

STAFF SUMMARY FOR JUNE 10-11, 2015

13. 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 April meeting and pending items from previous meetings.
- (B) Action on non-regulatory requests received at the April meeting and pending items from previous meetings.
- (C) Streamlining routine regulatory changes
- (D) Public draft of *California State Wildlife Action Plan – 2015 Update*
- (E) Other

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 March 26 were published as tables in the April meeting binder, (2) requests received as late handouts were delivered at the April meeting, and (3) requests that were received during public forum at the April meeting.
- (C) At its April 2015 meeting, the California Fish and Game Commission (Commission) directed staff to bring to the June 2015 meeting an initial proposal for streamlining some of the routine rulemakings to create more efficient processes.
- (D) N/A

Background

- (A-B) FGC provides guidance and direction to staff regarding requests from the public received by mail, fax, 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) See Exhibit C.1 for background.
- (D) FGC has received updates during development of the California State Wildlife Action Plan (SWAP) – 2015 Update draft. The public comment period is currently open (see exhibits D1 and D2).

Significant Public Comments (N/A)

- (D) A commenter urges FGC to ask DFW to amend language in the public draft to reflect language in a 2013 document where only *illegal* hunting, fishing and harvesting in the Bay Delta-Central Coast Region was identified as a pressure, rather than hunting, fishing and harvesting in general (Exhibit D.3).

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,

STAFF SUMMARY FOR JUNE 10-11, 2015

WRC, TC, DFW staff, or FGC staff for further evaluation or information gathering.
The exhibits contain staff recommendations for each request.

- (C) See Exhibit C.1 for staff recommendation.
- (D) N/A

Exhibits

- A1. Regulatory requests received in preparation for or presented at the Apr 2015 meeting
- B1. Non-regulatory requests received in preparation for or presented at the Apr 2015 meeting
- C1. *Staff Report on Streamlining Routine Regulatory Changes*
- D1. DFW news release on SWAP 2015 Update draft
- D2. SWAP 2015 Update – Executive summary
- D3. Email from Scott McMorroo regarding language in the public draft, SWAP – 2015 Update, received May 26, 2015

Motion/Direction

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

OR

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

**CALIFORNIA FISH AND GAME COMMISSION
DECISION LIST FOR REGULATORY REQUESTS
Received Through April 9, 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

Date Received	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
2/6/2015	Michel & Associates, representing National Rifle Association	Methods of take - small game	T14, Sec. 311	Requests removing improper restrictions on possession of firearms necessary for self-defense.	Referred on 4/8/2015 to DFW for recommendation.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to 2016 upland game rulemaking.	
2/4/2015	James Moore	Restricted fishing		Requests lifting the fishing restrictions from the banks of the Sacramento River, immediately below the Red Bluff Diversion Dam.	Referred on 4/8/2015 to DFW. Proposal currently under review by DFW.	Action scheduled 6/10-11/2015 Staff Recommendation: Will be included in Aug 2015 notice for 2016 sport fish rulemaking.	
2/12/2015 FGC meeting	Robert Moore	Take of wild turkey	T14, Sec. 354	Requests language be added to section 354(c) to include wild turkeys, so as to require the proper point when archery hunting wild turkeys.	Referred on 4/8/2015 to DFW for recommendation.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to 2016 upland game rulemaking.	
2/22/2015	Meyer Ranch	Abalone		Requests the start time be back to 1/2 hour before sunrise and reduce the total take of Abalone to 15 per year to promote opportunities for all abalone fishermen.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; to be considered during abalone fishery management plan development process.		
2/7/2015	Eric Mills	Method of take, birds and mammals		Request to prohibit robotic/electronic duck decoys.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; no new data to support request.		
2/18/2015	William Toth	Feather River spring salmon		Request to release low flow provisions up to the Hwy 62 bridge to permit increased fishing opportunities.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to 2016 Central Valley Salmon rulemaking.		

Date Received	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
3/18/2015	Hazel Tove	Ferrets		Request to permit ferrets under certain circumstances.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; no new data to support request.		
2/27/2015	George Madriaga	Hedgehogs		Request permit of hedgehogs under certain circumstances.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; no new data to support request.		
3/8/2015	Jim Jackson	Sportfish - Inyo Cnty. Limits		Requests limits on fishing for Pine Creek including size and possession restrictions.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to Fishery Management Council for consideration in 2017 sport fish rulemaking.		
3/25/2015	Ken Bates	Squid		Requests emergency daily boat limit of 50 short tons squid for conservation measure next season.	Withdrawn by petitioner on 4/15/2015		
3/3/2015	William Anderson	Waterfowl		Requests to increase the 25 cartridge limit for waterfowl hunting to reduce the physical exertion it takes to make multiple trips to vehicles for additional cartridges.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; the regulatory rationale is not linked to bag limits but rather sportsmanship.		
3/20/2015	Andy Brown	Experimental Squid permits		Requests change to fishery management plan and regulations to allow experimental market squid vessel permit.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny regulations request; Refer to fishery management plan review process.		
3/20/2015	Scott Rassmussen	Experimental Squid permits		Requests change to fishery management plan and regulations to allow experimental market squid vessel permit.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny regulations request; Refer to fishery management plan review process.		
2/19/2015	Kieth Riggerberg, Outdoor Sportsman Coalition of California	Method of take	Section 311, T14	Requests removing improper restrictions on possession of firearms necessary for self-defense.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to 2016 upland game rulemaking.		

Date Received	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
2/19/2015	Randy Walker, The California Sportsman Lobby	Method of take	Section 311, T14	Requests removing improper restrictions on possession of firearms necessary for self-defense.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to 2016 upland game rulemaking.		
3/4/2015	Ronald LaForce, United Outdoor Sportsmen	Feather River salmon		Request and early run salmon season to commence May 2, 2015, with a possession limit of 1 fish per day.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to 2016 Central Valley salmon rulemaking.		
3/23/2015	California Department of Water Resources (DWR)	Central Valley Salmon		Requests elimination of the size and bag limits for Striped Bass to reduce predation on Central Valley Spring Run Chinook Salmon, Central Valley Steelhead, and Green Sturgeon.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to 2016 Central Valley salmon rulemaking.		
3/5/2015	Sonoma County Fish and Wildlife Commission	Inland Filleting of Salmonoids	Section 1.45, T14	Request to abolish fillet requirements for inland salmonoids.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to 2016 sport fish rulemaking.		
3/8/2015	Gary Hansen, Glenn County Fish, Game and Recreation Commission	Inland filleting of salmonoids	Section 1.45, T14	Request to abolish fillet requirements for inland salmonoids.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to 2016 sport fish rulemaking.		
4/8/2015	Charlie Beck	Steelhead fishing		Request for review of low flow regulation in Region 3 to permit more opportunity including: lowering low flow guidelines on the Guala River to 75 cfs and the Navaro to 100 cfs, extend trout fishing from fourth Saturday in May to September 30.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to DFW for evaluation and recommendation.		
4/8/2015	Neil Light	Steelhead fishing		Request closure of Guala River north fork, and the Garcia from HWY 1 Bridge.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to DFW for evaluation and recommendation.		
4/8/2015	Erik Owen	Steelhead fishing		Request adoption of low flow guidelines of 75cfs on the Koala and 100cfs on the Navarro, and consider artificial only restrictions	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to DFW for evaluation and recommendation.		
4/8/2015	David Misakign	Steelhead fishing		Request adoption of low flow guidelines of 75cfs on the Guala River and 100cfs on the Navarro.	Action scheduled 6/10-11/2015 Staff Recommendation: Refer to DFW for evaluation and recommendation.		

**CALIFORNIA FISH AND GAME COMMISSION
DECISION LIST FOR NON-REGULATORY REQUESTS
Received Through April 9, 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
 **Lavender cells:** Accepted and moved to a rulemaking

 **Blue cells:** Referrals to FGC staff or committee for more information
 **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
1/30/2015	Jim Brockett James McCabe	Permit for Possession of Rattlesnales	Requests permit to possess rattlesnakes for the purposes of (a) extracting venom for developing anit-venom serums and (b) dog aversion training.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; request requires statutory change.		
2/18/2015	Jono Wilson Nature Conservancy	Abalone Fishery Management Plan	Management requests for consideration during the Abalone FMP process.	Action scheduled 6/10-11/2015 Staff Recommendation: Will be considered by MRC. Refer proposal to DFW for consideration during FMP review.		
3/25/2015	Stephen Smith	FGC meetings	Request to webcast all public meetings as webinars so that persons who can't attend at the location may still comment.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; FGC does not have sufficient staff.		
3/25/2015	Ken Bates	Squid Fishery Management Plan	Initiate Squid FMP review to allow experimental squid permits	Withdrawn by petitioner on 4/15/2015		
4/8/2015	Kimberly Richard	Baby seals	Request for review of issue by MRC to save the seals.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; FGC has no authority over marine mammals, refer to National Marine Fisheries Service.		
4/8/2015	Richard James	Tomales Bay Oyster Farming Oversight	Request that the Commission provide better and more consistent oversight of the Tomales Bay oyster faming operations.	Action scheduled 6/10-11/2015 Staff Recommendation: Grant; FGC is working with DFW and growers to determine how to provide more consistent oversight.		

Date Received	Name of Petitioner	Subject of Request	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
4/8/2015	Al Gerhardt	Sea lions	Request consideratio of a management plan for Sea lions.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; FGC has no jurisdiction over marine mammals, responsibility of National Marine Fisheries Service.		
4/9/2015	Kathy Lynch	Michael Sutton	Request Commissioner Sutton recuse himself from participating in processes where Audobon has a clear interest.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; authority of Fair Political Practices Commission or Governor's office.		
4/9/2015	Kim Richard	Budget resources	Request regulations that permit adopt a California critter as a way to raise money from nonconsumptive users and sustain habitat.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; requires statutory change.		
4/9/2015	William Chamberlain	Central management	Request having one central agency to manage natural resources that transcend state lines including wildlife, water, air, and mining to conform policies with with biological borders not artificial state lines.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; requires statutory change.		
4/9/2015	Eric Mills, Edward Simpson, Jen Dowdy, Jill Beckett	Live animal food markets	Request to add consideration of live animal food markets on the agenda, in particular to outlaw the importation of bullfrogs and other amphibians.	Action scheduled 6/10-11/2015 Staff Recommendation: Deny; under evaluation by DFW.		
4/9/2015	Mark Hennely	Humbolt Bay Mariculture Project	Request that the Commission keep watching this development given it's potential impact on Black brandt, support a full EIR, and consider wieghing in on the project.	Action scheduled 6/10-11/2015 Staff Recommendation: Grant; FGC jurisdiction is limited, will monitor the issue.		

California Fish and Game Commission

Staff Report on Streamlining Routine Regulation Changes

June 1, 2015

Staff from the California Fish and Game Commission (Commission) and the California Department of Fish and Wildlife (Department) spend a significant amount of time on annual, routine, non-controversial rulemakings. Creating more efficient and responsive processes that still allow Commission oversight, but without the rulemaking workload, would free Commission and Department staff time to devote to other high-priority regulation changes as well as policy review, amendment and development, for which there is currently limited capacity.

Rulemakings that are largely driven by objective, empirical data generally do not require discretionary input as the proposed changes are set based on an accepted protocol, criteria or procedure; historically these types of rulemakings have had minimal changes from year-to-year and, as a result, limited public and FGC engagement. In other cases, FGC rulemakings are developed to conform with federal regulations where there is limited or no FGC discretion; in these cases, much of the public debate and engagement takes place at the federal level (i.e., Pacific Fishery Management Council) and historically the state has always conformed with those regulations. And, in at least one case, existing regulations may be unnecessary.

At its April 2015 meeting, the California Fish and Game Commission (Commission) directed staff to investigate the possibility of streamlining some of the routine rulemakings to create more efficient processes that still allow Commission oversight and provide notification to the Commission and public. Staff was directed to bring an initial proposal to the June 2015 Commission meeting.

Staff has identified a number of annual regulation changes that are potential candidates for streamlining:

- Central Valley salmon sport fishing
- Commercial and recreational groundfish fishing
- Commercial and recreational ocean salmon fishing
- Commercial and recreational tuna fishing
- Commercial and recreational Pacific halibut fishing
- Emergency closures for inland fisheries at risk due to drought
- Mammal hunting tag quotas
- Annual and five year Private Lands Wildlife Habitat Enhancement and Management Area plans and license renewals (initial plans would not be candidates)

After reviewing the relevant statutes and regulations, the degree to which accepted protocols, procedures or criteria are used, and historical public and Commission engagement in the candidate rulemakings, staff believes mammal (big game) hunting tag quotas and inland fisheries at risk due to drought are the most appropriate rulemakings to first consider for developing streamlined annual processes.

Unless directed otherwise, staff expects to bring to the August 2015 meeting a draft initial statement of reasons for big game hunting tag quotas and a draft initial statement of reasons for emergency closures for inland fisheries at risk due to drought. Please see below for conceptual descriptions and rationale for the first two proposed streamlining processes.

Big Game Hunting Tag Quotas

In the initial scoping of this issue, staff has determined that big game tag quotas have historically appeared in Title 14 of the California Code of Regulations as a matter of information, but there are no statutory requirements to list them in regulation. The Commission may establish season dates, bag and possession limits, and boundaries for big game hunting; however, big game tag quotas is not a regulation that is enforceable or that may be violated and is therefore not necessary to include in regulation.

Annual tag quota regulation amendments have created the majority of annual mammal regulations; for example, in the last five years tag quota amendments have averaged over 93% of the mammal hunting rulemaking packages. Since they are not required to be in regulation, tag quotas could be presented in an annual report to the Commission outside of the rulemaking process, considerably reducing the overall regulatory workload for the annual hunting regulations. To maintain public opportunity to participate, scoping and comment periods could be noticed and held by the Department regarding potential changes and recommendations following the conclusion of population data collection and analysis.

Commission and Department staff intends to develop an initial statement of reasons (Title 14, Sections 360, 361, 362, 363 and 364) and request to go to notice at the Commission's August meeting, with discussion at the October meeting and adoption at the December meeting; this allows the regulations to become effective before the Commission finalizes mammal hunting regulations for the 2016-2017 seasons.

The proposed rule would establish criteria and procedures for establishing quotas and how the Commission and public will be notified.

Emergency Closures for Inland Fisheries at Risk Due to Drought

Drought conditions continue in California at record levels in the state's recorded rainfall history. While the current drought could end next year, it is a pattern that California will experience again, as research shows recurring periods of drought and mega-drought in California over the last 1,000 years. When multi-year droughts do occur, hydrological conditions can deteriorate relatively quickly, creating inadequate water quality and quantity to support fisheries. Decisions about when to close a fishery due to inadequate water quality or quantity do not require the deliberations and discretionary input of the Commission for each and every water body if they are based on objective criteria adopted by the Commission with public input.

Conceptually this long-term solution will be similar to the emergency regulation proposed under Agenda Item 19, where specific criteria must be met and a notification process for the Commission and public is established. Department and Commission staff will work together to develop a proposal that refines the emergency approach based on lessons learned in the coming weeks and feedback from the public.

California Department of Fish and Wildlife News Release

May 18, 2015

Media Contacts:

Carol Singleton, CDFW Communications, (916) 322-8962

Armand Gonzales, SWAP Project Lead, (916) 616-0691

California's State Wildlife Action Plan 2015 Available for Public Review

The California Department of Fish and Wildlife (CDFW) has released the draft California State Wildlife Action Plan 2015 Update (SWAP 2015) and is seeking public input. Public input will help shape the final SWAP 2015, which will be completed by October 2015. The draft SWAP 2015 is available online at www.wildlife.ca.gov/SWAP. Written comments on SWAP 2015 can be submitted on the website, by emailing SWAP@wildlife.ca.gov or by mail to SWAP 2015 Update, California Department of Fish and Wildlife, 1416 Ninth Street, 12th Floor, Sacramento, CA 95814. The comment period is open from May 18 through July 2, 2015.

