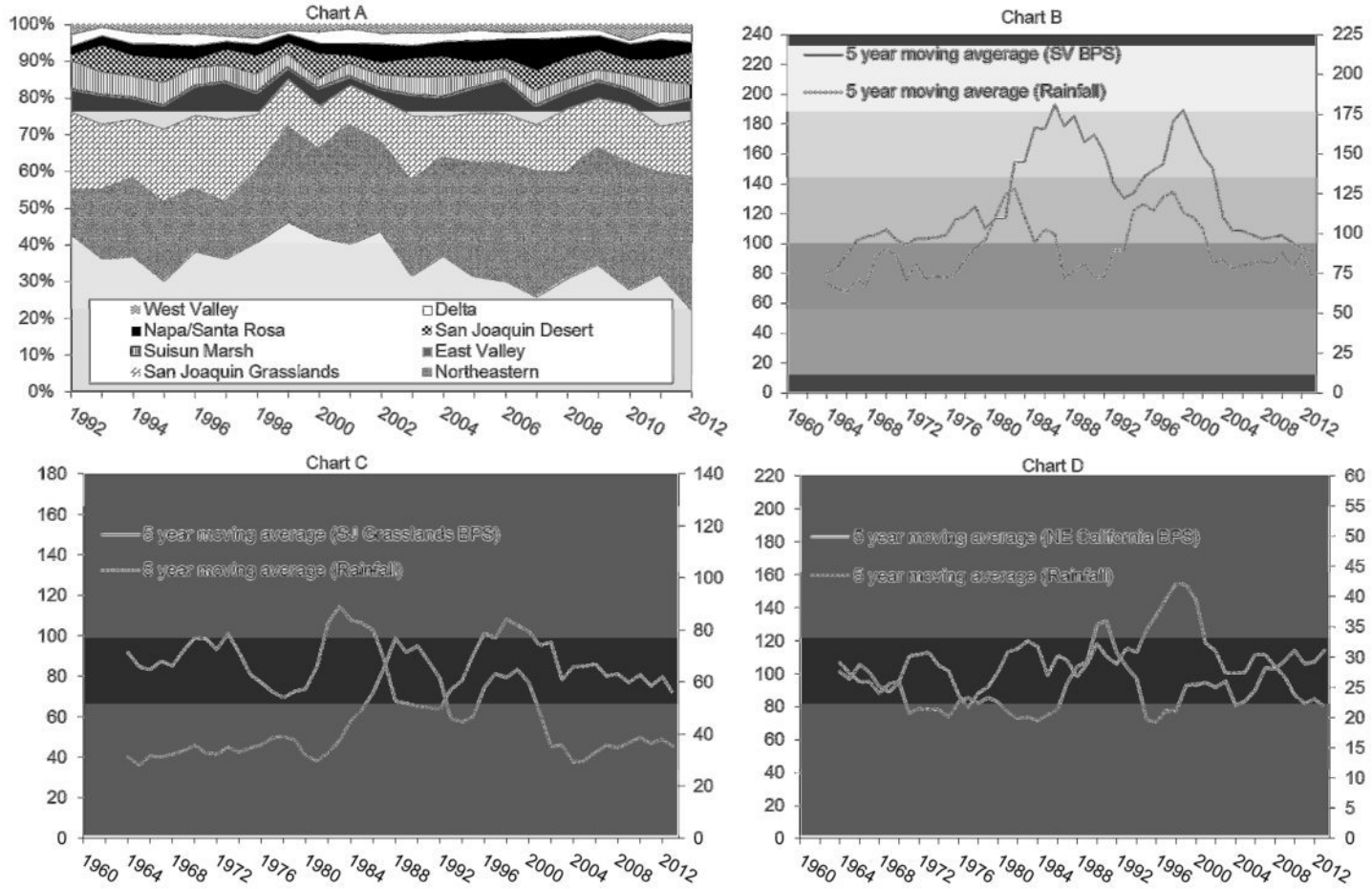
population changes. Even in absence of hunter or other mortality factors, density dependent factors on breeding areas (available habitat, predator response etc.) drive duck populations (Newton 1994, Clark and Shulter 1999, Viljugrein et al. 2005). Figure 7 compares hunter harvest in relation to the breeding population of mallards in California. Harvest has very little correlation (Chart A; R^2=0.10, Chart B; R^2=0.12, respectively) with subsequent breeding population levels.

A number of goose populations have increased substantially in the Pacific Flyway in recent years, with continued hunting and more liberal season and bag limits. Examples are the Pacific greater white-fronted goose and the Ross's goose. Pacific greater white-fronted geese have increased from 75,000 in 1978 to 650,000 by 2010. Surveys conducted in the 1960's estimated Ross's geese at 10,000 while the current population estimate is 700,000. When goose populations are low they are vulnerable to over exploitation by sport hunting. Ducks can breed successfully at age one while geese will breed at age two to three (refer to "K selection"). In the past, goose populations have been subject to overexploitation by predators (e.g. Aleutian goose; PFC 2006[b]) or overharvest by subsidence or sport hunting (Pacific greater white-fronted goose; Pamplin 1986). Recovery actions have successfully increased these populations.

The Service implemented a general harvest strategy for setting duck framework regulations that regularly occur in California and are sought after by hunters (as explained in the Adaptive Harvest Management Section under Background and Existing Conditions). These harvest management strategies ensure duck populations are healthy over the long-term while providing hunting opportunity consistent with the long-term health. As a participant of the Pacific Flyway Council, the Department reviewed and voted to adopt these management strategies for establishing seasons and bag limits. In addition, the Department participates in the monitoring of various populations, both wintering and breeding. If defined populations goals are not met than bag or season limit reductions are triggered. For example the California Breeding Population Survey is used in the Adaptive Harvest Management strategy that establishes regulatory packages for most duck species for all 11 states in the Pacific Flyway.

The Pacific Flyway is currently working on revising the management plan for Tule white-fronted geese. The plan will incorporate population estimates derived from Department ground surveys, telemetry data and public hunt area harvest from check station measurements. These management actions will ensure that population levels of waterfowl species in California are being monitored and hunter harvest is sustainable over the long term.

Figure 3. Proportion of California breeding population by area (Chart A) and area specific mallard BPS estimates with total rainfall (Charts B-D, mallard on left Y axis in thousands; precipitation on right Y axis in inches)



-Total rainfall amounts based on 5 year average from January to April.
-SV total rainfall from Woodland, Willows and Red Bluff weather stations.
-SJ Grasslands total rainfall from Stockton and Merced weather stations.
-NE total rainfall from Tule Lake and Alturas weather stations.

Figure 4. California Department of Fish and Wildlife, Northeastern California Canada Goose Survey 1950-2013.

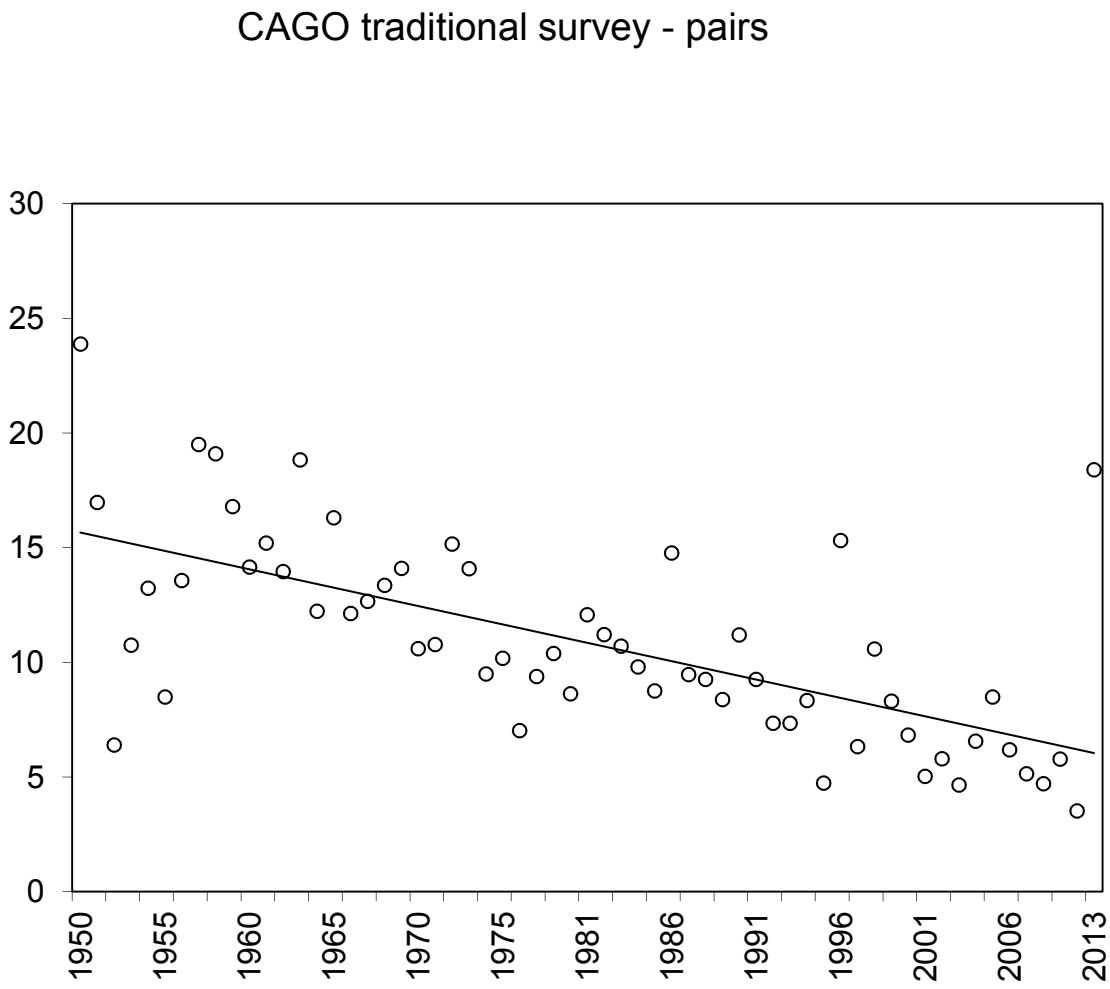
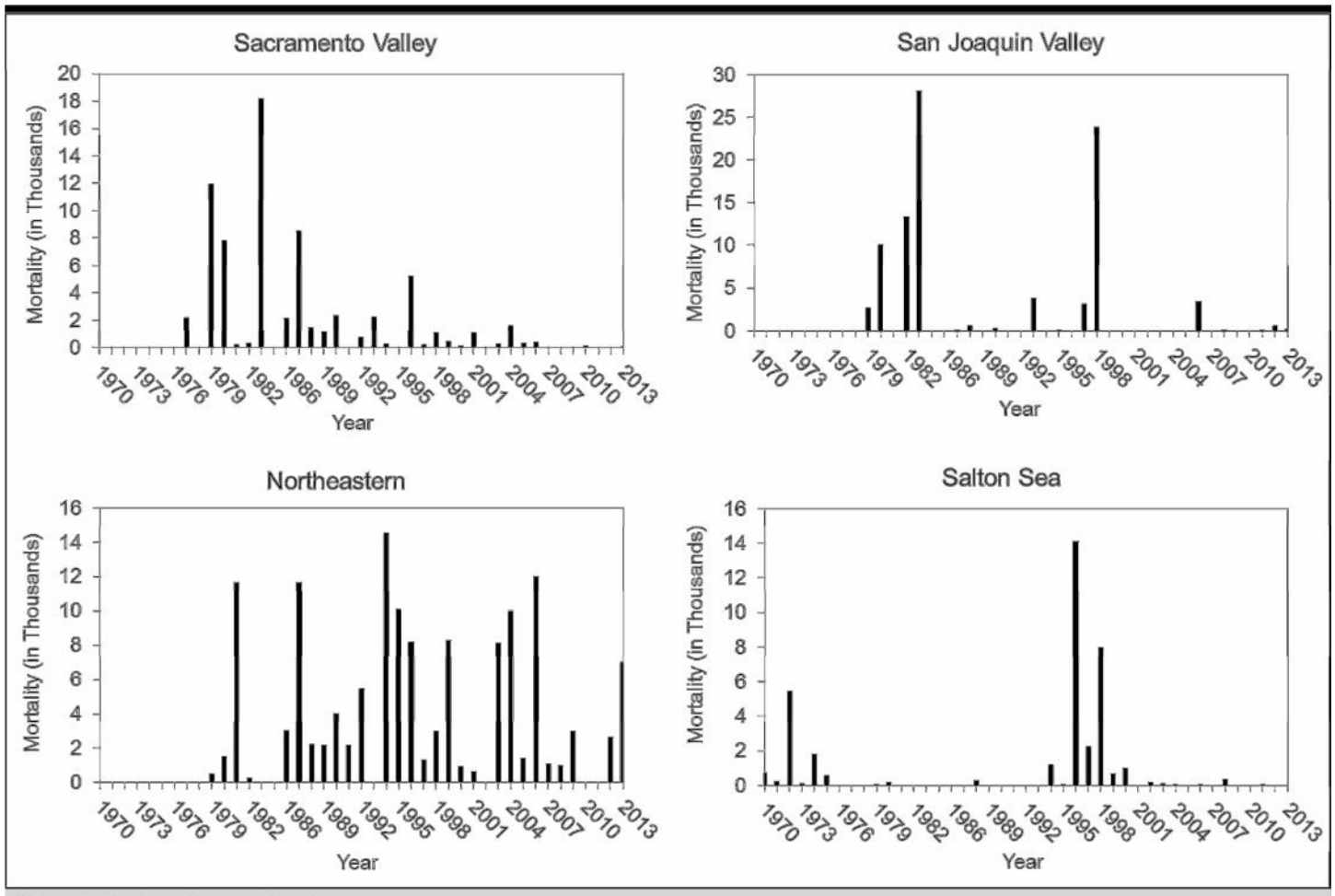
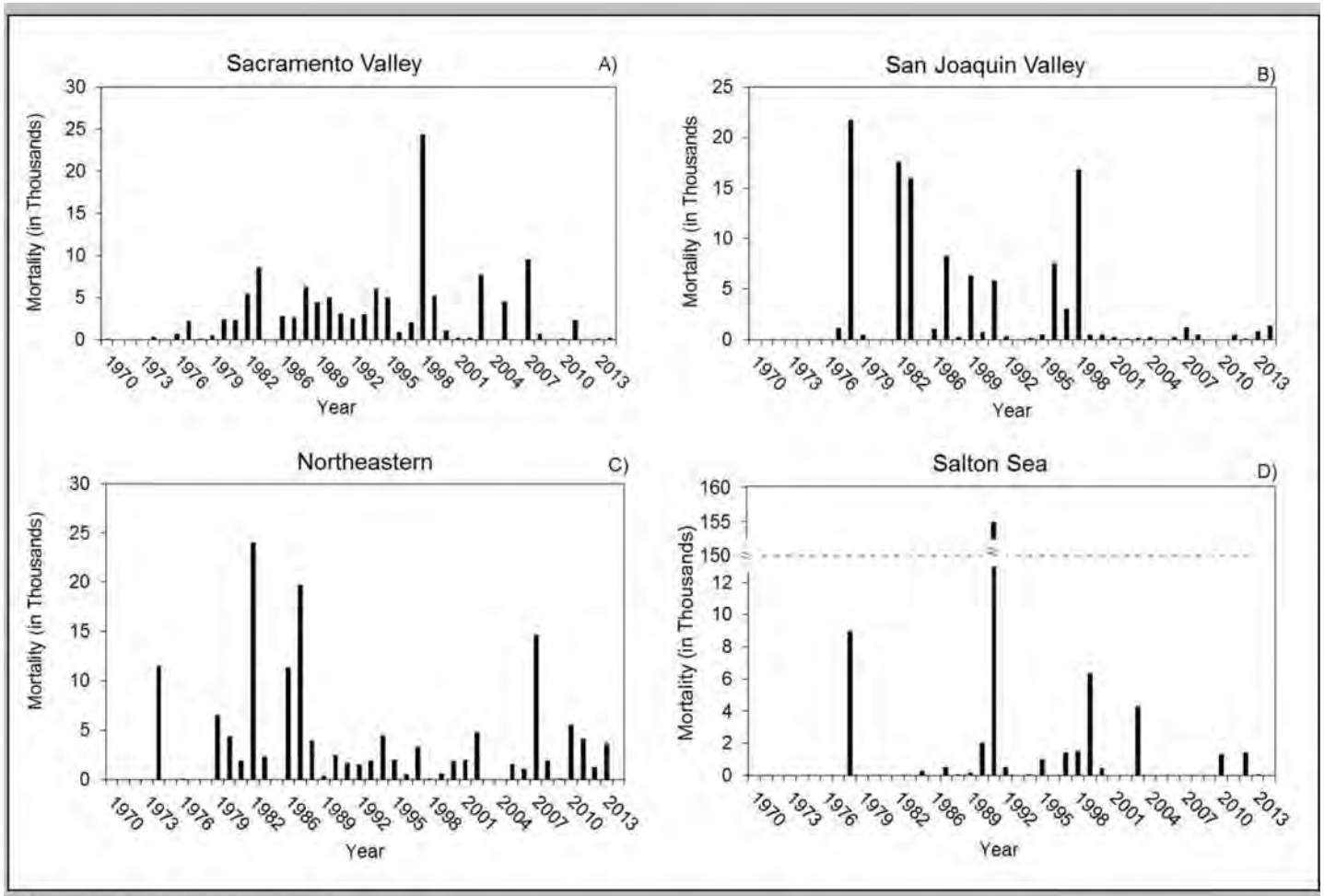


Figure 5. Waterfowl mortality from botulism by area, California 1970-2014



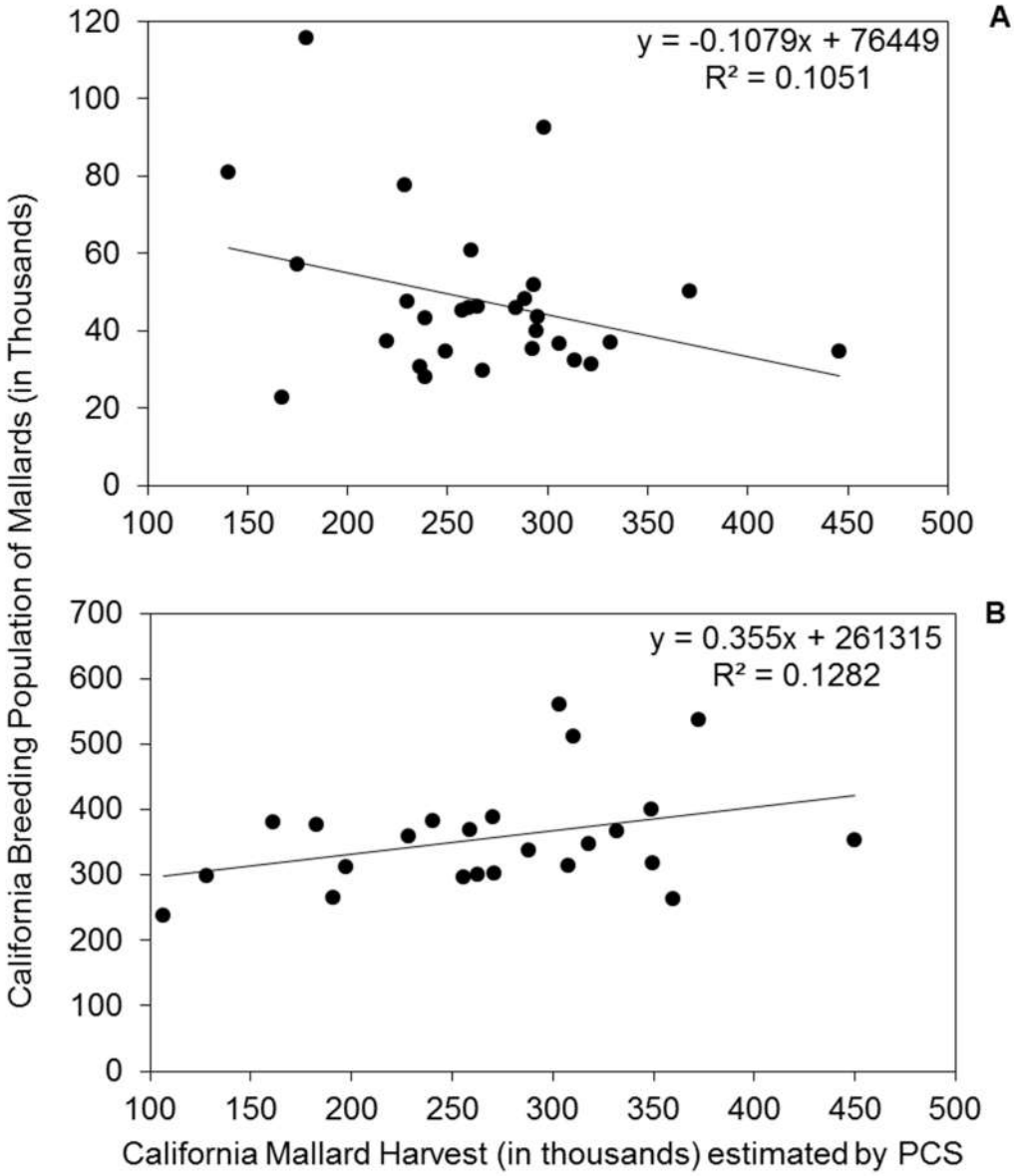
[1]All waterfowl species combined.
[2]Mortality represent total number reported to the USGS Wildlife Health Center.
[3]No data collected during 1985 due to federal government shutdown.

Figure 6. Waterfowl mortality from avian cholera by area, California 1970-2014.



[1]All waterfowl species combined.
[2]Mortality represent total number reported to the USGS Wildlife Health Center.
[3]No data collected during 1985 due to federal government shutdown.

Figure 7. California breeding mallard populations estimates vs hunter harvest: 1960-1990[1] (Chart A), 1991-2014[2] (Chart B)



CUMMULATIVE IMPACTS

Short-term uses and Long-term Productivity

The 2006 analysis was presented on page 97 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The proposed project and existing hunting regulations will result in the temporary reduction of waterfowl, coot and moorhen populations and the use of nonrenewable fuels by hunters and the Department in the assessment of migratory game bird populations and the enforcement of the regulations. On the other hand, the Service concluded (USDI 1975:215) that the issuance of annual hunting regulations contributes significantly to the long-term productivity of the migratory game bird resource and their habitats, because hunting is allowed for only a few species of migratory birds for a limited period of time, and the revenues from hunting are important in the acquisition and management of migratory game bird habitats. Therefore, the project and existing regulations actually enhances long-term productivity of migratory game birds and results in no significant adverse impact on long-term productivity.

Growth Inducing Impacts

The 2006 analysis was presented on page 98 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Because the hunting of migratory game birds is undertaken for a limited period of time and generally occurs in sparsely populated regions of the State, it is not likely to add to the growth in population in California or result in large-scale developments in any particular city or area. Overall numbers of migratory game bird hunters are declining, and because these numbers are declining, there is not likely to be an additional demand for housing in the specific areas in which hunting will occur. Therefore, the project and existing hunting regulations will not result in significant adverse impacts through growth.

Significant Irreversible Environmental Changes

The 2006 analysis was presented on page 98 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The proposed project and existing hunting regulations would result in the continued commitment of energy resources by biologists and wardens in data collection, regulation promulgation, and law enforcement, and by hunters traveling to hunting areas. Therefore, the project will not result in significant adverse environmental impacts through irreversible changes.

The 2006 analyses and document referenced (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115) is located and available

upon request from California Department of Fish and Game, Wildlife Branch, 1812 9th Street, Sacramento, CA 95811.

CHAPTER 3 – ALTERNATIVES

The three California project alternatives evaluated herein are: (1) no project – no change from the 2015-16 hunting regulations; (2) reduced season lengths and bag limits; and (3) elimination of all mechanical decoys.

Alternative 1. No project – no change from the 2015-16 hunting regulations

This alternative provides identical season and bag limit regulations as the 2015-16 seasons. Under this alternative, an increase in the total goose daily bag limit and the white goose daily bag limit and the age requirement change for the Youth Waterfowl Hunting Days would not occur.

Advantages of This Alternative

Waterfowl regulations are inherently complicated and any changes may result in confusion for some members of the public. Maintaining the 2015-16 regulations for the 2016-17 season may result in less confusion to some members of the public.

