

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

Amend Section 29.15
Title 14, California Code of Regulations
Re: Abalone

I. Date of Initial Statement of Reasons (ISOR): April 26, 2013

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: April 17, 2013
 Location: Santa Rosa, California

(b) Discussion Hearing: Date: May 22, 2013
 Location: Los Angeles, California

(c) Adoption Hearing: Date: June 26, 2013
 Location: Sacramento, California

III. Description of Regulatory Action:

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

Present Regulations

Under existing law, red abalone (abalone) may be taken for recreational purposes with a sport fishing license and an abalone report card subject to regulations approved by the Fish and Game Commission (Commission). Current regulations specify season, size limit, bag and possession limit, annual limit, closed fishing areas, and hours and methods of take for abalone. The proposed regulation change would amend Title 14, California Code of Regulations (CCR), Section 29.15 beginning with the 2014 fishing season which opens April 1.

Proposed Regulations

The proposed regulation change is in response to recent declines in red abalone populations and the guidelines in the Abalone Recovery and Management Plan (ARMP), adopted by the Commission in 2005. Management is based on the average abalone density across eight index sites within Mendocino and Sonoma counties, surveyed by Department of Fish and Wildlife (Department) scientists. These eight index sites account for nearly half of all abalone caught by fishery participants. Recent scuba surveys indicate that the average density of emergent abalone (sublegal and legal sized) for the eight index sites has declined over the past six years (Figure 1).

In addition to increased fishing pressure prior to 2010, an unprecedented die-off of abalone occurred in late August 2011 along the Sonoma County coast. This mass-mortality event is thought to have been caused by a harmful algal bloom (red tide). Invertebrate populations in shallow water (less than 20 feet deep) were more heavily impacted than those in deeper water. Since most abalone fishers take abalone from shallow water, the abalone populations most affected by the die-off are also the ones most affected by the fishery. Concern over the impact of the die-off on Sonoma County abalone populations resulted in the expansion of the annual Department ARMP index site monitoring effort to complete surveys of all four Sonoma County index sites in 2012. Survey results show the large scale die-off coupled with the previous downward trend in density at the index sites, has reduced abalone densities in Sonoma County by 60 percent since the 2003-2007 survey cycle. The overall average density in the fishery has dropped below the threshold level of 0.50 abalone per meter square (m^2)⁽ⁱ⁾ at which the ARMP prescribes a reduction in the catch by 25 percent (Figure 2). In addition, abalone density at the Fort Ross site was below the threshold level of 0.25 abalone/ m^2 at which the ARMP calls for site closure (Figure 3).

Report card data indicate that Sonoma County sites, especially Fort Ross, have been the most heavily used sites due to their proximity to large population centers in the Bay Area and Central Valley (Figure 4). As a result of this fishing pressure and the 2011 mortality event, the average densities of Sonoma County sites are lower than Mendocino County sites (Figure 3) and reducing the catch for Sonoma County relative to the rest of the fishery is prudent. The proposed closure of Fort Ross will likely shift effort to other Sonoma County sites, which further underscores the advisability of specifically reducing the catch for Sonoma County.

Two-to-Six Year Site Closure: Fort Ross Area

The ARMP prescribes closure of sites that fall below the 0.25 abalone/ m^2 density threshold to allow local populations to recover to levels supporting sustainable fishing. This response to rapid declines in abundance will help to reduce the risk of further declines in the area. When a site is closed, the ARMP prescribes a reduction in the overall fishery to compensate for the subsequent shift in fishing effort. The overall fishery reductions proposed by the 5 options listed below satisfy this management action.

Beginning with the 2012 season, the Fort Ross area season was reduced to the months of June, and August through November, in response to increased fishing pressure and decreased densities of abalone at this site prior to 2010. The 2011 red-tide-induced mortality event further impacted this population so that the average density fell below 0.25 abalone/ m^2 in the 2012 surveys (Figure 3). Wildlife officers noted much less fishing activity in this area in 2012 because of lower densities and the difficulty finding legal-sized abalone. The Department is proposing site closure of the Fort Ross area for a period between two to six years. The Commission may select the duration of closure

i Abalone density of 0.50 abalone / m^2 is equivalent to 5,000 / hectare

within the two to six year range or may elect to close the site without specifying a sunset date.

Because abalone grow slowly, the density of adult abalone at a closed site would not be expected to dramatically increase until more than six years after a significant recruitment event. Significant recruitment events are rare and current information suggests they may occur approximately every 10 years. The most recent recruitment event measured by the Department was in 2005 at Van Damme State Marine Conservation Area. However, the spatial magnitude of this recruitment over the entire north coast is unknown. Because of the uncertainty of knowing when the next significant recruitment event may occur and its scale of contribution to recovery, estimating the time to reach current ARMP criteria for reopening a site is difficult and will require monitoring. Based on abalone growth rates, an approximation of the time to reach such levels is over 10 years.

The Department is committed to revising the ARMP during the next two to six years as the fishery transitions toward the long term, area-based, management plan. Under a long term management plan it is likely that new criteria for reopening a closed site will be incorporated under the revised ARMP at which time Fort Ross could be assessed for reopening. If the Fort Ross closure is adopted, the Department will continue to conduct surveys within this time frame to evaluate the status of the site relative to criteria that are in place for reopening a closed site. If the criteria have not been met a recommendation to the Commission to continue site closure will be made. The advisability of allowing the site to reopen will be evaluated by the Department under the criteria that are in place at the time the closure expires, and a recommendation will be prepared for the Commission's consideration. If the ARMP has undergone revision and new criteria are established, the Department will evaluate the Fort Ross conditions against those criteria; otherwise the current ARMP criteria will form the basis for the evaluation.

Pros

- Provides increased protection for an area which has fallen below the 0.25 abalone/m² threshold for site closure that is prescribed in the ARMP.
- Prevents abalone densities from falling to levels which would cause local abalone populations to experience reproductive impairment.
- Provides a respite from fishing for an area hard hit by the 2011 red tide event.
- Allows abalone resistant to the red tide to remain in the population and pass that desirable trait on to future generations through reproduction.