SWAP 2015 is a comprehensive, statewide plan for conserving California's fish and wildlife and their vital natural habitats for future generations. It is part of a nationwide effort by all 50 states and five U.S. territories to develop conservation action plans and participate in the federally authorized [State and Tribal Wildlife Grants \(SWG\) Program](#).

Congress created the SWG program in 2000, recognizing the need to fund programs for the conservation of wildlife diversity. California's first SWAP was completed by California Department of Fish and Game (now CDFW) and approved by the U.S. Fish and Wildlife Service (USFWS) in 2005. CDFW has received approximately \$37 million in federal support for the state's wildlife conservation activities through the SWG program from 2005 through 2014. The SWG program requires that SWAPs be updated at least every 10 years. CDFW has now prepared the draft SWAP 2015, which is the first comprehensive update of SWAP 2005. SWAPs are required to include provisions to ensure public participation in the development, revision and implementation of projects and programs.

SWAP 2015 focuses on conserving wildlife in the nation's most biologically diverse state while considering the growing human population, changing climate and the implications to the state's natural resources. SWAP 2015 is a flexible but scientifically grounded plan. Employing an ecosystem approach to conserve and manage diverse habitats and species, the plan creates and provides a blueprint for conservation actions necessary to respond to the highest priorities of California's aquatic, marine and terrestrial resources in a coherent manner. Its implementation relies on making important and helpful conservation information more accessible to resource managers and the public, and on developing lasting partnerships with a broad array of governments, agencies, organizations, businesses and citizens. With help from many partners, CDFW's vision for the state's wildlife is to sustain the floral and faunal biodiversity of California over the next decade and establish the conservation framework for the decades that follow.

Public meetings to provide information about SWAP 2015 will be held in Sacramento, Oakland, San Diego and Los Angeles. See www.wildlife.ca.gov/SWAP for more details.

###

For more than two years, California has been dealing with the effects of drought. To learn about all the actions the state has taken to manage our water system and cope with the impacts of the drought, visit www.ca.gov/drought.

Every Californian should take steps to conserve water. Find out how at www.saveourwater.com/.

Subscribe to CDFW News via e-mail or RSS feed at www.wildlife.ca.gov/news.

May 2015
Public Draft



California State Wildlife Action Plan

2015 UPDATE

A Conservation Legacy for Californians



EXECUTIVE SUMMARY



Credits for photographs on cover (from top left to bottom right):
pine marten by U.S. Fish and Wildlife Service (public domain)
western burrowing owl, istock photo
coastal cutthroat trout by Pat Clayton, fisheyeguyphotography.wordpress.com
red abalone by Athena Maguire, CDFW
western spadefoot toad by Chris Brown, U.S. Geologic Survey
coast horned lizard by Steve Berardi, Long Beach, CA.

Credits for photographs on first page of chapters:

Chapters 1, 10, 11: Ascent Environmental, Inc.
Chapters 2, 3, 4, 7, 8: Public Domain
Chapter 5: Matt Elyash, CDFW
Chapter 6: Patricia Bratcher, CDFW
Chapter 9: Bob Sahara, CDFW

Public Draft

CALIFORNIA STATE WILDLIFE ACTION PLAN 2015 UPDATE - EXECUTIVE SUMMARY

A Conservation Legacy for Californians



Prepared by
California Department of Fish and Wildlife



With Assistance from



Ascent Environmental, Inc.



Foundations of Success



Blue Earth Consultants, LLC

May 18, 2015

Suggested citation: California Department of Fish and Wildlife (CDFW). 2015. California State Wildlife Action Plan, 2015 Update: A Conservation Legacy for Californians. Prepared with assistance from Ascent Environmental, Inc., Sacramento, CA.

Table of Contents

	Page
ACKNOWLEDGEMENTS	xi
ACROMYNS AND ABBREVIATIONS.....	xv
EXECUTIVE SUMMARY.....	1
Vision for Wildlife Conservation	1
Statewide Goals.....	2
Ecosystem Approach.....	3
Development of Conservation Strategies	6
Integration and Implementation of SWAP 2015	6
Adaptive Management and Monitoring.....	7
Conclusion.....	8
HOW TO USE THE STATE WILDLIFE ACTION PLAN 2015 UPDATE	23
1 INTRODUCTION AND VISION.....	1-1
1.1 California’s Challenge – Sustaining Biodiversity	1-1
1.2 CDFW Jurisdiction	1-2
1.3 Vision for State Wildlife.....	1-4
1.4 State and Tribal Wildlife Grant Program.....	1-6
1.5 SWAP 2015 Approach.....	1-11
1.6 Companion Plans.....	1-29
2 CALIFORNIA’S NATURAL DIVERSITY AND CONSERVATION ISSUES.....	2-1
2.1 Geographic and Topographic Diversity	2-2
2.2 Climatic Diversity	2-3
2.3 Habitat and Species Diversity	2-4
2.4 Species of Greatest Conservation Need	2-11
2.5 Challenges in California Ecosystems	2-14
3 EXISTING CONSERVATION APPROACHES.....	3-1
3.1 Regulatory Framework	3-1
3.2 CDFW Planning Tools.....	3-6
3.3 CDFW Conservation Programs.....	3-16

		Page
4	STATEWIDE CONSERVATION CATEGORIES.....	4-1
4.1	Statewide Goals.....	4-1
4.2	Categories of Conservation Strategies.....	4-4
5	PROVINCE-SPECIFIC CONSERVATION STRATEGIES	5-1
5.1	North Coast and Klamath Province	5.1-1
5.2	Cascades and Modoc Plateau Province	5.2-1
5.3	Bay Delta and Central Coast Province	5.3-1
5.4	Central Valley and Sierra Nevada Province.....	5.4-1
5.5	South Coast Province	5.5-1
5.6	Deserts Province	5.6-1
5.7	Marine Province	5.7-1
6	ANADROMOUS FISHES.....	6-1
6.1	Vision.....	6-1
6.2	Goals and Objectives - Targets and Strategies	6-2
6.3	Anadromy and Species Diversity in California.....	6-2
6.4	Salmonid Ecoregions.....	6-11
6.5	Companion Conservation and Recovery Plans	6-14
6.6	Challenges to Anadromous Species and Watersheds.....	6-16
6.7	Anadromous Fish Conservation Targets and Strategies.....	6-18
6.8	Other Essential Actions.....	6-23
7	IMPLEMENTATION AND INTEGRATION.....	7-1
7.1	Integration with Other CDFW and Resource Agency Programs.....	7-1
7.2	Companion Plans.....	7-12
7.3	Resources Needed For Conservation Actions.....	7-13
7.4	Coordination with Partners.....	7-25
7.5	Public Outreach Strategies.....	7-26
7.6	Adaptive Responses to Emerging Issues	7-26
7.7	Review and Revision.....	7-27

	Page
8	MONITORING CALIFORNIA’S CONSERVATION STRATEGIES 8-1
8.1	Adaptive Management..... 8-1
8.2	Monitoring Effectiveness of SWAP 2005 Implementation..... 8-9
8.3	SWAP 2015 Effectiveness Measure Framework8-16
9	PLAN PREPARERS.....9-1
10	BIBLIOGRAPHY10-1
11	GLOSSARY11-1

Appendices

- A Required Report Elements and Compliance
- B California State Wildlife Action Plan 2015 Revision Summary
- C Species of Greatest Conservation Need
- D Conservation Strategies for All Macrogroups in California, Freshwater Aquatic Species Assemblages, Marine Ecosystems, and Anadromous Fishes
- E Invasive Species in California
- F Climate Adaptation Strategies Crosswalk
- G Public Scoping
- H California State Wildlife Action Plan Implementation Evaluation Report 2005 - 2014

Figures

Figure 1	SWAP 2015 Organizational Roadmap.....	25
Figure 1.5-1	SWAP 2015 Provinces.....	1-14
Figure 1.5-2	Relationship of Ecoregions to SWAP 2015 Provinces.....	1-16
Figure 1.5-3	Relationship of Hydrologic Units to SWAP 2015 Provinces.....	1-17
Figure 1.5-4	Bay Delta Conservation Unit Defined for SWAP 2015.....	1-18
Figure 1.5-5	Adaptive Project Management Cycle.....	1-24
Figure 1.5-6	Conceptual Model for How Conservation Strategies Improved Conditions for Conservation Targets.....	1-26
Figure 1.6-1	Identifying and Aligning SWAP 2015 and Partners’ Priorities to Create Companion Plans.....	1-30
Figure 4-1	Conceptual Model for Conservation Strategies.....	4-2
Figure 5.1-1	Land Ownership of the North Coast and Klamath Province.....	5.1-2
Figure 5.1-2	Ecoregions of the North Coast and Klamath Province.....	5.1-6
Figure 5.1-3	Hydrologic Units of the North Coast and Klamath Province.....	5.1-7
Figure 5.1-4	Plant Communities of the North Coast and Klamath Province.....	5.1-8
Figure 5.2-1	Land Ownership of the Cascades and Modoc Plateau Province.....	5.2-2
Figure 5.2-2	Ecoregions of the Cascades and Modoc Plateau Province.....	5.2-7
Figure 5.2-3	Hydrologic Units of the Cascades and Modoc Plateau Province.....	5.2-8
Figure 5.2-4	Plant Communities of the Cascades and Modoc Plateau Province.....	5.2-11
Figure 5.3-1	Land Ownership of the Bay Delta and Central Coast Province.....	5.3-5
Figure 5.3-2	Ecoregions of the Bay Delta and Central Coast Province.....	5.3-9
Figure 5.3-3	Hydrologic Units of the Bay Delta and Central Coast Province.....	5.3-10
Figure 5.3-4	Plant Communities of the Bay Delta and Central Coast Province.....	5.3-13
Figure 5.4-1	Land Ownership of the Central Valley and Sierra Nevada Province.....	5.4-2
Figure 5.4-2	Ecoregions of the Central Valley and Sierra Nevada Province.....	5.4-7
Figure 5.4-3	Hydrologic Units of the Central Valley and Sierra Nevada Province.....	5.4-8
Figure 5.4-4	Plant Communities of the Central Valley and Sierra Nevada Province.....	5.4-9
Figure 5.5-1	Land Ownership of the South Coast Province.....	5.5-2
Figure 5.5-2	Ecoregions of the South Coast Province.....	5.5-4
Figure 5.5-3	Hydrologic Units of the South Coast Province.....	5.5-5
Figure 5.5-4	Plant Communities of the South Coast Province.....	5.5-6
Figure 5.6-1	Land Ownership of the Deserts Province.....	5.6-2
Figure 5.6-2	Ecoregions of the Deserts Province.....	5.6-5
Figure 5.6-3	Hydrologic Units of the Deserts Province.....	5.6-6
Figure 5.6-4	Plant Communities of the Deserts Province.....	5.6-7

Figure 5.7-1 Marine Conservation Units 5.7-5

Figure 6.3-1 Limits of Anadromy in California 6-4

Figure 6.3-2 Salmonid Distribution 6-8

Figure 6.3-3 Sturgeon Distribution 6-10

Figure 6.3-4 Smelts and Lamprey Distribution 6-12

Figure 6.4-1 Anadromous Salmonid Ecoregions 6-13

Figure 8.1-1 A Three Phase (Nine-Step) Adaptive Management Framework..... 8-5

Figure 8.3-1 Results Chain for Data Collection and Analysis..... 8-19

Figure 8.3-2 Results Chain for Partner Engagement 8-21

Figure 8.3-3 Results Chain for Management Planning..... 8-23

Figure 8.3-4 Results Chain for Direct Management..... 8-25

Figure 8.3-5 Results Chain for Economic Incentives..... 8-27

Figure 8.3-6 Results Chain for Environmental Review 8-29

Figure 8.3-7 Results Chain for Land Acquisition, Easement, or Lease 8-31

Figure 8.3-8 Results Chain for Land Use Planning 8-33

Figure 8.3-9 Results Chain for Law and Policy 8-35

Figure 8.3-10 Results Chain for Outreach and Education..... 8-37

Figure 8.3-11 Results Chain for Training and Technical Assistance 8-39

Tables

Table 1 Conservation Targets and Strategies for the North Coast and Klamath Province 9

Table 2 Conservation Targets and Strategies for the Cascades and Modoc Plateau Province 12

Table 3 Conservation Targets and Strategies for the Bay Delta and Central Coast Province 13

Table 4 Conservation Targets and Strategies for Central Valley and Sierra Nevada Province..... 14

Table 5 Conservation Targets and Strategies for the South Coast Province 17

Table 6 Conservation Targets and Strategies for the Deserts Province..... 18

Table 7 Summary of Conservation Targets and Strategies for the Marine Province 20

Table 1.5-1 California SWAP 2015 Provinces, Conservation Units, and Conservation Targets... 1-22

Table 1.5-2 Standardized Key Ecological Attributes and Indicators Used to Measure Change in Condition 1-27

Table 1.5-3 Standardized List of Stresses Used in SWAP 2015..... 1-28

Table 1.5-4 Standardized List of Pressures Used in SWAP 2015..... 1-29

Table 4-1 Number of Conservation Strategies per Category Developed to Address Pressures..... 4-5

Table of Contents

Table 5.1-1	Conservation Units and Targets – North Coast and Klamath Province	5.1-9
Table 5.1-2	Key Ecological Attributes – North Coast and Klamath Province.....	5.1-13
Table 5.1-3	Focal Species of Conservation Strategies Developed for Conservation Targets in the North Coast and Klamath Province	5.1-14
Table 5.1-4	Key Pressures on Conservation Targets – North Coast and Klamath Province	5.1-20
Table 5.1-5	Stresses and Pressures for American Southwest Riparian Forest and Woodland; North Coastal and Montane Riparian Forest and Woodland.....	5.1-40
Table 5.1-6	Stresses and Pressures for Freshwater Marsh.....	5.1-42
Table 5.1-7	Stresses and Pressures for Pacific Northwest Conifer Forest.....	5.1-46
Table 5.1-8	Stresses and Pressures for Pacific Northwest Subalpine Forest	5.1-49
Table 5.1-9	Stresses and Pressures for California Foothill and Valley Forest and Woodlands.....	5.1-51
Table 5.1-10	Stresses and Pressures for Alpine Vegetation	5.1-55
Table 5.1-11	Stresses and Pressures for Fen (Peatlands), North Coastal and Montane Riparian Forest and Woodland, Subalpine Aspen Forests and Pine Woodlands, Western Upland Grasslands, Wet Mountain Meadow.....	5.1-58
Table 5.1-12	Stresses and Pressures for Subalpine Aspen Forest and Pine Woodlands.....	5.1-60
Table 5.1-13	Stresses and Pressures for Montane Upland Deciduous Scrub	5.1-63
Table 5.1-14	Stresses and Pressures for Native Aquatic Species Assemblages/Communities	5.1-70
Table 5.1-15	Conservation Targets and Strategies for the North Coast and Klamath Province.....	5.1-71
Table 5.2-1	Conservation Units and Targets – Cascades and Modoc Plateau Province	5.2-9
Table 5.2-2	Key Ecological Attributes – Cascades and Modoc Plateau Province.....	5.2-12
Table 5.2-3	Focal Species of Conservation Strategies Developed for Conservation Targets in the Cascades and Modoc Plateau Province	5.2-13
Table 5.2-4	Key Pressures on Conservation Targets – Cascades and Modoc Plateau Province.....	5.2-16
Table 5.2-5	Stresses and Pressures for North Coastal Mixed Evergreen and Montane Conifer Forests.....	5.2-31
Table 5.2-6	Stresses and Pressures for Western Upland Grasslands.....	5.2-34
Table 5.2-7	Stresses and Pressures for Big Sagebrush Scrub, Great Basin Dwarf Sagebrush Scrub, Great Basin Upland Scrub	5.2-38
Table 5.2-8	Stresses and Pressures for Great Basin Pinyon-Juniper Woodland.....	5.2-41
Table 5.2-9	Stresses and Pressures for Eagle Lake Native Fish Assemblage.....	5.2-46
Table 5.2-10	Stresses and Pressures for Great Basin Pinyon-Juniper Woodland.....	5.2-49
Table 5.2-11	Conservation Targets and Strategies for the Cascades and Modoc Plateau Province.....	5.2-51
Table 5.3-1	Conservation Units and Targets – Bay Delta and Central Coast Province*	5.3-11
Table 5.3-2	Key Ecological Attributes– Bay Delta and Central Coast Province.....	5.3-14
Table 5.3-3	Focal Species of Conservation Strategies Developed for Conservation Targets – Bay Delta and Central Coast Province.....	5.3-15