Disadvantages of This Alternative

The no change alternative provides less hunting opportunity compared to the proposed project because an increase in the total goose daily bag limit and the white goose daily bag limit, and an increase in the youth waterfowl hunt age would not be allowed . In addition, the no change alternative may not be current with yet to be established federal frameworks for the 2016-17 season.

Conclusion Regarding Alternative 1

It is unlikely that significant irreversible impacts would occur immediately or statewide as a result of selecting the no change alternative. However, this alternative was not recommended and may conflict with Federal frameworks.

Alternative 2. Reduced Season Lengths, Season Timing and Bag Limits

This alternative provides a suite of restrictions that when taken alone or in combination are expected to reduce harvests. This alternative could be selected by the Commission based on changes in Federal frameworks or a conclusion by the Commission that reduced harvests are a better alternative than the project or existing regulations. Under this alterative, for a generalized analysis, the length of each migratory bird season could be reduced by about 50 percent. For ducks, more conservative Adaptive Harvest Management regulatory alternatives (86 or 60 days) could be used. For brant, the 37-day season would be reduced to 19 days and for most other geese the season would be reduced from either 107 or 100 days to 51 days.

The AHM alternatives for the Pacific Flyway include total duck bag limits that range from 4 to 7 with differing restrictions on mallards and hen mallards. Other bag limit reductions considered in this alternative include a reduction from as many as 20 to as few as 1 geese depending on zone; a reduction in brant from two to one; and a reduction in the coot limit from 25 to 12 birds per day. Additionally, species-specific regulations, for pintail, redheads, canvasback or scaup could be further reduced under this alternative.

Advantages of This Alternative

Selection of Alternative 2, reduced season lengths, timing and bag limits, would reduce total harvest, although the magnitude of this reduction is not precisely predictable. This alternative has advantages only if the levels of harvest are suppressing populations. In 2014-15, the estimated retrieved harvest in California was 948,860 ducks, 215,630 geese and 11,100 coots. If harvest regulation restrictions cause a larger than expected decline in hunter participation, harvests might be reduced by more than 50 percent. If, as experienced in the 1989-90 season, there is a drop in hunter participation but fall flights are larger or contain higher percentages of juveniles than are expected, harvests would probably not decline by 50 percent. If harvests declined by exactly 50 percent; approximately 474,430 ducks, 107,800 geese, and 5,550 coots would not be harvested in California. If waterfowl, coots and moorhens have access to habitat of sufficient quality and quantity and these populations are being suppressed due to the levels of harvest previously experienced, populations might increase in following years as a result of the selection of this alternative. This alternative would provide recreational opportunity for hunters and meet one of the goals of the Conservation of Wildlife Resources Policy (Fish and Game Code, Section 1801), which is to include hunting as part of maintaining diversified recreational uses of wildlife.

Non-consumptive opportunities to view migratory birds would not differ substantially from the proposed project, because while this would increase non-conflicting viewing days on hunting areas, these areas are a small percent of

total waterfowl habitat. Reduction in possible conflicts between non-consumptive and consumptive users would be a likely result of this alternative.

Disadvantages of This Alternative

Harvest restrictions for waterfowl, coots and moorhens would probably be a disincentive for many of those private landowners who provide habitat through flooding of seasonal wetlands and agricultural lands during the fall and winter. These habitats form the majority of available wintering habitat for waterfowl and wetland dependent wildlife in California *(*Heitmeyer et al. 1989*)*. Habitat provided only during the hunting season would be available for a shorter time. For many of these private landowners, the short period of time allowed for hunting may be judged to be not worth the high costs associated with providing water and managing this habitat. This would reduce the amount of habitat available for waterfowl and other wetland dependent wildlife. Overcrowding, and as a result, reduced food resources and increased losses to diseases, would be expected.

Conclusion Regarding Alternative 2

Selection of this alternative might lead to a greater decline in participation by hunters. The reductions in the number of days that waterfowl, coots and moorhens could be hunted might not be deemed to be worth the costs of licenses, stamps, travel, and entry fees. A change in season timing is not likely to significantly affect the number of active hunters. A reduction in hunter participation would result in reduced revenues to the Department and the Service which are used to acquire, manage, and maintain vital habitats. If the reduced season length resulted in a lower hunting harvest and hunting mortality was additive to natural mortality, an increase in some populations of waterfowl would be possible. However, the Department concludes that this alternative alone would not result in a significant increase in waterfowl numbers in future years.

Alternative 3. Elimination of all mechanically- and artificially-powered spinning wing decoys as a method of take.

The use of mechanical or electronic duck decoys (also known as spinning wing decoys (SWDs), “rotoducks”, “motoducks”, motion wing decoys, etc.) may lead to increases in harvest beyond those anticipated by existing bag limits and season length. Some hunters and other members of the public are opposed to the use of these devices because they believe that the devices exceed the bounds of “fair chase” and eliminate the emphasis on traditional hunting skills needed to successfully hunt ducks, and the advantages detract from the experience and dedication needed to sustain the hunting tradition.

This alternative would eliminate the use of all mechanical and artificially powered spinning wing decoys as a method of take. The Department analyzed several

sources of information relative to the possible effects of spinning wing decoys and these analyses are provided in Appendix D.

Advantages of This Alternative

The evidence seems clear that spinning blade and spinning wing decoys increase harvest at the individual hunt level, and level of observed increases in harvest at the individual hunt level are not reflected in overall estimates of harvest (Appendix E). However, the role of harvest in duck population dynamics is not clearly understood and the effect of reducing harvest success at the individual hunt level may or may not result in observable changes in population parameters. Some members of the hunting public have expressed concerns that continual advances in technology ultimately detract from the traditional hunting experience and potentially may lead to a reduction in the support for waterfowl hunting. This is thought to be due to hunters becoming less dedicated to developing skills and investing in the activity to a level that generates support for conservation and potentially increasing the negative view of hunting by those that are currently not opposed to hunting. As technology continues to improve, debates such as the one over spinning blade and spinning wing devices would continue. A new debate over each new technological advance would seem likely. Resources would continually be re-directed to assess each new technological advance.

Disadvantages of This Alternative

As detailed in Appendix D, existing analyses do not clearly establish an effect of harvest on duck population dynamics. To some unmeasured extent, the use of SWD may influence more hunters to join or remain in hunting, thereby providing support for wetland and waterfowl conservation. Commercial enterprises that develop and market these devices would likely be opposed to their regulation. There is no information regarding other duck attracting devices currently in use and there is no basis to conclude that these devices increase duck harvest. Commercial enterprises exist or may be developed to increase technological improvements for attracting ducks.

Conclusions Regarding Alternative 3

The selection of this alternative would not result in a significant adverse environmental impact. As reported in Appendix D, to date, the Department is unable to scientifically associate observed changes in duck population status, except perhaps for certain cohorts of local mallards, with the use of SWDs. The selection of this alternative would be viewed favorably by those hunters and other members of the public who are opposed to the use of non-traditional methods, but would be viewed unfavorably by those hunters who are not opposed to their use. Those commercial enterprises that develop and market these devices would likely be opposed to their regulation.

LITERATURE CITED

Ackerman, J.T, J. M. Eadie, M. L. Szymanski, J. H. Caswell, M. P Vrtiska, A. H. Raedeke, J. M. Checkett, A. D. Afton, T. G. Moore, F. D. Caswell, D. D. Humburg and J. Yee. Effectiveness of spinning-wing decoys varies among dabbling duck species and locations. Journal of Wildlife Management 70: 799-804.

Ackerman, J. T., J. Y. Takekawa, D. L. Orthmeyer, J. P. Fleskes, J. L. Yee and K. L. Kruse. 2006. Spatial use by wintering greater white-fronted geese relative to a decade of habitat change in California's Central Valley. The Journal of Wildlife Management 70: 965 – 976.

Afton, A.D and M.G. Anderson. 2001. Declining scaup populations: A retrospective analysis of long-term population and harvest survey data. Journal of Wildlife Management 65(4): 781 – 796.

Anderson, M. G., and L. G. Sorenson. 2001. Global climate change and waterfowl: adaptation in the face of uncertainty. Transactions of the North American Wildlife and Natural Resources Conference 66:307–319.

Anderson, D.R., and K.P. Burnham. 1976. Population ecology of the mallard: VI. The effect of exploitation on survival. U.S. Fish and Wildl. Serv. Resour. Publ. 128. 66pp.

Ankney, and R. Alisauskas. 1991. Nutrient reserve dynamics and diet of breeding female gadwalls. The Condor 93:799 – 810.

Arnold, T.W. and E.K. Fritzell. 1987. Food habits of prairie mink during the waterfowl breeding season Canadian Journal of Zoology 65: 2322 – 2324.

Batt, B. D. J., editor. 1998. The greater snow goose: report of the Arctic Goose Habitat Working Group. Arctic Goose Joint Venture special publication. U.S. Fish and Wildlife Service, Washington, D.C., USA, and Canadian Wildlife Service, Ottawa, Ontario, Canada.

Bauer, S., M. Van Dinther, K. Hogd, M. Klaassen and J. Madsen. 2008. The consequences of climate-driven stop-over sites changes on migration schedules and fitness of Arctic geese. Journal of Animal Ecology 77: 654 – 660.

Bellrose, F.C. 1980. Ducks, Geese and Swans of North America. Stackpole Books, Harrisburg, PA. 540pp.

Blanchong, J.A., M.D. Samuel, D.R. Goldberg, D.J. Shadduck and L.H. Creekmore. 2006. Wetland environmental conditions associated with the risk of avian cholera outbreaks and the abundance of *Pasteurella multocida*. Journal of Wildlife Management, 70(1): 54 – 60.

Boomer, G.S., F.A. Johnson, and G.S. Zimmerman. 2015. Adaptive harvest management: adjustments for SEIS 2013. U.S. Department of Interior, Washington, D.C. 20 pp. Available online at http://www.fws.gov/migratorybirds/CurrentBirdIssues/Management/AHM/AHM-intro.htm

Brownlee, W.C. 1985. Steel vs. lead. A ten year summary on the Murphree Wildlife Management Area. Texas Parks and Wildlife Department, Administrative Report, Federal Aid Project W-106-R. 10pp.

Burnham, K.P. and D.R. Anderson. 1984. Tests of compensatory vs. additive hypotheses of mortality in mallards. Ecology 65:105-112.

Caswell, J. H., and F. D. Caswell. 2003. Vulnerability of mallards to hunting with a spinning-wing decoy in Manitoba. Wildlife Society Bulletin 32:1297-1304.

Clark, R.G. and D. Shulter. 1999. Avian habitat selection: Pattern from process in nest-site use by ducks. Ecology 80(1): 272 – 287.

Conn, P. B. and W. L. Kendall. 2004. Evaluating Mallard adaptive management models with time series. J. Wildl. Manage. 68:1065-1081.

CVJV. 1990. Central Valley Joint Venture Implementation Plan – A component of the North American Waterfowl Management Plane. U.S. Fish and Wildlife Service, Sacramento, CA

CVJV. 2006. Central Valley Joint Venture Implementation Plan – Conserving bird habitat. U.S. Fish and Wildlife Service, Sacramento, CA.

CVJV. 2014. California Drought: Potential Impacts on Ducks in the Central Valley. Report. Sacramento, CA.

Drever, M. C. and R. G. Clark. 2007. Spring temperature, clutch initiation date, and duck nest success: a test of the mismatch hypothesis. Journal of Animal Ecology 76:139-148.

Dzus, E.H. and R.G. Clark 1998. Brood survival and recruitment in Mallards of relation to wetland density and hatching date. The Auk 115(2): 311 – 318.

Eadie, J. M., T. G. Moore and J. T. Ackerman. 2001. Experimental evaluation of the effect of mechanical wing decoys on hunting success and waterfowl response in California, 1999-2000. Technical Report to the California Waterfowl Association, Sacramento, California.

Ely, C. R. and D.G. Raveling. 1989. Body composition and weight dynamics of greater white-fronted geese. Journal of Wildlife Management 53: 80 – 87.

Emery, R.B. D.W. Howerter, L.M. Armstrong, M.G. Anderson, J.H. Devries, and B.L. Joynt. 2005. Seasonal variation in waterfowl nesting success and its relation to cover management in the Canadian prairies. Journal of Wildlife Management 69:3 pp 1181-1193.

Fleskes, J.P., D. A. Skalos and M.A. Farinha. 2013. Changes in types and area of post-harvest flooded fields available to waterbirds in Tulare Basin, California. Journal of Fish and Wildlife Management

Fleskes, J.P., D. M Mauser, J.L. Yee, D.S. Blehert and G.S. Yarris. 2010. Flightless and post-molt survival and movements of female Mallards molting in Klamath Basin. Waterbirds 33(2): 208 – 220.

Fleskes, J. P., J. L. Yee, M. L. Casazza, M.R. Miller, J. Y. Takekawa, and D.L. Orthmeyer. 2005. Waterfowl distribution, movements, and habitat use relative to recent habitat changes in the Central Valley of California: A cooperative project to investigate impacts of the Central Valley Joint Venture and changing agricultural practices on the ecology of wintering waterfowl. Final Report. U.S. Geological Survey-Western Ecological Research Center, Dixon Field Station, Dixon, CA.

Garr, J.D. 2014. The status of status of rice fields during midwinter in the Sacramento Valley California: Final Report 2014. Wildlife Friendly Farming, Colusa, CA.

Gilmer, D. S., M. R. Miller, R. D. Bauer, and J. R. Ledonne. 1982. California USA Central Valley wintering waterfowl concerns and challenges. Proceedings of the 47th North American Wildlife and Natural Resources Conference. Pgs. 441 – 452. K. Sabol, Editor. Washington, DC, USA.

Grand, J.B. and P.F. Flint. 1996. Renesting ecology of Northern pintail on the Yukon-Kuskokwim Delta, Alaska. The Condor 98: 820 – 824

Giudice, J. H. 2003. Survival and recovery of mallards and gadwalls banded in eastern Washington, 1981-1998. Journal of Field Ornithology 74:1-11.

Heitmeyer, M.E. and D.G. Raveling. 1988. Winter resource use by three species of dabbling ducks in California. Unpub. Rept. Delta Waterfowl and Wetlands Res. Sta. Manitoba, Canada. 201 pp.

_____, D.P. Connelly, and R.L. Pederson. 1989. The Central, Imperial, and Coachella valleys of California. Pages 475-505 *in* L.M. Smith, R.L. Pederson, and R.M. Kaminski, eds. Habitat Management for Migrating and Wintering Waterfowl in North America. Texas Tech. Univ. Press, Lubbock.

Higgins, K.F. 1977. Duck nesting in intensively farmed areas of North Dakota. J. Wildlife Management 41(2): 232-242.

Inger, R., G. A. Gudmundsson, G. D. Ruxton, J. Newton, K. Colhoun, S. Auhage and S. Bearhop. 2008. Habitat utilization during staging affects body condition in a long distance migrant, *Branta bernicla hrota*: potential impacts on fitness. Journal of Avian Biology 39: 704 – 708.

Johnson, D. H. and Grier, J. W. 1988. Determinants of breeding distributions of ducks. Wildlife Monograph 100:1-37.

Johnson, F.A., J.E. Hines, F. Montalbano III, and J.D. Nichols. 1986. Effects of liberalized harvest regulations on wood ducks in the Atlantic Flyway. Wildl. Soc. Bull. 14:383-388.

Johnson, F.A., B.K. Williams, J.D. Nichols, J.E. Hines, W.L. Kendall, G.W. Smith, and D.F. Caithamer. 1993. Developing an adaptive management strategy for harvesting waterfowl in North America. Trans. North Am. Wildl. Nat. Resour. Conf. 58:565-583.

Johnson, W. C., B. V. Millett, T. Gimangy, R. A. Voldseth, G. R. Guntensnergen, and D. E. Naugle. 2005.Vulnerability of northern prairie wetlands to climate change. Bioscience 55:863-872.

Klaassen, M.2002. Relationships between migration and breeding strategies in arctic breeding birds. In Berthold, P. Gwinner, E. & Sonnenschein, E. (eds) Avian Migration: 237 – 249.

Krapu, G.L. 1974. Feeding ecology of pintail hens during reproduction. The Auk 91: 278 – 290.

Krapu, G. L., A. T. Klett, and D. G. Jorde. 1983. The effect of variable spring water conditions on mallard reproduction. Auk 100:689-698.

Kirsch, L.M. 1969. Waterfowl production in relation to grazing. J. Wildlife Management 33(4): 821-828.

McLandress, R. M., G. S. Yarris, A. E. H. Perkins, D.P. Connelly and D. G. Raveling. 1996. Nesting Biology of Mallards in California. The Journal of Wildlife Management 60(1): 94 –107.

McWilliams, S.R., C. Guglielmo, B. Pierce and M. Klaassen. 2004. Flying, fasting, and feeding in birds during migration: a nutritional and physiological ecology perspective. Journal of Avian Biology 35: 377 – 393.

Miller, M. R. 1986. Northern pintail body condition during wet and dry winters in the Sacramento Valley, California. The Journal of Wildlife Management 50: 189 – 198.

Miller, M. R., J. Beam, and D.P. Connelly. 1988. Dabbling duck harvest dynamics in the Central Valley of California - implications for recruitment. Pages

553- 569 *in* M.W. Weller, ed. Waterfowl in winter. Univ. of Minnesota Press, Minneapolis MN. 624 pp.

Miller, N.L., K. Bashford, E. Strem. 2003. Potential Impacts of Climate Change on California Hydrology. Journal of the American Water Resources Association 39:771-784.

Milonski, M. 1958. The significance of farmland for waterfowl nesting and techniques for reducing losses due to agricultural practices. Trans. N. Am. Wildl. Conf. 23:215-228.

Murphy-Klassen, H., T. Underwood, S. G. Sealy, and A. A. Czymyi. 2005. Long-term tends in spring arrival dates of migrate birds at Delta Marsh, Manitoba, in relation to climate change. Auk 122:1130-1148.

Newton, I. 1994. The role of nest sites in limiting the numbers of hole-nesting birds: A review. Biological Conservation 70(3) 265 – 276.

Nichols, J.D. and J.E. Hines. 1982. The relationship between harvest and survival rates of mallards: a straight forward approach with portioned data sets. J. Wildl. Manage. 47:334-348.

Nichols, J.D. 1991. Responses of North American duck populations to exploitation. Pages 498-525 *in* J. D. Lebreton and G. J. M. Hirons, Eds. Bird population studies: Their relevance to conservation and management. Oxford Univ. Press, Oxford, England.

Nichols, J.D., M.J. Conroy, D.R. Anderson, and K.P. Burnham. 1984. Compensatory mortality in waterfowl populations: A review of the evidence and implications for research and management. Trans. North Am. Wildl. and Nat. Resour. Conf. 49:535-554.

Nichols, J.D., Blohm, R. J., Reynolds, R. E., Trost, R. E., Hines, J. E., and Blade, J. P. 1991. Band reporting rates for mallards with reward bands of different dollar values. Journal of Wildlife Management 55:1119-126.

Nichols, J. D., Reynolds, R. E., Blohm, R. J., Trost, R. E., Hines, J. E. and Bladen, J. P. (1995). Geographic variation in band reporting rates for mallards based on reward banding. Journal of Wildlife Management 59 697–708.

Olson, S.M., Compiler. 2015. Pacific Flyway Data Book. U.S. Fish and Wildlife Service, Vancouver, WA.

Orthmeyer, D., J. Y. Takekawa, C. R. Ely, M. L. Wege and W. E. Newton. 1995. Morphological variation in greater white-fronted geese in the Pacific flyway. Condor 97: 123 – 132.

Pacific Flyway Council. 2002. Pacific Flyway management plan for Pacific brant. Pacific Flyway Study Comm. [c/o USFWS, DMBM], Portland, OR. Unpubl. rept. 40 pp.+ appendices.

_____. 2006. Pacific Flyway management plan for the Aleutian goose. Aleutian Goose Subcomm., Pacific Flyway Study Comm. [c/o USFWS], Portland, OR. Unpubl. rept. 20 pp.+ appendices.

Pamplin, W.L. Jr. 1986. Cooperative efforts to halt population declines of geese nesting on Alaska's Yukon Kuskokwim Delta. Transcripts of the North American Wildlife and Natural Resources Conference 51: 487 – 506.

Palmer, R.S. 1976. Handbook of North American birds. Vols. 2 and 3. Yale University Press, New Haven and London, CT. 521 pp. and 560 pp.

Parry, G. D. 1981. The meanings of r- and K-selection. Oecologia 48(2): 260 – 264.

Raveling, D. G. and M.E. Heitmeyer. 1989. Relationships of population size and recruitment of pintails to habitat conditions and harvest. J. Wildl. Manage. 53:1088-1103.

Rocke, T.E. and M. D. Samuel. 1999. Water and sediment characteristics associated with avian botulism outbreaks in wetlands. The Journal of Wildlife Management 63(4) 1249 – 1260.

Rohwer, F.C and M. Anderson. 1988. Female-biased philopatry, monogamy, and the timing of pair formation in migratory waterfowl. Current Ornithology 5: 187 – 221.

Royle, J.A., and P. Garrettson. 2005. The effect of reward band value on mid-continent mallard band reporting rates. Journal of Wildlife Management 69:800-804.

Sedinger, J.S., N. D. Chelgren, D. H. Ward, M. S. Lindberg. 2008. Fidelity and breeding probability related to population density and individual quality in black brent geese Branta bernicla nigricans. *Journal of Animal Ecology* 77:4 pp 702-712.

Sedinger, J. S., and E. Rexstad. 1994. Do restrictive harvest regulations result in higher survival rates in mallards? Reply to Smith and Reynolds (1992). Journal of Wildlife Management 58:571-577.

Shuford, W.D., G.W. Page and J.E. Kjelmyr. 1998. Patterns and dynamics of shorebird use of California's Central Valley. The Condor 100: 227 – 244.

Skalos, D.A 2011. Evaluating body condition and predicting lipid mass of wintering Pacific greater white-fronted geese (*Anser albifrons frontalis*). M.S. Thesis, UC Davis.

Smith, G.W. and R.E. Reynolds. 1992. Hunting and mallard survival. J. Wildl. Manage. 56(2):306-316.

Sorenson, L. G., R. Goldberg, T. L. Root, and M. G. Anderson. 1988. Potential effects of global warming on waterfowl populations breeding in the northern Great Plains. Climatic Change 40:343-369.

Szymanski, M. L., and A. D. Afton. 2004. Effects of spinning-wing decoys on flock behavior and hunting vulnerability of mallards in Minnesota. Wildlife Society Bulletin 33:993-1001.

Thomas, D.R. 2009. Assessment of waterfowl body condition to evaluate the effectiveness of The Central Valley Joint Venture. M.S. Thesis, UC Davis.

Trost, R.E. 1987. Mallard survival and harvest rates: a reexamination of relationships. Trans. N.Am. Wildl. Nat. Resour. Conf. 52:264-284.

USDI. 1975. Issuance of annual regulations permitting the sport hunting of migratory birds. U.S. Fish and Wildl. Serv. Final environ. impact statement. Wash. D.C. 710pp. + append.

USDI. 1988. Issuance of annual regulations permitting the sport hunting of migratory birds. U.S. Fish Wildl. Serv. Final supplem. environ. impact statement. Wash. D.C. 130 pp. + append.

USDI. 2013. Issuance of annual regulations permitting the sport hunting of migratory birds. U.S. Fish Wildl. Serv. Final supplem. Environ. Impact statement. Wash. D.C. 271 pp. + append.

U. S. Fish and Wildlife Service. 1989. North American Wetland Conservation Act. U.S. Department of the Interior, Washington, D.C. USA.

_____. 2014a. Adaptive Harvest Management: 2014 Hunting Season. U.S. Department of Interior, Washington, D.C. 62 pp. Available online at http://www.fws.gov/migratorybirds/mgmt/AHM/AHM-intro.html.

_____. 2014b. Waterfowl population status, 2014 U.S. Department of the Interior, Washington, D.C. USA.

_____. 2014c. Migratory bird hunting activity and harvest during the 2012 and 2013 hunting seasons: Preliminary estimates. U.S. Department of the Interior, Washington, D.C. U.S.A.

Viljugrien, H., N.C. Stenseth, G.W. Smith, and G.H. Steinbakk. 2005. Density dependence in North America Ducks. Ecology 86(1): 245 – 254.