Cons

- Creates more complex regulations and may cause more confusion.
- Fishers from the south and Bay Area may need to drive further to go fishing.
- May hurt businesses dependent on the abalone fishery in the area.
- May create a more permanent shift in fishing effort to other open areas.

Rationale

A fundamental tenet of the ARMP is that Department biologists will track and monitor abalone densities in the northern California recreational red abalone fishery in order to maintain sustainable levels of take. The index sites in Sonoma County are now showing declines in densities of abalone and the average density for the whole fishery is below the density triggers set forth in the ARMP. In 2012, density survey results for the northern California recreational red abalone fishery show:

(1) Average density for index sites is below the ARMP trigger to reduce catch. Surveys at fishery index sites have shown a decline in overall average abalone densities since 2003 (Figure 1). The average density observed in the most recent dive surveys at the eight ARMP index sites was 0.47 abalone/m² which is below the ARMP trigger of 0.50 abalone/m² for lowering the catch (Figure 1).

(2) Fort Ross Index site density is at the ARMP trigger for site closure. Abalone densities at the Fort Ross index site have been trending downwards over the past six years. Regulations were changed in 2012 to close Fort Ross for the first two months of the season to reduce fishing effort at this location. Additionally, the abalone population was severely affected in the Fort Ross area by the 2011 Sonoma County red tide die-off event. The average density observed in the most recent 2012 dive survey at Fort Ross was 0.25 abalone/m² which is at the ARMP trigger for site closure (Figure 3).

(3) Evidence of Poor Recruitment. Low recruitment rates of sub-legal size abalone (below 0.45 abalone/m²) indicated by dive surveys might not be sufficient to sustain abalone populations with current levels of take (Table 5).

During the past eight years the density declined from greater than the sustainable fishery density level (0.66/m²) in the first cycle (2005 – 2007) to below the trigger level to reduce the total allowable catch (TAC) in this cycle (0.47/m²). This decline in density is the trigger for management action. Although the average densities for Mendocino County index sites remain relatively high, the fishery is currently considered as one unit. Reducing the annual limit in Sonoma and Marin counties could cause fishers to shift their effort to Mendocino County and accelerate the decline in abalone densities there as well.

The decline in density is evidence that abalone are being taken faster than they are being replaced by reproduction and recruitment into the fishery. The catch rate should be reduced to lower the likelihood of abalone density falling further.

Reducing the catch now will conserve more of the spawning population in order to maintain a higher rate of reproduction and a healthy and sustainable recreational fishery.

Regulatory Options to Achieve 25% Catch Reduction

For public notice purposes and to facilitate Commission discussion, the Department is proposing five regulatory options to address the fishery reduction prescribed in the ARMP in addition to the closure of Fort Ross. The

goal of the catch reduction options is to achieve roughly a 25 percent reduction in the fishery in addition to closure of the Fort Ross area. One option or a combination of options can be selected to achieve the 25 percent catch reduction goal. These options address the low density of abalone populations for the whole fishery. One option (Option 5) allows for greater reductions in Sonoma County, targeting the areas most heavily impacted. Estimates of catch reduction are based on fishery catch data from report cards and are approximate estimates of reduction and may not be indicative of future reduction in catch.

Pre-scoping of Regulatory Options: The Department conducted four meetings with constituent groups and an online survey to gather feedback from fishery participants on the proposed regulation changes. Options presented for consideration included 1 through 4, discussed below. Option 5 was generated as a result of the four scoping sessions. The early morning closure was the most strongly supported by the online survey, wildlife officers, and most constituent groups. Rockpickers (defined as fishers who do not use fins while taking abalone) were most opposed to this option. The Director's Recreational Abalone Advisory Committee (RAAC) supported the following options for reducing the fishery, but not necessarily all of them together as a combined package: 1) reducing the annual limit to 12; 2) closing the month of April; 3) having two cards with limitations on Sonoma County; and 4) closing Fort Ross. Local businesses believed they would be harmed by closing April but they believed closing November may have less of an impact. Closing November would allow wildlife officers to focus on hunting openers that month.

Current web-based and paper surveys examining the management options proposed in this ISOR suggest reducing the daily bag limit was the least favored method of reducing the catch. The early morning closure was favored by the majority of respondents (>1000 responses). This option is not preferred by rockpickers. Both the reduction of the annual card limit and closing additional months were viewed more favorably than reducing the daily bag limit.

Regulation Options to Reduce Take:

Estimates of the reduction in catch are given for each of the management options listed below. Because past experience does not necessarily predict future behavior, there are varying degrees of uncertainty and bias associated with the estimates. The catch reduction estimates for options 1 and 3 are based on report card data from the previous 5 years, and these estimates should be considered as maximum impacts. Fishermen may change their behavior to fish later in the day or in different months in response to these changes in regulations. There is no way to predict or quantify this behavior change, although the effect would reduce the impact from the maximum value that is provided. Therefore the estimates for options 1 and 3 probably overstate the reduction in catch to some unknown degree. Estimates of the reduction to the fishery from options 2, 4 and 5 based on changes to bag and annual limits are considered unbiased because they are based on hard caps in the limits.

These three options do not offer fishermen the opportunity to avoid the new restrictions by shifting effort, and consequently the estimates are less dependent upon possible changes in fishing behavior.

Option 1: Early Morning Closure (estimated 5 to 23 percent catch reduction).

The proposed regulation would shorten the fishing day by amending the legal fishing hours to start at a time within the range of 7:00 AM to 8:00 AM. Current regulations allow for fishing to start one-half hour before sunrise. This regulation could reduce the catch by 5 percent for a 7:00 AM start or up to 23 percent for an 8:00 AM start time. These estimates are based on records of the time of day abalone were fished as reported on the abalone report cards (2007-2011). The realized catch reduction is contingent on time of low tide and the behavior of abalone rockpickers and divers. Most minus tides occur in the early morning hours during the spring and this is when a high percentage of intertidal abalone are taken mostly by rockpickers. Estimates in the catch reduction may not be realized if rockpickers, and to a lesser extent divers, adjust their behavior to take abalone later in the morning when tides are still low but occur after 8:00 AM. Benefits gained from reductions in the catch before 8:00 AM in the intertidal habitats may not be detected in the subtidal density surveys used to manage the abalone fishery.