Table 5.3-4	Key Pressures on Conservation Targets – Bay Delta and Central Coast Province.....	5.3-21
Table 5.3-5	Stresses and Pressures for American Southwest Riparian Forest and Woodland.....	5.3-33
Table 5.3-6	Stresses and Pressures for California Grassland, Vernal Pools, and Flowerfields.....	5.3-36
Table 5.3-7	Stresses and Pressures for Coastal Sage Scrub, Northwest Coast Cliff and Outcrop, Coastal Dune and Bluff Scrub, North Coast Deciduous Scrub and Terrace Prairie	5.3-40
Table 5.3-8	Stresses and Pressures for Coastal Lagoons	5.3-44
Table 5.3-9	Stresses and Pressures for North American Pacific Coastal Salt-Marsh.....	5.3-50
Table 5.3-10	Conservation Targets and Strategies for the Bay Delta and Central Coast Province.....	5.3-51
Table 5.4-1	Conservation Units and Targets – Central Valley and Sierra Nevada Province*	5.4-10
Table 5.4-2	Key Ecological Attributes – Central Valley and Sierra Nevada Province.....	5.4-16
Table 5.4-3	Focal Species of Conservation Strategies Developed for Conservation Targets – Central Valley and Sierra Nevada Province.....	5.4-17
Table 5.4-4	Key Pressures on Conservation Targets – Central Valley and Sierra Nevada Province	5.4-22
Table 5.4-5	Stresses and Pressures for American Southwest Riparian Forest and Woodland.....	5.4-44
Table 5.4-6	Stresses and Pressures for Chaparral, Desert Transition Chaparral, Montane Chaparral, and California Foothill and Coastal Rock Outcrop Vegetation.....	5.4-47
Table 5.4-7	Stresses and Pressures for California Foothill and Valley Forests and Woodlands.....	5.4-50
Table 5.4-8	Stresses and Pressures for North Coastal Mixed Evergreen and Montane Conifer Forests.....	5.4-53
Table 5.4-9	Stresses and Pressures for Alpine Vegetation	5.4-57
Table 5.4-10	Stresses and Pressures for Pacific Northwest Subalpine Forest	5.4-60
Table 5.4-11	Stresses and Pressures for Fen (Peatlands).....	5.4-64
Table 5.4-12	Stresses and Pressures for Clear Lake Native Fish Assemblage.....	5.4-68
Table 5.4-13	Stresses and Pressures for Goose Lake Native Fish Assemblage	5.4-70
Table 5.4-14	Stresses and Pressures for Carson Lake Native Fish Assemblage.....	5.4-75
Table 5.4-15	Stresses and Pressures for Walker River Native Fish Assemblage	5.4-79
Table 5.4-16	Stresses and Pressures for San Joaquin Native Fish Assemblage	5.4-83
Table 5.4-17	Stresses and Pressures for Upper Kern River Native Fish Assemblage	5.4-86
Table 5.4-18	Conservation Targets and Strategies for Central Valley and Sierra Nevada Province	5.4-87
Table 5.5-1	Summary of Conservation Units and Targets – South Coast Province*	5.5-7
Table 5.5-2	Key Ecological Attributes – South Coast Province	5.5-8

Table of Contents

Table 5.5-3	Focal Species of Conservation Strategies Developed for Conservation Targets – South Coast Province	5.5-9
Table 5.5-4	Key Pressures on Conservation Targets – South Coast Province	5.5-11
Table 5.5-5	Stresses and Pressures for California Grassland and Flowerfields	5.5-19
Table 5.5-6	Stresses and Pressures for American Southwest Riparian Forest and Woodland.....	5.5-24
Table 5.5-7	Stresses and Pressures for Native Fish Assemblage.....	5.5-28
Table 5.5-8	Stresses and Pressures for South Coast Native Aquatic Herp Assemblage	5.5-32
Table 5.5-9	Conservation Targets and Strategies for the South Coast Province	5.5-33
Table 5.6-1	Summary of Conservation Units and Targets – Deserts Province*	5.6-8
Table 5.6-2	Key Ecological Attributes – Deserts Province.....	5.6-11
Table 5.6-3	Focal Species of Conservation Strategies Developed for Conservation Targets – Deserts Province.....	5.6-12
Table 5.6-4	Key Pressures on Conservation Targets – Deserts Province.....	5.6-17
Table 5.6-5	Stresses and Pressures for Big Sagebrush Scrub.....	5.6-33
Table 5.6-6	Stresses and Pressures for Great Basin Pinyon-Juniper Woodland.....	5.6-35
Table 5.6-7	Stresses and Pressures for Shadscale-Saltbush Scrub.....	5.6-40
Table 5.6-8	Stresses and Pressures for Desert Wash Woodland and Scrub	5.6-42
Table 5.6-9	Stresses and Pressures for Sparsely Vegetated Desert Dune	5.6-45
Table 5.6-10	Stresses and Pressures for American Southwest Riparian Forest and Woodland.....	5.6-47
Table 5.6-11	Stresses and Pressures for High Desert Wash and “Rangeland” Scrub, Great Basin Upland Scrub.....	5.6-49
Table 5.6-12	Stresses and Pressures for Mojave and Sonoran Desert Scrub.....	5.6-53
Table 5.6-13	Stresses and Pressures for Walker River Native Fish Assemblage	5.6-57
Table 5.6-14	Stresses and Pressures for Cienegas	5.6-60
Table 5.6-15	Stresses and Pressures for Springs and Spring Brooks.....	5.6-65
Table 5.6-16	Stresses and Pressures for Anthropogenically Created Aquatic Features	5.6-68
Table 5.6-17	Conservation Targets and Strategies for the Deserts Province.....	5.6-69
Table 5.7-1	Species of Greatest Conservation Need – Marine Province.....	5.7-12
Table 5.7-2	Potential Pressures Affecting Embayments, Estuaries, Lagoons.....	5.7-17
Table 5.7-3	Stresses and Pressures for Embayments, Estuaries, Lagoons.....	5.7-19
Table 5.7-4	Conservation Targets and Strategies for the Marine Province	5.7-29
Table 6.3-1	Anadromous Fish Species in California and Salmonid Ecoregions.....	6-5
Table 6.3-2	Annual Presence and Use of Freshwater Habitat of Selected Anadromous Fish Species and Runs in Different Major Watershed Drainages in California	6-6
Table 6.7-1	Conservation Strategies for Anadromous Fish Conservation Targets and Strategies.....	6-19

Table 8.2-1 Comparison of SWAP 2005 Conservation Actions with SWAP 2015 Categories of Conservation Strategies..... 8-12

Table 8.2-2 Classification of Conservation Action Categories in SWAP 2005 as Enabling Conditions or Implementation Actions 8-13

Table 8.3-1 Results, Objectives, and Effectiveness Measures for Data Collection and Analysis..... 8-20

Table 8.3-2 Results, Objectives, and Effectiveness Measures for the Partner Engagement 8-22

Table 8.3-3 Results, Objectives, and Effectiveness Measures for Management Planning 8-24

Table 8.3-4 Results, Objectives, and Effectiveness Measures for Direct Management..... 8-26

Table 8.3-5 Results, Objectives, and Effectiveness Measures for Economic Incentives..... 8-28

Table 8.3-6 Results, Objectives, and Effectiveness Measures for Environmental Review..... 8-30

Table 8.3-7 Results, Objectives, and Effectiveness Measures for Land Acquisition, Easement, or Lease..... 8-32

Table 8.3-8 Results, Objectives, and Effectiveness Measures for Land Use Planning 8-34

Table 8.3-9 Results, Objectives, and Effectiveness Measures for Law and Policy 8-36

Table 8.3-10 Results, Objectives, and Effectiveness Measures for Outreach and Education 8-38

Table 8.3-11 Results, Objectives, and Effectiveness Measures for the Training and Technical Assistance 8-40

Acknowledgements

CDFW Guidance Committees

Executive Committee: Chuck Bonham, Director; Kevin Hunting, Chief Deputy Director; Tom Cullen, Administrator-Office of Spill Prevention and Response; Sonke Mastrup, Executive Director-Fish and Game Commission; John Donnelly, Executive Director Wildlife Conservation Board; Sandra Morey, Deputy Director-Ecosystem Conservation Division; Dan Yparraguirre, Deputy Director-Fish and Wildlife Division; Tom Lupo, Deputy Director-Data and Technology Division; Jordan Traverso, Deputy Director-Office of Communication, Education and Outreach.

Steering Committee: Helen Birss, Chief-Habitat Conservation Planning Branch; Scott Cantrell, Chief-Water Branch; Stafford Lehr, Chief-Fisheries Branch; Eric Loft, Chief-Wildlife Branch; Steve Schoenig, Chief-Biogeographic Data Branch; Julie Yamamoto, Chief-Science Branch, Office of Spill Prevention and Response; Neil Manji, Regional Manager-Northern Region; Kimberly Nicol, Regional Manager-Inland Desert Region; Ed Pert, Regional Manager-South Coast Region; Jeff Single, Regional Manager-Central Region; Tina Bartlett, Regional Manager-North Central Region; Craig Shuman, Regional Manager-Marine Region; Scott Wilson, Regional Manager-Bay Delta Region.

Technical Committee: Whitney Albright, Climate Science and Renewable Energy Branch; Debbie Aseltine-Neilson, Marine Region; Tina Bartlett, North Central Region; Daniel Burmester, Water Branch; Dave Lentz, Fisheries Branch; Pete Figura, Northern Region; Holly Gellerman, Office of Spill Prevention and Response; Mike Giusti, Inland Desert Region; Melanie Gogol-Prokurat, Biogeographic Data Branch; Junko Hoshi, Habitat Conservation Planning Branch; Stephen Juarez, South Coast Region; Greg Martinelli, Bay Delta Region; Amber Pairis, Climate Science and Renewable Energy Branch; Monica Parisi, Habitat Conservation Planning Branch; Steve Schoenig, Biogeographic Data Branch; Dale Steele, Wildlife Branch; Rocky Thompson, Central Region; Terry Tillman, Marine Region.

Core Planning Team

CDFW: Whitney Albright, Climate Science and Renewable Energy Branch; Angela Barlow, IT Systems Branch; Meredith Fleener, Office of Communication, Education, and Outreach; Armand Gonzales, Climate Science and Renewable Energy Branch; Julia Gonzales, Climate Science and Renewable Energy Branch; Melanie Gogol-Prokurat, Biogeographic Data Branch; Cathy Grunwaldt, Habitat Conservation Planning Branch; Guphy Gustafson, Biogeographic Data Branch; Junko Hoshi, Habitat Conservation Planning Branch; Todd Keeler-Wolf, Biogeographic Data Branch; Kurt Malchow, Climate Science and Renewable Energy Branch; Diane Mastalir, Biogeographic Data Branch; Brian Salazar, Grants Branch; Steve Schoenig, Chief-Biogeographic Data Branch; Tara de Silva, Climate Science and Renewable Energy Branch; Carol Singleton, Office of Communication, Education, and Outreach.

Acknowledgements

Consultants: Curtis Alling, Ascent Environmental; Judy Boshoven, Foundations of Success; Tegan Churcher-Hoffmann, Blue Earth Consultants; Natalie DuBois, Defenders of Wildlife; Sarah Eminhizer, Blue Earth Consultants; Steve Henderson, Ascent Environmental; Heidi Hill-Drum, Center for Collaborative Policy; Lisa Kashiwase, Ascent Environmental; Linda Leeman, Ascent Environmental; Warren Lockwood, Sitka Technology; Richard Margolis, Foundations of Success; Jodie Monahan, Center for Collaborative Policy; Nick Salfsky, Foundations of Success; Christina Sloop, Blue Earth Consultants.

Visioning Team: Tina Bartlett, Regional Manager-North Central Region; Scott Cantrell, Chief-Water Branch; Eric Loft, Chief-Wildlife Branch; Dan Yparraguirre, Deputy Director-Fish and Wildlife Division; Tom Lupo, Deputy Director-Data and Technology Division; Sandra Morey, Deputy Director-Ecosystem Conservation Division; Julie Yamamoto, Chief-Science Branch, Office of Spill Prevention and Response; Terry Tillman, Marine Region; Rob Titus, Sacramento - Central Valley Harvest Field Office; Scott Wilson, Regional Manager-Bay Delta Region.

Conservation Strategies Development Teams

Partners: Shelley Ellis, Bureau of Land Management; Elizabeth Brusati, Doug Johnson, Dana Morawitz, California Invasive Plant Council; Tiffany Meyer, David Passovoy, California Department of Forestry and Fire Protection; Patricia Gordon-Reedy, Conservation Biology Institute; Daniel Gluesenkamp, Greg Suba, California Native Plant Society; Greg Yarris, Central Valley Joint Venture; Pamela Flick, Defenders of Wildlife; Kristal Davis-Fadtke, Delta Conservancy; Dominic Bachman, Judy Hohman, Dave Imper, Carolyn Lieberman, Bob Parris, Cassie Roeder, Mary Root, Jonathan Snapp-Cook, Susan Wynn, Andy Yuen, U. S. Fish and Wildlife Service; Linda Manning, National Park Service; Geoff Geupel, Point Blue Conservation Science; Christina Sloop, San Francisco Bay Joint Venture; Trish Smith, The Nature Conservancy; Jessica Strickland, Trout Unlimited; Steve Beissinger, U.C. Berkeley; Cameron Barrows, U.C. Riverside; Greg Guisti, U.C. Davis, Todd Ellsworth, Chrissy Howell, Kathleen Nelson, Don Yasuda, U. S. Forest Service, Denise LeBerteaux, Eremico.

CDFW Team-Leads: Ali Aghili, Region 1; Alisa Ellsworth, Region 6; Brad Henderson, Region 1; Jack Crayon, Region 6; Debbie Aeltine-Neilson, Marine Region; Timothy Dodson, Region 3; Nancy Frost, Region 5; Michelle Gilroy, Region 1; Joshua Bush, Region 2; Karen Miner, Region 5; Krysta Rogers, Wildlife Branch; Dave Lentz, Fisheries Branch; Gordon Lepig, Region 1; Richard Lis, Region 1; Mike Giusti, Region 6; Mike Morrison, Region 6; Mark Wheatley, Region 1; John O'Brien, Region 5; Paul Divine, Region 1; Robert Schaefer, Region 1; Richard Shinn, Region 1; Rocky Thompson, Region 4; William Somer, Region 2; Steve Parmenter, Region 6, Kristal Tomlinson, Region 4; Terry Tillman, Marine Region; Kevin Shaffer, Fisheries Branch; Don Crocker, Karen Caprio.