Ward, D. H., A. Reed, J. S. Sedinger, J. M. Black, D. V. Derksen, and P. M. Caselli. 2005. North American brant: effects of changes in habitat and climate on population dynamics. Global Change Biology 11:869-880.

White, G. C., and K. P. Burnham. 1999. Program MARK: survival estimation from populations of marked animals. Bird Study 46 Supplement: 120-138.

Yarris, G.S., R.M. McLandress and A. E. H. Perkins. 1994. Molt migration of postbreeding female mallards from Suisun Marsh, California. The Condor 96(1): 36 – 45.

Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White. 1990. California's wildlife. Vol. II - birds. California statewide wildlife habitat relationships system. Calif. Dep. Fish and Game, Wildl. Manage. Div., Sacramento, CA.

Appendix A. 2015-16 Regulations Related to Migratory Waterfowl, Coot, Moorhen, (Common Gallinule).

§502. Waterfowl, Migratory; American Coot and Common Moorhen (Common Gallinule).

(a) Definitions.
(1) Dark geese. Dark geese include Canada geese, cackling geese, Aleutian geese and white-fronted geese (“specklebelly”).
(2) Large Canada geese. Large Canada geese include western Canada geese (“honker”) and lesser Canada geese (“lessers”).
(3) Small Canada geese. Small (about the size of a mallard) Canada geese include cackling geese and Aleutian geese. Both are white-cheeked geese nearly identical in appearance to Large Canada geese. Aleutian geese have a thin white neck ring and Cackling geese have dark breasts. Both species have a high-pitched cackle as opposed to the deeper “honking”.
(4) White geese. White geese include Ross' geese, snow geese and blue phase of both species.
(b) Waterfowl Hunting Zones.
(1) Northeastern California Zone: In that portion of California lying east and north of a line beginning at the intersection of Interstate 5 with the California-Oregon state line; south along Interstate 5 to its junction with Walters Lane south of the town of Yreka; west along Walters Lane to its junction with Easy Street; south along Easy Street to the junction with Old Highway 99; south along Old Highway 99 to the point of intersection with Interstate 5 north of the town of Weed; south along Interstate 5 to its junction with Highway 89; east and south along Highway 89 to Main Street in Greenville; north and east to its junction with North Valley Road; south to its junction of Diamond Mountain Road; north and east to its junction with North Arm Road; south and west to the junction of North Valley Road; south to the junction with Arlington Road (A22); west to the junction of Highway 89; south and west to the junction of Highway 70; east on Highway 70 to Highway 395; south and east on Highway 395 to the point of intersection with the California-Nevada state line; north along the California-Nevada state line to the junction of the California-Nevada-Oregon state lines west along the California-Oregon state line to the point of origin.
(2) Southern San Joaquin Valley Zone: All of Kings and Tulare counties and that portion of Kern County north of the Southern California Zone.
(3) Southern California Zone: In that portion of southern California (but excluding the Colorado River zone) lying south and east of a line beginning at the mouth of the Santa Maria River at the Pacific Ocean; east along the Santa Maria River to where it crosses Highway 166 near the City of Santa Maria; east on Highway 166 to the junction with Highway 99; south on Highway 99 to the crest of the Tehachapi Mountains at Tejon Pass; east and north along the crest of the Tehachapi Mountains to where it intersects Highway 178 at Walker Pass; east on Highway 178 to the junction of Highway 395 at the town of Inyokern; south on Highway 395 to the junction of Highway 58; east on Highway 58 to the junction of Interstate 15; east on Interstate 15 to the junction with

Highway 127; north on Highway 127 to the point of intersection with the California-Nevada state line.
(4) Colorado River Zone: In those portions of San Bernardino, Riverside, and Imperial counties lying east of the following lines: Beginning at the intersection of Highway 95 with the California-Nevada state line; south along Highway 95 to Vidal Junction; south through the town of Rice to the San Bernardino-Riverside county line on a road known as “Aqueduct Road” in San Bernardino County; south from the San Bernardino-Riverside county line on road known in Riverside County as the “Desert Center to Rice Road” to the town of Desert Center; east 31 miles on Interstate 10 to its intersection with the Wiley Well Road; south on this road to Wiley Well; southeast along the Army-Milpitas Road to the Blythe, Brawley, Davis Lake intersections; south on the Blythe-Brawley paved road to its intersection with the Ogilby and Tumco Mine Road; south on this road to Highway 80; east seven miles on Highway 80 to its intersection with the Andrade-Algodones Road; south on this paved road to the intersection of the Mexican boundary line at Algodones, Mexico.
(5) Balance of State Zone: That portion of the state not included in Northeastern California, Southern California, Colorado River or the Southern San Joaquin Valley zones.
(6) Special Management Areas
(A) North Coast. All of Del Norte and Humboldt counties.
(B) Humboldt Bay South Spit (West Side). Beginning at the intersection of the north boundary of Table Bluff County Park and the South Jetty Road; north along the South Jetty Road to the South Jetty; west along the South Jetty to the mean low water line of the Pacific Ocean; south along the mean low water line to its intersection with the north boundary of the Table Bluff County Park; east along the north boundary of the Table Bluff County Park to the point of origin.
(C) Sacramento Valley. Beginning at the town of Willows; south on Interstate 5 to the junction with Hahn Road; east on Hahn Road and the Grimes-Arbuckle Road to the town of Grimes; north on Highway 45 to its junction with Highway 162; north on Highway 45-162 to the town of Glenn; west on Highway 162 to the point of beginning.
(D) Morro Bay. Beginning at a point where the high tide line intersects the State Park boundary west of Cuesta by the Sea; northeasterly to a point 200 yards offshore of the high tide line at the end of Mitchell Drive in Baywood Park; northeasterly to a point 200 yards offshore of the high tide line west of the Morro Bay State Park Boundary, adjacent to Baywood Park; north to a point 300 yards south of the high tide line at the end of White Point; north along a line 400 yards offshore of the south boundary of the Morro Bay City limit to a point adjacent to Fairbanks Point; northwesterly to the high tide line on the sand spit; southerly along the high tide line of the sand spit to the south end of Morro Bay; easterly along the Park boundary at the high tide line to the beginning point.
(E) Martis Creek Lake. The waters and shoreline of Martis Creek Lake, Placer and Nevada counties.
(F) Northern Brant. Del Norte, Humboldt and Mendocino counties.
(G) Balance of State Brant. That portion of the state not included in the Northern Brant Special Management Area.

(H) Imperial County. Beginning at Highway 86 and the Navy Test Base Road; south on Highway 86 to the town of Westmoreland; continue through the town of Westmoreland to Route S26; east on Route S26 to Highway 115; north on Highway 115 to Weist Rd.; north on Weist Rd. to Flowing Wells Rd.; northeast on Flowing Wells Rd. to the Coachella Canal; northwest on the Coachella Canal to Drop 18; a straight line from Drop 18 to Frink Rd.; south on Frink Rd. to Highway 111; north on Highway 111 to Niland Marina Rd.; southwest on Niland Marina Rd. to the old Imperial County boat ramp and the water line of the Salton Sea; from the water line of the Salton Sea, a straight line across the Salton Sea to the Salinity Control Research Facility and the Navy Test Base Road; southwest on the Navy Test Base Road to the point of beginning.

(c) Seasons and Bag and Possession Limits for American Coots, and Common Moorhens.		
(1) Statewide Provisions		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
American Coot and Common Moorhen	Concurrent with duck season(s)	Daily bag limit: 25, either all of one species or a mixture of these species. Possession limit: triple the daily bag limit
(d) Seasons and Bag and Possession Limits for Ducks and Geese by Zone.		
(1) Northeastern California Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	From the second Saturday in October extending for 105 days. **(Oct 10 – Jan 22)** Scaup: from the second Saturday in October extending for a period of 58 days **(Oct 10 – Dec 6)** and from the fourth Saturday in December extending for a period of 28 days. **(Dec 26 – Jan 22)**	Daily bag limit: 7 Daily bag limit may include: • 7 mallards, but not more than 2 females. • 2 pintail (either sex). • 2 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	Regular Season:	Daily bag limit: 25

	Dark geese from the second Saturday in October extending for 100 days. **(Oct 10 – Jan 17)** White geese from the first Saturday in November extending for 72 days. **(Nov 7– Jan 17)** Late Season: White-fronted geese from the first Sunday in March extending for 5 days. **(Mar 6 – Mar 10)** White geese from the first Sunday in February extending for 33 days. **(Feb 7 – Mar 10)** During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016, Fish and Game Code.	Daily bag limit may include: • 15 white geese. • 10 dark geese but not more than 2 Large Canada geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.
(2) Southern San Joaquin Valley Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	From the fourth Saturday in October extending for 100 days. **(Oct 24 – Jan 31)** Scaup: from the first Saturday in November extending for 86 days. **(Nov 7 – Jan 31)**	Daily bag limit: 7 Daily bag limit may include: • 7 mallards, but not more than 2 females. • 2 pintail (either sex). • 2 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	From the fourth Saturday in October extending for 100 days. **(Oct 24 – Jan 31)**	Daily bag limit: 25 Daily bag limit may include: • 15 white geese. • 10 dark geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.
(3) Southern California Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		

(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	From the fourth Saturday in October extending for 100 days. **(Oct 24 – Jan 31)** Scaup: from the first Saturday in November extending for 86 days. **(Nov 7 – Jan 31)**	Daily bag limit: 7 Daily bag limit may include: • 7 mallards, but not more than 2 females. • 2 pintail (either sex). • 2 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	From the fourth Saturday in October extending for 100 days. **(Oct 24 – Jan 31)**	Daily bag limit: 18 Daily bag limit may include: • 15 white geese. • 3 dark geese (see definitions 502(a)). Possession limit: triple the daily bag limit.
(4) Colorado River Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers).	From the third Friday in October extending for 101 days. **(Oct 16 – Jan 24)** Scaup: from the last Saturday in October extending for 86 days. **(Oct 31 – Jan 24)**	Daily bag limit: 7 Daily bag limit may include: • 7 mallards, but not more than 2 females or Mexican-like ducks. • 2 pintail (either sex). • 2 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	From the third Friday in October extending for 101 days. **(Oct 16 – Jan 24)**	Daily bag limit: 14 Daily bag limit may include: • 10 white geese. • 4 dark geese (see definitions: 502(a)). Possession limit: triple the daily

		bag limit.
(5) Balance of State Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers).	From the fourth Saturday in October extending for 100 days. **(Oct 24 – Jan 31)** Scaup: from the first Saturday in November extending for 86 days. **(Nov 7 – Jan 31)**	Daily bag limit: 7 Daily bag limit may include: • 7 mallards, but not more than 2 females. • 2 pintail (either sex). • 2 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	Early Season: Large Canada geese only from the Saturday closest to October 1 for a period of 5 days EXCEPT in the North Coast Special Management Area where Large Canada geese are closed during the early season. **(Oct 3 – Oct 7)** Regular Season: Dark and white geese from the fourth Saturday in October extending for 100 days **(Oct 24 – Jan 31)** EXCEPT in the Sacramento Valley Special Management Area where the white-fronted goose season will close after December 21. **(Oct 24 – Dec 21)** Late Season: White-fronted geese and white geese from the second Saturday in February extending for a period of 5 days EXCEPT in the Sacramento Valley Special Management Area	Daily bag limit: 25 Daily bag limit may include: • 15 white geese. • 10 dark geese EXCEPT in the Sacramento Valley Special Management Area where only 3 may be white-fronted geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.

	where the white-fronted goose season is closed. During the Late Season, hunting is not permitted on wildlife areas listed in Sections 550-552 EXCEPT on Type C wildlife areas in the North Central and Central regions. **(Feb 13 – Feb 17)**		

(6) Special Management Areas (see descriptions in 502(b)(6))				
	(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*	
1. North Coast	All Canada Geese	From the first Sunday in November extending for a period of 85 days **(Nov 8 – Jan 31)** (Regular Season) and from the third Saturday in February extending for a period of 20 days **(Feb 20 – Mar 10)**(Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions Section 2016, Fish and Game Code.	Daily bag limit: 10 Canada Geese of which only 1 may be a Large Canada goose (see definitions: 502(a)), EXCEPT during the Late Season the bag limit on Large Canada geese is zero. Possession limit: triple the daily bag limit.	
2. Humboldt Bay South Spit (West Side)	All Species	Closed during brant season.		
3. Sacramento Valley	White-Fronted Geese	Open concurrently with the goose season through December 21, and during Youth Waterfowl Hunting Days. **(Oct 24 – Dec 21)**	Daily bag limit: 3 white-fronted geese. Possession limit: triple the daily bag limit.	
4. Morro Bay	All species	Open in designated area only from the opening day of brant season through the remainder of waterfowl season.		
5. Martis Creek	All species	Closed until November		

Lake		16.		
6. Northern Brant	Black Brant	From November 8 extending for 37 days. **(Nov 8 – Dec 14)**	Daily bag limit: 2 Possession limit: triple the daily bag limit.	
(7) Balance of State Brant	Black Brant	From November 9 extending for 37 days. **(Nov 9 – Dec 15)**	Daily bag limit: 2 Possession limit: triple the daily bag limit.	
(8) Imperial County	White Geese	From the first Saturday in November extending for a period of 86 days **(Nov 7 – Jan 31)**(Regular Season) and from the first Saturday in February extending for a period of 16 days **(Feb 6 – Feb 21)**(Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016, Fish and Game Code.	Daily bag limit: 15 Possession limit: triple the daily bag limit.	

(e) Youth Waterfowl Hunting Days Regulations (NOTE: To participate in these Youth Waterfowl Hunts, federal regulations require that hunters must be 15 years of age or younger and must be accompanied by a non-hunting adult 18 years of age or older.)

(1) Statewide Provisions.

(A) Species	*(B) Season*	*(C) Daily Bag Limit*
Ducks (including Mergansers), American Coot, Common Moorhen, Black Brant, Geese	1. Northeastern California Zone: The Saturday fourteen days before the opening of waterfowl season extending for 2 days. **(Sept 26 – 27)** 2. Southern San Joaquin Valley Zone: The Saturday following the closing of waterfowl season extending for 2 days. **(Feb 6 – Feb 7)** 3. Southern California Zone: The Saturday following the closing of	Same as regular season.

	waterfowl season extending for 2 days. **(Feb 6 – Feb 7)** 4. Colorado River Zone: The Saturday following the closing of waterfowl season extending for 2 days. **(Jan 30 – Jan 31)** 5. Balance of State Zone: The Saturday following the closing of waterfowl season extending for 2 days. **(Feb 6 – Feb 7)**	
(f) Falconry Take of Ducks (including Mergansers), Geese, American Coots, and Common Moorhens.		
(1) Statewide Provisions		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers), Geese, American Coot and Common Moorhen	1. Northeastern California Zone. Open concurrently with duck season. **(Oct 10 – Jan 17)** 2. Balance of State Zone. Open concurrently with duck season and February 6-7, 2016, EXCEPT in the North Coast Special Management Area where the falconry season for geese runs concurrently with the season for Small Canada geese (see 502(d)(6)). **(Oct 24 – Jan 31 & Feb 6 – Feb 7)** 3. Southern San Joaquin Valley Zone. Open concurrently with duck season and February 1-3, 2016. Goose hunting in this zone by means of falconry is not permitted. **(Oct 24 – Jan 31 & Feb 1 – Feb 3)** 4. Southern California Zone. Open concurrently with duck season and February 1-5, 2016 EXCEPT in the Imperial County Special Management Area where goose hunting by means of falconry is not permitted. **(Oct 24 –**	Daily bag limit: 3 Daily bag limit makeup: • Either all of 1 species or a mixture of species allowed for take. Possession limit: 9

	Jan 31 & Feb 1 – Feb 5) 5. Colorado River Zone. Open concurrently with duck season and January 25-28, 2016. Goose hunting in this zone by means of falconry is not permitted. Federal regulations require that California's hunting regulations conform to those of Arizona, where goose hunting by means of falconry is not permitted. **(Oct 16 – Jan 28)**	

Note: Authority cited: Sections 202 and 355, Fish and Game Code. Reference: Sections 202, 355 and 356, Fish and Game Code.

Appendix B. Estimated Retrieved Harvest of Geese in California

Year	Canada	White-Front	Snow	Ross'	Brant	TOTAL
1962	53,532	50,088	28,826	0	9,433	141,879
1963	99,888	56,694	66,810	0	8,008	231,400
1964	77,920	51,735	55,151	0	3,748	188,554
1965	49,685	42,211	33,771	0	10,735	136,402
1966	72,415	65,321	155,543	1,022	7,155	301,456
1967	8,756	62,819	72,413	533	6,929	151,450
1968	72,935	47,345	53,308	0	8,298	181,886
1969	72,613	68,443	72,545	2,514	10,056	226,171
1970	95,112	70,639	112,614	5,114	393	283,872
1971	74,008	34,216	94,123	3,646	2,524	208,517
1972	148,888	51,813	41,998	0	13,698	256,397
1973	69,701	44,615	106,721	4,398	2,161	227,596
1974	72,166	40,682	50,764	8,464	1,693	173,769
1975	62,002	30,193	81,993	6,968	0	181,156
1976	58,444	44,044	127,678	7,726	515	238,407
1977	42,610	33,572	77,771	3,395	9,700	167,048
1978	46,530	34,719	28,578	2,360	674	112,861
1979	31,373	21,399	26,179	4,419	0	83,370
1980	26,950	18,693	28,459	2,795	0	76,897
1981	52,089	21,781	28,591	6,316	0	108,777
1982	46,418	15,004	26,263	7,298	0	94,983
1983	56,384	16,157	43,223	6,789	3,573	126,126
1984	38,004	6,686	49,609	8,373	0	102,672
1985	40,313	15,157	65,085	8,913	0	129,468
1986	21,999	7,542	31,839	3,477	0	64,857
1987	1,348	9,634	28,601	2,375	0	41,958
1988	26,296	4,707	30,571	884	0	62,458
1989	24,486	9,519	30,263	5,106	566	69,940
1990	32,691	7,003	8,104	2,438	475	50,711
1991	9,474	9,828	25,839	3,253	211	48,605
1992	28,546	11,705	26,407	3,076	1,810	71,544
1993	21,066	12,311	46,461	7,430	2,368	89,636
1994	28,469	12,597	21,847	7,476	2,774	73,163
1995	21,119	11,476	30,679	4,833	328	68,435
1996	25,487	16,530	46,849	12,405	2,639	103,910
1997	23,659	22,448	27,628	8,058	4,029	85,822
1998	23,299	21,984	38,371	6,049	12,097	101,800
1999	14,017	23,925	35,563	23,545	2,639	99,689
2000	25,877	21,184	31,721	6,749	1,800	87,331
2001	30,228	27,080	33,167	13,015	4,100	107,590
2002	37,762	31,497	30,279	15,662	1,100	116,300
2003	41,946	24,685	32,851	16,333	2,300	118,115
2004	44,492	39,924	35,355	10,329	800	130,900
2005	49,182	42,156	46,653	7,729	900	146,620
2006	41,381	52,492	43,296	5,875	2,900	145,944
2007	50,484	59,416	52,038	7,961	1,800	171,699
2008	49,252	110,523	70,946	13,779	1,000	245,500
2009	53,865	56,101	30,693	8,740	900	150,299
2010	68,666	67,810	54,548	14,974	541	206,539
2011	51,870	55,760	43,718	14,635	750	166,733
2012	47,877	41,842	45,261	14,886	1,093	150,959
2013	44,071	65,071	38,747	13,310	952	162,151
2014*	52,735	74,976	66,492	18,343	3,080	215,626
Averages:						
1962-2013	46,301	35,015	48,968	6,643	2,888	139,814
1962-65	70,256	50,182	46,140	0	7,981	174,559
1966-70	64,366	62,913	93,285	1,837	6,566	228,967
1971-75	85,353	40,304	75,120	4,695	4,015	209,487
1976-80	41,181	30,485	57,733	4,139	2,178	135,717
1981-85	46,642	14,957	42,554	7,538	715	112,405
1986-90	21,364	7,681	25,876	2,856	208	57,985
1991-95	21,735	11,583	30,247	5,214	1,498	70,277
1996-00	22,468	21,214	36,026	11,361	4,641	95,710
2001-05	40,722	33,068	35,661	12,614	1,840	123,905
2005-12	52,100	63,465	48,842	10,528	1,256	176,191
2010-14	53,044	61,092	49,753	15,230	1,283	180,402
% Change from:						
2013	19.7%	15.2%	71.6%	37.8%	223.5%	33.0%
1962-2013	13.9%	114.1%	35.8%	176.1%	6.7%	54.2%
% State's Total Goose Harvest:						
2014	23.3%	33.2%	29.4%	8.1%	1.4%	
1962-2013	33.1%	25.0%	35.0%	4.8%	2.1%	
*Preliminary Data						

Appendix C. 2014 Pacific Flyway Fall and Winter Goose Surveys

Pacific White-fronted Goose abundance indices from breeding pair surveys in Alaska (Yukon-Kuskokwim Delta Coastal Zone Survey and Alaska-Yukon Waterfowl Breeding Population and Habitat Survey) and fall counts in California, 1979–current.

	Yukon-Kuskokwim		Bristol Bay		Projected fall	
Year	Delta	Interior	Total	Total	population[b]	Fall Survey[a]
1979						73,100
1980						93,500
1981						116,500
1982						91,700
1983						112,900
1984						100,200
1985	18,914	12,082	5,050	36,046	163,249	93,900
1986	13,400	10,019	4,266	27,685	141,930	107,100
1987	15,717	7,564	3,657	26,938	140,026	130,600
1988	27,191	14,145	3,918	45,254	186,728	124,690
1989	28,004	16,307	5,398	49,709	198,087	263,350
1990	37,836	18,468	2,003	58,307	220,010	237,050
1991	31,286	13,262	4,527	49,075	196,470	215,655
1992	34,671	16,110	7,052	57,833	218,802	230,675
1993	39,748	22,790	1,306	63,844	234,128	253,820
1994	56,513	12,966	4,092	73,571	258,930	298,930
1995	77,710	10,215	2,612	90,537	302,190	251,970
1996	78,032	36,543	4,353	118,928	374,582	350,850
1997	83,215	30,452	3,657	117,324	370,492	318,954
1998	87,881	34,381	1,915	124,177	387,966	413,100
1999	95,040	27,800	3,483	126,323	393,437	285,514
2000	91,911	16,798	1,654	110,363	352,743	284,044
2001	113,603	24,460	6,095	144,158	438,913	337,848
2002	90,407	17,387	5,311	113,105	359,734	402,565
2003	117,951	17,387	2,177	137,515	421,975	424,900
2004	100,622	16,601	1,828	119,051	374,895	337,971
2005	121,017	18,566	6,530	146,113	443,898	508,890
2006	138,067	28,979	4,702	171,748	509,262	426,300
2007	178,515	28,488	2,177	209,180	604,706	476,009
2008	161,979	54,913	1,045	217,937	627,035	602,699
2009	144,678	32,712	5,137	182,527	536,746	457,802
2010	174,556	44,402	7,923	226,881	649,840	783,648
2011	168,925	33,989	6,095	209,009	604,270	646,501
2012	181,519	47,250	3,744	232,513	664,201	831,955
2013	164,399	29,568	5,485	199,452	579,902	No Survey
2014	205,081	16,503	348	221,932	637,221	663,257
2015	140,313	18,468	1,132	159,913	479,085	
Averages:						
Long Term	97,377	23,535	3,828	124,740	389,402	324,241
3-yr	169,931	21,513	2,322	193,766	565,403	663,257
% Change from:						
Long Term	46.2	-22.1	-71.1	29.4	24.0	-100.0
3-yr	-17.4	-14.2	-51.2	-17.5	-15.3	-100.0
2014	-31.6	11.9	225.3	-27.9	-24.8	-100.0

[a]Fall surveys were initiated in 1979 and guided management actions until 1998. Management actions after 1998 were based on total indicated birds (AK Total) from the breeding ground survey and a factor derived from the historic relationship between the fall survey and breeding ground survey (1985–1998). Timing of the Fall survey is as follows: 1979–1988 (November) and 1989–2014 (October).

[b]Projected fall population = (Alaska total * 2.5498) + 71,339.

White Goose (Snow Goose and Ross's Goose) abunda
indices from the California Special white goose survey a
Skagit-Fraser photo inventory conducted in December,
1979–current.