Pros

- Reduces take by the segment of the abalone fishing public showing rapid growth in recent years.
- Most strongly supported by online survey respondents and other constituent groups.
- Reduces take from intertidal abalone populations which is associated with higher sub-legal mortality.
- Provides a uniform start time throughout the season rather than the current start time (one half hour before sunrise) which changes continuously during the season.
- Take reduction method favored by wildlife enforcement officers.

Cons

- Protection primarily of intertidal abalone might not address the problem of lower abalone densities at deeper depths where the index site scuba surveys are conducted that measure density used in management.
- Fishers may pursue abalone at higher tides and later in the day when water conditions may be rougher and more dangerous.
- Unequal impact to one user group mainly reduces opportunities for rockpickers.
- Reduction in take will be less than projected if substantial fishing effort is shifted to later hours or if rockpickers adjust behavior more like divers and take abalone from deeper water.

- Since divers and rockpickers can legally enter the water before the legal start time, it may be difficult for wildlife officers to identify abalone take occurring prior to the legal start time.
- Current survey methods do not detect changes in abalone densities within intertidal habitats.

Option 2: Reduce bag limit from three abalone per day to two abalone (estimated 29 percent reduction).

The proposed regulation would decrease the daily bag limit from three abalone to two abalone per day. A reduction in bag limit is relatively simple to enforce and the regulation is easy to understand. This regulation is more likely to be opposed by fishers who live further from the coast and might lead to reduced purchases of abalone cards by those who believe it is not worth making a trip to the coast for two abalone. This regulation would be more acceptable to fishers if the possession limit were increased to four but some wildlife officers are concerned that increasing the possession limit offers more opportunities for illegal take. The effectiveness of this regulation change would be reduced if people decide to increase the number of days they catch abalone.

Pros

- Provides increased protection for a fishery which has fallen below the 0.50 abalone/m² threshold for management action that is set forth in the ARMP.
- Easy to understand and enforce.
- Reliable method of providing the 25 percent reduction required in the ARMP.

Cons

- Might discourage people from participating in the fishery if they believe the trip to the coast is too far to travel for two abalone.
- Could hurt local businesses dependent on the abalone fishery if significant numbers of people decide it is not worth traveling to the coast for two abalone.

Option 3: Reduced Fishing Season: Limit the fishing season from seven to fewer open months per year (estimated 12 to 28 percent reduction).

Season reductions are commonly used for reducing the catch of recreational fisheries. Closing specific months could reduce the abalone catch by 12 to 28 percent depending on the months closed. The Department estimates the impact of the closures based on the catch record from 2007 - 2011 abalone card returns. Some options for reducing the season are listed in Table 1. The current 7-month season is more work for enforcement with a finite number of wildlife officers along the north coast. A shorter season would allow wildlife officers to concentrate abalone enforcement efforts in the open months and allow more flexibility in shifting resources to enforcement of other hunting and

fishing activities. The actual fishing reduction may be less than the estimate due to a shift in effort to months which remain open.

If the Fort Ross closure is not adopted, the open season for the Fort Ross area may continue to be different than the general open season.

Table 1. Examples of reduced fishing season options and the estimated percent catch reduction to the fishery.

* Note: Some of the examples listed here would need to be combined with other options to reach the 25% catch reduction target.

Closed Months	Percent Reduction
April, November	24%
April *	16%
Oct and Nov *	12%
April, October, November	28%

Pros

- Easy to enforce and understand.
- A shorter season would allow wildlife officers to shift resources to other hunting and fishing activities during the additional closed months.
- Provides protection required for the abalone fishery which has fallen below the ARMP density threshold of 0.50 abalone/m².
- Closing the fishery during months in which weather conditions are rough could reduce the number of fatalities occurring among fishers.
- May provide more protection to fishery stock that may be more vulnerable to fishing during the spring months due to less kelp coverage if April is closed.

Cons

- May overestimate catch reduction on fishery-wide basis because fishers could shift their effort to months which remain open.
- Would likely hurt local businesses dependent on the abalone fishery in the newly closed months, especially the opening month of April.

Option 4: Reduce annual limit from 24 per year (sub-options: 21 to 9 abalone per year).

The proposed regulation would reduce the number of abalone which could be taken per year by each fisher on an annual basis. This method of reducing the catch is more concrete than the other options because it does not have the possible effort shifts which introduce an element of uncertainty for estimating the effects of the other options. With other options, the projected take reductions would be less than estimated if people increase the number of days of effort or shift fishing effort to other times, months, or deeper waters.

Based on report card data, an annual average of 36,000 fishers purchased abalone cards between 2002 and 2011. Fishers took an estimated annual average of 259,000 abalone during the same period with take ranging from a low of 214,000 in 2011 to a high of 309,000 in 2007. Some options for reducing the annual limit from 24 abalone per year are listed in Table 2 with corresponding catch reduction estimates. The reduction in the total number of abalone taken per year will help mitigate shifts in effort within the fishery if the Fort Ross area is closed.

Table 2. Examples of estimated percent catch reductions for reduced annual limits (Option 4).

* Note: Some options would need to be combined with another option to achieve 25% catch reduction.

Annual Limit	Estimated % reduction
21*	3%
18*	8%
15*	15%
12	24%
9	36%

Pros

- Reduction in catch is more certain than Option 1 or Option 3 (early morning closure, or season closure) because an annual limit is a maximum regardless of tides, times, areas, months or fishing behavior.
- Will help mitigate shifts in effort within the fishery if the Fort Ross area is closed.
- May not impact most fishers since the average annual take per person is seven to eight abalone per year.

Cons

- May negatively impact local businesses and the local economy by reducing the number of abalone fishing trips.
- Would disproportionately affect avid and local fishermen who currently take their full annual limit or close to the annual limit.

Option 5: Catch reduction targeting Sonoma and Marin counties.