CDFW Team Members. Headquarters: Sandra Summers, Guphy Gustafson, Biogeographic Data Branch; Mike Brown, Karen Carpio, Dave Lentz, Jonathan Nelson, Joe Pisciotto, Kevin Shaffer, Glenn Yoshioka, Fisheries Branch; Junko Hoshi, Habitat Conservation Planning Branch; Holly Gellerman, Steve Hampton, Vicki Lake, Office of Spill Prevention and Response; Daniel Burmester, Water Branch; Rhianna Lee, Laura Patterson, Krysta Rogers, Chris Stermer, Wildlife Branch. Region 1: Ali Aghili, Steve Cannata, Jennifer

Carlson, Joe Croteau, Paul Divine, Pete Figura, Brett Furnas, Michelle Gilroy, Mike Harris, Robert Hawkins, Brad Henderson, Scott Hill, Christine Hubbard, Gordon Leppig, Richard Lis, Eric Nelson, Robert Schaefer, Richard Shinn, Mark Wheatley. Region 2: Joshua Bush, Ben Ewing, Margarita Gordus, John Hanson, Laurie Hatton, Stacy Heminway, Paul Hofmann, Ken Kundargi, Lauren Mulloy, Julie Newman, Jeanine Phillips, William Somer, Kevin Thomas. Region 3: Timothy Dodson, Mike Harris, April Hennessy, Terris Kasteen, Karen Taylor. Region 4: Jeff Cann, Margarita Gordus, Dave Hacker, Tim Heyne, Tim Kroeker, Dennis Michniuk, Bob Stafford, Erin Tennant, Rocky Thompson, Krista Tomlinson. Region 5: Dan Blankenship, Bryand Duke, Nancy Frost, Tim Hovey, Dwayne Maxwell, Karen Miner, John O'Brien, Heather Pert, Terri Stewart. Region 6: Dawne Baker, Jack Crayon, Allisa Ellsworth, Dawne Emery, Mike Giusti, Scott Harris, Rebecca Jones, Charlie Land, Jane McKeever, Mike Morrison, Gerald Mulcahy, Steve Parmenter, Nick Peterson, Karen Riesz, Tim Taylor, Kristina White, David Vigil. Region 7: Debbie Aseltine-Neilson, Vicki Frey, Rebecca Garwood, Lori Gustafson, Rebecca Jones, Jerry Kashiwada, Jane McKeever, Bill Paznokas, Kirsten Ramey, Paulo Serpa, Travis Tanaka, Terry Tillman, Paul Ton, Eric Wilkins.

Plan Preparers are listed in Chapter 9.

Acronyms and Abbreviations

ACE	Areas of Conservation Emphasis
ACEC	Areas of Critical Environmental Concern
AF	AcreFeet
AFB	Air Force Base
AFRP	Anadromous Fish Restoration Program
AFWA	Association of Fish and Wildlife Agencies
AML	Appropriate Management Levels
BCP	Budget Change Proposal
BDCP	Bay Delta Conservation Plan
BIOS	Biogeographic Information and Observation System
BLM	U.S. Bureau of Land Management
BMP	Best Management Practices
BRBP	Blue Ridge Berryessa Partnership
BSSC	Bird Species of Special Concern
CAL FIRE	California Department of Forestry and Fire Protection
CalEMA	California Emergency Management Agency
CalEPA	California Environmental Protection Agency
CalNASP	California National Archery in the Schools Program
CalSTA	California State Transportation Agency
CalTIP	Californians Turn in Poachers and Polluters
Caltrans	California Department of Transportation
CAMP	Campaign Against Marijuana Planting
CAPP	Conceptual Area Protection Plan
CBC	California Biodiversity Council
CCAS	California Climate Adaptation Strategy
CDFG	California Department of Fish and Game

Acronyms and Abbreviations

CDFW	California Department of Fish and Wildlife
CDNPA	California Desert Native Plants Act
CDOF	California Department of Finance
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERES	California Environmental Resources Evaluation System
CESA	California Endangered Species Act
CFA	Code of Federal Regulations
CHAT	Crucial Habitat Assessment Tool
CIB	California Interregional Blueprint
CISR	Center for Invasive Species Research
CLNWS	China Lake Naval Weapons Station
CNDDB	California Natural Diversity Database
CNRA	California Natural Resources Agency
Commission	Fish and Game Commission
CTP	California Transportation Plan
CVFPP	Central Valley Flood Protection Plan
CVP	California Central Valley Project
CVPIA	Central Valley Improvement Protection Act
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
DBW	Division of Boating and Waterways
Delta Reform Act	Sacramento-San Joaquin Delta Reform Act of 2009
Delta	Sacramento-San Joaquin Delta
DMG	Deserts Managers Group
DOD	U.S. Department of Defense
DOI	U.S. Department of Interior
DOW	Defenders of Wildlife
DRECP	Desert Renewable Energy Conservation Plan
DSC	Delta Stewardship Council

DSP	Distinct Population Segment
DWR	California Department of Water Resources
EBM	Ecosystem Biodiversity Monitoring
EGPR	Environmental Goals and Policy Report
ELI	Environmental Law Institute
ELRT	Eagle Lake rainbow trout
ELRTCS	Eagle Lake Rainbow Trout Conservation Strategy
ENSO	El Niño-Southern Oscillation
EPA	U.S. Environmental Protection Agency
ERP	Ecosystem Restoration Program
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FGC	Fish and Game Code
FPR	Forest Practice Regulation
FRAP	Fire and Resource Assessment Program
FRGP	Fisheries Restoration Grants Program
FRPA	Fish Restoration Program Agreement
GIS	Geographic Information Systems
HCP	Habitat Conservation Plan
HCPB	Habitat Conservation Planning Branch
HUC	Hydrologic Unit Code
IEP	Interagency Ecological Program
IID	Imperial Irrigation District
INRMP	Integrated Natural Resource Management Plan
IPCC	Intergovernmental Panel on Climate Change
KEA	Key Ecological Attribute
LAE	Land Acquisition Evaluation
LCC	Landscape Conservation Cooperative
LED	Law Enforcement Division
LMP	Land Management Plan

Acronyms and Abbreviations

Lower Colorado River Program	2005 Lower Colorado River Multi-Species Conservation Program
LSA	Lake and Streambed Alteration
MAST	Management, Analysis and Synthesis Team
MBTA	Migratory Bird Treaty Act
MCU	Marine Conservation Unit
MCS	Marijuana Cultivation Site
MLPA	Marine Life Protection Act
MMA	Marine Managed Area
MMBF	Million Board Feet
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MSCP	Multiple Species Conservation Program
MSHCP	Multiple Species Habitat Conservation Plan
MSSC	Mammal Species of Special Concern
NASP	National Archery in the Schools Program
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NERRS	National Estuarine Research Reserve System
NGO	Non-Governmental Organization
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NPS	National Park Service
NRCS	National Resource Conservation Service
NZMS	New Zealand mud snails
OHV	Off-Highway Vehicle
OPC	California Ocean Protection Council
OPR	Governor's Office of Planning and Research
OSPR	Office of Spill Prevention and Response

OTD	Office of Training and Development
PDO	Pacific decadal oscillation
PLM	Private Lands Management
PORTS	Parks On-line Resources for Teachers and Students
PUC	Public Utilities Commission
QSA	Quantification Settlement Agreement
RAMP	Regional Advance Mitigation Planning
RCD	Resource Conservation District
RDM	Residual Dry Matter
REAT	Renewable Energy Action Team
ROW	Right-Of-Way
SCP	Scientific Collector's Permit
SGCN	Species of Greatest Conservation Need
SHA	Safe Harbor Agreement
SHARE	Shared Habitat Alliance for Recreational Enhancement
SI	CDFW's Science Institute
Sierra Framework	Sierra Nevada Framework for Conservation and Collaboration
SJRRP	San Joaquin River Restoration Program
SMART	Specific, Measurable, Attainable, Relevant, and Time-Bound
SMCA	State Marine Conservation Area
SMR	State Marine Reserve
SMRMA	State Marine Recreational Management Area
SNEP	Sierra Nevada Ecosystem Project
SNFPA	Sierra Nevada Forest Plan Amendment
SRWP	Sacramento River Watershed Program
SSC	Species of Special Concern
SVRA	State Vehicular Recreation Area
SWAP	State Wildlife Action Plan
SWG	State and Tribal Wildlife Grants
SWP	State Water Project

Acronyms and Abbreviations

SWRCB	State Water Resources Control Board
TA	Technical Assistance
TAC	Technical Advisory Committee
TCP	Timberland Conservation Program
TMDL	Total maximum daily load
TNC	The Nature Conservancy
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTS	Unarmored Threespine Stickleback
VegCAMP	Vegetation Classification and Mapping Program
WCB	Wildlife Conservation Board
WCGA	West Coast Governors Alliance
WET	Watershed Enforcement Team
WFL	Wildlife Forensic Laboratory
WIL	Wildlife Investigations Lab

Executive Summary

Congress created the State and Tribal Wildlife Grants (SWG) program in 2000, recognizing the need to fund programs for the conservation of wildlife diversity. Congress mandated each state and territory to develop by 2005 a State Wildlife Action Plan (SWAP) that provided a comprehensive wildlife conservation strategy to continue receiving federal funds through the SWG program. California's first SWAP was completed by California Department of Fish and Game (now the California Department of Fish and Wildlife [CDFW]) and approved by the U.S. Fish and Wildlife Service (USFWS) in 2005. California's SWAP 2005 identified and targeted Species of Greatest Conservation Need (SGCN) and the vital habitats on which they depend. CDFW has received approximately \$37 million in federal support for the state's wildlife conservation activities through the SWG program from 2005 through 2014. The SWG program requires SWAP updates at least every 10 years. CDFW has now prepared SWAP 2015, which is the first comprehensive update of SWAP 2005.

Vision for Wildlife Conservation

In SWAP 2015, CDFW is focusing on conservation of the wildlife resources of the nation's most biologically diverse state using an approach that is in harmony with a growing human population and the need for resilience in the face of a changing climate. SWAP 2015 is a flexible, but scientifically grounded plan. Employing an ecosystem approach to conserve and manage diverse habitats and species, SWAP 2015 provides a blueprint for actions necessary to address highest priorities for conserving California's aquatic, marine, and terrestrial resources. Its implementation relies on making important and helpful conservation information more accessible to resource managers and the public, and on developing lasting partnerships with a broad array of governments, agencies, organizations, businesses, and citizens. CDFW's vision for conserving the state's wildlife is to sustain the floral and faunal biodiversity of California over the next decade, and to establish a solid conservation framework for the decades that follow.

Through SWAP 2015, together with diverse partners, CDFW seeks to:

- maintain and enhance the integrity of ecosystems by conserving key natural processes and functions, habitat qualities, and sustainable native species population levels, so that California's ecosystems are resilient to shifting environmental conditions resulting from climate change;
- promote partnerships with federal, state, and local agencies; tribal governments; and non-governmental organizations with aligned conservation goals to leverage efficient use of funding and other public resources;
- inspire greater understanding and recognition of critical needs for conserving wildlife and their habitats by lawmakers, land use planners, private landowners, and others who have influence in developing and implementing conservation actions;

Executive Summary

- allocate sufficient water and manage water resources to maintain healthy ecosystems and fish and wildlife populations when considering state and regional water supply needs;
- provide resources and coordinate efforts with partners to eradicate or control invasive species and to prevent new introductions;
- sustain the quality of California's natural resources and biodiversity in harmony with predicted economic growth and human population increases;
- continue to prioritize protection of key habitat linkages, sensitive habitats, and specialized habitats for SGCN;
- integrate wildlife conservation with working landscapes and environments, recognizing both the economic and ecological values of agriculture, rangeland, forestry, and fisheries;
- support conservation programs that benefit native species, habitats, and ecosystems through broad-based public funding from federal, state, special district, and local government sources;
- educate the public about wildlife conservation issues and inspire a conservation ethic in present and future generations through public outreach; and
- enhance conservation capacity by clearly articulating conservation purposes, applying adaptive management principles, and effectively using staff and financial resources.

Statewide Goals

Three statewide goals to enhance California ecosystems have been identified for SWAP. These overarching goals, with their associated sub-goals, represent the desired ecological outcomes for SWAP 2015 implementation.

Goal 1 - Abundance: Maintain and increase the extent of ecosystems and the distribution of native species while sustaining and enhancing species richness and abundance in California.

- *Goal 1.1 (Ecosystem Extent):* Maintain and increase the ecosystem extent.
- *Goal 1.2 (Species and Habitat Distribution):* Maintain and increase the distribution of native species and their habitats.
- *Goal 1.3 (Species Abundance and Richness):* Sustain and enhance the abundance of native species and species richness, including genetic diversity.
- *Goal 1.4 (Ecosystem Diversity):* Sustain and enhance ecosystem diversity.

Goal 2 - Enhance Ecosystem Conditions: Maintain and improve ecological conditions vital to ecosystem sustainability in California.

- *Goal 2.1 (Connectivity):* Maintain and improve connectivity vital to ecosystem sustainability (including vegetation, wildlife corridor, genetic permeability, water flow, lateral floodplain extent, and groundwater).

- ▲ *Goal 2.2 (Community Structure and Composition):* Maintain and improve community structure and composition vital to ecosystem sustainability (including those relevant to age class, habitat richness, structural heterogeneity, native species richness, and key species population level).
- ▲ *Goal 2.3 (Water Quantity and Availability):* Maintain and improve water quality (temperature, chemistry, pollutant and nutrient concentrations) vital to ecosystem sustainability, and improve the quantity and availability of water for ecosystems (including ocean, lakes, rivers, streams, groundwater, and snowpack).
- ▲ *Goal 2.4 (Soil Quality):* Maintain and improve soil quality vital to ecosystem sustainability (including soil moisture, chemistry, pollutant and nutrient concentrations and dynamics).

Goal 3 - Enhance Ecosystem Functions and Processes: Maintain and improve ecosystem functions and processes vital to ecosystem sustainability in California.

- ▲ *Goal 3.1 (Successional Dynamics):* Maintain or improve successional dynamics vital to ecosystem sustainability.
- ▲ *Goal 3.2 (Disturbance Regime):* Maintain or improve disturbance regimes vital to ecosystem sustainability (including fire regime, flooding regime, and grazing regime).
- ▲ *Goal 3.3 (Hydrological Regime):* Maintain or improve hydrological regimes vital to ecosystem sustainability (including fresh water hydrodynamics, oceanic circulation, and tidal patterns).
- ▲ *Goal 3.4 (Soil and Sediment Deposition Regime):* Maintain or improve soil and sediment deposition regimes vital to ecosystem sustainability (including hydro-geomorphic processes, wind-driven processes, and soil stability).

Ecosystem Approach

A multi-species, ecosystem approach has been used as the guiding framework for developing SWAP 2015. An ecosystem approach to conservation involves maintaining and enhancing the ecosystem processes, structure, and conditions, recognizing that all components are interrelated in a dynamically changing system. Large-scale landscape approaches are generally the most reliable and preferred method to conserve ecological integrity, including biological diversity. The approach benefits both game and non-game (or harvested and non-harvested) wildlife species, and creates many co-benefits related to both natural values (such as enhanced water quality, soil conservation, or resilience to the effects of climate change) and societal values (such as open space, scenic quality, or outdoor recreation opportunities).

Species of Greatest Conservation Need

A key element of updating the SWAP is identifying and compiling information on the species of wildlife that are indicative of the state's biological diversity and have the greatest need for conservation. These species are referred to as SGCN. For SWAP 2015, regional teams developed

criteria and evaluated species, resulting in a list of over 1,000 species of invertebrates, amphibians, reptiles, fish, birds, mammals, and plants that are considered SGCN. Because of the large number of species, a species-based implementation approach is not feasible; however, it is recognized that dividing California into habitat categories may present limitations that must be balanced with species-specific efforts when needed to effectively address conservation of species.

SWAP 2015 used three criteria to determine the list of SGCN:

- species listed as threatened, endangered, or candidate species in California under the federal Endangered Species Act or the California Endangered Species Act;
- species for which there is a conservation concern (generally equivalent to California Species of Special Concern); or
- species identified by CDFW as being highly vulnerable to climate change.

Consideration of Climate Change

Significant climate-related changes to California's environment have been documented in the last decade, including sea level rise, natural community shifts, increased prevalence of invasive species, increased number and intensity of wildfires, and prolonged drought (CNRA 2009, CNRA 2014). Climate-induced effects on wildlife, in combination with other pressures, have the potential to greatly diminish vulnerable wildlife populations and habitats and must be considered when developing management strategies. Climate change considerations have been given great weight during development of SWAP 2015, in the following ways:

- adopting climate vulnerability as a criterion for selecting SGCN;
- incorporating climate forecasts when assessing the ecological conditions of conservation targets;
- conducting climate change vulnerability analyses for native species and vegetation in California; and
- identifying how the SWAP conservation strategies align with California's Climate Change Adaptation Strategy and the National Fish, Wildlife, and Plants Climate Adaptation Strategy, thus achieving important climate adaptation co-benefits through SWAP implementation.