Year	Skagit-Fraser	California	Total
1979	35,600	492,500	528,100
1980	22,400	181,800	204,200
1981	48,600	711,300	759,900
1982	26,100	328,000	354,100
1983	24,500	523,100	547,600
1984	26,600	439,700	466,300
1985	46,200	503,600	549,800
1986	39,900	481,800	521,700
1987	47,700	477,600	525,300
1988	43,800	397,200	441,000
1989	32,200	431,700	463,900
1990	31,700	676,800	708,500
1991	39,100	651,000	690,100
1992	34,300	605,000	639,300
1993	49,100	520,100	569,200
1994	42,600	435,600	478,200
1995	37,000	464,400	501,400
1996	45,800	320,500	366,300
1997	47,000	369,400	416,400
1998	47,100	307,200	354,300
1999	28,600	550,400	579,000
2000	56,300	600,500	656,800
2001	52,000	396,200	448,200
2002	73,100	523,700	596,800
2003	66,800	521,000	587,800
2004	68,141	682,128	750,269
2005	80,040	630,686	710,726
2006	79,891	719,810	799,701
2007	94,859	978,622	1,073,481
2008	57,000	900,403	957,403
2009	73,964	827,055	901,019
2010	63,641	800,156	863,797
2011	69,964	1,027,887	1,097,851
2012	56,973	824,432	881,405
2013	75,313	1,275,890	1,351,203
2014	58,007	1,122,679	1,180,686
Averages:			
Long Term	50,608	602,774	653,382
3-yr	63,431	1,074,334	1,137,765
% Change from:			
Long Term	15.1	91.0	85.0
3-yr	-8.6	4.5	3.8
2013	-23.0	-12.0	-12.6

Aleutian Canada Goose abundance indices from direct count and mark-resight methods, 1975–current.

Year	Estimate	SE	L95% C.I.	U95% C.I.	Method
1975	790				Direct count
1976	900				Direct count
1977	1,280				Direct count
1978	1,500				Direct count
1979	1,590				Direct count
1980	1,740				Direct count
1981	2,000				Direct count
1982	2,700				Direct count
1983	3,500				Direct count
1984	3,800				Direct count
1985	4,200				Direct count
1986	4,300				Direct count
1987	5,000				Direct count
1988	5,400				Direct count
1989	5,800				Direct count
1990	6,300				Direct count
1991	7,000				Direct count
1992	7,680				Direct count
1993	11,680				Direct count
1994	15,700				Direct count
1995	19,150				Direct count
1996[a]	21,420				Direct count
1997[a]	22,800				Direct count
1998[a]	27,600				Direct count
1999[a]	15,417	556	14,326	16,508	Mark-resight
2000[a]	20,352	761	18,861	21,843	Mark-resight
2001[a]	32,408	1,069	30,313	34,503	Mark-resight
1999	35,508	3,118	29,396	41,619	Mark-resight
2000	34,245	1,346	31,607	36,882	Mark-resight
2001[b]					
2002[b]					
2003	72,750	2,705	67,448	78,051	Mark-resight
2004	108,505	4,642	99,407	117,604	Mark-resight
2005	87,091	4,553	78,167	96,014	Mark-resight
2006	100,030	4,525	91,161	108,898	Mark-resight
2007	107,467	7,559	92,650	122,283	Mark-resight
2008	110,950	6,661	97,894	124,006	Mark-resight
2009	83,589	11,798	60,465	106,712	Mark-resight
2010	107,439	8,568	90,646	124,231	Mark-resight
2011	101,435	6,979	87,756	115,114	Mark-resight
2012	132,526	10,052	112,823	152,229	Mark-resight
2013	161,137	14,530	132,657	189,616	Mark-resight
2014	147,609	12,905	122,316	172,903	Mark-resight
2015	189,110	17,925	153,977	224,243	Mark-resight
Averages:					
Long Term	43,605	6,681	78,437	104,626	
3-yr	165,952	15,120	136,317	195,587	
% Change from:					
Long Term	372.1	197.8	108.1	129.8	
3-yr	14.0	18.6	13.0	14.7	
2014	28.1	38.9	25.9	29.7	

[a]Methods overlapped by three years.

[b]There is no estimate for 2001 and 2002 because of insufficient data.

Pacific Brant population indices from the Mid-winter Waterfowl Survey, 1936–current. The table continues on the next page and includes long-term summary statistics.

	U.S. and Canada						Mexico[b]			MWS Index		Izembek Index	
Year	Ak[e]	BC[a]	WA	OR	CA	Subtotal[a]	Baja	Mainland	Subtotal	Annual[c]	3-yr Avg[c]	Annual[d]	% Juv[d]
1936			8,202	3,085	19,910	31,197							
1937			13,450	5,935	13,460	32,845							
1938			24,560	10,475	38,200	73,235							
1939			25,595	9,502	16,890	51,987							
1940			35,520	5,350	35,050	75,920							
1941			24,100	5,000	31,785	60,885							
1942			53,950	6,850	28,983	89,783							
1943			37,000	575	18,000	55,575							
1944			33,950	7,250	20,250	61,450							
1945			32,650	3,000	30,100	65,750							
1946			25,462	55	60,452	85,969							
1947			20,250	8,200	39,640	68,090							
1948			20,660	2,850	32,750	56,260							
1949			20,650	803	66,515	87,968							
1950			15,574	3,600	57,792	76,966							
1951			21,639	2,110	48,131	71,880	93,200	0					
1952			16,578	3,200	43,840	63,618	102,945	0					
1953			27,473	1,509	37,557	66,539	87,905	0					
1954			15,376	1,560	28,750	45,686	86,316	0					
1955			21,915	1,686	34,070	57,671	76,679	0					
1956			15,914	2,073	38,510	56,497	52,743	0					
1957			20,701	1,493	35,848	58,042	73,380	0					
1958			25,219	2,778	26,560	54,557	71,305	4					
1959			10,815	1,121	10,750	22,686	71,305	1,400					
1960			17,614	652	3,771	22,037	113,087	1,115	114,202	136,239	--		
1961			16,675	1,330	6,853	24,858	138,625	4,355	142,980	167,838	--		
1962			25,815	2,266	23,510	51,591	116,245	2,400	118,645	170,236	158,104		
1963			20,400	2,639	2,388	25,427	101,575	13,240	114,815	140,242	159,439		
1964			34,169	2,000	8,353	44,522	117,470	23,290	140,760	185,282	165,253		23.9
1965			19,938	1,325	3,372	24,635	117,350	24,915	142,265	166,900	164,141		25.6
1966			22,175	798	3,284	26,257	115,601	19,505	135,106	161,363	171,182		19.2
1967			21,235	1,523	3,824	26,582	111,755	41,315	153,070	179,652	169,305		41.8
1968			15,746	865	1,729	18,340	111,600	24,400	136,000	154,340	165,118		16.8
1969			10,063	382	166	10,611	97,400	35,075	132,475	143,086	159,026		17.1
1970			8,916	963	207	10,086	98,200	33,400	131,600	141,686	146,371		21.8
1971			10,915	1,374	130	12,419	105,800	31,000	136,800	149,219	144,664		34.1
1972			4,328	1,047	0	5,375	91,200	28,200	119,400	124,775	138,560		28.8
1973			5,911	2,544	950	9,405	85,500	30,100	115,600	125,005	133,000		35.9
1974			4,977	1,904	470	7,351	96,900	26,400	123,300	130,651	126,810		29.4
1975			6,163	1,507	480	8,150	80,825	34,455	115,280	123,430	126,362		4.6
1976			7,540	1,769	680	9,989	82,783	29,273	112,056	122,045	125,375		36.7
1977			14,111	2,100	0	16,211	86,534	44,222	130,756	146,967	130,814	107,784	35.3
1978			18,100	1,110	560	19,770	106,469	36,648	143,117	162,887	143,966	116,298	31.6
1979			8,078	1,255	10	9,343	87,860	32,210	120,070	129,413	146,422		14.7
1980			7,665	1,015	135	8,815	89,690	47,860	137,550	146,365	146,222	128,204	14.7
1981	3,271		10,107	1,790	540	15,708	160,560	21,200	181,760	197,468	157,749	127,667	25.8
1982			6,451	706	485	7,642	85,105	28,297	113,402	121,044	154,959	180,734	18.6
1983			3,113	718	565	4,396	81,761	23,157	104,918	109,314	142,609	125,177	9.5
1984	1,611		7,097	930	700	10,338	95,170	29,533	124,703	135,041	121,800	147,933	24.1
1985		283	11,793	641	800	13,517	101,405	30,163	131,568	145,085	129,813	120,122	13.7

[a] In British Columbia, totals for 1984-1991 are Christmas Bird Counts, and from 1992-on are from Canadian Wildlife Service counts.

[b] Incomplete survey in Mexico during 1951–1959.

[c] Includes Western High Arctic brant. 3-year average considers most recent 3 years of annual counts.

[d] Izembek index from fall before Mid-winter Waterfowl Survey, includes Western High Arctic brant.

[e] The historical Alaska MWS index was recalcutated in 2015, following the reccomendation by Wilson and Dau 2015.

Pacific Brant population index, continued.

	U.S. and Canada						Mexico[b]			MWS Index		Izembek Index	
Year	Ak[f]	BC[a]	WA	OR	CA	Subtotal[a]	Baja	Mainland	Subtotal	Annual[c]	3-yr Avg[c]	Annual[d]	% Juv[d]
1986	5,338	319	12,026	1,113	706	19,502	92,525	22,200	114,725	134,227	134,227	122,673	13.7
1987	7,550	205	14,371	1,133	736	23,995	73,825	13,088	86,913	110,908	122,568	108,582	15.3
1988	6,180	263	19,831	1,104	947	28,325	99,066	17,630	116,696	145,021	130,052	136,765	31.2
1989	6,918	484	18,538	871	1,033	27,844	89,600	18,121	107,721	135,565	130,498	123,822	19.3
1990	5,303	406	13,756	1,399	992	21,856	107,545	22,320	129,865	151,721	144,102	135,041	23.9
1991	4,742	591	16,221	1,262	1,340	24,156	88,650	19,905	108,555	132,711	139,999	123,551	19.2
1992	7,043	283	13,505	1,397	2,424	24,652	78,280	14,905	93,185	117,837	134,090	128,784	27.8
1993	8,369	180	13,058	1,254	9,415	32,276	68,280	24,444	92,724	125,000	125,183	119,965	16.5
1994	12,125	382	13,595	666	2,299	29,067	83,130	17,135	100,265	129,332	124,056	143,375	23.6
1995	11,381	363	20,231	708	3,987	36,670	74,060	22,755	96,815	133,485	126,414	142,701	11.6
1996	10,278	634	6,941	644	2,008	20,505	87,280	20,205	107,485	127,990	128,952	152,613	36.1
1997	10,049	500	9,753	669	3,598	24,569	108,018	22,720	130,738	155,307	138,927	125,475	21.7
1998	8,562	619	10,881	580	6,091	26,733	97,805	14,300	112,105	138,838	140,712	130,104	17.4
1999	10,354	985	15,252	645	4,296	31,532	84,965	15,795	100,760	132,292	142,146	117,312	25.7
2000	8,120	1,238	13,859	523	3,389	27,129	92,020	16,420	108,440	135,569	135,566	131,134	21.6
2001	17,790	1,254	10,197	695	4,197	34,133	78,850	13,010	91,860	125,993	131,285	151,216	30.9
2002	13,576	1,483	13,478	552	4,092	33,181	93,995	11,055	105,050	138,231	133,264	112,554	7.5
2003	7,677	1,103	11,455	557	3,124	23,916	74,132	8,094	82,226	106,142	123,455	115,839	20.5
2004	12,756	2,117	14,544	528	6,372	36,317	71,685	13,270	84,955	121,272	121,882	135,944	13.7
2005	12,041	1,020	14,286	609	5,224	33,180	59,960	14,068	74,028	107,208	111,541	134,474	18.2
2006	15,404	1,792	16,305	649	5,069	39,219	87,483	14,254	101,737	140,956	123,145	134,189	33.3
2007	28,533	2,078	12,712	702	7,387	51,412	65,250	13,932	79,182	130,594	126,253	120,875	20.3
2008	27,422	1,264	19,775	370	4,827	53,658	83,856	19,443	103,299	156,957	142,836	135,551	28.2
2009	21,482	2,574	29,243	823	6,392	60,514	*no survey conducted* [e]			--	142,836	130,294	15.5
2010	28,234	2,699	23,908	0	13,553	68,394	71,688	23,389	95,077	163,471	150,341	144,594	26.8
2011	42,937	2,414	21,457	0	15,610	82,418	61,153	18,897	80,050	162,468	160,965	130,093	20.3
2012	44,252	1,229	17,502	687	2,227	65,897	101,571	9,873	111,444	177,341	167,760	126,028	17.5
2013	41,821	2,204	16,454	200	7,448	68,127	71,607	23,566	95,173	163,300	167,703	154,481	13.8
2014	48,140	2,104	17,485	511	7,916	76,156	68,290	28,869	97,159	173,315	171,319	157,781	15.2
2015	50,316	1,636	10,706	486	4,906	68,050	44,533	23,899	68,432	136,482	157,699	170,539	
Averages:													
Long Term	16,862	1,120	17,095	1,832	12,742	38,848	89,865	18,980	113,616	142,275	141,793	132,902	22.2
3-yr	46,759	1,981	14,882	399	6,757	70,778	61,477	25,445	86,921	157,699	165,574	160,934	14.5
% Change from:													
Long Term	218.8	48.4	-37.7	-73.7	-61.8	76.9	-50.8	26.4	-40.2	-4.1	11.5	29.3	-100.0
3-yr	7.6	-17.4	-28.1	21.8	-27.4	-3.9	-27.6	-6.1	-21.3	-13.5	-4.8	6.0	-100.0
2014	4.5	-22.2	-38.8	-4.9	-38.0	-10.6	-34.8	-17.2	-29.6	-21.3	-7.9	8.1	-100.0
Objectives:	9,000	8,000	25,000	3,000	10,000	55,000			107,000		162,000		

[a] In British Columbia, totals for 1984–1991 are Christmas Bird Counts, and from 1992–on are from Canadian Wildlife Service counts.

[b] Aerial surveys were not flown (2009, 2011-2012, 2014–2015) in Mexico due to pilot safety concerns. Instead, ground-counts conducted by Palacios and Avila (including 2013).

[c] Includes Western High Arctic brant. 3-year average considers most recent 3 years of annual counts.

[d] Izembek index from fall before Mid-winter Waterfowl Survey, includes Western High Arctic brant.

[e] No survey conducted due to pilot survey concerns.

[f] The historical Alaska MWS index was recalcutated in 2015, following the reccomendation by Wilson and Dau 2015.

Snow Goose population and productivity indices from Wrangel Island, Russia, 1966–current.

	Population				Nesting			Brood Size		
Year	Adults	Breeding adults	% Juvenile	Total spring	Nests	% Successful	Clutch Size	At Nesting colony	At brood rearing area	Colony Size (ha)
1966							3.6			
1967							4.9			
1968										
1969		114,000			58,200		3.7			1,962
1970	120,000	120,000	20.0	150,000	60,000	96.0	3.7	3.5	2.5	2,600
1971	120,000	24,000	9.1	132,000	12,000	55.0	4.7	3.4	2.3	825
1972	106,000	36,000	0.6	107,000	18,000	45.0	4.2	3.5	2.3	950
1973	85,900	12,000	0.0	86,000	6,000	67.0	6.0	3.9		200
1974	69,500	32,000	0.7	70,000	15,000	0.0	4.7			800
1975	56,000	56,000	0.0	56,000	28,000	74.4	3.8	3.4	2.4	
1976	46,000	46,000	20.7	58,000	23,000	79.0	3.7	3.2	2.8	1,840
1977	57,200	10,000	16.1	68,200	5,000	76.8	5.0	3.7		400
1978	64,900	42,000	0.8	65,400	21,000	80.0	4.2	3.7	2.4	2,200
1979	62,100	60,000	26.5	84,500	30,000	90.0	3.8	3.6		1,860
1980	80,300	20,000	11.5	90,700	10,000	70.0	5.4	3.3		315
1981	86,200	78,000	3.2	89,000	39,000	95.0	4.0	3.7	3.1	2,118
1982	81,000	28,000	18.5	100,000	14,000	65.0	4.1	3.2	2.8	688
1983	92,800	3,400	2.4	95,000	1,700	5.9	4.8			125
1984	85,000	42,000	0.0	85,000	21,000	83.3	3.7	3.2	2.1	1,500
1985	80,000	50,000	5.4	85,000	25,000	87.7	3.7	3.2	2.4	1,457
1986	70,000	58,000	20.4	90,000	29,000	90.0	3.9	3.6	3.2	2,100
1987	85,000	47,000	15.0	100,000	23,500	80.0	3.7	3.4	2.8	1,900
1988	80,000	13,000	17.7	80,000	6,500	51.0	5.2	3.4	2.7	675
1989	70,000	60,000	1.4	70,000	30,000	60.0	3.8	3.3		1,025
1990	60,000	53,000	0.0	60,000	26,500	49.2	3.8	3.2	2.2	940
1991	56,000	41,600	6.6	60,000	20,800	82.0	4.1	3.4	2.7	888
1992	56,000	46,200	20.0	70,000	23,100	70.1	4.0	3.5	3.5	742
1993	64,500	52,200	0.8	65,000	26,100	85.1	3.9	3.2		910
1994	52,500	30,000	25.0	70,000	15,000	13.0	2.8	2.1		1,000
1995	64,000	8,800	0.8	65,000	4,400	50.0	4.7	2.8		430
1996	75,000	75,400	0.0	75,000	37,700	75.4		3.7	2.4	740
1997	70,000	55,200	15.0	85,000	22,600	71.2	4.0	3.5		628
1998	80,000	31,800	10.0	90,000	15,900	66.0	4.6	3.5		750
1999	85,000	20,800	5.6	90,000	10,400	75.0	4.7	3.3		278
2000	87,400	49,600	8.0	95,000	24,800	87.8	3.5	3.2	2.8	738
2001	92,400	48,000	12.0	105,000	24,000	87.0	3.6	3.2	2.3	900
2002		60,600		110,000	30,300	81.5	4.0	3.5	3.0	855
2003		55,000		115,000	27,500	77.5			2.2	900
2004	111,700	56,800	4.9	117,500	28,400	75.0	3.6	3.2		838
2005		95,800		117,500	47,900	82.3	4.2	3.7	3.3	900
2006	100,800	93,200	23.9	132,500	46,600	87.7	4.0	3.7	3.2	875
2007		79,000		140,000	39,500	84.4	4.0	3.5	3.1	1,100
2008		20,000		140,000	10,000	35.0				
2009		108,800		132,500	54,400	79.5	4.1	3.6		
2010		10,000		150,000	5,000					
2011		144,000	5.0	155,000	72,000	81.0	4.2	3.7		
2012[a]										
2013				160,000	78,300	75.8	3.7	3.2	2.7	1,063
2014[a]										
2015	228,500	215,600	4.8	240,000	107,800	89.1	4.0	3.7		2,680
Averages:										
Long Term	82,334	54,609	9.2	100,041	28,331	70.0	4.1	3.4	2.7	1,092
3-yr	147,000	123,200	11.2	185,000	86,033	82.0	4.0	3.5	3.0	1,013
% Change from:										
Long Term	192.8	323.9	-48.7	148.0	306.4	28.0	-3.3	9.0	-100.0	154.8
3-yr	0.0	0.0	0.0	20.0	15.9	8.1	4.2	6.6	-100.0	43.2
2014	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

[a]Data were not gathered in 2012 or 2014.

Appendix D. Possible Effects of Spinning Wing Decoys in California

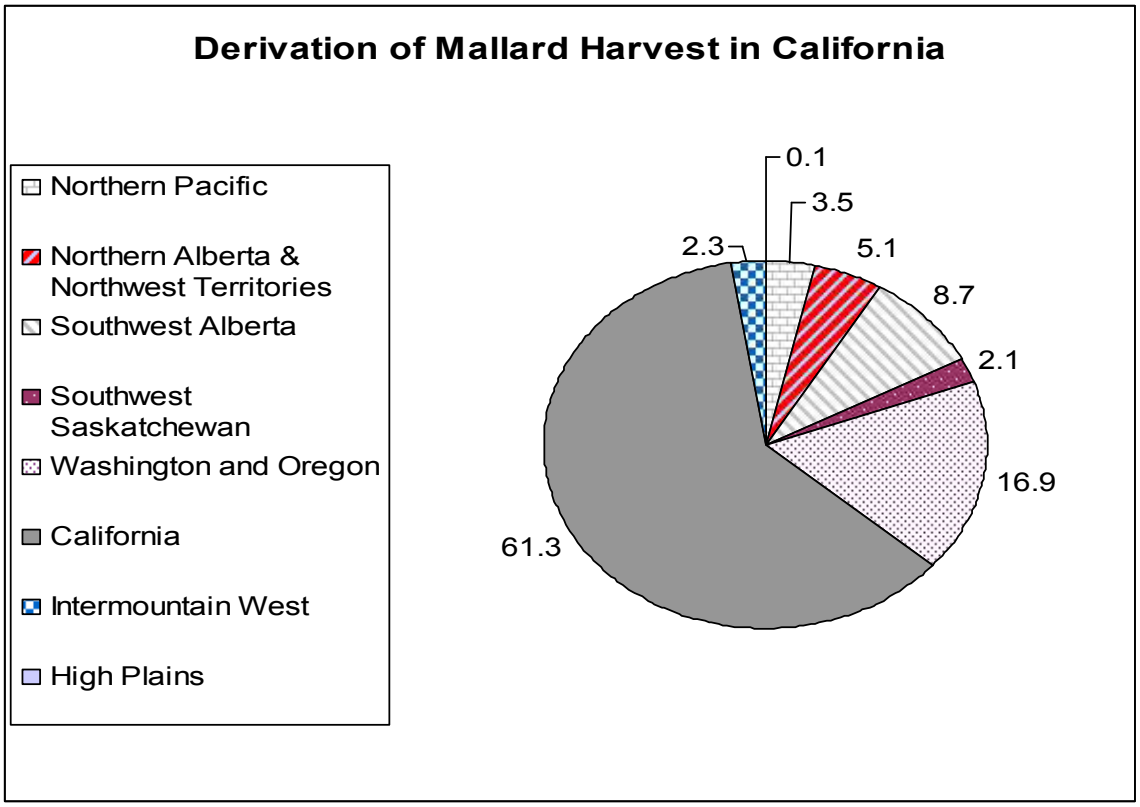
Introduction

The use of mechanical or electronic duck decoys (also known as spinning wing decoys (SWDs), “rotoducks”, “motoducks”, motion wing decoys, etc.) may lead to increases in harvest beyond those anticipated by existing bag limits and season length. Some hunters and other members of the public are opposed to the use of these devices because they believe that the devices may lead to excessive harvest or exceed the bounds of “fair chase” and eliminate the emphasis on traditional hunting methods.

The Department examined the results of studies, existing monitoring programs, and initiated additional analyses to assess the potential effects of SWDs on the harvest of ducks. Monitoring programs (i.e. estimates of breeding populations, total harvests) are not designed to measure the effectiveness of a single harvest method, such as a SWD.

These analyses mostly focus on mallards because mallards are the most abundant breeding duck in the State, are the most frequently occurring duck species in the harvest (Appendix E) and, unlike other species of ducks, are mostly derived from within California (62%; J. Dubovsky, USFWS, unpub data, Figure D-1).

Figure D-1. Derivation of Mallard Harvest in California.



Department Surveys on the Use and Effectiveness of SWDs

The widespread use of SWDs in California began in 1998. The Department compared the daily harvest of hunters on public hunting areas who said they used SWDs to those that said they did not during the 1999-00 to 2001-02 seasons.

Hunters were sampled on five public hunting areas (Delevan National Wildlife Refuge, Upper Butte Basin Wildlife Area, Grizzly Island Wildlife Area, Los Banos Wildlife Area, and Mendota Wildlife Area) on 10 randomly-selected dates during the 1999-00 hunting season and again on five areas (Sacramento National Wildlife Refuge, Upper Butte Basin Wildlife Area, Grizzly Island Wildlife Area, Los Banos Wildlife Area, and Mendota Wildlife Area) on 14 random days during the 2000-01 hunting season. During the 2001-02 hunting season, sampling occurred on 10 days picked at random on the Delevan National Wildlife Refuge, Upper Butte Basin Wildlife Area, Grizzly Island Wildlife Area, Los Banos Wildlife Area, and Mendota Wildlife Area.