In addition to reducing the annual limit in the fishery overall as proposed in Option 4, it is advisable to further reduce the catch in Sonoma County because of low abalone densities in that area due to both fishing activities and the 2011 red tide die-off. While the density in the fishery as a whole has fallen below the trigger to reduce the take by 25 percent, this overall reduction in density is largely due to particularly low densities in the Sonoma County portion of the

fishery (Figure 2). Marin County is included with Sonoma County to simplify enforcement by creating a contiguous zone in which the reduced catch would be in effect. Additional fishing restrictions in Sonoma and Marin counties would be expected to: 1) provide for a larger regional spawning stock to improve the prospects for successful future recruitment into that area of the fishery; 2) protect the survivors of the red tide thus bolstering the opportunity for this desirable trait to be passed to future generations; and 3) reverse the downward trend in Sonoma County densities, thus promoting recovery and reducing the risk of additional Sonoma County site closures in the future. Current percent average catch from report card data from 2006-10 show that approximately 60% of the catch occurred from Mendocino County to the north while 40% was caught in Sonoma and Marin counties (Note: 2011 data is not used due to anomalous catch because of the red tide die-off and subsequent emergency closure of the Sonoma fishery).

One method to restrict take for Sonoma and Marin counties would be to limit the number of abalone that may be taken and recorded from that area on report cards to a subset of the total allowable annual take by each individual for the entire fishery. The catch location codes are divided by county so there should only be a given number of abalone on the card between site codes 60 and 99. This approach might encourage people to delay recording their catch in the more restricted area. Automated License Data System (ALDS) and License and Revenue Branch (LRB) staff favor this alternative because it is a simple method for reducing take in specific areas and it does not incur costs associated with redesigning the abalone card. However, since the ALDS system does not allow differences in printing on the tags to reflect different zones, all tags on the card must have the same basic format.

Some examples of possible card splits for the various annual limit options are shown in Table 3. However, the Commission is not limited to the examples presented; other area combinations may be considered which are not shown. For each sub-option, the percent reduction in the coastwide catch that is associated with the overall annual limit is not affected by the area split. The reduction in Sonoma and Marin counties ranges up to 46% if the annual limit for Sonoma and Marin counties is reduced to 6 (Table 4). Some sample options would need to be combined with another option to reach the goal of a 25% reduction in catch.

Table 3. Examples of some possible combinations of both options 4 and 5 for reductions in the annual limit and reduction in Sonoma and Marin counties with estimates of the resulting percent catch reduction. * Note: Needs to be combined with another option to achieve 25% catch reduction.

Overall Annual Limit	Percent Reduction	Option 5 Sub-options	All Areas	Mendocino Co. & North Only
18*	8%	1	18	0
		2	9	9
15*	15%	1	15	0

		2	9	6
12	24%	1	12	0
		2	6	6
9	36%	1	9	0
		2	6	3

Table 4. Estimated percent catch reduction for Sonoma and Marin counties for sub-option reductions in annual limit. If the annual limit remains at 24, the fishery-wide catch would remain unchanged despite the Sonoma-Marin reduction.

Sonoma-Marin Annual Sub-Limit	Sonoma-Marin Percent Catch Reduction
21	2%
18	5%
15	11%
12	18%
9	30%
6	46%
3	68%

Pros

- Provides increased protection for an area which was heavily impacted by the 2011 abalone red tide die-off and has dramatically declined from the previous survey cycle of 2003-07 (Figure 2).
- Reduction in catch is more certain than Option 1 or 3 (early morning or season closure) because an annual limit is a maximum regardless of tides, times, areas, months or fishing behavior.
- Considered a step towards area management, a tool described in the ARMP designed to target a specific area for catch reduction while minimizing regulatory impact to other areas.

Cons

- May negatively impact local businesses and the local economy by reducing the number of abalone fishing trips in Sonoma and Marin counties.
- Could lead to effort shift and reduction in abalone populations in areas which remain open with a higher annual limit.
- Creates an additional layer of complexity for abalone management.

In all options, current regulatory language concerning a temporary special closure of Sonoma County is also being removed for clarity.

Department Recommendation

The Department recommends that regulations be adopted in response to guiding principles prescribed in the ARMP for changes to management in the recreational red abalone fishery, specifically: 1) a reduction in the fishery of 25%; and 2) Fort Ross site closure. Rather than identifying specific management options from among those presented in the ISOR, the Department recommends that management actions be chosen from among the options provided in the ISOR to accomplish 1) and 2), above. Clearly, there are multiple options (or combinations of options) that could accomplish the regulatory objective of reducing the fishery, and they are deemed equally advisable from the Department's perspective providing that the objectives are achieved. The estimated reductions based on past fishing patterns for options 1 and 3 may be poor predictors of future fishing reductions whereas estimates for options 2, 4 and 5 may provide a better indication of future fishing reductions.

The Department is in agreement with a number of constituents who support area-based management actions to further reduce take in Sonoma County. In 2011, a red tide hit the Sonoma County coast impacting red abalone populations. Red abalone populations at Sonoma County index sites have declined by 60% since the 2003-2007 survey cycle.

It is also important to recognize that some management options which are popular, such as the early morning closure (Option 1), would have the greatest impact on the rockpicking sector of the fishery (rather than the dive fishery) and so adoption of that option would not evenly spread the burden of the fishery reductions across the sectors.

Management benefits resulting from Option 1 would not be as great as the other options because the intertidal area most affected by Option 1 is not covered by the ARMP density surveys. However, biological benefits would be expected to eventually accrue as a result of increased reproductive success and the movement of animals from the intertidal to the subtidal.

Finally, the Department sees value in heavily weighing the management recommendations presented by the RAAC group in considering changes to fishing restrictions. The committee is composed of a balance of representatives from different fishing sectors, the science community and geographic areas within California.

The Department will be tracking abalone catch in the fishery to determine the impact of any regulation changes adopted in 2013 by the Commission. Information from the catch in 2014 and beyond will be used in an adaptive management framework. This adaptive approach will be used by the Department to assess whether the approved regulation changes are meeting the fishery reduction goals set forth in the ARMP. If the goals are not being met, the Department will return to the Commission within three years with additional management proposals designed to meet the ARMP goals.