Prioritizing Conservation Targets

The process to provide the SWAP elements required by USFWS and develop multi-species conservation strategies began by broadly categorizing natural resources in California. The categories used in SWAP 2015 are terrestrial, freshwater aquatic, and marine habitats. SWAP 2015 recognizes that within each of these resource categories, there are strategies that apply to specific geographic regions, and others that are more broadly relevant across many regions or possibly statewide. To assess conservation needs at a manageable scale, the state was

subdivided for each resource category using established and accepted geographic units. These geographic units are ecoregions (adopting “sections” identified under the U.S. Forest Service Ecoregion Classification) for terrestrial resources, hydrologic units (adopting the four digit hydrologic unit codes identified by the U.S. Geologic Survey) for freshwater aquatic resources, and marine conservation units (adopting marine study regions identified under the Marine Life Protection Act [Fish and Game Code Section 2850-2863]), collectively called conservation units. The conservation units were then grouped together into seven major geographic provinces. This approach facilitated the discussion of ecosystems, natural communities and species at a scale appropriate for regional conservation planning. The seven provinces are:

- ▲ North Coast and Klamath
- ▲ Cascades and Modoc Plateau
- ▲ Central Valley and Sierra Nevada
- ▲ Bay Delta and Central Coast
- ▲ South Coast
- ▲ Deserts
- ▲ Marine

An exception to developing conservation strategies within these geographic scales is the analysis for anadromous fish. Anadromous fish begin life in the fresh water of rivers and streams, migrate to the ocean to grow into adults, and then return to fresh water to spawn. Most anadromous fish spend the majority of their life in marine environments and travel great distances to reach their spawning rivers or streams. Because the geographic ranges of anadromous fish span many of the provinces developed for SWAP 2015, the organization of conservation strategies by hydrologic unit or even province does not adequately address their conservation needs. As such, the geographic organization of conservation strategies for anadromous fish has been developed separately to capture all the habitats within their ranges.

For each conservation unit in California, SWAP 2015 developed at least one conservation project, consisting of a set of conservation strategies to improve conditions of a conservation target. The focus of SWAP 2015 is on species deemed to be most rare, imperiled, and in need of conservation. Habitat types with high levels of species richness, high counts of rare and endemic species, and high counts of vulnerable species (including declining and at-risk species and SGCNs), are prioritized for selection as potential terrestrial conservation targets. Expert opinion and knowledge were employed to identify the highest priority freshwater aquatic targets for each hydrologic unit. Marine ecosystem targets were based on priorities identified through work recently completed as part of the Marine Life Protection Act (MLPA). Anadromous fish conservation targets are key species, species guilds, habitat types, or ecological processes essential to the future conservation of anadromous species and were prioritized by CDFW to adequately encapsulate their evolutionary and ecological significance.

Development of Conservation Strategies

Statewide conservation strategies have been developed in SWAP 2015 for terrestrial, freshwater aquatic, and marine resources in the following categories:

- ▲ Data Collection and Analysis
- ▲ Partner Engagement
- ▲ Management Planning
- ▲ Direct Management
- ▲ Economic Incentives
- ▲ Environmental Review
- ▲ Land Acquisition, Easement, and Lease
- ▲ Land Use Planning
- ▲ Law and Policy
- ▲ Outreach and Education
- ▲ Training and Technical Assistance

Specific conservation strategies were developed as part of a conservation project for each conservation target using a systematic approach. First, for each conservation target, key ecological attributes (KEAs) were identified. These attributes are the ecological qualities on which the ecological viability of the conservation target most depends. Stresses, the degraded conditions of ecological attributes, were then identified followed by the identification of pressures that are the sources of degradation of ecological attributes. If applicable, underlying socio-economic causes for the pressures were also recognized. After illustrating the interrelationship of KEAs, stresses and pressures, conservation strategies were developed to either directly or indirectly alleviate negative impacts of pressures or stresses, or to improve or maintain the ecological viability of conservation targets by conserving KEAs. The conservation targets, stresses, pressures, and conservation strategies for each province are summarized in Tables 1-7. (See below, following “Conclusion” section.)

Conservation strategies for anadromous fish are summarized in Table 8 and consist of the following general strategies:

- ▲ Research, Assessment, and Monitoring;
- ▲ Securing Adequate Funding;
- ▲ Habitat Enhancement, Restoration, and Protection; and
- ▲ Developing Water Management Plans.

Integration and Implementation of SWAP 2015

Implementation of California’s SWAP 2015 will involve integrating SWAP features into other resource management programs and plans led by CDFW or partners, developing more detailed SWAP implementation plans, systematically pursuing resources necessary for implementation of conservation strategies, effectively coordinating and collaborating with CDFW partners, and adaptively responding to emerging issues.

Because of California’s tremendous biodiversity and the broad spectrum of actions needed to implement conservation strategies across a complex assemblage of resources, land uses, government activities, and resource-consumptive industries, CDFW determined that a more detailed coordination framework for SWAP 2015 implementation was needed beyond the presentation in SWAP 2015. Called “companion plans,” these sector-specific action plans will be instrumental in the implementation of SWAP 2015. CDFW, in partnership with other state and federal agencies and organizations involved in the use, management, and conservation of California’s natural resources and cultural heritage, are creating nine sector-specific plans.

Sector-Specific Companion Plans:

- ▲ Agriculture
- ▲ Consumptive and Recreational Uses
- ▲ Energy Development
- ▲ Forests and Rangelands
- ▲ Land Use Planning
- ▲ Transportation Planning
- ▲ Tribal Lands
- ▲ Water Management
- ▲ Marine Resources

Companion plans will support development of well-coordinated, collaborative, multi-stakeholder efforts that leverage human and financial resources, as well as increase efficiencies for implementation of strategies, to achieve goals and objectives described in SWAP 2015. These plans will identify shared priorities of SWAP 2015 and CDFW partners, and mutually strengthen the conservation capabilities of CDFW and participating organizations.

Adaptive Management and Monitoring

Natural communities, ecosystems, species population dynamics, and the effects of pressures or conservation actions on the environment are inherently complex. Resource managers often need to take action to conserve species even though scientific information may be incomplete and outcomes of the actions may be uncertain. Adaptive management is essential to implementing effective conservation programs in light of these challenges. Adaptive management of a conservation plan is a process to continually monitor to assess the environment, as well as the effects and effectiveness of conservation strategies, and to adjust the plan when improvement is needed to achieve the desired outcomes. SWAP 2015 has integrated the concept of adaptive management in its preparation and implementation.

For SWAP 2015, CDFW has adopted a framework of effectiveness measures that is consistent with the *Open Standards for the Practice of Conservation* (www.conservationmeasures.org) and that has been proposed by the Association of Fish and Wildlife Agencies (AFWA) (2011). This framework establishes a standardized and readily accessible monitoring and evaluation process to inform and guide SWAP implementation. Under the effectiveness measure framework, the information gathered through monitoring and evaluation can be used to identify successful strategies that should be continued and shared, and also to identify less effective ones that should be improved or abandoned. The effectiveness measure framework also provides a

mechanism for CDFW to report on the status of SWAP implementation to USFWS, conservation partners and the public.

SWAP 2015 employs three types of monitoring: (1) status monitoring, which tracks conditions of species, ecosystems and other conservation factors over time; (2) effectiveness monitoring, which determines if conservation strategies are having their intended results and to identify ways to improve actions that are less effective (i.e., adaptive management); and (3) effect monitoring, addressing whether and how the target conditions are being influenced by the implementation of strategies. The effectiveness measure framework promoted by AFWA and adopted for SWAP 2015 brings these three types of monitoring together to (1) attribute changes in ecosystems and species status to the effectiveness of SWAP conservation strategies, and (2) roll up the results of many different strategies into statewide reports.

Conclusion

California's SWAP 2015 establishes a strategic vision of the integrated conservation efforts needed to sustain the tremendous diversity of wildlife resources found in the state. Although SWAP 2015 is not a specific work plan for CDFW or any other organization, it is meant to visualize, support, complement, and unite the plans of the multiple conservation and management entities within California. More detailed, operation-level plans will be needed to complete many of the strategies identified in SWAP 2015. Such plans should be developed by the appropriate entities whose interest, authority, or responsibility encompass each action and in coordination with the SWAP and its companion plans. Support provided by the SWG program will enable coordination and implementation of many projects identified under the SWAP.

SWAP 2015 is an adaptive plan that will continually be updated, revised, and improved, based on the input and deliberations of all those involved in wildlife conservation. Working together, Californians can shape a future with abundant wildlife, outstanding biodiversity, and healthy ecosystems that define the state and provide for the inspiration, recreation, sustenance, and livelihood of its residents and visitors for current and coming generations.

North Coast and Klamath Province

Table 1 Conservation Targets and Strategies for the North Coast and Klamath Province				
Target	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
American Southwest Riparian Forest and Woodland North Coastal and Montane Riparian Forest and Woodland	<p>Northern California Coast Ranges:</p> <ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired channel pattern are increased by at least 5% from 2015 acres/miles. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. <p>Northern California Coast:</p> <ul style="list-style-type: none"> By 2025, acres of habitat (riparian) are increased at least 5% from 2015 acres. By 2025, acres with desired endemic plant diversity (ground cover, shrubs, understory) are increased at least 5% from 2015 acres. By 2025, acres with native species dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired channel pattern (natural floodplain) are increased by at least 5% from 2015 acres/miles. By 2025, miles connected (to natural floodplain) are increased by at least 5% from 2015 miles. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres/miles with natural hydrologic regime (through management of water operations in the Eel, Klamath, Trinity, Mad, and Russian Rivers) has increased by at least 5% from 2015 acres/miles. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Successional dynamics Age class heterogeneity Hydrological regime 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Invasive plants/animals Housing and urban areas Livestock farming and ranching 	<ul style="list-style-type: none"> Partner Engagement Management Planning Direct Management Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education
Freshwater Marsh	<ul style="list-style-type: none"> By 2025, acres of freshwater emergent wetland habitat acre increased by at least 5% from 2015 acres. By 2025, miles of freshwater emergent wetland with native species dominant are increased by at least 5% from 2015 miles. By 2025, population abundance of key species (SGCN) is increased by at least 5% from 2015 population levels. By 2025, acres/miles of freshwater emergent wetland with desired inches of groundwater are increased by at least 5% from 2015. By 2025, acres of freshwater emergent wetland with suitable soil characteristics are increased by 5% from 2015 acres. By 2015, population of key species (beaver) is increased by at least 5% from 2015 population levels. By 2025, acres of freshwater emergent wetland with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired channel pattern (connected floodplains) are increased by at least 5% from 2015 acres/miles. By 2025, miles with desired level of discharge (mimicking natural flood frequency, seasonality, and magnitude) are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Successional dynamics Key species population levels Surface water flow regime 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Housing and urban areas Invasive plants/animals Livestock farming and ranching Other ecosystem modifications 	<ul style="list-style-type: none"> Management Planning Economic Incentives Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education
Pacific Northwest Conifer Forests	<ul style="list-style-type: none"> By 2025, acres of redwood habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity (multi-story canopy) are increased by at least 5% from 2015 acres. By 2025, acres/miles with natural hydrologic (udic) regime are increased by at least 5% from 2015 acres/miles. By 2025, acres with suitable soil characteristics (in wet meadows) are increased by at least 5% from 2015 acres. By 2025, acres with desired (late) stages of succession are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Successional dynamics Structural diversity Hydrological regime Soil and sediment deposition regime 	<ul style="list-style-type: none"> Agricultural and forestry effluents Avalanches Fire and fire suppression Introduced genetic material Invasive plants/animals Livestock farming and ranching Logging and wood harvesting Parasites/pathogens/diseases Roads and railroads Wood and pulp plantations 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Outreach and Education Training and Technical Assistance

Table 1 Conservation Targets and Strategies for the North Coast and Klamath Province (continued)				
Target	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
Pacific Northwest Subalpine Forest	<ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Successional dynamics Structural diversity Age class heterogeneity 	<ul style="list-style-type: none"> Climate change Fire and fire suppression Parasites/pathogens/diseases Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Environmental Review Land Use Planning Training and Technical Assistance
California Foothill and Valley Forests and Woodlands	<ul style="list-style-type: none"> By 2025, acres with desired endemic plant diversity are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity (oak recruitment) are increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired inches of groundwater are increased by at least 5% from 2015 acres/miles. 	<ul style="list-style-type: none"> Fire regime Successional dynamics Key species population levels Native versus non-native diversity Age class heterogeneity Soil and sediment deposition regime 	<ul style="list-style-type: none"> Fire and fire suppression Invasive plants/animals Livestock farming and ranching Recreational activities 	<ul style="list-style-type: none"> Partner Engagement Direct Management Economic Incentives Land Acquisition/ Easement/ Lease Outreach and Education
Alpine Vegetation	<ul style="list-style-type: none"> By 2025, acres connected are maintained within the ecoregion from 2015 acres. By 2025, acres of macrogroup (target) are maintained within the ecoregion from 2015 acres. By 2025, acres with desired plant diversity (species richness and subgroup/alliance diversity) are maintained within the ecoregion from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Diversity 	<ul style="list-style-type: none"> Climate Change Commercial and industrial areas Invasive plants/animals Livestock farming and ranching Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Outreach and Education Training and Technical Assistance
Fen (Peatlands) North Coastal and Montane Riparian Forest and Woodland Subalpine Aspen Forests and Pine Woodlands Western Upland Grasslands, Wet Mountain Meadow	<ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with native species dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired channel pattern are increased by at least 5% from 2015 acres/miles. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Successional dynamics Native versus non-native diversity Hydrological regime 	<ul style="list-style-type: none"> Fire and fire suppression Invasive plants/animals Logging and wood harvesting 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management Environmental Review Law and Policy Outreach and Education
Subalpine Aspen Forests and Pine Woodlands	<ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, acres connected are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Connectivity among communities and ecosystems Successional dynamics Age class heterogeneity Soil and sediment deposition regime 	<ul style="list-style-type: none"> Fire and fire suppression Logging and wood harvesting Parasites/pathogens/diseases 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management Environmental Review Law and Policy Outreach and Education

North Coast and Klamath Province

Table 1 Conservation Targets and Strategies for the North Coast and Klamath Province (continued)				
Target	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
Montane Upland Deciduous Scrub	<ul style="list-style-type: none"> By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, connected montane shrubland and grassland acres are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres with suitable soil characteristics are increased by 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Fire regime Connectivity among communities and ecosystems Successional dynamics Age class heterogeneity 	<ul style="list-style-type: none"> Housing and urban areas Logging and wood harvesting Fire and fire suppression 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management Environmental Review Law and Policy Outreach and Education
Native Aquatic Species Assemblages/Communities	<ul style="list-style-type: none"> By 2025, miles of streams with target amphibian population are increased by at least 5% from 2015 miles. By 2025, miles of streams with target fish population are increased by at least 5% from 2015 miles. By 2025, population of key species are increased by at least 5% from 2015 population. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, acres/miles with desired concentrations of pollutants are increased by at least 5% from 2015 acres/miles. By 2025, acres/miles with total dissolved solids are decreased by at least 5% from 2015 acres. By 2025, miles with desired stream stage (flow) are increased by at least 5% from 2015 miles. By 2025, acres/miles with desired temperature are increased by at least 5% from 2015 acres/miles. 	<ul style="list-style-type: none"> Area and extent of community Key species population levels Native versus non-native diversity Soil and sediment deposition regime Surface water flow regime Water temperatures and chemistry Pollutant concentrations and dynamics 	<ul style="list-style-type: none"> Agricultural and forestry effluents Annual and perennial non-timber crops Dams and water management/use Fire and fire suppression Garbage and solid waste Household sewage and urban waste water Housing and urban areas Fishing and harvesting aquatic resources Livestock farming and ranching Industrial and military effluents Introduced genetic material Invasive plants/animals Logging and wood harvesting Marine and freshwater aquaculture Mining and quarrying Parasites/pathogens/diseases Renewable energy Roads and railroads 	<ul style="list-style-type: none"> Direct Management Economic Incentives Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education