The results from nearly 23,000 hunter-days from the three year survey are summarized in Table D-1. Use of SWDs generally increased in the second year of study, especially in the Sacramento Valley, but use declined on some areas during the third year of study on some areas. SWD use varied from 16 to 59 percent of hunters. There were no other differences between years. Total ducks harvested was significantly greater for hunters using SWDs on all five areas, and the overall average increase was about 1 bird per hunter.

Although the average number of mallards taken by hunters using mechanical duck decoys trended higher, harvest on only one of the five areas was higher at a statistically significant level in one year. The overall average increase in mallards bagged for hunters using SWDs was about 0.5 mallards per hunter-day.

Although average numbers of ducks taken by hunters using SWDs were higher than the averages by hunters that did not use the devices, and use of the devices was common, overall duck harvest on the public hunting areas in 1999 (201,000); 2000 (165,000); and 2001 (157,000); was lower than in 1998 and the overall ducks per hunter per day was essentially unchanged.

Effectiveness of December 1st Regulation

Beginning in 2001, the Commission adopted a prohibition on the use of electronic or mechanically operated spinning-wing decoys from the beginning of the waterfowl season until November 30th. Before and after the regulation change, a variety of changes have occurred with mallard harvest regulations (i.e. opening days, bag limits, season length). The Department analyzed public hunt results to see if any changes have occurred with mallard harvest in relation to the regulation change. Mallards were chosen for this analysis, since the December 1st regulation was created when the

Table D-1. Use and success of hunters using SWD on selected public hunting areas.

Area	Year	% Who Used Decoy	Total Duck Harvest	Percent Mallard	Avg Mallards per Hunter	Avg Ducks per Hunter	Sample Size	Total Annual Hunter Visits
Little Dry Creek	1999-00	52 - YES 48 - NO	2431 1610	36 34	1.4 1	3.9 2.8	1197	5030
	2000-01	59 - YES 41 - NO	2707 1006	47 51	1.4 0.8	2.9 1.6	1550	4650
	2001-02	52 - YES 47 - NO	2697 1553	42 47	1.86 1.32	4.42 2.79	1165	4188
Delevan	1999-00	52 - YES 48 - NO	1643 1177	17 18	0.5 0.4	2.6 2	1210	7061
	2000-01	not sampled						
	2001-02	45 - YES 54 - NO	1831 1251	30 30	1.09 0.6	3.55 2.02	1132	5941
Sacramento	1999-00	not sampled						
	2000-01	57 - YES 43 - NO	1271 904	24 32	0.5 0.6	1.8 1.7	1212	8656
	2001-02	not sampled						
Grizzly Island	1999-00	29 - YES 71 - NO	1129 1998	14 18	0.3 0.3	2 1.4	1978	8658
	2000-01	36 - YES 64 - NO	1508 1852	28 26	0.5 0.3	1.8 1.2	2305	7176
	2001-02	39 - YES 60 - NO	699 652	17 17	0.24 0.14	1.42 0.85	1250	5880
Los Banos	1999-00	24 - YES 76 - NO	416 786	31 28	0.6 0.3	1.8 1.1	981	4314
	2000-01	41 - YES 59 - NO	802 448	31 35	0.7 0.3	2.1 0.9	914	4698
	2001-02	34 - YES 65 - NO	454 502	16 23	0.32 0.26	2 1.17	654	4427
Mendota	1999-00	16 - YES 84 - NO	790 3179	16 13	0.4 0.2	2.4 1.8	2133	9886
	2000-01	24 - YES 76 - NO	1224 2716	29 20	0.6 0.3	2 1.3	2638	10196
	2001-02	28 - YES 71 - NO	1842 3056	12 12	0.33 0.22	2.59 1.71	2497	11132

breeding population of mallards in California was declining. Beginning in December, a larger percentage of migrant mallards start appearing in the harvest.

A mallard per hunter visit was calculated for all public hunt areas. Although waterfowl zones and other issues exist (e.g. delay due to rice harvest), these were controlled for by computing an average mallard take per hunter day on all areas before and after December 1st (including this date). Additionally, for analysis, data from 1992 – 2006 was partitioned into three categories: 1992-1997, 1998-2000, and 2001-2006). Use of SWDs began during the 1998-1999 hunting season in California, and continued without restriction until the December 1st restriction starting with the 2001-02 waterfowl hunting season, therefore we have a five year buffer (before and after restriction) on each side of their uncontrolled use on public hunting areas (Figure D-2).
Also Included are past years (2007 – 2013) average mallard take per day on public areas.

Based on statistical tests (ANOVAs), there was no difference in mallard harvest per hunter day during the three time periods after December 1st (P = 0.617). However, there were significant differences in hunter harvest per day among the three time periods before December 1st (P = .005). On average, the mallard harvest per hunter-day was 33% larger from 1998-2000 than 1992-1997 before December 1st. The mallard harvest per hunter day was 26% larger for the same period when compared to 2001-2006 seasons. Based on public hunt results, it appears that the December 1st restriction has significantly decreased the before December 1st harvest on mallards on public hunt areas (on a hunter-day basis).

Studies and Scientific Literature on Spinning Wing Decoys (SWDs)

University of California Davis Study

A more rigorous study during the 1999-00 hunting season by the University of California, Davis, also indicated an increase in harvest, particularly early in the season. In this study, hunters were observed during alternating 30 minute periods with SWDs in use and not in use. A total of 37 hunts were conducted. Overall, when hunters used a mechanical duck decoy, they shot about 2.5 times as many ducks as when they didn't use one. Early in the season, hunters using the device shot nearly 7 times more ducks than when the same hunters didn't use the device (Eadie *et al*. 2001). Summary information from this study is provided in the Figure D-3.

Arkansas Study

In Arkansas, as study was conducted during 2 years (2001-02 and 2002-03) to evaluate their effectiveness. Overall, 272 hunters killed 537 ducks during 101 hunts. Mallards comprised 57% of the harvest. Of ducks taken, 64 percent were harvested during periods when decoys were on and only 36 percent when off. Results of paired observations indicate that kill per hunter was 1.8 times greater with decoys on versus off. Similarly, 1.3 times as many flocks were seen per hunt, 1.8 times as many shots were fired per hunter and 1.2 times as many cripples were lost during periods when SWDs were on versus off. Age ratios of harvested mallards were similar with decoy use

(Imm./Adult ratio = 0.26 when ON and Imm./Adult ratio = 0.23 when OFF), however, adult mallards were 2 times more likely to be shot during periods with a robo" decoy on than off. Body mass was similar for mallards shot and retrieved during both treatments (ON and OFF) (M. Checkett, Arkansas Game & Fish Commission, unpub. data).

Figure D-2. Mallard harvest on the public hunting areas relative to December 1, 1992-2014 hunt seasons.

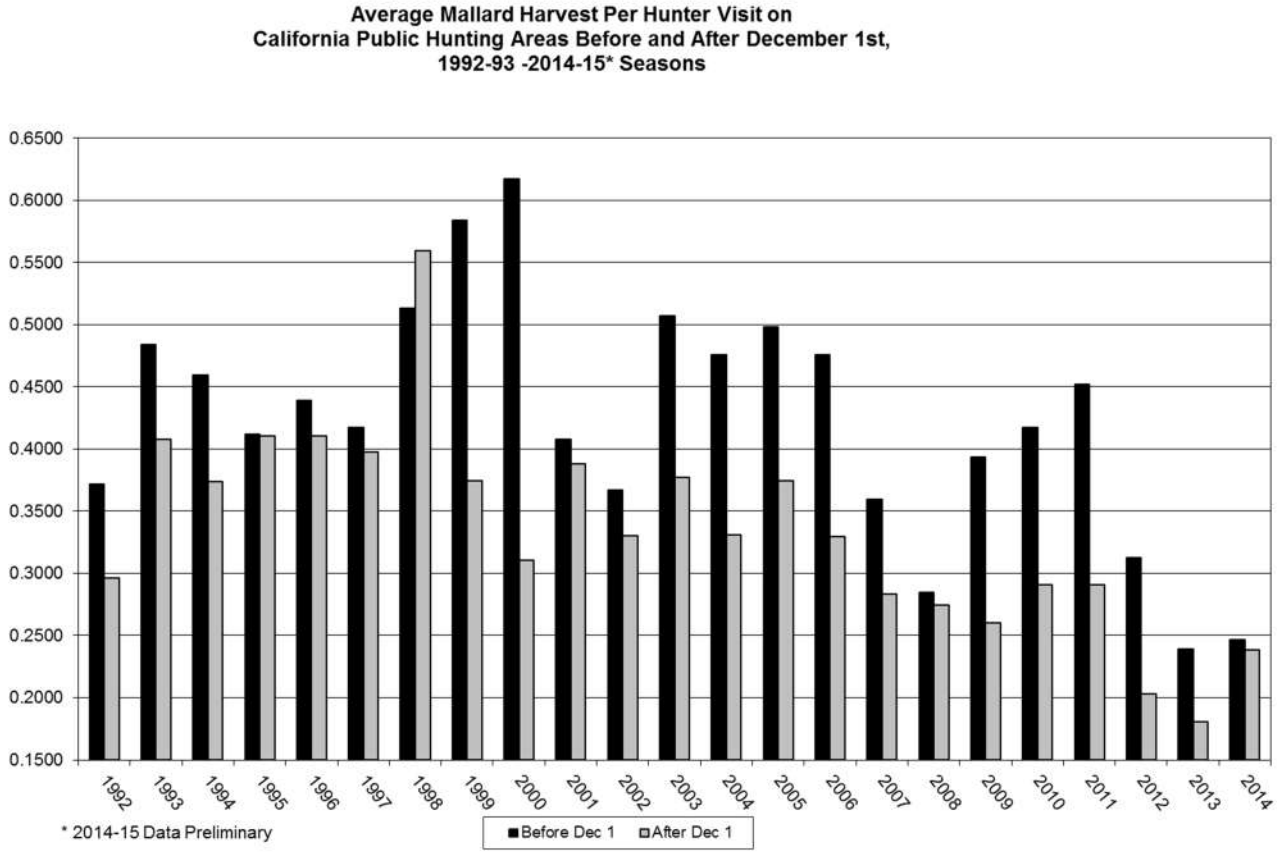
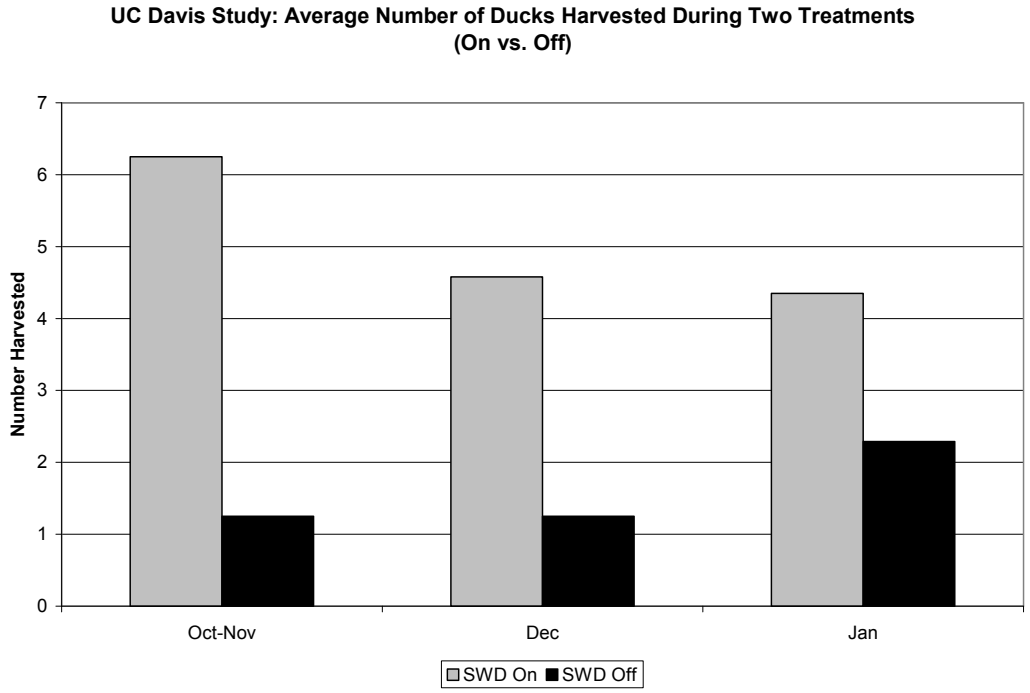


Figure D-3. Summary results from University of California, Davis Study



Manitoba, Canada, Study

In Manitoba, Canada, during the falls of 2001 and 2002, 99 experimental marsh and 55 experimental field hunts were conducted. Each hunt consisted of a series of equal and alternating 15-minute experimental (SWD on) and control (SWD off) periods, separated by a 3-minute buffer. Duration of total hunts ranged from 1.0 to 3.0 hours with an average of 1.4 ± 0.5 hours. Experimental marsh hunts indicated that mallards were 1.9 times more likely to fly within gun range, the kill rate was 5.0 times greater, size adjusted body mass of harvested mallards was greater, and the crippling rate was 1.6 times lower in experimental than control periods. Field hunts indicated that mallards were 6.3 times more likely to fly within gun range, kill rate was 33 times greater, and crippling rate was 2.2 times lower in experimental than control periods. A SWD activity*age interaction indicated that adult males harvested during experimental periods had higher size adjusted body mass than that of juveniles mallards harvested during experimental periods. However, body condition of harvested adult and juvenile mallards did not differ significantly during control periods (Caswell and Caswell 2004).

Minnesota study

In Minnesota, due to concerns about the potential increased harvest of local mallards, 219 experimental hunts with 367 volunteer hunters were conducted during 1,556 sampling periods (both ON and OFF treatments) during the 2002 waterfowl season. When using a SWD, mallards were 2.91 times more likely to respond to the decoy (within 40 m) as compared to when off. Flock size was larger when the decoy was on,

as compared to off. The number of mallards killed/hour/hunter was 4.71 times higher when the SWD was on. There was no difference in crippling loss in treatment types (ON vs. OFF). Age ratios of mallards were 1.89 (HY/AHY birds) versus 0.61 when ON and OFF, respectively. Overall, the study predicted an increase in mallard harvest, if SWDs became widely used in Minnesota (Szymanski and Afton 2004).

Missouri Study

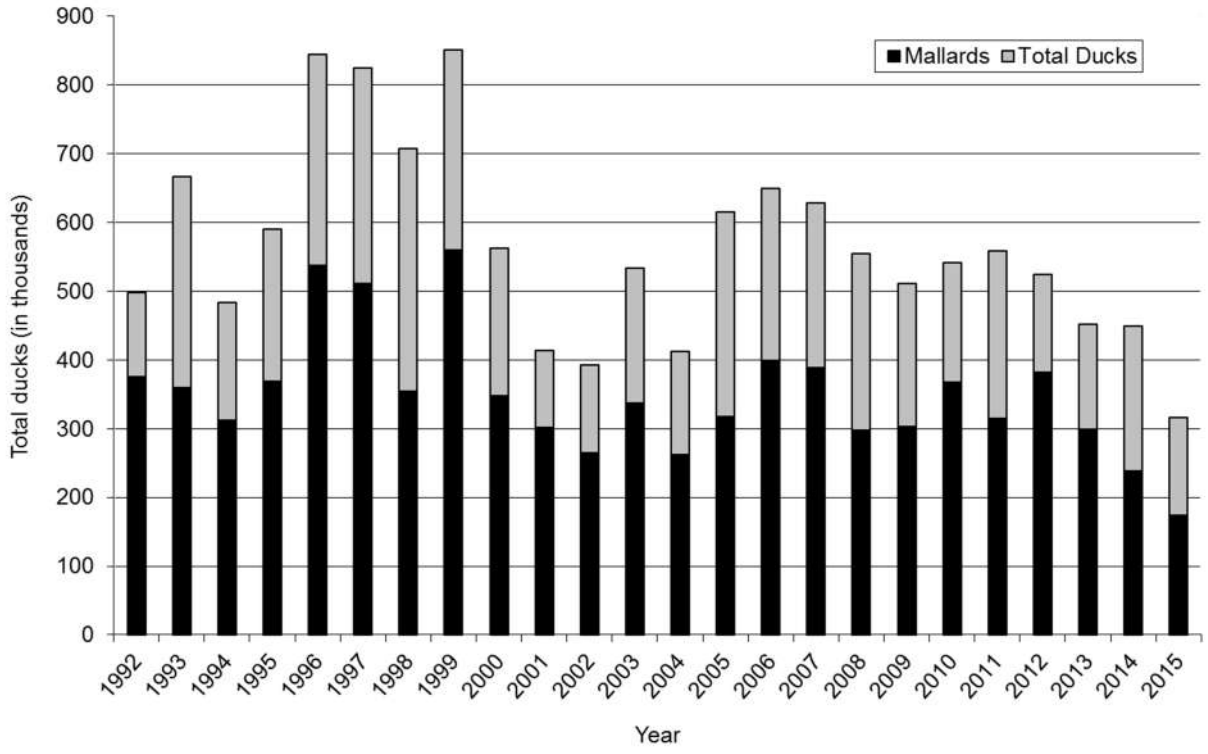
In Missouri, efforts to evaluate the use and attitudes regarding SWD were completed in 2000 and 2001. Hunters using SWDs shot and retrieved 1.28 more total ducks per hunting party (2-3 hunters) and 0.82 more male mallards than when not using a SWD. Missouri waterfowl hunters hunting on public areas were more successful in 2000 when using SWDs than hunters who did not use SWDs. The overall difference in success rate between users and non-users was 0.78 ducks per hunter trip; however, about half of this difference was attributed to factors other than SWDs, such as greater hunting skills. The remaining increase in hunting success, between 0.32 and 0.45 ducks/ hunter trip (13%-19% increase in success rate), was attributed to SWDs (A. Raedecke, Missouri Department of Conservation, unpub. data).

These brief summaries of the additional results and other studies (Nebraska) were summarized in Ackerman et al (2006). Overall, 70.2% of all ducks were harvested when the SWDs were used, as compared to 29.8% when the decoy was not in use. Significant results indicated that the probability of being shot increased with latitude (study location) and annual survival rates of species. These results support that fact that ducks may be more naïve at the beginning of migration (i.e. Manitoba), as compared to late in migration (i.e. Arkansas). Ackerman et al. (2006) suggested that these studies “only measured the effect of SWDs on kill rates of ducks and these rates will not necessarily translate into overall changes in population harvest rates.”

<u>California breeding populations</u>

The Department annually estimates the breeding population of ducks in California. Results of the current year breeding population survey are not usually available until June of each year. Based on the mallard breeding population, a decline was observed following the 1999 waterfowl season, but this trend was not statistically significant because the annual estimates have large confidence intervals. More recent mallard breeding population levels are similar to the mid 1990s levels when SWDs were not being used for duck hunting. Furthermore, breeding populations of mallards and total ducks have remained relatively stable since 2008 (Figure D-4).

Figure D-4. California Duck Breeding Population Estimates, 1992- 2015



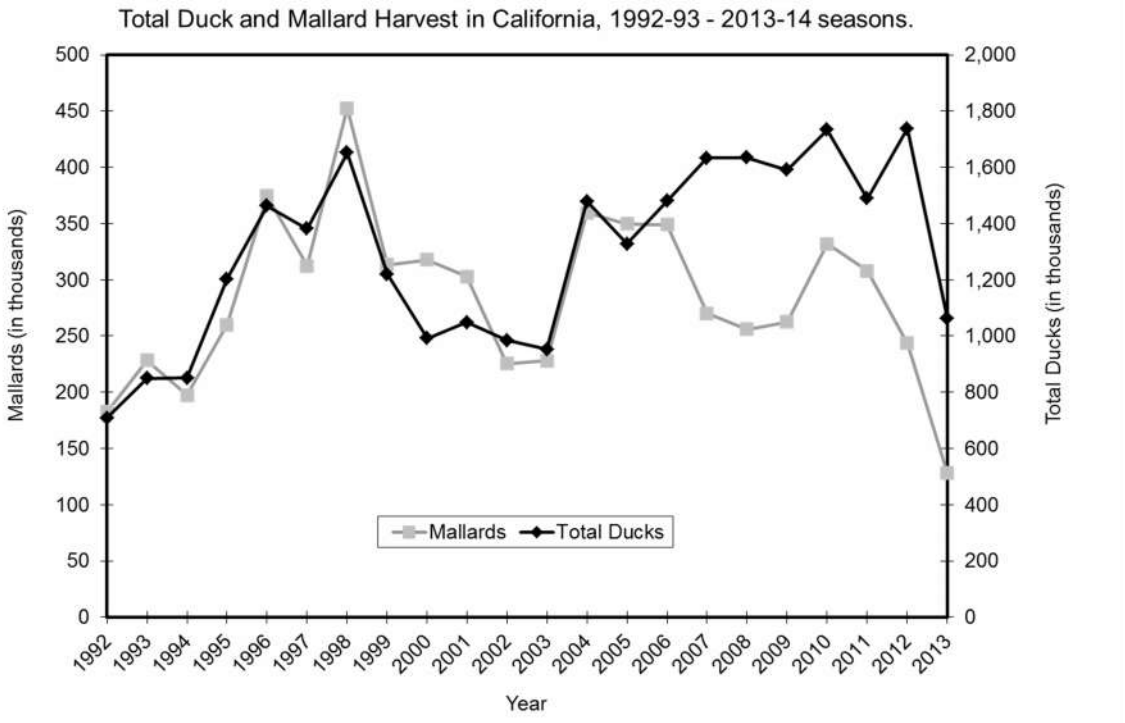
Total estimated duck harvest

The Service annually estimates the harvest of ducks in California and though out the United States. However, the most recent year of harvest is not available until July of the following year. For example, at this time, harvest information from the 2013-14 season is available but harvest estimates from 2014-15 will not be available until July, 2015. This information will be updated in the Final Environmental Document. There remain many factors (e.g. regulations, weather, hunter participation, age ratios in duck populations, etc.) besides the use SWDs that may impact hunter success on an individual hunt, which may transfer to decreased or increased total statewide duck harvest.

Relationships Among Survival & Harvest in Mallards: Issues in Findings

The studies cited above indicate that the use of SWDs increases harvest at the individual hunt level, however, despite the widespread use of SWDs (at least when last measured) overall estimates of harvest have not changed at the same magnitude as indicated in the individual hunt studies (Appendix E, Figure D-5). To have a biological effect at the population level, SWDs would have to be shown to lead to increased harvests and those increased harvests would have to be shown to lead to decreased annual survival rates. Other unmeasured variables act on populations during and after hunting seasons and it is not possible to unequivocally attribute potential population level effects due to SWDs through existing monitoring programs. However, banding data are the most likely of these monitoring programs that provide any inference on the role of SWDs on population parameters of ducks.

Figure D-5. Mallard and Total Duck (all species combined) harvest in California.



Numerous scientific studies have attempted to improve the understanding of the relationship among harvest rates and annual survival rates of waterfowl (Anderson and Burnham 1976, Nichols *et al*. 1984, Nichols and Hines 1982, Burnham and Anderson 1984, Johnson *et al*. 1986, Trost 1987, Raveling and Heitmeyer 1989, Nichols 1991, Smith and Reynolds 1992, Conn and Kendall 2004). Most of these studies have relied on banding data. As an example, Smith and Reynolds (1992) concluded that survival rates increased in response to restrictive regulations, and they rejected the completely compensatory model of population dynamics. Conversely, Sedinger and Rextad (1994) contested those conclusions because Smith and Reynolds pooled data and their analyses had low statistical power. Thus, there is still debate whether existing harvest levels affect survival rates in mallard populations. Partially due to this debate and uncertainty, the Service implemented Adaptive Harvest Management in 1995 to help reduce the uncertainty about the role of harvest and survival rates in population dynamics of mid-continent mallards.

The ability to detect significant changes in estimates of mallard recovery and survival rates in California, and relate these changes solely to the use of SWDs, is difficult if not impossible for several reasons.

First, survival and recovery rates are calculated through modeling using data from banded ducks. The data from these banded ducks consists of the number of birds banded (categorized by age, sex, date and location of banding) and reports of encountered bands (usually through hunting for game birds). The number of birds encountered divided by the number of birds banded is the recovery rate. However, not all bands encountered are reported, and an estimate of reporting rate is needed. The product of the recovery rate and the reporting rate is the harvest rate.