Additional Information

Abalones are long-lived, slow growing sedentary animals that have very sporadic successful recruitment. These biological characteristics along with other factors (i.e. disease and predation), make them generally vulnerable to overfishing as has been demonstrated in the collapse of abalone fisheries in southern California and many other parts of the world. Abalone populations are most susceptible at low population densities since they are broadcast spawners and require relatively high densities for successful fertilization. Fertilization success drops off rapidly when males and females are more than one meter apart. Red abalone reproduction has been shown to be sporadic in northern California as measured using abalone recruitment surveys over the past decade.

The Department is required under the Marine Life Management Act to maintain sustainable fisheries. Red abalone punctured with an abalone iron during fishing may not survive because abalone have no blood clotting mechanisms; sublegal-sized abalone taken and then put back suffer high incidental mortality rates. The lack of blood clotting coupled with slow growth suggests a precautionary approach to management is warranted for maintaining healthy stocks. Any of the proposed regulation changes is expected to reduce the number of red abalone taken or incidentally killed in the recreational fishery and help maintain a sustainable fishery (see “Abalone Recovery and Management Plan Status Report – Northern California Red Abalone Fishery” available on the Department of Fish and Wildlife website at <http://www.dfg.ca.gov/marine/amp/index.asp>).

Past input on similar regulatory options may be of help in determining which current option(s) may have the most public support. Wildlife officers favor the early morning closure because they believe abalone populations in areas utilized by rockpickers have been especially impacted by abalone fishing effort. In addition, wildlife officers are observing rockpickers experiencing more difficulty in finding legal sized abalone and believe reducing the hours available in the early morning would help protect the most heavily impacted segment of abalone populations. Since rockpickers need low tides to take abalone and many low tides are in the early morning hours in the spring, a later start time would limit the impact to the intertidal rockpicking portion of the fishery.

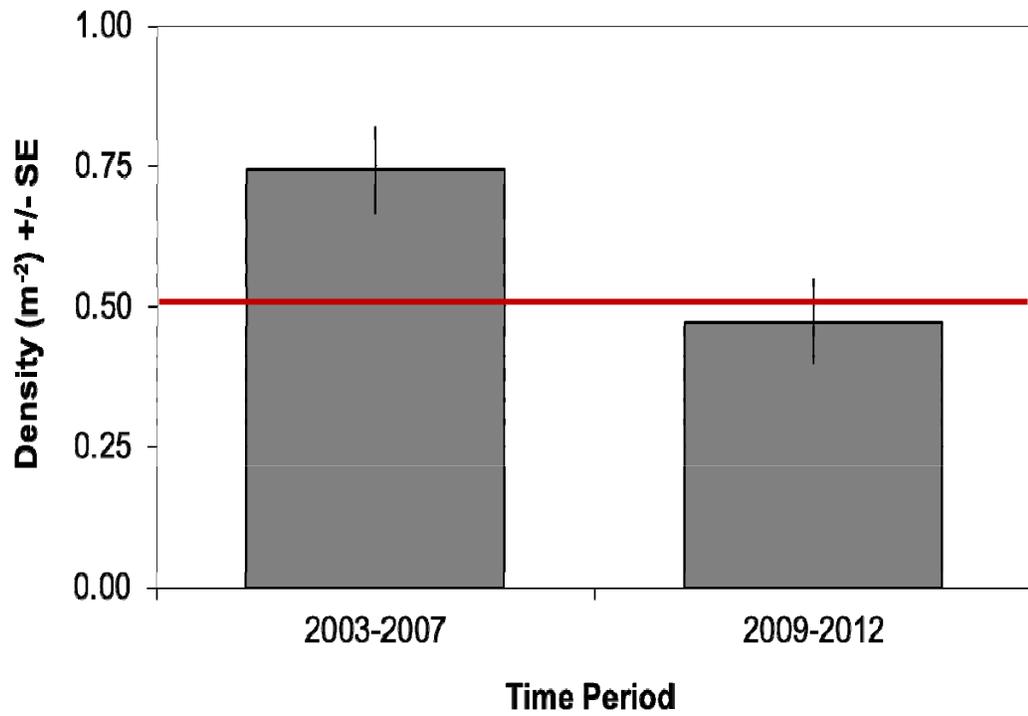


Figure 1. Average red abalone densities per meter square, plus or minus standard error (SE), for all index sites from 2003-07 and 2009-12. Criteria for 25 percent TAC reduction is indicated by bold line at 0.5 abalone per meter square.

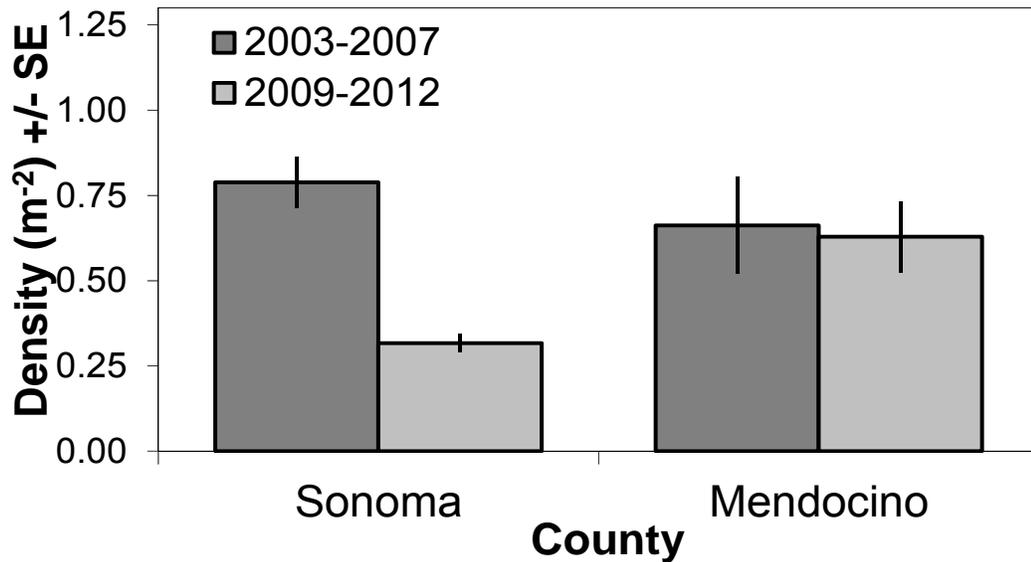


Figure 2. Average red abalone densities per meter square for Sonoma and Mendocino County index sites from 2003-07 and 2009-12. There was a significant 60% reduction in Sonoma County from the earlier (2003-2007) time point to 2012.