¹ Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 2 Conservation Targets and Strategies for the Cascades and Modoc Plateau Province				
Target	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
North Coastal Mixed Evergreen and Montane Forests	<ul style="list-style-type: none"> By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, miles with desired level of water yield are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Fire regime Successional dynamics Native versus non-native diversity Age class heterogeneity Hydrological regime 	<ul style="list-style-type: none"> Fire and fire suppression Livestock farming and ranching Logging and wood harvesting Renewable energy Utility and service lines 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education
Western Upland Grasslands	<ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity (remove in-growth trees from within grassland habitats) are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Successional dynamics Native versus non-native diversity 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Fire and fire suppression Invasive plants/animals Livestock farming and ranching Logging and wood harvesting 	<ul style="list-style-type: none"> Data Collection and Analysis Direct Management Economic Incentives Land Acquisition/ Easement/ Lease Land Use Planning Law and Policy
Big Sagebrush Scrub Great Basin Dwarf Sagebrush Scrub Great Basin Upland Scrub	<ul style="list-style-type: none"> By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres with suitable soil characteristics are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Successional dynamics Native versus non-native diversity Soil and sediment deposition regime 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Fire and fire suppression Housing and urban areas Invasive plants/animals Livestock farming and ranching Parasites/pathogens/diseases Recreational activities Renewable energy Utility and service lines 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Law and Policy Outreach and Education
Great Basin Pinyon-Juniper Woodland	<ul style="list-style-type: none"> By 2025, acres with desired native species dominance and desired structural diversity are increased by at least 5% within the presettlement range of pinyon-juniper and juniper habitats in the ecoregion. By 2025, acres of desired successional stage are increased by at least 5% from presettlement habitat acreage. By 2025, acres with desired fire return interval are increased by at least 5% from 2015 levels. 	<ul style="list-style-type: none"> Fire regime Successional dynamics Structural diversity Native versus non-native diversity 	<ul style="list-style-type: none"> Climate change Fire and fire suppression Invasive plants/animals Livestock farming and ranching Other ecosystem modifications 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management
Eagle Lake Native Fish Assemblage	<ul style="list-style-type: none"> By 2025, miles of streams with target fish population (Eagle Lake Rainbow Trout - ELRT) are increased by at least 5% from 2015 miles. By 2025, miles of river with native species dominant are increased by at least 5% from 2015 miles. By 2025, population of key species (ELRT) are increased by at least 5% from the 2015 population size. By 2025, acres with desired genetic connectivity between lower Pine Creek and lake populations during spawning and migration period are increased by at least 5% from 2015 acres. By 2025, miles connected are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Key species population levels Native versus non-native diversity Hydrological regime Soil and sediment deposition regime Surface water flow regime Water level fluctuations 	<ul style="list-style-type: none"> Dams and water management/use Introduced genetic material Invasive plants/animals Livestock farming and ranching Logging and wood harvesting Roads and railroads 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Law and Policy Outreach and Education
Goose Lake Native Fish Assemblage	<ul style="list-style-type: none"> By 2025, acres connected are increased by at least 5% from 2015 acres by improving access to habitat in all lake tributaries and enhancing fish passage. By 2025, populations of key species are increased by at least 5% from 2015 population size. By 2025, miles of river in Pine and Davis Creeks with native species dominant are increased by at least 5% from 2015 miles. By 2025, miles connected between stream and lake populations during spawning and migration period are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Key species population levels Endemic diversity Native versus non-native diversity Hydrological regime Soil and sediment deposition regime Surface water flow regime Water temperatures and chemistry Water level fluctuations Nutrient concentration and dynamics 	<ul style="list-style-type: none"> Dams and water management/use Introduced genetic material Invasive plants/animals Livestock farming and ranching Logging and wood harvesting Roads and railroads 	<ul style="list-style-type: none"> Data Collection and Analysis Direct Management Law and Policy Outreach and Education

¹ Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Bay Delta and Central Coast Province

Table 3 Conservation Targets and Strategies for the Bay Delta and Central Coast Province				
Target	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
American Southwest Riparian Forest and Woodland	<ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres of riparian habitat in the Central Coast Ecoregion. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, miles connected are increased by at least 5% from 2015 miles of riparian habitat. By 2025, miles with desired level of discharge are increased by at least 5% from 2015 miles. By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres of riparian habitat. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Age class heterogeneity Water level fluctuations 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Invasive plants/animals Livestock farming and ranching Roads and railroads 	<ul style="list-style-type: none"> Direct Management Land Acquisition/ Easement/ Lease Outreach and Education
California Grassland, Vernal Pools, and Flowerfields	<ul style="list-style-type: none"> By 2025, acres of grassland habitat restored are increased by at least 5% from 2015 acres. By 2025, acres of vernal pool habitat restored are increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres by treatment with managed grazing. By 2025, population of key species (spadefoot toad) is increased by at least 5% from 2015 population levels. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres by reducing encroachment of coyote bush/coastal scrub into grassland. By 2025, miles with desired stream stage are increased by at least 5% from 2015 miles through length of hydroperiod. By 2025, miles with desired level water quality are increased by at least 5% from 2015 miles by meeting standards of Basin Plan. 	<ul style="list-style-type: none"> Area and extent of community Successional dynamics Key species population levels Native versus non-native diversity Surface water flow regime 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Commercial and industrial areas Fire and fire suppression Housing and urban areas Invasive plants/animals Livestock farming and ranching Renewable energy Roads and railroads 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management Land Acquisition/ Easement/ Lease Land Use Planning
Coastal Sage Scrub Northwest Coast Cliff and Outcrop Coastal Dune and Bluff Scrub North Coast Deciduous Scrub and Terrace Prairie	<ul style="list-style-type: none"> By 2025, acres with desired structural diversity are increased at least 5% from 2015 acres. By 2025, acres connected are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres with suitable soil characteristics are increased by 5% from 2015 acres. By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Connectivity among communities and ecosystems Structural diversity Native versus non-native diversity Soil and sediment deposition regime 	<ul style="list-style-type: none"> Air-borne pollutants Annual and perennial non-timber crops Climate change Commercial and industrial areas Fire and fire suppression Housing and urban areas Invasive plants/animals Roads and railroads Tourism and recreation areas 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Environmental Review Land Acquisition/ Easement/ Lease Land Use Planning Law and Policy
Coastal Lagoons	<ul style="list-style-type: none"> By 2025, area (miles/acres) with desired nutrient load (TMDL) are increased by at least 5% from 2015 area (miles/acres). By 2025, acres of lagoon habitat are increased by at least 5% from 2015 acres. By 2025, acres of connected lagoon habitat are increased by at least 5% from 2015 acres. By 2025, miles with desired level of discharge (water level) are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Surface water flow regime Nutrient concentrations and dynamics 	<ul style="list-style-type: none"> Agricultural and forestry effluents Annual and perennial non-timber crops Climate change Commercial and industrial areas Dams and water management/use Fire and fire suppression Garbage and solid waste Housing and urban areas Housing sewage and urban waste water Livestock farming and ranching Other ecosystem modifications Recreational activities Roads and railroads Tourism and recreation areas Wood and pulp plantations 	<ul style="list-style-type: none"> Data Collection and Analysis Direct Management Land Acquisition/ Easement/ Lease Law and Policy Training and Technical Assistance
Salt Marsh	<ul style="list-style-type: none"> By 2025, miles with desired level of water quality are increased by at least 5% from 2015 miles. By 2025, acres of habitat (salt-marsh habitat) are increased by at least 5% from 2015 acres. By 2025, acres with desired genetic connectivity are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity are increased at least 5% from 2015 acres. By 2025, acres connected are increased by at least 5% from 2015 acres. By 2025, acres of habitat (salt-marsh habitat by providing high-tide refugia for sensitive species) are increased by at least 5% from 2015 acres. By 2025, miles with desired level of water yield (consistent with the Bay-Delta Water Quality Control Plan requirements) are increased by at least 5% from 2015 miles. By 2025, improve water quality in the San Francisco Bay Delta by meeting Total Maximum Daily Load requirements for organic and inorganic pollutants. By 2025, miles with desired level water quality are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Successional dynamics Structural diversity Diversity Native versus non-native diversity Soil and sediment deposition regime Pollutant concentrations and dynamics Water level fluctuations 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Commercial and industrial areas Dams and water management/use Fishing and harvesting aquatic resources Housing and urban areas Hunting and collecting terrestrial animals Invasive plants/animals Livestock farming and ranching Recreational activities Roads and railroads Shipping lanes 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education

¹ Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 4 Conservation Targets and Strategies for Central Valley and Sierra Nevada Province				
Target	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
American Southwest Riparian Forest and Woodland	<ul style="list-style-type: none"> By 2025, acres of functional riparian habitat are increased by at least 5% from 2015 acres. By 2025, acres connected riparian habitat are increased by at least 5% from 2015 acres. By 2025, acres/miles with natural hydrologic regime have increased by at least 5% from 2015 acres/miles. By 2025, acres/miles with total dissolved solids (meeting TMDL) are decreased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Hydrological regime Soil and sediment deposition regime Surface water flow 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Housing and urban areas Invasive plants/animals Livestock farming and ranching Recreational activities Roads and railroads Utility and service lines 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management Outreach and Education Land Acquisition/ Easement/ Lease Law and Policy
Chaparral Desert Transition Chaparral Montane Chaparral California Foothill and Coastal Rock Outcrop Vegetation	<ul style="list-style-type: none"> By 2025, acres of macrogroup habitat (target) are maintained or increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant is increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, acres with desired connectivity are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Connectivity among communities and ecosystems Successional dynamics Structural diversity Native versus non-native species 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Climate change Fire and fire suppression Housing and urban areas Invasive plants/animals Renewable energy 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Land Acquisition/ Easement/ Lease
California Foothill and Valley Forests and Woodlands	<ul style="list-style-type: none"> By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, populations of key species (oaks) are increased by at least 5% from 2015 population. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, miles with desired level of water yield are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Fire regime Successional dynamics Key species population levels Native versus non-native species Age class heterogeneity Soil and sediment deposition regime 	<ul style="list-style-type: none"> Fire and fire suppression Invasive plants/animals Livestock farming and ranching Recreational activities 	<ul style="list-style-type: none"> Direct Management Partner Engagement Economic Incentives Land Acquisition/ Easement/ Lease Outreach and Education
North Coastal Mixed Evergreen and Montane Conifer Forests	<ul style="list-style-type: none"> By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, acres with desired age class heterogeneity (increase rotation age) are increased by at least 5% from 2015 acres. By 2025, acres of habitat (with increased recruitment of oaks, aspen, and shrubs) are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired water yield are increased by at least 5% from 2015 acres/miles. 	<ul style="list-style-type: none"> Fire regime Successional dynamics Native versus non-native species Age class heterogeneity Hydrological regime 	<ul style="list-style-type: none"> Fire and fire suppression Livestock farming and ranching Logging and wood harvesting Renewable energy Utility and service lines 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education
Alpine Vegetation	<ul style="list-style-type: none"> By 2025, acres connected are maintained within the ecoregion from 2015 acres. By 2025, acres of macrogroup (target) are maintained within the ecoregion from 2015 acres. By 2025, acres with desired plant diversity (species richness and subgroup/alliance diversity) are maintained within the ecoregion from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Diversity 	<ul style="list-style-type: none"> Climate change Commercial and industrial areas Invasive plants/animals Livestock farming and ranching Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Outreach and Education Training and Technical Assistance
Pacific Northwest Subalpine Forest	<ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Successional dynamics Structural diversity Age class heterogeneity 	<ul style="list-style-type: none"> Climate change Fire and fire suppression Parasites/pathogens/diseases Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Environmental Review Land Use Planning Training and Technical Assistance

Central Valley and Sierra Nevada Province

Table 4 Conservation Targets and Strategies for Central Valley and Sierra Nevada Province (continued)				
Target	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
Fen (Peatlands)	<ul style="list-style-type: none"> By 2025, acres of habitat (meadows) are increased by at least 5% from 2015 acres. By 2025, populations of key species (hydrophilic vegetation for SGCNs) are increased by at least 5% from 2015 population. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres/miles with a natural hydrologic regime have increased by at least 5% from acres/miles. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres with suitable soil characteristics (reduced sediment input) are increased by at least 5% from 2015 acres. By 2025, miles with desired level of discharge are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Connectivity among communities and ecosystems Key species population levels Endemic diversity Soil and sediment deposition regime Water level fluctuations 	<ul style="list-style-type: none"> Agricultural and forestry effluents Annual and perennial non-timber crops Dams and water management/use Fire and fire suppression Housing and urban areas Hunting and collection of terrestrial animals Industrial and military effluents Invasive plants/animals Livestock farming and ranching Logging and wood harvesting Mining and quarrying Parasites/pathogens/diseases Recreational activities Roads and railroads Tourism and recreation areas 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management Land Acquisition/ Easement/ Lease Outreach and Education
Clear Lake Native Fish Assemblage	<ul style="list-style-type: none"> By 2025, acres of habitat (wetland) are increased by at least 5% from 2015 acres. By 2025, acres of habitat (riparian) are increased by at least 5% from 2015 acres. By 2025, populations of key species (tule perch, prickly sculpin, and Clear Lake hitch) are increased by at least 5% from 2015 population. By 2025, miles of river with native species dominant are increased by at least 5% from 2015 miles. By 2025, water flow of Adobe, Scotts, Middle, Kelsey, Cole creeks in Lake County are increased by at least 5% during spring and early summer season so that native fish species could better migrate in these creeks. By 2025, miles with desired stream stage (in Adobe, Scotts, Middle, Kelsey, Cole creeks in Lake Co. during spring and early summer season) are increased by at least 5% from 2015 miles. By 2025, miles with desired level water quality are increased by at least 5% from 2015 miles. By 2025, acres/miles with desired channel pattern are increased by at least 5% from 2015 acres/miles. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Key species population levels Structural diversity Diversity Native versus non-native species Endemic diversity Soil and sediment deposition regime Surface water flow regime Pollutant concentration and dynamics Nutrient concentrations and dynamics 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Invasive plants/animals Mining and quarrying Recreational activities 	<ul style="list-style-type: none"> Partner Engagement Direct Management Economic Incentives Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education
Goose Lake Native Fish Assemblage	<ul style="list-style-type: none"> By 2025, acres connected are increased by improving access to habitat in all lake tributaries, by at least 5% from 2015 acres. By 2025, populations of key species are increased, by at least 5% from 2015 population. By 2025, miles of river in Pine and Davis Creeks with native species dominant are increased by at least 5% from 2015 miles. By 2025, miles connected between stream and lake populations during spawning and migration period are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Key species population levels Native versus non-native species Endemic diversity Soil and sediment deposition regime Surface water flow regime Water temperature and chemistry Nutrient concentrations and dynamics Water level fluctuations 	<ul style="list-style-type: none"> Dams and water management/use Introduced genetic material Invasive plants/animals Livestock farming and ranching Logging and wood harvesting Roads and railroads 	<ul style="list-style-type: none"> Direct Management Law and Policy Outreach and Education
Carson River Native Fish Assemblage	<ul style="list-style-type: none"> By 2025, miles of streams with target fish population are increased by at least 5% from 2015 miles in the Carson River basin. By 2025, miles with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired concentrations of pollutants are increased by at least 5% from 2015 acres/miles (consistent with TMDL). By 2025, acres/miles with total dissolved solids are decreased by at least 5% from 2015 acres. By 2025, miles with desired stream stage are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Native versus non-native species Age class heterogeneity Soil and sediment deposition regime Surface water flow regime Pollutant concentration and dynamics 	<ul style="list-style-type: none"> Dams and water management/use Fishing and harvesting aquatic resources Housing and urban areas Introduced genetic material Invasive plants/animals 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education Training and Technical Assistance