Reporting rates have been estimated because this rate is necessary to estimate the harvest rate and harvest rate is necessary to understand the relationship between harvest and population dynamics. Reporting rates vary widely due to band type and even geography (Nichols *et al*. 1991, 1995, Royle and Garretson 2004). Band types (i.e. their inscriptions) have changed over time. Before the 1990s, “avise” bands were used. These bands were inscribed with “AVISE BIRD BAND, WRITE WASHINGTON DC USA”. Later, “address” bands were introduced with the inscription “WRITE BIRD BAND LAUREL MD 20708”. These bands were replaced beginning in 1995, but not entirely until about 1999, with “toll-free” bands that were inscribed with “CALL 1 800 327 BAND and WRITE BIRD BAND LAUREL MD 20708 USA”. The adoption and widespread advertising of this new reporting method greatly increased reporting rate and apparent recovery rates. Due to the overlap of band types and the timing and duration of research into reporting rates, harvest rates can not be calculated for all areas in all years.

Secondly, changes in basic hunting regulations (e.g. season length and bag limits) occurred before and after the use of SWDs began. For instance, in 2001 (the first year of the December 1 regulation), the season was 100 days long with a 7 mallard (2 hen) daily bag limit whereas in 2002, the season was 74 days long with a 5 mallard (1 hen) daily bag limit. Thus, changes in harvest and survival rates due to basic regulations could be confounded with any changes to these parameters due to the use of SWDs.

More inferences could be made from the standard monitoring programs with stabilized regulations over a period of time.

Third, duck (and presumably mallard) harvest varies annually due to non-regulatory effects (weather, hunter participation, etc.) and survival rates vary due to variation in natural mortality (disease, etc.) (Miller et al. 1988).

With these caveats in mind, the Department calculated recovery rates and survival rates for mallards banded in California between 1988 and 2005. These ducks were banded by the Department, the California Waterfowl Association, and the U.S. Fish and Wildlife Service. Only normal, wild mallards banded from June to September with standard USFWS bands were used in this analysis. The Department examined the data by age class (adult and hatch-year or immature) and sex. Survival and recovery rates were calculated using Brownie models (Brownie *et al.* 1985) in Program MARK (White and Burnham 1999). Harvest rates were calculated from recovery rates by incorporating reporting rates (Nichols *et al.* 1995, Royle and Garretson 2004). For comparison purposes, the Department summarized harvest rates for mid-continent mallards during liberal seasons (1979-1984) (Smith and Reynolds 1992) and for mallards from eastern Washington (1981-198) (Giudice 2003).

For data from mallards banded in California, the data were portioned into 4 time periods (Table D-3): Period 1 (Restrictive season lengths and bag limits, no SWD); Period 2 (Liberal season lengths and bag limits, no SWD); Period 3 (Liberal regulations with SWD, but no December 1 regulation) and, Period 4 (Liberal regulations with December 1 regulation). If SWD affected harvest and survival rates, harvest rates should be highest and survival rates lowest during Period 3. If regulations by themselves change these parameters, harvest rates should be higher and survival rates lower in Period 2 compared to Period 1. If SWD had an effect, survival rates should be lower and harvest rates higher in Period 3 compared to Period 2. If the December 1 regulation had an effect, harvest rates should be lower and survival rates higher during Period 4 compared to Period 3.

Table D-3. Time periods used to summarize basic regulations, SWD use, and the December 1 regulation.

Time Period	Starting Season	Ending Season	Regulations	Pre or Post-SWD	Dec 1st Restrictions
1st	1988	1994	Conservative	Pre-SWD	No
2nd	1995	1997	Liberal	Pre-SWD	No
3rd	1998	2000	Liberal	Post-SWD	No
4th	2001	2004	Liberal	Post-SWD	Yes

Unfortunately, due to the introduction of “toll-free” bands and the increasing and changing reporting rates, harvest rate estimates are only available for Periods 1 and 4. Harvest rates for adults between Period 1 and Period 4 were unchanged and lower than those rates for eastern Washington and mallards from the mid-continent region (Table D-4). However, harvest rates of immature mallards banded in California have increased between periods 1 and 4 by 62 and 30 percent for males and females, respectively. Thus, the combination of regulation changes and use of SWD did not change harvest rates of adults, but the combination of more liberal regulations and the use of SWD did change harvest rates of immature mallards. The combination of liberalized regulations and SWD appears to have increased the harvest rate of mallards banded in California to higher levels than occurred in the mid-continent region or eastern Washington (Table D-4).

Table D-4. Harvest rates for mallards banded in California (restrictive and liberal periods), eastern Washington (liberal period) and the mid-continent region (liberal period).

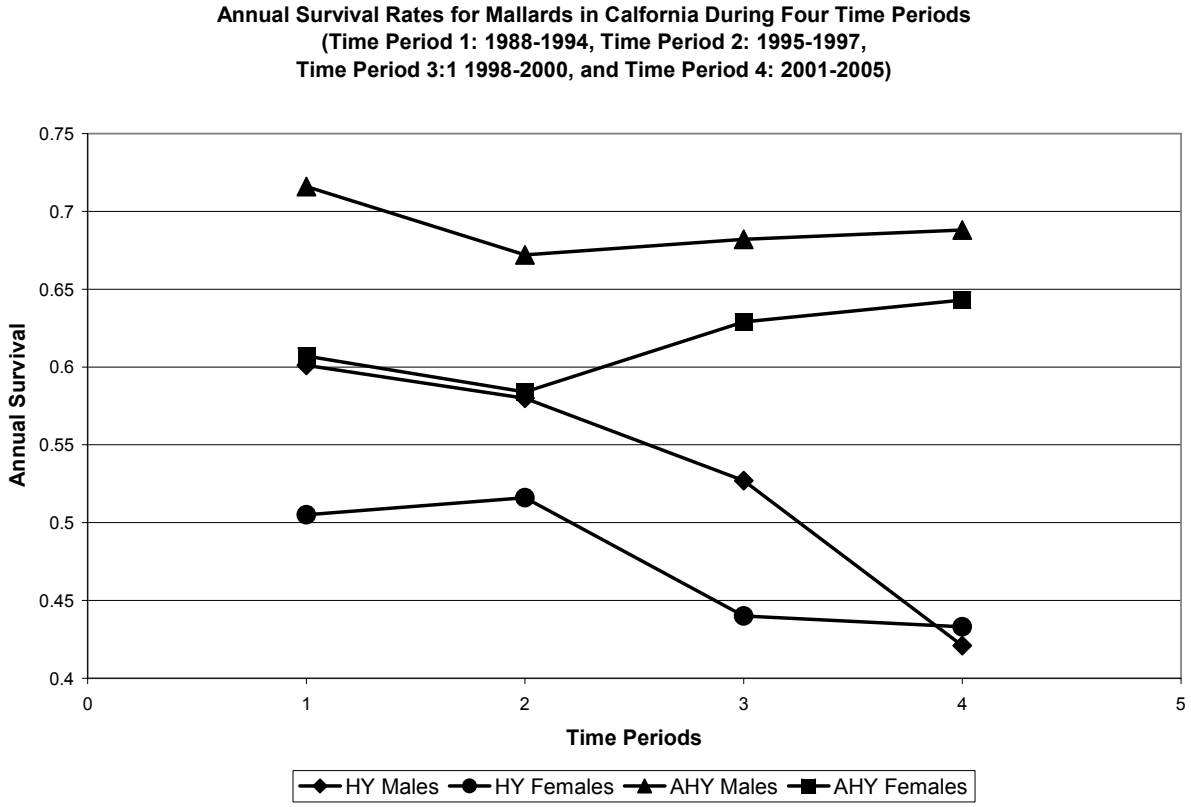
	California (restrictive)	**California (liberal)**	**Eastern Washington**	**Mid-Continent (liberal)**
Adult Males	0.138	0.138	0.172	0.150
Hatch-Year Males	0.202	0.327	0.286	0.228
Adult Females	0.058	0.058	0.100	0.097
Hatch-Year Females	0.143	0.186	0.172	0.157

Survival rates could be calculated for each cohort (age and sex) for each period (Figure D-6) since recovery and survival rate are not conditional on each other. Covariance among recovery and survival rates must be addressed to understand the impact of harvest on survival rates. Although recovery rates may have increased during these periods, it would not have as large an impact on survival rates, as compared to computed harvest rates. Furthermore, the grouping into time periods also correlates with the introduction of different band types.

Survival rates were constant for adult birds of sexes irrespective of harvest regulations, the use of SWD or the December 1 regulation (Figure D-6). However, survival rates for immature birds declined but only for males was the decline statistically significant ($P=0.048$).

From these analyses, it appears that adult mallard recovery, harvest and survival rates have not changed despite changes in regulations, the use of SWDs, or the imposition of the December 1 regulation. In contrast, immature mallard harvest rates have increased and survival rates have declined, but these changes may have been due to changing basic regulations, the use of SWDs, both, or other unmeasured variables.

Figure D-6. Annual survival rates of Mallards banded in California.



Public Perception of SWDs

The findings of this section have concentrated on biological information as related to the SWD in California. However, since past public views to the Commission has demonstrated different views on "fair chase", public opinion information has been added to this review of this topic. In 2005, D. J. Case & Associates, as commissioned by the Association of Fish and Wildlife Agencies, released the findings of the National Duck Hunter Survey. According to this study, 55% of California duck hunters stated that SWDs should be allowed, whereas 26% opposed their use and 19% had no opinion on the subject. Other surveys have shown a wide variety of responses to their opinions on SWDs. For instance, California Waterfowl Association's (CWA) 2006 survey indicated that a majority of hunters opposed electronic decoys, but accepted wind driven decoys (CWA, pers. comm.).

Summary of Findings

There is substantial evidence that SWDs can/have increased harvest and harvest potential on an individual hunt basis. Although SWDs have been shown to increase potential harvest, total harvest estimates have not increased at the same magnitude. Furthermore, SWDs have not increased harvest rates nor decreased survival rates on adult mallards. In hatch-year mallards, harvest rates have increased over 60 percent

on males, and survival rates have significantly declined. However, this is not a cause-and-effect relationship because other unmeasured variables were likely occurring simultaneously. The implementation of the December 1 regulation appears to have reduced daily harvest rates of mallards on public hunt areas when compared to unrestricted use of SWDs (1998-2000).

There is no clearly explicit link detectable through existing monitoring programs (or population level measures) between the introduction of SWDs and changes in measured population parameters. There remains no substantial evidence either for or against their large-scale effect on waterfowl populations. There are strongly held opposing positions on the “fair-chase” and other aspects of SWDs. For this reason, the Department has provided an alternative in Chapter 3.

Appendix E. Estimated Retrieved Harvest of Certain Ducks in California, 1962-2014

Year	Mallard	Gadwall	American Wigeon	G-w Teal	B-w/Cin. Teal	Northern Shoveler	Pintail	Wood Duck	Red-head	Canvas-back	All Other Species	TOTAL
1961	197.0	19.2	183.9	153.3	28.9	108.4	299.3	7.3	0.8	0.4	49.3	1,047.8
1962	167.0	17.5	128.5	145.1	48.8	86.8	285.3	12.1	1.0	0.0	70.1	962.2
1963	267.5	42.3	159.2	242.5	59.5	182.3	415.7	14.7	4.3	0.0	72.0	1,460.0
1964	249.0	40.5	166.3	214.6	49.4	77.2	342.0	17.0	7.8	9.2	74.2	1,247.3
1965	295.0	41.7	202.2	216.2	59.1	139.6	373.0	34.7	10.6	8.3	79.9	1,460.3
1966	288.4	51.5	215.2	267.1	36.6	162.3	563.0	13.1	8.6	39.9	97.5	1,743.2
1967	446.0	85.3	311.8	363.1	73.1	194.2	798.5	24.3	9.8	15.5	133.6	2,455.2
1968	236.2	34.2	169.6	262.5	42.6	111.5	381.1	11.3	5.5	10.5	68.3	1,333.4
1969	331.7	43.3	229.9	332.2	49.2	197.4	900.5	18.8	6.0	12.3	94.4	2,215.8
1970	371.0	43.5	264.0	361.3	38.2	201.8	1,032.9	21.4	12.9	26.9	77.7	2,451.5
1971	313.4	66.0	255.3	295.9	44.6	189.3	752.1	14.2	13.2	34.4	96.6	2,075.0
1972	321.8	49.3	231.5	332.6	64.9	157.4	715.3	21.2	5.8	0.9	90.2	1,991.0
1973	219.4	32.4	145.6	245.2	94.8	101.1	477.0	32.7	9.5	13.8	79.5	1,451.0
1974	292.3	60.2	194.3	319.6	59.8	167.4	712.4	21.7	8.9	27.1	59.4	1,923.0
1975	293.1	46.5	193.9	344.7	47.7	184.5	746.9	19.3	5.4	28.1	49.5	1,959.6
1976	305.6	37.6	278.7	403.0	42.5	185.6	680.6	23.4	6.6	34.2	82.9	2,080.6
1977	229.7	27.4	162.4	306.4	44.8	115.3	350.8	24.3	7.1	22.4	82.9	1,373.5
1978	294.3	39.2	179.4	405.1	64.9	161.0	596.0	29.0	8.2	14.1	66.0	1,857.2
1979	260.7	47.9	168.3	292.0	42.4	112.6	641.5	12.4	6.6	14.8	63.1	1,662.3
1980	238.6	64.2	165.6	259.1	27.1	108.4	410.0	40.2	10.8	10.3	67.6	1,401.8
1981	239.0	33.6	125.8	211.8	28.9	120.4	261.0	23.8	7.9	14.3	73.8	1,140.3
1982	284.2	53.8	122.8	266.5	50.3	140.2	327.9	26.2	10.9	10.6	59.6	1,353.1
1983	298.6	59.2	103.7	203.7	58.9	112.4	334.3	23.1	14.8	6.9	71.4	1,287.0
1984	265.1	43.3	94.6	178.2	52.6	91.9	194.9	15.7	6.6	12.2	50.8	1,005.9
1985	261.8	53.6	106.0	180.7	28.6	99.6	200.3	9.5	6.7	27.5	52.7	1,027.0
1986	257.6	57.7	113.9	176.8	19.0	86.6	194.5	20.2	4.4	16.3	43.2	990.2
1987	228.4	50.4	124.3	214.1	29.4	113.1	243.8	11.8	5.3	12.6	49.8	1,083.0
1988	139.7	23.2	62.7	122.1	16.0	44.1	70.3	9.6	2.3	0.1	23.7	513.8
1989	175.8	42.1	71.8	185.0	31.9	64.2	91.6	15.9	4.6	7.2	33.3	723.3
1990	179.7	45.2	80.1	149.9	19.4	69.5	80.3	11.4	2.5	4.2	28.7	671.0
1991	161.2	40.4	94.3	169.7	13.7	49.4	81.3	14.3	1.8	4.7	23.0	653.9
1992	182.7	33.3	72.9	183.9	18.4	74.1	75.0	16.4	3.5	8.8	39.2	708.1
1993	228.4	63.1	77.3	219.2	25.7	60.2	90.5	31.9	5.6	10.2	37.1	849.2
1994	197.4	68.7	97.6	183.0	14.7	106.0	92.0	20.8	5.8	14.4	51.0	851.3
1995	259.8	85.4	159.2	291.2	35.4	101.5	162.7	28.8	9.0	10.2	59.6	1,202.8
1996	374.4	104.1	175.6	306.5	39.4	164.1	182.0	26.4	10.8	12.7	66.4	1,462.4
1997	312.2	79.4	162.0	311.6	36.9	172.6	188.2	22.5	11.7	17.1	67.3	1,381.5
1998	452.6	129.6	166.5	352.4	62.0	217.1	146.3	33.4	15.9	21.4	55.2	1,652.4
1999	313.5	69.4	153.9	285.5	66.8	116.1	123.3	25.6	5.0	13.8	47.9	1,220.8
2000	317.7	62.4	113.1	207.2	31.3	87.5	85.4	32.0	4.7	10.6	39.6	991.5
2001	302.8	65.4	146.9	200.5	36.1	111.6	89.7	32.5	4.3	6.6	51.5	1,047.9
2002	225.4	83.7	134.4	239.7	35.6	103.9	79.9	24.7	4.9	0.7	52.4	985.3
2003	228.1	79.7	112.8	218.0	46.2	96.2	79.2	25.2	8.2	7.0	51.5	952.1
2004	359.7	132.6	196.8	348.7	57.3	147.7	98.8	22.5	9.6	11.5	94.1	1,479.3
2005	349.8	105.0	176.8	297.6	58.2	128.8	115.7	39.4	7.8	4.8	43.3	1,327.2
2006	349.1	124.2	165.7	331.3	56.9	224.6	123.2	31.3	9.1	17.5	47.9	1,480.8
2007	270.3	122.2	218.8	402.9	43.4	275.3	137.9	33.7	9.5	32.6	86.4	1,632.9
2008	255.9	110.2	271.8	468.5	39.9	209.5	169.4	36.3	7.0	0.6	64.2	1,633.7
2009	262.4	117.9	195.3	387.5	35.3	157.7	177.1	27.1	6.6	9.8	63.6	1,591.4
2010	332.0	124.4	226.2	394.9	48.2	220.8	242.6	34.1	7.7	17.6	85.6	1,734.1
2011	308.1	106.2	169.8	311.9	36.9	253.9	201.6	21.0	14.3	15.9	47.2	1,489.1
2012	243.5	95.3	193.7	371.2	31.9	291.5	201.1	21.9	14.6	23.4	25.0	1,738.1
2013	127.9	60.7	152.5	258.8	22.0	197.3	130.5	5.5	7.7	30.0	67.9	1,062.3
2014*	106.3	56.4	161.5	240.5	18.1	155.1	115.6	9.3	3.8	15.5	66.7	948.8
Averages:												
1961-13	271.0	64.4	163.1	271.5	42.4	140.6	312.2	22.4	7.6	13.9	62.4	1,378.8
1961-65	235.1	32.3	168.0	194.3	49.2	118.9	343.1	17.2	4.9	3.6	69.1	1,235.5
1966-70	334.7	51.6	238.1	317.2	47.9	173.4	735.2	17.8	8.6	21.0	94.3	2,039.8
1971-75	288.0	50.9	204.1	307.6	62.4	159.9	680.7	21.8	8.6	20.9	75.0	1,879.9
1976-80	265.8	43.2	190.9	333.1	44.3	136.6	535.8	25.8	7.9	19.2	72.5	1,675.1
1981-85	269.7	48.7	110.6	208.2	43.9	112.9	263.7	19.7	9.4	14.3	61.7	1,162.7
1986-90	196.2	43.7	90.6	169.6	23.1	75.5	136.1	13.8	3.8	8.1	35.8	796.3
1991-95	205.9	58.2	100.3	209.4	21.6	78.3	100.3	22.4	5.1	9.7	42.0	853.1
1996-00	354.1	89.0	154.2	292.6	47.3	151.5	145.0	28.0	9.6	15.1	55.3	1,341.7
2001-05	293.2	93.3	153.5	260.9	46.7	117.6	92.7	28.9	7.0	6.1	58.6	1,158.4
2006-12	296.3	117.5	207.9	382.8	43.4	223.6	175.3	30.6	9.0	15.7	65.8	1,593.7
2013-14	117.1	58.6	157.0	249.7	20.1	176.2	123.1	7.4	5.8	22.8	67.3	1,005.6
% Change from:												
2013	-16.9%	-7.1%	5.9%	-7.1%	-17.7%	-21.4%	-11.4%	70.3%	-50.6%	-48.3%	-1.8%	-10.7%
1961-13	-60.8%	-12.5%	-1.0%	-11.4%	-57.3%	10.3%	-63.0%	-58.5%	-49.7%	11.5%	6.8%	-31.2%
% State's Total Duck Harvest:												
2014	11.2%	5.9%	17.0%	25.3%	1.9%	16.3%	12.2%	1.0%	0.4%	1.6%	7.0%	
1961-13	19.7%	4.7%	11.8%	19.7%	3.1%	10.2%	22.6%	1.6%	0.5%	1.0%	4.5%	
* Preliminary Data												

Appendix F. Possible Effects of Climate Change Impacts on Waterfowl

Over the long term climate change models suggest temperature increases in many areas, both increases and decreases in precipitation, its timing, sea level rise, changes in the timing and length of the four seasons, declining snow packs and increasing frequency and intensity of severe weather events. Many uncertainties make it difficult to predict the precise impacts that climate change will have on wetlands and waterfowl. The effects of climate change on waterfowl populations, including their size and distribution, will probably be species specific and variable, with some effects considered negative and others considered positive (Anderson and Sorenson 2001). For example, a longer and warmer ice-free season in the Arctic would be expected to result in higher overall reproductive success for Arctic nesting geese (Batt 1998).

Breeding Season

Increasing spring temperatures have led to earlier arrival of waterfowl on northern breeding areas (Murphy-Klassen et al. 2005), yet nest survival has not decreased at this point of time (Drever and Clark 2007). In fact, earlier nest initiations are often more successful (Emery et al. 2005, Sedinger et al. 2008). However, future changes in wetland distribution and type (Johnson et al. 2005) on northern breeding grounds may impact settling patterns (Johnson and Grier 1988), and potentially recruitment for certain species through differences in breeding probability (Krapu et al. 1983), nest survival, and duckling survival. In California, areas with wetland brood habitat may become more limited if precipitation decreases with increasing temperatures, as predicted for the prairie pothole region of the United States and Canada (Sorenson et al 1998). Production of waterfowl that rely on agricultural habitats may be similarly affected if water availability (amounts and or timing) change.

Non-breeding Season

The Central Valley of California has one of the world's largest concentrations of over-wintering waterfowl (Heitmeyer et al. 1989). The primary expected response of waterfowl to climate change is redistribution as birds seek to maintain energy balance. Increased fall and winter temperatures in northern regions would make it unnecessary for waterfowl to migrate as far south and the wintering populations of waterfowl in California may be reduced. Shifting patterns of precipitation and temperatures may cause decreased availability of water for managed wetlands and agricultural production in the Central Valley. Changes in water availability and timing (Miller et al 2003) would likely have the greatest impact on rice agriculture, an important component of wintering waterfowl habitat in California. Decreasing habitats may cause a decline in body condition which may impact recruitment and survival in waterfowl populations. Ultimately, this will cause decreased recruitment as birds shift out of optimal nesting habitats (e. g. Ward et al. 2005), and a decrease in over-wintering populations.

Summary of Findings

There is substantial evidence that climate change will cause changes in habitats and other factors that affect waterfowl populations over the long term. Waterfowl populations are assessed in many ways on an annual basis (See pages 38-40 of the 2006 Final Environmental Document for Migratory Game Bird Hunting, SCH #2006042115, incorporated by reference, available at 1812 9th Street, Sacramento 95811). In summary, the condition of breeding habitats is assessed annually during the breeding population surveys conducted by the Service with assistance from some states and the Canadian Wildlife Service (CWS) in the spring and summer. The specific methodology of these surveys is provided in Chapter 3, pages 55-57, 2006 Final Environmental Document for Migratory Game Bird Hunting, SCH #2006042115, incorporated by reference, available at 1812 9th Street, Sacramento 95811).

Because the effect of regulated harvest is minimal (pages 57-67 of 2006 Final Environmental Document for Migratory Game Bird Hunting, SCH #2006042115, , incorporated by reference, available at 1812 9th Street, Sacramento 95811) implementation of the proposed project in the current year is not expected to result in significant negative effects to waterfowl populations. The effect is minimal because summary, the weight of historic scientific evidence leans toward the compensatory mortality hypothesis, though there are enough ambiguities to make complete reliance on this hypothesis as a management strategy an unwise approach (USDI 1988a:96). Accordingly, restrictive regulations have been established when populations reached low levels. For example, duck seasons were reduced from 93 days to 59 days, and bag limits were reduced from seven birds per day to four birds per day during the late 1980s in response to declines in duck populations caused by drought (Page 66, 2006 Final Environmental Document for Migratory Game Bird Hunting, SCH #2006042115, incorporated by reference, available at 1812 9th Street, Sacramento 95811).