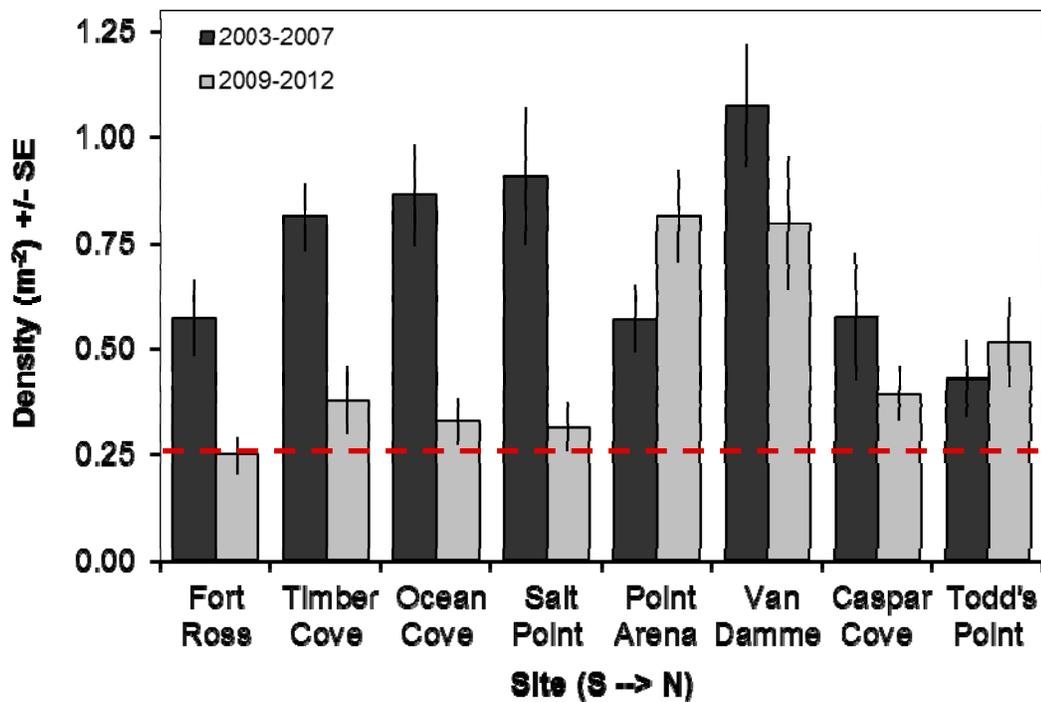


Figure 3. Average red abalone densities per meter square for each index site from 2003-2007 and 2009-12. Criteria for site closure is indicated by dashed line at 0.25 abalone per meter square.

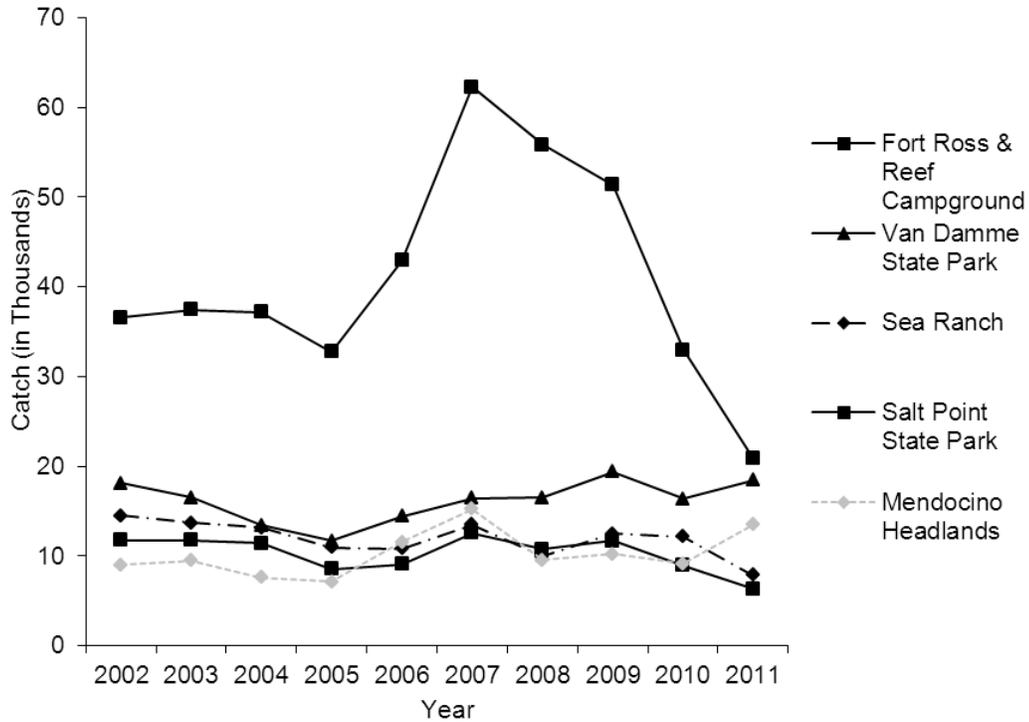


Figure 4. Red abalone catch for the top five sites in the fishery estimated from the report cards from 2002-2011. (Note: Highest catch in all years is Ft. Ross)

Site	Total Abalone Density (all depths and sizes)	Recruitment Density (abalone 4 in. to 7 in. length)
Todd's Point 2009/10	0.510	0.096
Caspar Cove 2011	0.393	0.156
Van Damme 2010	0.797	0.298
Point Arena 2010	0.812	0.225
Salt Point 2012	0.314	0.105
Ocean Cove 2012	0.327	0.119
Timber Cove 2012	0.368	0.135
Fort Ross 2012	0.248*	0.078
Overall Average	0.471*	0.152

Anticipated Benefits of Regulation Options

It is the policy of this state to ensure the conservation, sustainable use, and where feasible, restoration of California's marine living resources for the benefit of all the citizens of the state. The objectives of this policy include, but are not limited to, the following: (1) Conserve the health and diversity of marine ecosystems and marine living resources; and (2) Allow and encourage only those activities and uses of marine living resources that are sustainable.