Table 4 Conservation Targets and Strategies for Central Valley and Sierra Nevada Province (continued)				
Target	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
Walker River Native Fish Assemblage	<ul style="list-style-type: none"> By 2025, miles of streams with target fish population (SGCNs) are increased by at least 5% from 2015 miles. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, miles connected (i.e., past barriers) are increased by at least 5% from 2015 miles. By 2025, miles with desired stream stage (mimics natural hydrograph) are increased by at least 5% from 2015 miles. By 2025, miles with desired level of water quality (meeting TMDL standards) are increased by at least 5% from 2015 miles. By 2025, miles with desired age class heterogeneity are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Hydrological regime Soil and sediment deposition regime Surface water flow regime Water quality 	<ul style="list-style-type: none"> Dams and water management/use Introduced genetic material Invasive plants/animals Livestock farming and ranching Roads and railroads 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Law and Policy Outreach and Education
San Joaquin Native Fish Assemblage	<ul style="list-style-type: none"> By 2025, miles connected native fish habitat are increased by at least 5% from 2015 miles. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, miles with desired level of water yield (flow) are increased by at least 5% from 2015 miles. By 2025, miles of streams with target fish population are increased by at least 5% from 2015 miles. By 2025, acres/miles of native fish habitat with desired temperature are increased by at least 5% from 2015 acres/miles. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Surface water flow regime Water temperature and chemistry 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Household sewage and urban waste water Housing and urban development Invasive plants/animals Marine and freshwater aquaculture Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management Law and Policy Outreach and Education
Upper Kern River Native Fish Assemblage	<ul style="list-style-type: none"> By 2025, miles of streams with target fish population are increased by at least 5% from 2015 miles. By 2025, miles with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired concentrations of pollutants are increased by at least 5% from 2015 acres/miles (consistent with TMDL). By 2025, acres/miles with total dissolved solids are decreased by at least 5% from 2015 acres. By 2025, miles with desired stream stage are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Native versus non-native species Age class heterogeneity Soil and sediment deposition regime Surface water flow regime 	<ul style="list-style-type: none"> Housing and urban areas Introduced genetic material Invasive plants/animals Livestock farming and ranching 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management Land Acquisition/ Easement/ Lease Outreach and Education Training and Technical Assistance

¹ Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

South Coast Province

Table 5 Conservation Targets and Strategies for the South Coast Province				
Target	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
California Grassland and Flowerfields	<ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres connected are increased by at least 5% from 2015 acres. By 2025, acres with desired endemic plant/animal diversity are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. By 2025, populations of key species are increased by at least 5% from 2015 population levels. By 2025, acres/miles with desired plant/animal diversity are increased by at least 5% from 2015 acres/miles. By 2025, acres with desired genetic connectivity are increased by at least 5% from 2015 acres. By 2025, acres/miles with natural hydrologic regime are increased by at least 5% from 2015 acres/miles. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Connectivity among communities and ecosystems Successional dynamics Key species population levels Endemic diversity Native versus non-native diversity Soil and sediment deposition regimes Nutrient concentrations and dynamics 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Climate change Fire and fire suppression Housing and urban areas Invasive plants/animals Livestock farming and ranching Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Land Acquisition/ Easement/ Lease
American Southwest Riparian Forest and Woodland	<ul style="list-style-type: none"> By 2025, area of the community is maintained or increased by at least 5% in every watershed throughout the ecoregion. By 2025, the amount of continuous riparian habitat is increased by at least 5% from 2015 levels. By 2025, the range of more than one riparian SGCN is maintained or increased by at least 5%. By 2025, the number of stream miles that display the full range of age classes and vegetation layers (herb, shrub, subtree, trees) are increased by at least 5% from 2015 levels. By 2025, miles of surface water flows, both ephemeral and permanent, are restored to mimic historic patterns (hydrographs) of flooding and low flow patterns by at least 5% from 2015 miles. By 2025, at least 5% of riparian habitat (acres) are dominated by native species. By 2025, greater than 5% of the riparian areas display functional connectivity. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Key species population levels Structural diversity Native versus non-native diversity Hydrological regime Surface water flow regime Water level fluctuations 	<ul style="list-style-type: none"> Avalanches/landslide Dams and water management/use Fire and fire suppression Garbage and solid waste Household sewage and urban waste water Housing and urban areas Invasive plants/animals Livestock farming and ranching Mining and quarrying (no strategies) Recreational activities (no strategies) Roads and railroads (no strategies) Tourism and recreation areas 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education
Native Fish Assemblage	<ul style="list-style-type: none"> By 2025, at least 5% more streams contain their historic native fish composition. By 2025, at least two more streams have improved connectivity. By 2025, increase by at least 5% the ratio of native fish to non-native fish in Big Tujunga Creek, Haines Creek, and the Santa Clara River mainstem. By 2025, all species and their life stages are present and commonly encountered during summer fish surveys within their currently known range. By 2025, suitable flows are released to maintain target populations below Big Tujunga and Cogswell dams. By 2025, maintain or increase by at least 5% a natural hydrologic regime in coastal lagoons that support target species. 	<ul style="list-style-type: none"> Connectivity among communities and ecosystems Native versus non-native diversity Age class heterogeneity Diversity Surface water flow regime Water level fluctuations 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Climate change Dams and water management/use Household sewage and urban waste water Housing and urban areas Invasive plants/animals Mining and quarrying Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Direct Management Land Acquisition/ Easement/ Lease Outreach and Education
South Coast Native Aquatic Herp Assemblage	<ul style="list-style-type: none"> By 2025, area occupied by assemblage is increased by at least 5% from 2015 levels. By 2025, all populations contain both juvenile (egg and tadpole) and adult life stages in adequate abundance to ensure population sustainability. By 2025, non-native invasive aquatic species will be reduced by at least 5% within sensitive amphibian habitat, and their source populations identified to aid recovery of native amphibians. By 2025, restore flow regimes to provide an increase by at least 5% in access to suitable habitat for native species. 	<ul style="list-style-type: none"> Area and extent of community Native versus non-native diversity Age class heterogeneity Surface water flow regime 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Climate change Housing and urban areas Invasive plants/animals Other ecosystem modifications Parasites/pathogens/diseases Recreational activities Roads and railroads 	<ul style="list-style-type: none"> Data Collection and Analysis Direct Management Land Acquisition/ Easement/ Lease Outreach and Education

¹ Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 6 Conservation Targets and Strategies for the Deserts Province				
Target	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
Big Sagebrush Scrub	<ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, acres where native species is dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Native versus non-native diversity Age class heterogeneity 	<ul style="list-style-type: none"> Fire and fire suppression Housing and urban areas Invasive plants/animals Parasites/pathogens/diseases 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management Economic Incentives Land Acquisition/ Easement/ Lease
Great Basin Pinyon-Juniper Woodland	<ul style="list-style-type: none"> By 2025, acres with desired native species dominance and desired structural diversity are increased by at least 5% within the presettlement range of pinyon-juniper and juniper habitats in the ecoregion. By 2025, acres of desired successional stage are increased by at least 5% from presettlement habitat area. By 2025, acres desired fire return are increased by at least 5% from 2015 levels. 	<ul style="list-style-type: none"> Fire regime Successional dynamics Structural diversity Native versus non-native diversity 	<ul style="list-style-type: none"> Climate change Fire and fire suppression Invasive plants/animals Livestock farming and ranching Other ecosystem modifications 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management
Shadscale-Saltbush Scrub	<ul style="list-style-type: none"> By 2025, at least 5% of the disturbed areas show signs of improved successional dynamics. By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired endemic plant/animal diversity are increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres connected are increased by at least 5% from 2015 acres. By 2025, acres/miles with natural hydrologic regime have increased by at least 5% from acres/miles. By 2025, acres with suitable soil characteristics are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Successional dynamics Endemic diversity Native versus non-native diversity Hydrological regime Soil and sediment deposition regime 	<ul style="list-style-type: none"> Airborne pollutants Annual and perennial non-timber crops Commercial and industrial areas Housing and urban areas Industrial and military effluents Invasive plants/animals Military activities Recreational activities Renewable energy Roads and railroads Utility and service lines 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Land Acquisition/ Easement/ Lease Outreach and Education Training and Technical Assistance
Desert Wash Woodland and Scrub	<ul style="list-style-type: none"> By 2025, acres of (desert wash) habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired endemic plant/animal diversity are increased at least 5% from 2015 acres. By 2025, population of key species (Couch's spadefoot) is increased by at least 5% from 2015 population levels. By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. By 2025, miles connected (desert wash habitat) are increased by at least 5% from 2015 miles. By 2025, miles with stable bank (desert wash) are increased by at least 5% from 2015 miles. By 2025, miles with desired stream stage (water volume and flow) are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Key species population levels Structural diversity Endemic diversity Soil and sediment deposition regime Surface water flow regime 	<ul style="list-style-type: none"> Commercial and industrial areas Dams and water management/use Housing and urban areas Military activities Mining and quarrying Recreational activities Renewable energy Roads and railroads Tourism and recreation areas Utility and service lines 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Land Use Planning Outreach and Education
Sparsely Vegetated Desert Dune	<ul style="list-style-type: none"> By 2025, acres of habitat free of invasive non-native species are increased by at least 5% from 2015 acres. By 2025, acres of habitat are maintained or increased by at least 5% from 2015 acres. By 2025, acres of habitat with suitable soil characteristics regimes are increased by at least 5% from 2015 acres. By 2025, acres of habitat with desired ground water levels are increased by at least 5% from 2015 acres. By 2025, acres of habitat with desired connectivity are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Hydrological regime Soil and sediment deposition regime 	<ul style="list-style-type: none"> Climate change Housing and urban areas Invasive plants/animals Livestock farming and ranching Recreational activities Renewable energy 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Land Use Planning
American Southwest Riparian Forest and Woodland	<ul style="list-style-type: none"> By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres of target habitat are increased by at least 5% from 2015 acres. By 2025, miles with desired stream stage are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Native versus non-native diversity Surface water flow regime 	<ul style="list-style-type: none"> Invasive plants/animals Parasites/pathogens/diseases 	<ul style="list-style-type: none"> Data Collection and Analysis Direct Management Land Use Planning
High Desert Wash and "Rangeland" Scrub	<ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Successional dynamics Structural diversity Native versus non-native diversity 	<ul style="list-style-type: none"> Climate change Fire and fire suppression Invasive plants/animals Livestock farming and ranching Mining and quarrying Renewable energy 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management
Great Basin Upland Scrub	<ul style="list-style-type: none"> By 2025, acres with desired structural diversity are increased at least 5% from 2015 acres. By 2025, miles of river with native species dominant are increased by at least 5% from 2015 miles. 			

Table 6 Conservation Targets and Strategies for the Deserts Province (continued)				
Target	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
Mojave and Sonoran Desert Scrub	<ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres connected are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, populations of key species are increased by at least 5% from 2015 population. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Successional dynamics Key species population levels Native versus non-native diversity Weather regime 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Housing and urban areas Invasive plants/animals Renewable energy Roads and railroads Utility and service lines 	<ul style="list-style-type: none"> Partner Engagement Management Planning Land Acquisition/ Easement/ Lease Land Use Planning Outreach and Education Training and Technical Assistance
Walker River Native Fish Assemblage	<ul style="list-style-type: none"> By 2025, miles of streams with target fish population (SGCNs) are increased by at least 5% from 2015 miles. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, miles connected (i.e., past barriers) are increased by at least 5% from 2015 miles. By 2025, miles with desired stream stage (mimics natural hydrograph) are increased by at least 5% from 2015 miles. By 2025, miles with desired level of water quality (meeting TMDL standards) are increased by at least 5% from 2015 miles. By 2025, miles with desired age class heterogeneity are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Hydrological regime Soil and sediment deposition regime Surface water flow regime Water quality 	<ul style="list-style-type: none"> Dams and water management/use Introduced genetic material Invasive plants/animals Livestock farming and ranching Roads and railroads 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Law and Policy Outreach and Education
Cienegas	<ul style="list-style-type: none"> By 2025, acres of cienegas habitat are increased by at least 5% from 2015 acres. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, acres with desired fire regime (frequent low-intensity fire) are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired inches of groundwater (stable depth) are increased by at least 5% from 2015 acres/miles. 	<ul style="list-style-type: none"> Area and extent of community Fire regime Native versus non-native diversity Hydrological regime 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Earthquakes/tsunami Fire and fire suppression Housing and urban areas Introduced genetic material Invasive plants/animals Livestock farming and ranching Parasites/pathogens/diseases Renewable energy 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management Land Acquisition/ Easement/ Lease Outreach and Education
Springs and Spring Brooks	<ul style="list-style-type: none"> By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, miles connected are increased by at least 5% from 2015 miles. By 2025, acres/miles with desired inches of groundwater are increased by at least 5% from 2015 acres/miles. By 2025, acres/miles with desired water yield are increased by at least 5% from 2015 acres/miles. By 2025, acres with suitable soil characteristics are increased by 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Successional dynamics Native versus non-native diversity Hydrological regime Soil and sediment deposition regime Surface water flow regime Water quality 	<ul style="list-style-type: none"> Commercial and industrial areas Dams and water management/use Introduced genetic material Invasive plants/animals Livestock farming and ranching Marine and freshwater aquaculture Recreational activities Renewable energy 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Land Acquisition/ Easement/ Lease Outreach and Education
Anthropogenically Created Aquatic Features	<ul style="list-style-type: none"> By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired genetic connectivity are increased (between Salton Sea drains) by at least 5% from 2015 acres. By 2025, miles with stable bank are increased by at least 5% from 2015 miles. By 2025, miles with desired stream stage (mimic natural flow hydrograph) are increased by at least 5% from 2015 miles. 	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Soil and sediment deposition regime Surface water flow regime Water quality 	<ul style="list-style-type: none"> Agricultural and forestry effluents Dams and water management/use Invasive plants/animals Marine and freshwater aquaculture Recreational activities Renewable energy Roads and railroads 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management Land Use Planning Law and Policy Outreach and Education

¹ Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 7 Summary of Conservation Targets and Strategies for the Marine Province				
Target*	Goals	Key Ecological Attributes (KEAs)	Pressures ¹	Strategy Categories
Embayments Estuaries Lagoons	<ul style="list-style-type: none"> By 2025, in coordination with partners, area of target is increased by at least 5% (with 5% of this area available as buffer for sea level rise). By 2025, increase reproductive success of native shorebirds by at least 5%, increase native oyster populations by at least 5%, and reduce invasive species populations by at least 5%, as indicators of improved community structure in the embayments, estuaries, lagoons ecosystems. By 2025, protect at least 5% more shorebird habitats to secure high quality embayments, estuaries, lagoons ecosystems. By 2025, native seagrass (eelgrass) bed acreage is increased by at least 5%. (Will result in an increase in floating vegetation) By 2025, in coordination with partners, surface water flow (both ephemeral and permanent) is increased by at least 5% into embayments, estuaries, lagoons. By 2025, in coordination with State Water Boards and other partners, improve the water quality of tributaries that flow into embayments, estuaries, lagoons by meeting at least 5% of the TMDLs. By 2025, in coordination with partners, at least 5% of the embayment, estuary, and lagoon water bodies improve circulation and hydro-connectivity so that key ecological processes are restored, for example, nutrient and other chemical mixings in the water body are functioning better and improved tidal marsh evolutions are experienced throughout the target. By 2025, in coordination with State Water Boards and other partners, the water quality standards for at least 5% of embayment, estuary, and lagoon water bodies are met. By 2025, in coordination with State Water Boards and other partners, the sediment quality objectives for at least 5% of the embayment, estuary, and lagoon water bodies are met. 	<ul style="list-style-type: none"> Area and extent of community Community structure and composition (e.g., key species population levels, age class structure, biodiversity, endemic diversity, native versus non-native diversity) Connectivity among communities and ecosystems Biogenic habitat Hydrologic characteristics (e.g., flow coming into and out of target) Quantity of sediment delivered into target (sediment deposition) Circulation and connectivity within target Water quality Sediment quality 	<ul style="list-style-type: none"> Agricultural and forestry effluents Airborne pollutants Climate change Dams and water management/use Fishing, harvesting, and collecting aquatic resources Garbage and solid waste Household sewage and urban wastewater (urban runoff) Housing and urban areas, commercial and industrial areas (shoreline development) Hunting and collecting terrestrial animals Industrial and military effluents (hazardous spills) Industrial and military effluents, household sewage and urban wastewater (point discharge) Invasive plants/animals Logging and wood harvesting Marine and freshwater aquaculture Other ecosystem modifications (modification of mouth/channels, ocean/estuary water diversion/control, artificial structures) Parasites/pathogens/diseases Recreational activities Shipping lanes (ballast water) 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Environmental Review Land Acquisition/ Easement/ Lease Land Use Planning Law and Policy Outreach and Education Training and Technical Assistance

* Conservation strategies were only developed for the embayments, estuaries, lagoon target. Strategies for other marine conservation targets will be developed in the future.