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Section 502
Title 14, California Code of Regulations
Re: Waterfowl, Migratory; American Coot; and
Common Moorhen (Common Gallinule)

I. Date of Initial Statement of Reasons: November 3, 2015

II. Dates and Locations of Scheduled Hearings:

(a)	Notice Hearing:	Date:	December 10, 2015
		Location:	San Diego, CA
(b)	Discussion Hearings:	Date:	February 11, 2016
		Location:	Sacramento, CA
(c)	Adoption Hearing:	Date:	April 14, 2016
		Location:	Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

The U.S. Fish and Wildlife Service (Service) annually establishes federal regulation “frameworks” for migratory bird hunting. These “frameworks” describe the earliest waterfowl hunting seasons can open, the maximum number of days hunting can occur, the latest hunting seasons must close, and the maximum daily bag limit, among other things. States must set waterfowl hunting regulations within the federal frameworks. Beginning with the 2016–17 hunting season, the Service is using a new schedule for establishing frameworks in October rather than the previous schedule (established in late July). This enables the State agencies to select and publish season dates by April rather than August. This year, there will be a onetime overlap in the regulatory processes for the 2015–16 and 2016–17 seasons.

Under the new process, the proposed hunting season frameworks for a given year will be developed in the fall, of the prior year. For example, the breeding populations (including the CA Breeding Population Survey) and

habitat conditions observed in 2015 and the regulatory alternatives selected for the 2015 hunting season will be used to develop the frameworks for the 2016-17 season.

States may make recommendations to change federal framework regulations. These recommendations are made to Flyway Councils during August or September. The Councils may elect to forward these recommendations to the Service. The Service may elect to incorporate proposed changes in the "framework" regulations. The Service establishes the hunting framework regulations at a public meeting held in October.

Sections 202, 355 and 356 of the Fish and Game Code authorize the Fish and Game Commission (FGC) to annually adopt regulations pertaining to the hunting of migratory birds that conform with, or further restrict, the regulations prescribed by the Service pursuant to their authority under the Migratory Bird Treaty Act. The Fish and Game Commission selects and establishes in State regulations the specific hunting season dates and daily bag limits within the federal frameworks.

Current regulations in Section 502, Title 14, California Code of Regulations (CCR), provide definitions, hunting zone descriptions, season opening and closing dates, and daily bag and possession limits. The frameworks for the 2016-17 season have been approved by the Flyway Councils and adopted by the Service Regulation's Committee meeting October 20-21, 2015. The frameworks allow for a liberal duck season which includes a 107 day season, 7 daily duck limit including 7 mallards but only 2 hen mallards, 2 pintail, 2 canvasback, 2 redheads, and 3 scaup (during an 86 day season). Duck daily bag limits ranges, duck season lengths ranges and goose season length ranges have been provided to allow the FGC flexibility. See tables in the Informative Digest for season and bag limits. Lastly, Federal regulations require that California's hunting regulations conform to those of Arizona in the Colorado River Zone and with Oregon in the North Coast Special Management Area.

The specific recommended regulation changes are:

1) Changes in current subsection 502(d) propose to increase the total daily bag limit for geese in the Northeastern, Southern San Joaquin Valley, and the Balance of State zones from 25 to 30 geese per day; the Southern California Zone total daily bag limit for geese will increase from 18 to 23 geese per day. The daily bag limit for white geese will increase from 15 to 20 per day in the zones referenced.

   Both Ross' geese and lesser snow geese populations (defined as white

geese in Section 502(a)) in the Pacific Flyway are about 1,000,000 birds and are above their population goals (100,000 and 200,000 respectively). The Canadian Wildlife Service has proposed to designate both populations as overabundant because of the rapid population growth since 2003 and concern for the potential impacts to the breeding grounds in the Western Canadian Arctic. The Service and Pacific Flyway recognize that reducing the population is needed and increased the daily bag limit to 20 in 2013. CA increased the daily bag limit to 15 in 2015 and would like to liberalize again. However, achieving a population reduction through hunting alone is not likely given the low numbers of hunters.

The increase in the white goose and total goose daily bag limits are intended to increase the harvest of geese, allow additional hunting opportunity, and potentially reduce depredation complaints.

2) Proposed changes in current subsection 502(d)(5)(D)8 increase the white goose daily bag limit in the Imperial County Special Management Area from 15 to 20 per day.

This is intended to increase the harvest of white geese. See recommendation 1 above.

Minor editorial changes are also proposed to clarify and simplify the regulations and to comply with existing federal frameworks.

3) Proposed changes in current subsection 502(e) modify the age limit to participate in the Youth Waterfowl Hunting Days from 15 years of age and under to 17 years of age and under.

The federal frameworks were modified to allow the Youth Waterfowl Hunt age requirements to mimic that of individual states as long as the youth hunter is not 18 years of age or older.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 202 and 355, Fish and Game Code.
Reference: Sections 202, 355, and 356, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None.

(d) Identification of Reports or Documents Supporting Regulation Change:

2016 Draft Environmental Document Migratory Game Bird Hunting

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

This proposal was discussed at the Fish and Game Commission's Wildlife Resources Committee meeting held on September 9, 2015 in Fresno, CA.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

Three alternatives were offered by the public regarding hunting in Morro Bay Special Management Area. They include 1) Eliminate all hunting during the Martin Luther King weekend during the Morro Bay Winter Bird Festival; 2) Change start time for hunting to 8 AM on Saturdays and Sundays instead of 7 AM; 3) Change the days of hunting to Wednesdays, Saturdays and Sundays.

(b) No Change Alternative:

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1) The No Change Alternative would maintain the 2015-16 season lengths, dates, and daily bag limits in all zones. The federal frameworks were adopted by the U S Wildlife Service's Regulations Committee Meeting in October and are the basis for the Department's recommendations for the 2016-17 season. Maintaining the existing regulations may cause nonconformance to federal rules.

2) The No Change Alternative would maintain the existing regulations in the Morro Bay Special Management Area.

3) The No Change Alternative would maintain the existing total daily goose bag limits and the white goose daily bag limits.

4) The No Change Alternative would maintain the existing age limit to participate in the Youth Waterfowl Hunting Days.

(c) Consideration of Alternatives

Regarding the alternatives proposed for the Morro Bay Special Management Area: Current regulations (Section 506) already provide for a later morning start time (7 a.m. rather than ½ hour before sunrise in all other hunt zones in California) and a substantial portion of Morro Bay is not open for hunting. These limits on hunting in Morro Bay are consistent

with the federal framework and the Commission's mandate to conserve wildlife and provide recreational opportunity. The Commission, after consideration, therefore rejects the alternatives proposing to further restrict waterfowl hunting in Morro Bay.

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

(d) Description of Reasonable Alternatives That Would Lessen Adverse Impact on Small Business: None.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed regulations are intended to provide additional recreational opportunity to the public. The response is expected to be minor in nature.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate any impacts on the creation or elimination of jobs, the creation of new business, the elimination of

existing businesses or the expansion of businesses in California. The proposed waterfowl regulations will set the 2016-17 waterfowl hunting season dates and bag limits within the federal frameworks. Positive impacts to jobs and/or businesses that provide services to waterfowl hunters will be realized with the proposed regulations for the waterfowl hunting season in 2016-17. This is based on a 2011 US Fish and Wildlife national survey of fishing, hunting, and wildlife associated recreation for California. The report estimated that migratory bird hunters contributed about $169,115,000 to businesses in California during the 2011 migratory bird hunting season. The impacted businesses are generally small businesses employing few individuals and, like all small businesses, are subject to failure for a variety of causes. Additionally, the long-term intent of the proposed regulations is to sustainably manage waterfowl populations, and consequently, the long-term viability of these same small businesses.

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources. The Commission anticipates benefits to the State's environment by the sustainable management of California's waterfowl resources. The Commission does not anticipate any impacts to worker safety because the proposed amendments will not affect working conditions.

(c) Cost Impacts on a Representative Private Person or Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

(e) Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School Districts: None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code: None.

(h) Effect on Housing Costs: None.

VII. Economic Impact Assessment

The proposed waterfowl regulations will set the 2016-17 waterfowl hunting season dates and bag limits within the federal frameworks.

(a) Effects of the regulation on the creation or elimination of jobs within the state

Positive impacts to jobs and/or businesses that provide services to waterfowl hunters will be realized with the adoption of the proposed waterfowl hunting regulations for the 2016-17 waterfowl season. This is based on the 2011 U.S. Fish and Wildlife National Survey of Fishing, Hunting, and Wildlife-Associated Recreation for California (issued Feb. 2013). The report estimates that hunters contributed about $169,115,000 to small businesses in California during the 2011 waterfowl hunting season. The impacted businesses are generally small businesses employing few individuals and, like all small businesses, are subject to failure for a variety of causes. Additionally, the long-term intent of the proposed regulations is to sustainably manage waterfowl populations, and consequently, the long-term viability of these same small businesses. The 2011 report is posted on the US Dept. of Commerce website at http://www.census.gov/prod/2013pubs/fhw11-ca.pdf.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the state

The result of the regulations on the creation of new businesses or the elimination of existing businesses within the state will be neutral. Minor variations in the bag limits as may be established in the regulations are, by themselves, unlikely to stimulate the creation of new businesses or cause the elimination of existing businesses. The number of hunting trips and the economic contributions from them are expected to remain more or less the same.

(c) Effects of the regulation on the expansion of businesses currently doing business within the state

The long-term intent of the proposed regulations is to sustainably manage waterfowl populations, and consequently, the long-term viability of small businesses that serve recreational waterfowl hunters. Minor variations in the bag limits as may be established in the regulations are, by themselves, unlikely to stimulate substantial expansion of these existing businesses.

(d) Benefits of the regulation to the health and welfare of California residents

Hunting is an outdoor activity that can provide several benefits for those who partake in it and for the environment as well. The fees that hunters pay for

licenses and stamps are used for conservation. In addition, the efforts of hunters can help to reduce wildlife depredation on private lands. Hunters and their families benefit from fresh game to eat, and from the benefits of outdoor recreation. People who hunt have a special connection with the outdoors and an awareness of the relationships between wildlife, habitat, and humans. With that awareness comes an understanding of the role humans play in being caretakers of the environment. Hunting is a tradition that is often passed on from one generation to the next creating a special bond between family members and friends.

(e) Benefits of the regulation to worker safety

The regulations will not affect worker safety because they will not impact working conditions.

(f) Benefits of the regulation to the state's environment

It is the policy of this state to encourage the conservation, maintenance, and utilization of waterfowl resources for the benefit of all the citizens of the state. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of waterfowl to ensure their continued existence and the maintenance of a sufficient resource to support recreational opportunity. Adoption of scientifically-based waterfowl seasons, bag and possession limits provides for the maintenance of sufficient populations of waterfowl to ensure those objectives are met.

(g) Concurrence with other Statutory Requirements:

Not applicable

Informative Digest/Policy Statement Overview

Current regulations in Section 502, Title 14, California Code of Regulations (CCR), provide definitions, hunting zone descriptions, season opening and closing dates, and establish daily bag and possession limits for waterfowl hunting.

The frameworks for the 2016-17 season have been approved by the Flyway Councils and adopted at the Service Regulation's Committee meeting October 20-21, 2015. The proposed frameworks allow for a liberal duck season which includes a 107 day season, 7 daily duck limit including 7 mallards but only 2 hen mallards, 2 pintail, 2 canvasback, 2 redheads, and 3 scaup (during an 86 day season). Duck daily bag limits ranges, duck season lengths ranges and goose season length ranges have been provided to allow the FGC flexibility. Lastly, Federal regulations require that California's hunting regulations conform to those of Arizona in the Colorado River Zone and with Oregon in the North Coast Special Management Area. Based on the frameworks, the Department of Fish and Wildlife (Department) provides an annual recommendation to the Fish and Game Commission.

The Department recommendations are as follows:

1. Changes in current subsection 502(d) propose to increase the total daily bag limit for geese in the Northeastern, Southern San Joaquin Valley, and the Balance of State zones from 25 to 30 geese per day; the Southern California Zone total daily bag limit for geese will increase from 18 to 23 geese per day. The bag limit for white geese will increase from 15 to 20 per day in the zones referenced.

2. Proposed changes in current subsection 502(d)(5)(D)8 increase the white goose daily bag limit in the Imperial County Special Management Area from 15 to 20 per day.

3. Proposed changes in current subsection 502(e) modify the age limit to participate in the Youth Waterfowl Hunting Days from 15 years of age and under to 17 years of age and under.

Minor editorial changes are also proposed to clarify and simplify the regulations and to comply with existing federal frameworks.

<u>Benefits of the regulations</u>

The benefits of the proposed regulations are concurrence with federal law and the sustainable management of the State's waterfowl resources. Positive impacts to jobs and/or businesses that provide services to waterfowl hunters will be realized with the continued adoption of waterfowl hunting seasons in 2016-17.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Evaluation of incompatibility with existing regulations

The Commission has reviewed its regulations in Title 14, CCR, and conducted a search of other regulations on this topic and has concluded that the proposed amendments to Section 502 are neither inconsistent nor incompatible with existing State regulations. No other State agency has the authority to promulgate waterfowl hunting regulations.

Summary of Proposed Waterfowl Hunting Regulations

AREA	SPECIES	SEASONS	DAILY BAG & POSSESSION LIMITS
Statewide	Coots & Moorhens	Concurrent w/duck season	25/day. 75 in possession
Northeastern Zone *Season may be split for Ducks, Pintail, Canvasback ,Scaup, and Dark and White Geese. White geese may be split 3-ways.*	Ducks	Between 38 & 105 days	4-7/day, which may include: 3-7 mallards no more than 1-2 females, 2 pintail, 2 canvasback, 2 redheads, 3 scaup. Possession limit triple the daily bag.
	Scaup	86 days	
	Geese	No longer than 105 days	30/day, which may include: 20 white geese, 10 dark geese no more than 2 Large Canada geese. Possession limit triple the daily bag.
Southern San Joaquin Valley Zone *Season may be split for Ducks, Pintail, Canvasback and Scaup.*	Ducks	Between 38 & 105 days	4-7/day, which may include: 3-7 mallards no more than 1-2 females, 2 pintail, 2 canvasback, 2 redheads, 3 scaup. Possession limit triple the daily bag.
	Scaup	86 days	
	Geese	No longer than 100 days	30/day, which may include: 20 white geese, 10 dark geese. Possession limit triple the daily bag.
Southern California Zone *Season may be split for Ducks, Pintail, Canvasback and Scaup.*	Ducks	Between 38 &100 days	4-7/day, which may include: 3-7 mallards no more than 1-2 females, 2 pintail, 2 canvasback, 2 redheads, 3 scaup. Possession limit triple the daily bag.
	Scaup	86 days	
	Geese	No longer than 100 days	23/day, which may include: 20 white geese, 3 dark geese. Possession limit triple the daily bag.
Colorado River Zone *Season may be split for Ducks, Pintail, Canvasback and Scaup.*	Ducks	101 days	7/day, which may include: 7 mallards no more than 2 females or Mexican-like ducks, 2 pintail, 2 canvasback, 2 redheads, 3 scaup. Possession limit triple the daily bag.
	Scaup	86 days	
	Geese	101 days	14/day, up to 10 white geese, up to 4 dark geese. Possession limit triple the daily bag.

Summary of Proposed Waterfowl Hunting Regulations, Continued			
AREA	**SPECIES**	**SEASONS**	**DAILY BAG & POSSESSION LIMITS**
Balance of State Zone *Season may be split for Ducks, Pintail, Canvasback, Scaup and Dark and White Geese.*	Ducks	Between 38 & 100 days	4-7/day, which may include: 3-7 mallards no more than 1-2 females, 2 pintail, 2 canvasback, 2 redheads, 3 scaup. Possession limit triple the daily bag.
	Scaup	86 days	
	Geese	Early Season: 5 days (CAGO only) Regular Season: no longer than 100 days Late Season: 5 days (whitefronts and white geese)	30/day, which may include: 20 white geese, 10 dark geese. Possession limit triple the daily bag.
SPECIAL MANAGEMENT AREAS	**SPECIES**	**SEASON**	**DAILY BAG & POSSESSION LIMITS**
North Coast *Season may be split*	All Canada Geese	105 days except for Large Canada geese which cannot exceed 100 days or extend beyond the last Sunday in January.	10/day, only 1 may be a Large Canada goose. Possession limit triple the daily bag. Large Canada geese are closed during the Late Season.
Humboldt Bay South Spit (West Side)	All species	Closed during brant season	
Sacramento Valley	White-fronted geese	Open concurrently with general goose season through Dec 21	3/day. Possession limit triple the daily bag.
Morro Bay	All species	Open in designated areas only	Waterfowl season opens concurrently with brant season.
Martis Creek Lake	All species	Closed until Nov 16	
Northern Brant	Black Brant	Open Nov 8 extending for 37 days	2/day. Possession limit triple the daily bag.
Balance of State Brant	Black Brant	Open Nov 9 extending for 37 days	2/day. Possession limit triple the daily bag.
Imperial County *Season may be split*	White Geese	Up to 102 days	20/day. Possession limit triple the daily bag.
YOUTH WATERFOWL HUNTING DAYS	(NOTE: To participate in these Youth Waterfowl Hunts, federal regulations require that hunters must be 17 years of age or younger and must be accompanied by a non-hunting adult 18 years of age or older.)		
	SPECIES	**SEASON**	**DAILY BAG & POSSESSION LIMITS**
Northeastern Zone	Same as regular season	The Saturday fourteen days before the opening of waterfowl season extending for 2 days.	Same as regular season
Southern San Joaquin Valley Zone		The Saturday following the closing of waterfowl season extending for 2 days.	
Southern California Zone		The Saturday following the closing of waterfowl season extending for 2 days.	
Colorado River Zone		The Saturday following the closing for waterfowl season extending for 2 days.	
Balance of State Zone		The Saturday following the closing of waterfowl season extending for 2 days.	
FALCONRY OF DUCKS	**SPECIES**	**SEASON**	**DAILY BAG & POSSESSION LIMITS**
Northeastern Zone	Same as regular season	Between 38 and 105 days	3/ day, possession limit 9
Balance of State Zone		Between 38 and 107 days	
Southern San Joaquin Valley Zone		Between 38 and 107 days	
Southern California Zone		Between 38 and 107 days	
Colorado River Zone	Ducks only	105 days	

REGULATORY TEXT

Section 502, Title 14, CCR, is amended as follows:

§502. Waterfowl, Migratory; American Coot and Common Moorhen (Common Gallinule).

. . . [No changes to 502(a) through (c)]

(d) Seasons and Bag and Possession Limits for Ducks and Geese by Zone.		
(1) Northeastern California Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	~~From the second Saturday in October extending for 105 days. Scaup: from the second Saturday in October extending for a period of 58 days and from the fourth Saturday in December extending for a period of 28 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season may be split into two segments and will be between 38 and 105 days except for some species that may have a shorter season than the general duck season.]	Daily bag limit: ~~7~~[4-7] Daily bag limit may include: • ~~7~~[3-7] mallards, but not more than ~~2~~[1-2] females. • 2 pintail (either sex). • 2 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	Regular Season: Dark geese ~~from the second Saturday in October extending for 100 days.~~ ~~White geese from the first Saturday in November extending for 72 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season will be no longer than 100 days.] White geese [opening no	Daily bag limit: ~~25~~ 30 Daily bag limit may include: • ~~15~~ 20 white geese. • 10 dark geese but not more than 2 Large Canada geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.

	earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January.] Late Season: ~~White-fronted geese from the first Sunday in March extending for 5 days. White geese from the first Sunday in February extending for 33 days.~~ White-fronted geese from March 6 extending for 5 days. White geese [Season will be no longer than 33 days and closing no later than March 10.] During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016, Fish and Game Code.	
(2) Southern San Joaquin Valley Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	~~From the fourth Saturday in October extending for 100 days. Scaup: from the first Saturday in November extending for 86 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season may be split into two segments and will be between 38 and 105 days except for some species that may have a shorter season than the general duck season.]	Daily bag limit: ~~7~~[4-7] Daily bag limit may include: • ~~7~~[3-7] mallards, but not more than ~~2~~[1-2] females. • 2 pintail (either sex). • 2 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	~~From the fourth Saturday in October extending for 100 days.~~ [Opening no earlier than the Saturday closest to October 1	Daily bag limit: ~~25~~ 30 Daily bag limit may include: • ~~15~~ 20 white geese. • 10 dark geese (see definitions: 502(a)).

	and closing no later than the last Sunday in January. Season will be no longer than 100 days.]	Possession limit: triple the daily bag limit.
(3) Southern California Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	~~From the fourth Saturday in October extending for 100 days.~~ ~~Scaup: from the first Saturday in November extending for 86 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season may be split into two segments and will be between 38 and 105 days except for some species that may have a shorter season than the general duck season.]	Daily bag limit: ~~7~~[4-7] Daily bag limit may include: • ~~7~~[3-7] mallards, but not more than ~~2~~[1-2] females. • 2 pintail (either sex). • 2 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	~~From the fourth Saturday in October extending for 100 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season will be no longer than 100 days.]	Daily bag limit: ~~18~~ 23 Daily bag limit may include: • ~~15~~ 20 white geese. • 3 dark geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.
(4) Colorado River Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers).	~~From the third Friday in October extending for 101 days.~~ ~~Scaup: from the last Saturday in October extending for 86 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season will	Daily bag limit: 7 Daily bag limit may include: • 7 mallards, but not more than 2 females or Mexican-like ducks. • 2 pintail (either sex). • 2 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex).

	be 101 days except for some species that may have a shorter season than the general duck season.]	Possession limit: triple the daily bag limit.
Geese	~~From the third Friday in October extending for 101 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season will be 101 days.]	Daily bag limit: 14 Daily bag limit may include: • 10 white geese. • 4 dark geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.
(5) Balance of State Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers).	~~From the fourth Saturday in October extending for 100 days.~~ ~~Scaup: from the first Saturday in November extending for 86 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season may be split into two segments and will be between 38 and 100 days except for some species that may have a shorter season than the general duck season.]	Daily bag limit: ~~7~~[4-7] Daily bag limit may include: • ~~7~~[3-7] mallards, but not more than ~~2~~[1-2] females. • 2 pintail (either sex). • 2 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	Early Season: Large Canada geese only from the Saturday closest to October 1 for a period of 5 days EXCEPT in the North Coast Special Management Area where Large Canada geese are closed during the early season. Regular Season: Dark and white geese ~~from the fourth Saturday in October extending for 100 days~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season	Daily bag limit: ~~25~~ 30 Daily bag limit may include: • ~~15~~ 20 white geese. • 10 dark geese EXCEPT in the Sacramento Valley Special Management Area where only 3 may be white-fronted geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.

	will be no longer than 100 days] EXCEPT in the Sacramento Valley Special Management Area where the white-fronted goose season will close after December 21. Late Season: White-fronted geese and white geese from the second Saturday in February extending for a period of 5 days EXCEPT in the Sacramento Valley Special Management Area where the white-fronted goose season is closed. During the Late Season, hunting is not permitted on wildlife areas listed in Sections 550-552 EXCEPT on Type C wildlife areas in the North Central and Central regions.		

(6) Special Management Areas (see descriptions in 502(b)(6))

	(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*	
1. North Coast	All Canada Geese	~~From the second Sunday in November~~ From November 5 extending for a period of ~~85~~ 86 days (Regular Season) and from ~~the third Saturday in~~ February 20 extending for a period of ~~20~~ 19 days (Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions Section 2016, Fish and Game Code.	Daily bag limit: 10 Canada Geese of which only 1 may be a Large Canada goose (see definitions: 502(a)), EXCEPT during the Late Season the bag limit on Large Canada geese is zero. Possession limit: triple the daily bag limit.	
2. Humboldt Bay South Spit (West Side)	All Species	Closed during brant Season		
3. Sacramento Valley	White-Fronted Geese	Open concurrently with the goose season through December 21, and during Youth	Daily bag limit: 3 white-fronted geese. Possession limit: triple	

		Waterfowl Hunting Days.	the daily bag limit.	
4. Morro Bay	All species	Open in designated area only from the opening day of brant season through the remainder of waterfowl season.		
5. Martis Creek Lake	All species	Closed until November 16.		
6. Northern Brant	Black Brant	From November 8 extending for 37 days.	Daily bag limit: 2 Possession limit: triple the daily bag limit.	
7. Balance of State Brant	Black Brant	From November 9 extending for 37 days.	Daily bag limit: 2 Possession limit: triple the daily bag limit.	
8. Imperial County	White Geese	From the first Saturday in November extending for a period of 86 days (Regular Season) and from the first Saturday in February extending for a period of 16 days (Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016, Fish and Game Code.	Daily bag limit: ~~15~~ 20 Possession limit: triple the daily bag limit.	

(e) Youth Waterfowl Hunting Days Regulations (NOTE: To participate in these Youth Waterfowl Hunts, federal regulations require that hunters must be ~~15~~ 17 years of age or younger and must be accompanied by a non-hunting adult 18 years of age or older.)