The regulation options will benefit the red abalone population in northern California by enhancing the sustainability of the resource. Higher densities of red abalone in closer proximity to their neighbors have better fertilization and reproductive success than those at low densities. The proposed regulation changes are anticipated to increase the density of red abalone, leading to a healthier resource and improving the long-term health of the fishery.

Higher densities of red abalone are anticipated to enhance local small businesses in the coastal economy that rely on abalone fishing for their income. A healthy active fishery will attract more business to the coastal regions in the north particularly in the counties of Marin, Sonoma, Mendocino and Humboldt.

The environment will benefit from the proposed regulation options in the following ways: (1) The algal community will continue to be grazed by a stable population of red abalone in northern California rocky subtidal habitats. This grazing will maintain algal communities and prevent them from overgrowing reef communities; (2) Abalone will continue to act as important macrograzers maintaining substrate suitable for other invertebrates; and (3) Abalone will provide an important food source for other marine life in rocky subtidal kelp communities.

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

Authority: Sections 200, 202, 205, 210, 220, 240, 5521, and 7149.8, Fish and Game Code

Reference: Sections 200, 202, 205, 220, 5521, 7145, and 7149.8, Fish and Game Code

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

None

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

- (1) "Abalone Recovery and Management Plan Status Report – Northern California Red Abalone Fishery", May 2010, California Department of Fish and Game, available on Department of Fish and Wildlife website at <http://www.dfg.ca.gov/marine/armp/index.asp>

(2) "Abalone Recovery and Management Plan", adopted by the Fish and Game Commission, December 2005, available on Department of Fish and Wildlife website at <http://www.dfg.ca.gov/marine/armp/index.asp>.

(3) [Economic Impact Analysis](#)

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

October 27, 2012, Los Alamitos, California. Potential abalone sport regulation changes and research results supporting changes were presented and discussed at a scheduled teleconference call of the Recreational Abalone Advisory Committee (RAAC) meeting open to the public. Northern California density and management was discussed at the Commission's Marine Resources Committee meeting on December 11, 2012. Targeted discussions with constituent group representatives regarding the potential abalone sport regulation changes and the data supporting these were discussed in four focus group meetings in northern California in February 2013 and two follow up meetings with the RAAC in February 2013. Public comment was also received at the April 17, 2013 Commission meeting in Santa Rosa.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

- 1) Increasing the minimum size limit. Increase the minimum size limit to either seven and three quarter or eight inches from the current seven inch limit. An eight inch size limit is estimated to reduce the catch by 64% based on creel survey data. This alternative is rejected due to the following reasons:
 - While increasing the size limit may allow a longer period of reproduction, it will likely increase mortality related to injuries sustained during inadvertent removal and subsequent replacement of undersized animals between the present size limit and the new larger size limit.
 - Natural mortality would reduce the number of larger animals available to the fishery, compared to 7-inch animals. Thus the overall fishery yield could decrease, with little or no biological benefit to the stock.
- 2) Eliminate the current size limit. This alternative suggests replacing the minimum size limit with the requirement to keep any abalone collected towards the bag limit. Proponents of this alternative suggest that elimination of the size limit would result in the reduction of incidental mortality due to picking undersize abalone. This alternative is rejected for the following reasons:

- The current size limit is in place to maximize the fishery yield while allowing abalone time to reach sexual maturity and spawn before entering the fishery. Allowing the take of abalone of any size will potentially remove immature abalone from the fishery, thus reducing the chance for reproduction.
 - There is also no guarantee that poaching or incidental mortality will be reduced.
- 3) Creation of a second abalone report card that would have increased geographic restrictions and additional costs. This alternative was considered as another method to further reduce the take in Sonoma and Marin counties by splitting the tags between two cards with the second card having increased geographic restrictions and additional costs. The first card could be used at all sites including Sonoma and Marin counties while the second card could only be used in Mendocino County and areas north.

Creating a second card could generate additional funds for managing the abalone resource, because persons wishing to continue fishing after filling their first card would be required to purchase a second card for the remainder of the season. This would also result in those persons who most heavily utilize the resource contributing more funding to the enforcement and management of that resource.

This alternative is rejected for the following reasons:

- It would increase the cost of abalone fishing for those who might purchase a second card.
- Illegal take could increase since people could purchase more than one card
- It would increase the complexity of the regulations, enforcement efforts, data entry and analysis.
- It would cost the Department approximately \$13,000 to redesign the card.

(b) No Change Alternative:

Evidence exists that current levels of take may be unsustainable, especially in Sonoma County. The no change alternative goes against established ARMP management guidance and may require that the Commission consider fishery closure as prescribed in the ARMP if current declining trends in density continue and fall below the trigger level for fishery closure.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purposes for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more

cost-effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

(d) Description of Reasonable Alternatives That Would Lessen Adverse Impact on Small Business:

The proposed regulations contain five options, and multiple sub-options, with varying impacts on small business. No other alternatives that would lessen impact on small business were identified.

V. Mitigation Measures Required by Regulatory Action:

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

VI. Impact of Regulatory Action:

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

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

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. Depending on which regulatory option the Commission chooses, the proposed action could reduce recreational abalone activity expenditures and thus reduce direct revenue by 1.4 percent to as much as 36.9 percent. These outcomes could result in adverse revenue impacts to businesses ranging from \$182,000 (2009\$) to \$4.8 million (2009\$) in potential direct revenue losses. In the North Coast area most affected by these potential losses, the resulting impact to the economy could range from \$324,000 (2009\$) to \$8.5 million (2009\$) in total economic output losses. This is due to the ripple effect each dollar of direct revenue has on the affected regional economy's total output potential. Nonetheless, the proposed regulations would not result in a significant statewide adverse economic impact.