¹ Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 8 Conservation Targets and Strategies for Anadromous Fish		
Geography	Conservation Target	Conservation Strategy (Implementation by 2025)
Statewide	In-river spawning and rearing habitat	<ul style="list-style-type: none"> Document range and distribution of spawning and rearing habitat. Enhance and protect key spawning and rearing habitat for each specific anadromous species. <ul style="list-style-type: none"> Promote restoration actions that focus on ecological processes and climate change resilience.
	River flow	<ul style="list-style-type: none"> Identify annual flow regimes necessary for migration, rearing, and spawning of each anadromous species. Develop water management and conservation plans necessary to conserve anadromous fishes. <ul style="list-style-type: none"> Implement water management and conservation plans.
	Wetland habitat	<ul style="list-style-type: none"> Identify current condition of riparian and marsh habitat associated with anadromous species. Restore marsh and riparian habitat to improve carrying capacity of anadromous fishes. <ul style="list-style-type: none"> Protect key areas necessary to maintain viable populations.
North Coast and North Central Coast	California Anadromous Salmonid Stronghold Watersheds	<ul style="list-style-type: none"> Establish collaborative working groups for each Stronghold (Smith, Mattole, and South Fork Eel rivers). Assess ecological and human activities conditions that are allowing for healthy fish populations. <ul style="list-style-type: none"> Establish technical, agency, and financial support to maintain and expand ecological and human conditions supporting strong salmon and steelhead populations.
	Coastal estuaries	<ul style="list-style-type: none"> Evaluate current condition and estuarine needs for coho salmon, eulachon, longfin smelt in key estuaries (i.e., Smith, Klamath, and Eel rivers and Humboldt Bay). Restore and enhance estuary habitat and processes essential for anadromous species. <ul style="list-style-type: none"> Establish estuary function and structure that will allow anadromous migration and be responsive to climate change.
	Russian River	<ul style="list-style-type: none"> Restore and enhance estuary and river habitat necessary to support viable populations of all listed anadromous fishes (i.e., Chinook salmon, coho salmon, steelhead, green sturgeon). Develop and implement water management plan to ensure Russian River fisheries and land use are compatible. <ul style="list-style-type: none"> Expand Warm Springs Hatchery complex to function as a potential regional conservation facility for coho salmon and other listed species in the North-Central Domain.
Klamath-Trinity Rivers Basin	Pacific lamprey	<ul style="list-style-type: none"> Establish standing committee to implement interstate/intertribal 2012 Pacific lamprey conservation agreement. Implement habitat restoration and monitoring programs. <ul style="list-style-type: none"> Secure funding specific for conserving Pacific lamprey in the Klamath/Trinity Rivers Basin.
	Ecological processes	<ul style="list-style-type: none"> Evaluate wood debris, gravel, and water cycling and transport mechanisms across the basins. Establish agreements and practices to ensure adequate ecological processes are maintained to support sustainable anadromous populations across the basins. <ul style="list-style-type: none"> Establish monitoring and evaluation programs to track ecological processes and functioning.
	Listed and at-risk salmonids	<ul style="list-style-type: none"> Establish standing inter-organizational team to implement federal and state recovery plans, the Trinity River Restoration Plan, and Klamath River Settlement. Integrate recovery actions with strategic hatchery management (e.g., Iron Gate and Trinity River facilities). <ul style="list-style-type: none"> Integrate sustainable river and tribal fisheries with establishing sustainable, natural populations of salmon and steelhead.
South-Central and Southern California Coasts	Steelhead trout populations	<ul style="list-style-type: none"> Establish a robust monitoring program to evaluate steelhead populations, habitat, and ecological processes. Secure additional funding necessary to pursue essential habitat recovery. <ul style="list-style-type: none"> Determine role of resident populations to recovery and sustainability of anadromous populations.
	Migration barriers	<ul style="list-style-type: none"> Remediate most downstream barriers to steelhead entering rivers and streams. Accelerate planning and remediation of rim dam barriers to key steelhead populations. <ul style="list-style-type: none"> Modify land use practices (e.g., water use, agriculture, recreation, urban and road development) to minimize effects on migration corridors.
	Water management	<ul style="list-style-type: none"> In addition to the statewide strategy, identify key streams and locations essential for over-summering juvenile and adult steelhead. Investigate ability and options to creating water banks for steelhead habitat. <ul style="list-style-type: none"> Update CDFW management and conservation plan to integrate modern water management, including drought and climate change parameters.
Central Valley	Pacific lamprey	<ul style="list-style-type: none"> Establish standing committee to implement interstate/intertribal 2012 Pacific lamprey conservation agreement. Implement habitat restoration and monitoring programs. <ul style="list-style-type: none"> Secure funding specific for conserving Pacific lamprey in the Central Valley.
	Sturgeon	<ul style="list-style-type: none"> Establish fisheries management and conservation plans for white and green sturgeon. Implement habitat restoration and monitoring programs. <ul style="list-style-type: none"> Secure funding specific for conserving sturgeon populations and fisheries in the Central Valley.
	Chinook salmon and steelhead	<ul style="list-style-type: none"> Establish biological production goals for each species, coupled with SMART ecological objectives, prioritized restoration actions, focused biotic and abiotic monitoring, and adaptive management planning framework that are developed and overseen by an established standing inter-organizational team to integrate activities of NMFS and CDFW recovery programs, Central Valley Program Improvement Act program, Bay Delta Conservation Plan, San Joaquin River Restoration program, and CDFW fisheries programs to establish sustained salmon and steelhead populations and fisheries. <ul style="list-style-type: none"> Revise and integrate hatchery practices of the six facilities in the Central Valley to maximize scientific standards, minimize effects of programs on natural spawning populations and river habitat, and promote healthy fisheries populations. Conduct rim dam re-introduction pilot projects on Yuba and Sacramento rivers and evaluate efficacy of expanding rearing and spawning habitats for recovery.

How to Use the State Wildlife Action Plan 2015 Update

SWAP 2015 provides an ecosystem approach for the conservation of California's fish and wildlife resources through the identification of strategies intended to address stresses experienced by SGCN and the habitats upon which they depend. The conservation strategies developed in this plan are designed to enhance or maintain the KEAs that define the natural qualities of conservation targets by reducing the pressures that cause ecosystem stresses. CDFW designed SWAP 2015 to guide resource managers, conservation partners, and the public in understanding how they can directly and indirectly participate in conserving California's precious natural heritage. The following guidance is offered in the use of SWAP 2015.

For resource managers, conservation partners, and members of the public who wish to more deeply investigate the data and biologist input behind the SWAP 2015 assessments and conservation strategies, the database files used to compile and evaluate ecological data and management information can be accessed at: <http://www.dfg.ca.gov/SWAP/>.

SWAP 2015 is organized as follows:

- **Chapter 1** provides an introduction to SWAP 2015. The challenge, CDFW responsibility, and vision for California wildlife conservation are described. Chapter 1 also explains the requirements for updating SWAP and summarizes major changes through the update, including the analytical approach used in the update.
- **Chapter 2** describes California's natural diversity, identifies SGCN and the criteria used to evaluate species and habitat conditions, and addresses major pressures and stresses currently affecting the SGCN and their habitats.
- **Chapter 3** describes the existing conservation approaches in the state, including the major regulations protecting natural resources, CDFW planning tools, and major conservation programs.
- **Chapter 4** presents the statewide goals for SWAP 2015 and broad, state-level conservation strategies that will be implemented to achieve the desired conservation outcomes.
- **Chapter 5** is divided into seven sections that describe, at a province level, the conservation targets, SGCN and other focal species, KEAs, stresses, pressures, and conservation strategies including goals and objectives for the provinces.
- **Chapter 6** focuses on conservation strategies developed for anadromous fishes in California.
- **Chapter 7** describes how SWAP 2015 will be integrated with other programs and coordinated with partners for the implementation, including through companion plans.
- **Chapter 8** describes the monitoring plan for the conservation strategies, including the mandate for CDFW to use monitoring and adaptive management. It also presents a

Executive Summary

summary of the effectiveness evaluation of how SWAP 2005 was implemented. The chapter describes how the recommendations from the SWAP 2005 evaluation have been integrated into SWAP 2015. Rationales for selecting conservation strategies presented in SWAP 2015 and a framework for monitoring the effectiveness of the strategies are also described.

- ▲ **Chapter 9** provides the list of preparers of SWAP 2015.
- ▲ **Chapter 10** provides bibliographic references used in each chapter.
- ▲ **Chapter 11** provides a glossary of major terms used in SWAP 2015.
- ▲ **Several appendices** accompany SWAP 2015 to provide more detailed information and extensive tables that support the document.

Figure 1 below provides a “roadmap” to the document illustrating how SWAP 2015 is organized.

If questions arise regarding the use of SWAP 2015, please email SWAP@wildlife.ca.gov.

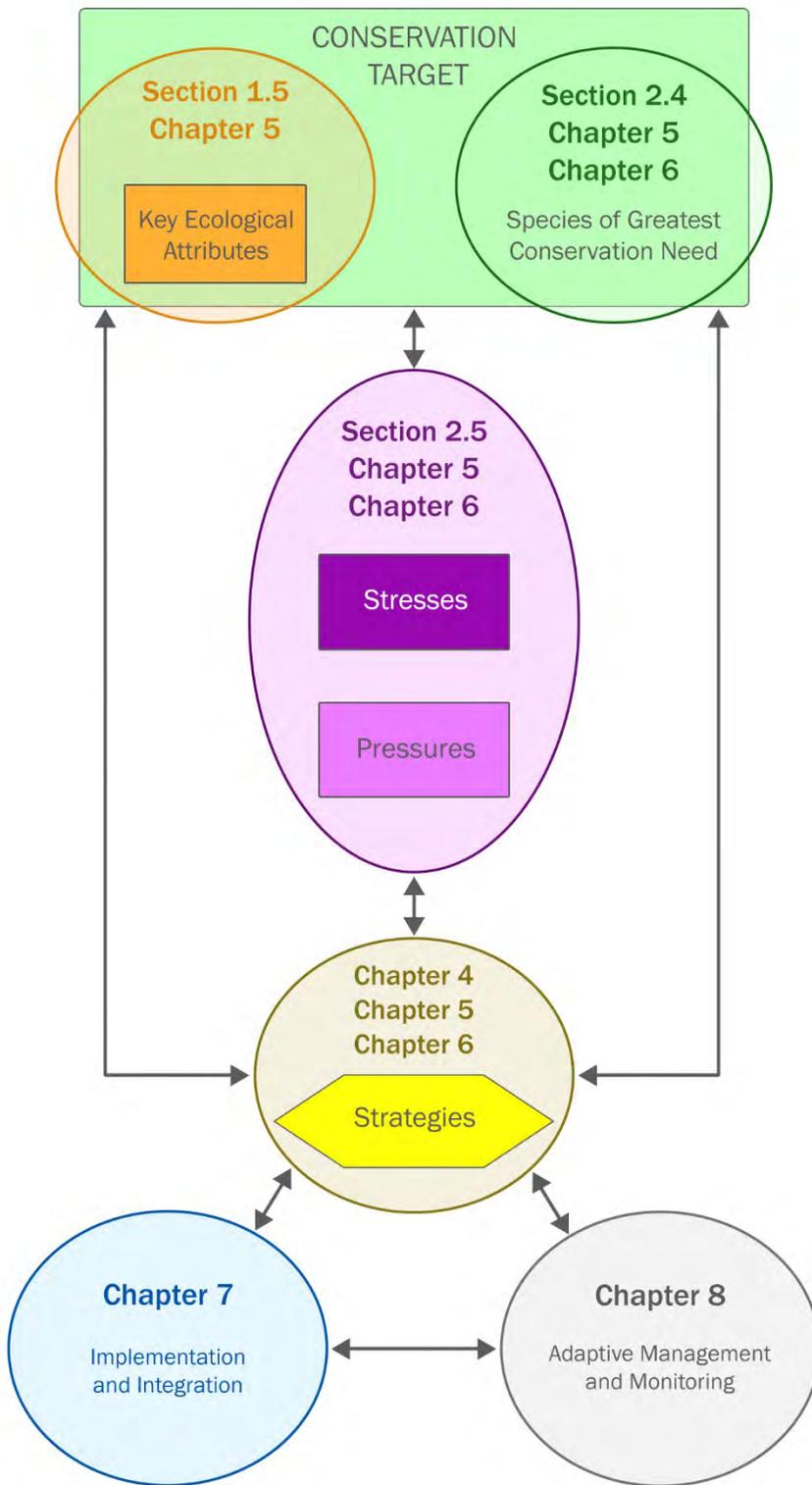


Figure 1 SWAP 2015 Organizational Roadmap

May 26, 2015

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

RE: 2015 State Wildlife Action Plan, Chapter 5.3 - Bay Delta-Central Coast

Dear Commissioners:

The draft 2015 State Wildlife Action Plan (SWAP) calls for a reduction in **legal** hunting, fishing, and harvesting of aquatic resources in the Bay Delta-Central Coast Region.

This language in the draft SWAP conflicts with documents presented in 2013 regarding the Bay Delta-Central Coast Region. In 2013, CDFW released a Fact Sheet for the Region that called for the reduction of **illegal** hunting, fishing, and harvesting of aquatic resources.

It seems that the original 2013 concept of reducing illegal take has morphed into a general reduction in hunting, fishing, harvesting in the draft 2015 SWAP.

In the past, the Commission and the Department have sought science-based decisions concerning the regulation of California's wildlife. To that end, I've submitted to CDFW a Public Records Act Request for any data, reports, or information that support a reduction of **legal** hunting in the Bay Delta-Central Coast Region.

I urge you to please ask the Department to amend the language of the draft 2015 SWAP to reflect the 2013 intent of reducing only illegal hunting, fishing, and harvesting.

Here's a link to the 2013 Fact Sheet that calls for a reduction the illegal consumptive uses:

<https://nrm.dfg.ca.gov/FileHandler.a...79077&inline=1>

Here's where you can find the reductions to legal hunting and fishing in the 2015 SWAP:

<https://nrm.dfg.ca.gov/FileHandler.a...=100044&inline>

Chapter 5.3 – Bay Delta and Central Coast

Page 5.3-21 Table 5.3-4 – Key Pressures on Conservation Targets

Page 5.3-47 Conservation Strategies

Intended pressure(s) reduced: Recreational activities; hunting and collecting terrestrial animals; fishing and harvesting aquatic resources

Page 5.3-49 Conservation Strategy 7 (Management Planning)

Intended pressure(s) reduced: Dams and water management/use; shipping lanes; roads and railroads; recreational activities; hunting and collecting terrestrial animals; fishing and harvesting aquatic resources.

P 5.3-49 Conservation Strategy 8 (Partner Engagement):

Intended pressure(s) reduced: Dams and water management/use; shipping lanes; roads and railroads; recreational activities; hunting and collecting terrestrial animals; fishing and harvesting aquatic resources.

Page 5.3-50 Table 5.3-9 Stresses and Pressures for North American Pacific Coastal Salt Marsh

Hunting and Collecting terrestrial animals and Fishing & Harvesting aquatic resources are listing as pressures.

Page 5.3-51 Table 5.3-10 Conservation Targets and Strategies for the Bay Delta and Central Coast Province

Hunting and Collecting terrestrial animals and Fishing & Harvesting aquatic resources are listed as pressures.

Thank you.

Best Regards,
/s/
Scott McMorrow
Inverness, CA