(1) Statewide Provisions.

(A) Species	*(B) Season*	*(C) Daily Bag Limit*
Ducks (including Mergansers), American Coot, Common Moorhen, Black Brant, Geese	1. Northeastern California Zone: The Saturday fourteen days before the opening of waterfowl season extending for 2 days. 2. Southern San Joaquin Valley Zone: The Saturday following the closing of waterfowl season extending for 2 days.	Same as regular season.

	3. Southern California Zone: The Saturday following the closing of waterfowl season extending for 2 days. 4. Colorado River Zone: The Saturday following the closing of waterfowl season extending for 2 days. 5. Balance of State Zone: The Saturday following the closing of waterfowl season extending for 2 days.	
(f) Falconry Take of Ducks (including Mergansers), Geese, American Coots, and Common Moorhens.		
(1) Statewide Provisions		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers), Geese, American Coot and Common Moorhen	1. Northeastern California Zone. ~~Open concurrently with duck season through January 17, 2016.~~ [No longer than 105 days.] 2. Balance of State Zone. ~~Open concurrently with duck season~~ [No longer than 102 days] EXCEPT in the North Coast Special Management Area where the falconry season for geese runs concurrently with the season for Small Canada geese (see 502(d)(6)) 3. Southern San Joaquin Valley Zone. ~~Open concurrently with duck season and February 1-3, 2016.~~ [No longer than 107 days.] Goose hunting in this zone by means of falconry is not permitted. 4. Southern California Zone. ~~Open concurrently with duck season and February 1-5, 2016.~~ [No longer than 107 days] EXCEPT in the Imperial County Special Management	Daily bag limit: 3 Daily bag limit makeup: • Either all of 1 species or a mixture of species allowed for take. Possession limit: 9

	Area where the falconry season for geese runs concurrently with the season for white geese. 5. Colorado River Zone. Open concurrently with duck season ~~and January 25-28, 2016~~ [not to exceed 105 days.] Goose hunting in this zone by means of falconry is not permitted. Federal regulations require that California's hunting regulations conform to those of Arizona, where goose hunting by means of falconry is not permitted	

Note: Authority cited: Sections 202 and 355, Fish and Game Code. Reference: Sections 202, 355 and 356, Fish and Game Code.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Section 507
Title 14, California Code of Regulations
Re: **Provisions Related to the Taking of Migratory Game Birds**

I. Date of Initial Statement of Reasons: November 2, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 10, 2015
Location: San Diego, CA

(b) Discussion Hearing: Date: February 11, 2016
Location: Sacramento, CA

(c) Adoption Hearing: Date: April 14, 2016
Location: Santa Rosa, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Current regulations in Section 507(a)(2), Title 14, California Code of Regulations (CCR), prohibit archery hunters from carrying a firearm while hunting migratory birds. However, since there is no specific archery only hunt or tag set aside for migratory birds, there is no reason to think individuals would take a bird with a firearm but pretend it was taken with archery equipment. Consequently, there is no reason to restrict archers from carrying firearms when taking migratory birds.

This amendment also addresses a grammatical error, correcting "~~crossbows~~ bolts" to "<u>crossbow</u> bolts," which is necessary to improve the clarity of the regulation.

The Department proposes to delete that part of subsection 507(a)(2) prohibiting the possession of a firearm while archery hunting:

> Only arrows or ~~crossbows~~ <u>crossbow</u> bolts with flu- flu fletching may be used except that conventionally fletched arrows may be used to take

waterfowl sitting on the water from scullboats or similar watercraft. ~~Archers hunting during any archery season may not possess a firearm while in the field engaged in archery hunting.~~

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Section 355, Fish and Game Code.
Reference: Sections, 355, and 356, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None.

(d) Identification of Reports or Documents Supporting Regulation Change: None.

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

This proposal was discussed at the Fish and Game Commission's Wildlife Resources Committee meeting held on September 9, 2015 in Fresno, CA.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No other alternatives were identified.

(b) No Change Alternative:

The No Change Alternative would maintain the existing regulation that prohibits archery hunters while engaged in migratory bird hunting from carrying a firearm.

(c) Consideration of Alternatives: In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

(d) Description of Reasonable Alternatives That Would Lessen Adverse Impact on Small Business: None.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed regulations are intended to provide additional recreational opportunity to the public. The response is expected to be minor in nature.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources. The Commission anticipates benefits to the State's environment in the sustainable management of natural resources.

The proposed action will not have significant impacts on jobs or business within California and does not provide benefits to worker safety.

(c) Cost Impacts on a Representative Private Person or Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

(e) Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School Districts: None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code: None.

(h) Effect on Housing Costs: None.

VII. Economic Impact Assessment

(a) Effects of the regulation on the creation or elimination of jobs within the state: Not applicable.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the state:

The result of the regulations on the creation of new businesses or the elimination of existing businesses within the state will be neutral. Clarification of regulations is, by itself, unlikely to stimulate the creation of new businesses or cause the elimination of existing businesses. The number of hunters and the economic contributions from them are expected to remain more or less the same.

(c) Effects of the regulation on the expansion of businesses currently doing business within the state:

The long-term intent of the proposed regulation is to maintain consistency in hunting regulations. Changes in this section are unlikely to stimulate substantial expansion of these existing businesses.

(d) Benefits of the regulation to the health and welfare of California residents:

Hunting is an outdoor activity that can provide several benefits for those who partake in it and for the environment as well. The fees that hunters pay for licenses and stamps are used for conservation. In addition, the efforts of hunters can help to reduce wildlife depredation on private lands. Hunters and their families benefit from fresh game to eat, and from the benefits of outdoor recreation. People who hunt have a special connection with the outdoors and an awareness of the relationships between wildlife, habitat, and humans. With that awareness comes an understanding of the role humans play in being caretakers of the environment. Hunting is a tradition that is often passed on

from one generation to the next creating a special bond between family members and friends.

(e) Benefits of the regulation to worker safety:

The regulations will not affect worker safety because they will not impact working conditions.

(f) Benefits of the regulation to the state's environment:

It is the policy of this state to encourage the conservation, maintenance, and utilization of wildlife resources for the benefit of all the citizens of the state.

(g) Concurrence with other Statutory Requirements:

Not applicable

Informative Digest/Policy Statement Overview

Current regulations in Section 507(a)(2), Title 14, California Code of Regulations (CCR), prohibit archery hunters from carrying a firearm while hunting migratory birds. However, since there is no specific archery only hunt set aside for migratory birds, there is no reason to think individuals would take a bird with a firearm but pretend it was taken with archery equipment. Consequently, there is no reason to restrict archers from carrying firearms when taking migratory birds. The existing regulation also refers to "crossbows bolts," rather than the proposed "crossbow bolts." This amendment is intended to correct a grammatical error and is necessary to improve the clarity of the regulation.

The Department proposes to delete that part of subsection 507(a)(2) prohibiting the possession of a firearm while archery hunting:

> "Only arrows or crossbow bolts with flu- flu fletching may be used except that conventionally fletched arrows may be used to take waterfowl sitting on the water from scullboats or similar watercraft. ~~Archers hunting during any archery season may not possess a firearm while in the field engaged in archery hunting.~~"

Benefits of the regulations

The benefit of the proposed regulation is consistency in regulations.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Evaluation of incompatibility with existing regulations

The Commission has reviewed its regulations in Title 14, CCR, and conducted a search of other regulations on this topic and has concluded that the proposed amendments to Section 507 are neither inconsistent nor incompatible with existing State regulations.

REGULATORY TEXT

Section 507, Title 14, CCR, is amended to read as follows:

§507. Provisions Related to the Taking of Migratory Game Birds.
(a) Authorized Methods. Only the following methods may be used to take migratory game birds:
(1) Falconry.
(2) Bow and Arrows or Crossbows. Only arrows or ~~crossbows~~ crossbow bolts with flu- flu fletching may be used except that conventionally fletched arrows may be used to take waterfowl sitting on the water from scullboats or similar watercraft. ~~Archers hunting during any archery season may not possess a firearm while in the field engaged in archery hunting.~~

… [No changes to subsections 507(a)(3) through 507(d)]

Note: Authority cited: Section 355, Fish and Game Code. Reference: Sections 355, 356 and 3005, Fish and Game Code.

Members of the California Fish and Game Commission
RE: Regulations for Hunting on Morro Bay

There has been a long tradition of hunting on Morro Bay but as I am sure that you are aware, it has also been an unpopular tradition with the residents in the area for almost as long. There have been very few good measurements of the degree of citizen displeasure with hunting or of the actual number of hunters on the Bay. A survey of the residents of Los Osos was performed by Cal Poly back in 1991. This survey showed that some 83% of the approximately 750 people surveyed were against hunting. (See Attachment. 1). It is likely that the rate of disapproval has gone up since then because recreational use of Morro Bay has increased dramatically in the intervening years. The City of Morro Bay is on record as being opposed to hunting as is the Los Osos Community Advisory Committee, several conservation groups and numerous commercial enterprises. It seems that it is time to revisit the hunting regulations to achieve a more equitable use of this resource. Several proposals for changes in the regulations are shown below along with justifications for the changes.

PROPOSAL 1. Eliminate all hunting during the Martin Luther King weekend.

Justification – The Morro Bay Winter Bird Festival is presented during this period and attracts upwards of 750 persons from all over North America over a 4 day period. This event is important for its economic impact plus it establishes a perspective for visitors about Morro Bay and the Central Coast in general. There are only a few hunters (2 or 3) on the bay at this time but their gunshots disturb all the waterfowl and downgrade the experience of festival attendees. A large gain for fair visitors can be achieved with very little loss to hunters.

PROPOSAL 2. Change start time for hunting to 8 AM on Saturdays and Sundays instead of 7 AM.

Justification – There are two large resort style lodgings with 1000 ft of the hunting area. These people could use an extra hour of peace on the weekend as could the 1000's of residents near the Bay. Noisy activities such as construction and trash service are restricted to these times on the weekends. Extending the restriction to the discharge of shotguns seems like a logical and considerate action. There are only 5-10 hunters on the water but they can disturb the start of the day for some thousands of persons. Hunting was restricted to start at 8 AM from about 1985 to 2006 without any apparent adverse affect.

PROPOSAL 3. – Change the days of hunting to Wednesdays, Saturdays and Sundays.

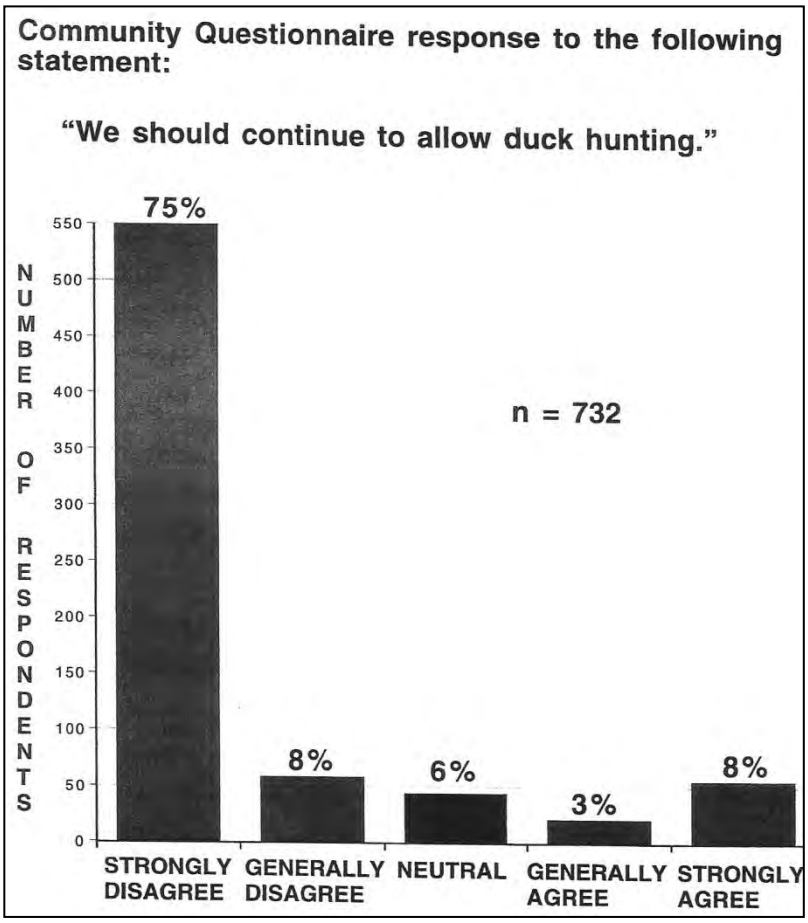
Justification – Morro Bay supports numerous recreational, commercial and avocational activities that are adversely affected by the presence of hunters on the Bay and the disturbances caused by their shotgun blasts. (Attachment 2 describes some of these affects in greater detail). Since hunters may be on the Bay any of the seven days it effectively restricts use on all seven days. If it was known beforehand that hunters would be present then potential users could reschedule their times of use. This would also allow for better enforcement of hunting regulations and education of users of the Bay. Such a schedule is already in effect at several wildlife areas that seem to be similar to Morro Bay, most notably Moss Landing.

ATTACHMENT 1 –

Previous surveys of hunter use and public opinion regarding hunting.

- Survey by John Roser – 1995. Mr. Roser, a local wildlife biologist, observed the number of hunters on the Bay during the Brandt season and converted his observations to hunter days. His total was 200 hunters-days or about 6.3 hunters/day. This correlates well with an unofficial statement by the manager of the Morro Bay museum that he thought that there were "about a half a dozen" on the bay during the Brandt season and much less during the remainder of the season. The Morro Bay State Natural History museum overlooks the hunting area.
- Survey of Los Osos Residents by Cal Poly in 1991 –

A survey of residents of Los Osos in 1991 conducted by the Landscape Architecture at Cal Poly returned the results shown in Figure at right.



- A survey cited by J. Lidberg of Cal F&G noted that during a survey from Oct. 22, 1978 to Feb. 22, 1979 that "most days there were no or very few hunters on the Bay".

ATTACHMENT 2

DISRUPTIONS CAUSED BY HUNTING

- Access to all parts of the Bay
  The bay is used by numerous kayakers, stand up paddle boarders, canoes, etc. wishing to observe waterfowl in an undisturbed state, enjoy the serenity of the bay and visit the sand spit. Hunters set up their decoys and other devices along the east edge of the sand spit, around grassy island and along the main channel. It makes it very difficult to enjoy these activities without encroaching close to the hunters. Some unfortunate confrontations have occurred. Many of the visitors to the bay are not aware of the hunting etiquette and unnecessarily disturb the hunters and endanger themselves.
- Distress to dogs and other animals.
  The parks and walkways along the Bay are very popular locations for dog walkers. The shotgun blasts greatly disturb many dogs to the point that dog owners do not walk their dogs in these areas during hunting season. In addition there are several California Dept. of Parks and Recreation bulletins displayed prominently at Morro Bay State Park says “Low disturbance areas are important for feeding and rest of waterfowl to maintain their weight and health”. . A single shotgun blast will disturb 1000’s of birds. The dissonance between two State Departments is intriguing.
- Public Perception of Area
  The City of Morro Bay prides itself by being a bird sanctuary and the entire area is trying to develop an image of eco friendliness to enhance its perception by visitors. Many visitors are dismayed that hunting is allowed on the Bay. This is even more disturbing to visitors to Morro Bay’s nationally recognized Winter Bird Festival
- Disruption of human activities.
  Nature photography, birding and recreational walking and biking have become very important activities to residents of and visitors to the area. Hunting disturbs the birds by causing them to move to areas inaccessible to photographers and birders. The sound of gun shots is also unpleasant for most walkers and cyclists.

California Fish and Game Commission
Potential Agenda Items for February 2016 Commission Meeting

The next regular meeting of the California Fish and Game Commission is scheduled for February 10-11 in Sacramento. This document identifies potential agenda items, including items to be received from FGC staff and DFW.

Wednesday, February 10: Marine-related and Administrative Items

1. Public forum
2. Tribal Committee update
3. Marine Resource Committee update
4. Discuss: draft California Spiny Lobster Fishery Management Plan
5. Notice: Spiny lobster sport and commercial fishing
6. Notice: E-reporting logbooks
7. Notice: Tribal take in marine protected areas
8. Discuss: Pacific halibut sport fishing
9. Discuss: Ocean salmon sport fishing (Apr and May)
10. Discuss: Klamath River salmon sport fishing
11. Receive/Discuss/Approve: Officer elections, committee appointments
12. Discuss/Approve/Renewal or Extend Existing Lease: Charles Friend Oyster Company
13. Discuss/Approve/Renewal or Extend Existing Lease: Point Reyes Oyster Company
14. Discuss/Approve Lease Amendment: Tomales Bay Oyster Company
15. Discuss/Approve Lease Renewal: Santa Barbara Mariculture Company
16. Discuss/Approve New Lease: Santa Barbara Mariculture Company
17. Discuss: Proposed final Master Plan for Marine Protected Areas
18. Direct staff/Action: Regulatory and non-regulatory requests from prior meetings
19. Receive DFW informational items

Thursday, February 11: Non-marine-related and Administrative Items

20. Public Forum
21. Wildlife Resources Committee update
22. Notice: DFW lands pass
23. Notice: Falconry cleanup
24. Discuss: Waterfowl hunting
25. Discuss: Central Valley salmon sport fishing
26. Discuss: Mammal hunting 2016-2017
27. Discuss: Fisheries at risk
28. Receive/Discuss: Recommendations for developing climate change policy
29. Adopt: Commission meeting procedures
30. Receive DFW status review for Townsend's big-eared bat
31. Receive DFW status review for Northern spotted owl

32. Discuss/Approve: Humboldt marten petition for candidacy
33. Receive other information (staff report, legislative, federal)
34. Discuss/Approve: Future agenda items, rulemaking calendar updates, and new business

State of California
Department of Fish and Wildlife

M e m o r a n d u m

Date: November 24, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Request for changes to the Fish and Game Commission's 2016 regulatory calendar.**

The Department of Fish and Wildlife (Department) requests the following schedule changes to the Fish and Game Commission's (Commission) 2016 regulatory calendar:

- Add a proposed rulemaking to establish standards for imposing penalty enhancements for illegal take of game with defined characteristics, pursuant to the Fish and Game Code Section 12013.3. The Department would like to vet this proposal at the May 2016 Wildlife Resources Committee meeting in Sacramento. Notice could occur at the August 2016 meeting with discussion and adoption scheduled for the October 2016 meeting.
- Add the regular sport fishing conformance rulemaking for groundfish to the Commission's calendar with notice scheduled at the August 2016 meeting, discussion at the October 2016 meeting and adoption at the December 2016 meeting.
- Add a proposed rulemaking to establish an automatic process to conform state ocean sport fishing regulations to Federal regulations pursuant to amended Fish and Game Code Section 205.1. The Department would like to use the Pacific halibut conformance regulations to test this approach. The proposed rulemaking would be noticed at the April 2016 meeting, discussed at the June 2016 meeting and adopted at the August 2016 meeting. If successful, the automatic conformance process would be in place for the 2017 Pacific halibut season.

If you have any questions or need additional information on the proposed changes, please contact Regulations Unit Manager, Craig Martz at (916) 653-4674 or by email at Craig.Martz@wildlife.ca.gov.

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PERPETUAL TIMETABLE FOR CALIFORNIA FISH AND GAME COMMISSION ANTICIPATED REGULATORY ACTIONS

Note: Dates shown reflect the actual date intended for the subject regulatory action. Please check commission and committee meeting agendas to confirm dates and actions.

Updated: 12/01/15

ITEMS PROPOSED FOR CHANGE ARE SHOWN IN **BLUE**

For FGC Staff use.						2015	2016																	
						DEC	JAN	FEB	MAR	MAR	APR	APR	APR	MAY	JUN	JUN	JUL	AUG	SEP	OCT	NOV
						9 10	20	10 11	15	21	12	13 14	18	18	21	22 23	21	24 25	21	19 20	17
QTRLY PUB	DFW RU ANALYST	FGC ANALYST	LEAD	REGULATORY CHANGE CATEGORY	ACTION DATE, TYPE AND LOCATION	FGC SAN DIEGO	WRC SACRAMENTO	FGC SACRAMENTO	TELECONFERENCE	MRC LOS ANGELES	TRIBAL COMMITTEE GEYSERVILLE	FGC SANTA ROSA	TELECONFERENCE	WRC SACRAMENTO	TRIBAL COMMITTEE HUNTINGTON BEACH	FGC HUNTINGTON BEACH	MRC NAPA	FGC SACRAMENTO	WRC SACRAMENTO	FGC CRESENT CITY	MRC IRVINE
					File Notice w/OAL by	10/13/15		12/15/15	1/19/16			2/16/16	2/23/16			4/26/16		6/28/16		8/11/15	
					Notice Published	10/23/15		12/24/15	1/29/16			2/26/16	3/4/16			5/6/16		7/8/16		8/21/15	
✱	SB	SF	MR	MARINE PROTECTED AREAS	632	A				E 3/1										D	
✱	MR	ST		GRAY WOLF	670.5	A				E 3/1											
	SB	MS	FB	SPORT FISH	1.05 et al.	A				E 3/1				R				N		D	
✱	MR	JS	FB	TRANSGENIC DEFINITION, APPLICATION & FEE	1.92, 703		E 1/1													D/A	
	SB	SF	MR	PACIFIC HALIBUT	28.20	N		D				A		E 5/1							
✱	SB	SF	MR	OCEAN SALMON SPORT FISHING (PHASE I)	27.80(c)	N		D	A		E 4/1										
	SB	SF	MR	OCEAN SALMON SPORT FISHING (PHASE II)	27.80(d)			D					A	E 5/1							
	SB	SF	FB	KLAMATH RIVER SPORT FISHING	7.50(b)(91.1)	N		D					A	V				E 8/1			
✱	/	SF	FGC	COMMISSION MEETING PROCEDURES	665	N		D				A					E 7/1				
	MR	JS	FB	CENTRAL VALLEY SALMON	7.50(b)	N		D					A					E 8/1			
	MR	JS	WLB	MAMMAL 2016-2017	265 et. al.	N		D				A		V			E 7/1				
	SB	JS	FB	FISHERIES AT RISK EM 1ST 90 DAY EXTENSION	8.01	EM	OAL NLT 12/19			Expires 3/29											
				FISHERIES AT RISK EM 2ND 90 DAY EXTENSION	8.01				EM	OAL NLT 3/19						Expires 6/29					
				FISHERIES AT RISK REGULAR RULEMAKING	8.01	N		D				A		Effective NLT 6/28/2016							
	MR	JS	WLB	WATERFOWL	502	N		D				A					E 7/1				
✱	MR	CW	MR	ELECTRONIC REPORT OF MARINE LOGBOOKS	190		N				D/A						E 7/1				
✱	SB	ST	MR	SPINY LOBSTER, SPORT AND COMMERCIAL	29.80, 29.90, 121-122		N				D					A					
	SB	CW	WLB	DFW LANDS PASS	550, 550.5, 551, 630, 703			N				D					A				
✱	MR	JS	WLB	FALCONRY CLEAN-UP	670			N				D					A				
	MR	SF	MR	PACIFIC HALIBUT SPORT CONFORMANCE PROCESS	28.20							N				D		A		E 9/1	
	MR	CW	WLB	UPLAND (RESIDENT) GAME BIRD	300		R						N				D		A	E 9/1	
	MR	SF	MR	RECREATIONAL GROUNDFISH	27.20 et. al.									V				N		D	
	SB	CW	EB	ENHANCE PENALTIES FOR GAME ILLEGAL TAKE	715 (new)									V					N		A
	MR	JS	WLB	BIG GAME TAG QUOTA REPORTING PROCESS	360, 361, 362, 363, 364														N		D
✱			MR	KELP FEES, RATE AND DEPOSITS [2016]	165, 165.5, 704																V
✱			MR	COMMERCIAL SEA CUCUMBER [2016]	128																
✱			MR	COMMERCIAL SEA URCHIN [TBD]	120.7																
			OGC	AZA/ZAA [TBD]	671.1																

EM = Emergency, E = Anticipated Effective Date (RED = expedited review), N = Notice Hearing, D = Discussion Hearing, A = Adoption Hearing, V =Vetting, R = Committee Recommendation, WRC = Wildlife Resources Committee, MRC = Marine Resources Committee