The impacts are not likely to affect the ability of California businesses to compete with businesses in other States, since these activities focus on resources and features unique to the North Coast.

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

The Commission does not anticipate any impacts on the creation of new business, the elimination of existing businesses or the expansion of businesses in California.

Depending on which regulatory option the Commission chooses, the potential reduced recreational abalone activity could result in job losses ranging from 0 jobs to as many as 82 jobs in abalone sport fishing related businesses. The Commission does not anticipate the creation of any new jobs.

Benefits to the Health and Welfare of California Residents: Depending on which regulatory option the Commission chooses, the potential reduced recreational abalone activity in the spring months when ocean conditions can be dangerous could result in enhanced fisherman safety.

The Commission does not anticipate benefits to California worker safety.

The Commission anticipates benefits to the State's environment. The proposed regulation changes are being made in order to effectively manage the red abalone fishery and maintain its sustainability. The Marine Life Management Act mandates that fisheries in California are managed sustainably. Abalone populations in California have declined and the fishery south of San Francisco was closed in 1997. The proposed regulations will benefit the abalone resource, abalone fishery and local businesses by maintaining a healthy viable fishery for years to come. Red abalone is an iconic species in California and one that is part of the state's natural heritage.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

Unknown, however the potential exists for some loss in recreational abalone report card sales revenue if some individuals decide not to participate in the fishery due to reduced bag or annual limits.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

Informative Digest/Policy Statement Overview

Under existing regulations (Section 29.15, Title 14, CCR), red abalone may only be taken for recreational purposes north of a line drawn due west magnetic from the center of the mouth of San Francisco Bay. Current regulations also specify: season, hours, daily limits, special gear provisions, measuring devices, abalone report card requirements, and minimum size limit.

The regulation change is being proposed in response to the guidelines in the Abalone Recovery and Management Plan (ARMP), adopted by the Commission in 2005, with regard to average abalone density at eight index sites (surveyed on a three year cycle) within Mendocino and Sonoma counties. Observations by Department of Fish and Wildlife (Department) wildlife officers and data analyses by biologists were considered in proposing the regulation changes, as well as input from fishing groups, the Recreational Abalone Advisory Committee, non-governmental organizations, and the public. Recent scuba surveys indicate that the average density of emergent abalone (sublegal and legal sized) has trended downward over the past five to ten years. Average density is now at 0.47 abalone per meter square (m^2) for the index sites which is below one of the management triggers established in the ARMP. Low average densities and declining trends indicate a risk that leaving regulations unchanged could result in further reductions in average density across the fishery which could lead to fishery closure if average densities fall below 0.30 abalone/ m^2 . Consequently, the Department is proposing regulations which will reduce the catch so that further reductions in average density may be prevented.

Additionally, average abalone density at the Fort Ross index site has fallen below the trigger level for site closure within the ARMP. The Department is proposing site closure of the Fort Ross area for a period between two and six years to allow recovery of abalone stocks to a level that allows reopening of the area. The Commission may select the duration of closure within the two to six year range or may elect to close the site without specifying a sunset date. The Department will continue to monitor density at Fort Ross (triennially) and recruitment events (annually) in northern California during the site closure in order to evaluate if the site should reopen or remain closed based on current ARMP criteria. The Department also anticipates revising the ARMP during this time frame to transition to the long term, area-based, management plan. Re-opening Fort Ross will likely be considered under the revised ARMP, as well as based on evidence of recovery at the site.

The proposed regulations will close the Fort Ross area and options are provided to reduce fishing hours, the annual limit, daily bag limit, and/or season. The following summarizes the options for regulatory change in Title 14, Section 29.15.

- Option 1: Change the legal fishing hours to begin at a time within the range of 7:00 AM to 8:00 AM instead of one-half hour before sunrise.
- Option 2: Reduce the daily bag and possession limit from three abalone to two abalone.

- Option 3: Reduce the season from seven months to fewer open months with various sub-options for closing months. If the Fort Ross Area Closure is not adopted, the open season for the Fort Ross area may be different than the general open season.
- Option 4: Reduce the annual limit with various sub-options for reduction (21 to 9 abalone).
- Option 5: Targeted catch reduction in Sonoma and Marin counties by apportioning tags by areas (3-21 tags in the targeted area, not to exceed the total annual limit selected in Option 4).

Options 1 through 5 are designed to reduce the total catch by up to an estimated 33 percent. This conforms to provisions in the ARMP that prescribe a 25 percent reduction in catch when average density levels are below the ARMP trigger for management action.

The Commission may adopt one or more options or a combination of options.

In all options, regulatory language concerning a temporary special closure of Sonoma County is repealed.

The regulation options will benefit the red abalone population in northern California by enhancing the sustainability of the resource. Higher densities of red abalone in closer proximity to their neighbors have better fertilization and reproductive success than those at low densities. The proposed regulation changes are anticipated to increase the density of red abalone, leading to a healthier resource and improving the long-term health of the fishery.

Higher densities of red abalone are anticipated to enhance local small businesses in the coastal economy that rely on abalone fishing for their income. A healthy active fishery will attract more business to the coastal regions in the north particularly in the counties of Marin, Sonoma, Mendocino and Humboldt.

The environment will benefit from the proposed regulation options in the following ways: (1) The algal community will continue to be grazed by a stable population of red abalone in northern California rocky subtidal habitats. This grazing will maintain algal communities and prevent them from overgrowing reef communities; (2) Abalone will continue to act as important macrograzers maintaining substrate suitable for other invertebrates; and (3) Abalone will provide an important food source for other marine life in rocky subtidal kelp communities.

The proposed regulations are neither inconsistent nor incompatible with existing state regulations. Section 20, Article IV, of the State Constitution specifies that the Legislature may delegate to the Fish and Game Commission such powers relating to the protection and propagation of fish and game as the Legislature sees fit. The Legislature has delegated to the Commission the power to regulate the recreational take of abalone (sections 200, and 205, Fish and Game Code). The Commission has reviewed its own regulations and finds that the proposed regulations are neither inconsistent nor incompatible with existing state regulations. The Commission has searched the

California Code of Regulations and finds no other state agency regulations pertaining to the recreational take of abalone.