

**California Department of Fish and Game**  
**Evaluation of the Potential Impacts Draft Marine Protected Area Proposals May Pose for**  
**Abalone Management and Abalone Recreational Fishery**  
**MLPA North Central Coast Study Region**  
**(Revised February 15, 2008)**

The establishment of marine protected areas (MPAs) in the North Central Coast Study Region (NCCSR), Alder Creek/Point Arena to Pigeon Point, may pose potential impacts to recreational abalone fishery and abalone management in the region. The purpose of this evaluation is to provide background information on potential impacts that may be posed by the draft MPA proposals put forward by the north central coast regional stake holder group (NCCRSR).

**Potential Impacts to Abalone Fishery Management**

Abalone management may be affected if proposed MPAs encompass what are known as “index sites”. These are areas of high or moderate fishing pressure which are used as long-term study sites to track abalone populations through time. Index sites are not discreet points, but areas where dives are conducted to gauge abalone population density along a portion of the coast. While exact locations of dives for a given index site varies slightly from year to year, the portion of the coastline targeted for analysis remains the same. For this analysis, index sites were determined by drawing boundaries around the set of points that represent the locations from the most recent set of survey dives.

In the absence of other broad-scale surveys across the entire fishery range, data from index sites help determine whether regulatory adjustments need to be made on the total number of abalone that can be harvested in a given year (total allowable catch). Partial or full closure of an index site area to fishing could affect the future utility of that site as an indicator of stock status. For example, if fishing is eliminated at an index site where harvest was originally allowed, that site may not be well suited to gauge the status of the population under “fished” conditions.

There are eight index sites in northern California, five of which are located in the NCCSR. In the current version draft MPA proposals, only the Salt Point abalone index site is potentially affected by one draft proposal (Draft MPA Proposal 4), with this proposal encompassing approximately 45% of the index site area. Though the inclusion of a portion of the Salt Point index site in an MPA would alter how some of the previous data could be utilized, the remaining area could continue to provide useful data as an indicator of stock abundance. The partial area of the Salt Point index site that is encompassed by Draft MPA Proposal 4 should not significantly affect the usefulness of this site in abalone management. No other index sites are affected by any of the proposals (Table 1).

**Table 1. Abalone index sites potentially affected by proposed MPAs.**

<i>Draft MPA Proposal</i>	<i>Index Sites Affected</i>	<i>Percent Area of Index Site Encompassed by Proposed MPA</i>
Proposal 0	None	0%
Proposal 1	None	0%
Proposal 2	None	0%
Proposal 3	None	0%
Proposal 4 (Black to Salt Point SMR)	Salt Point	45%
External Proposal A	None	0%

**Potential Impacts to Abalone Recreational Fishery**

The establishment of an MPA that disallows abalone harvest in an area where abalone harvest is popular may curtail the amount of localized fishing that occurs. As a consequence, establishments that cater to the recreational harvesters may also be affected by reductions in fishing activity. Such businesses may include (but may not be limited to) lodging establishments, campgrounds, restaurants, dive shops, and boat launches.

In order to provide a gauge for potential impacts of proposed MPAs to the recreational abalone fishery, abalone harvest data from abalone report cards are summarized here. Abalone harvesters are required to report every abalone taken and the general location of harvest on the report cards. For location of catch, harvesters must record the nearest pre-designated landing site provided on the card. These “coded sites” include launches, landmarks, and coastal access points. The abalone report card system generates data that provides both catch quantities and an approximate geographic distribution of the abalone catch. Table 2 lists the abalone report card landing sites and landings.

Prior to 2004, Stornetta Ranch near Point Arena Lighthouse was not accessible for recreational abalone fishing. However, in August of 2004 the ranch opened for public use, and an area which had previously experienced little fishing pressure became accessible for harvest. As a result, 2004 abalone report card data showed a very large jump in abalone landings (more than double) attributed to the Point Arena Lighthouse coded landing site (catches at Stornetta Ranch are coded to the Point Arena Lighthouse landing site). Due to this event, only data from 2005 were used to calculate landings in this evaluation (Table 2), as this represented the only full year of data during which Stornetta Ranch was open to abalone harvest.

Data prior to 2002 could not be used in this evaluation because individual bag limits were different from later years.

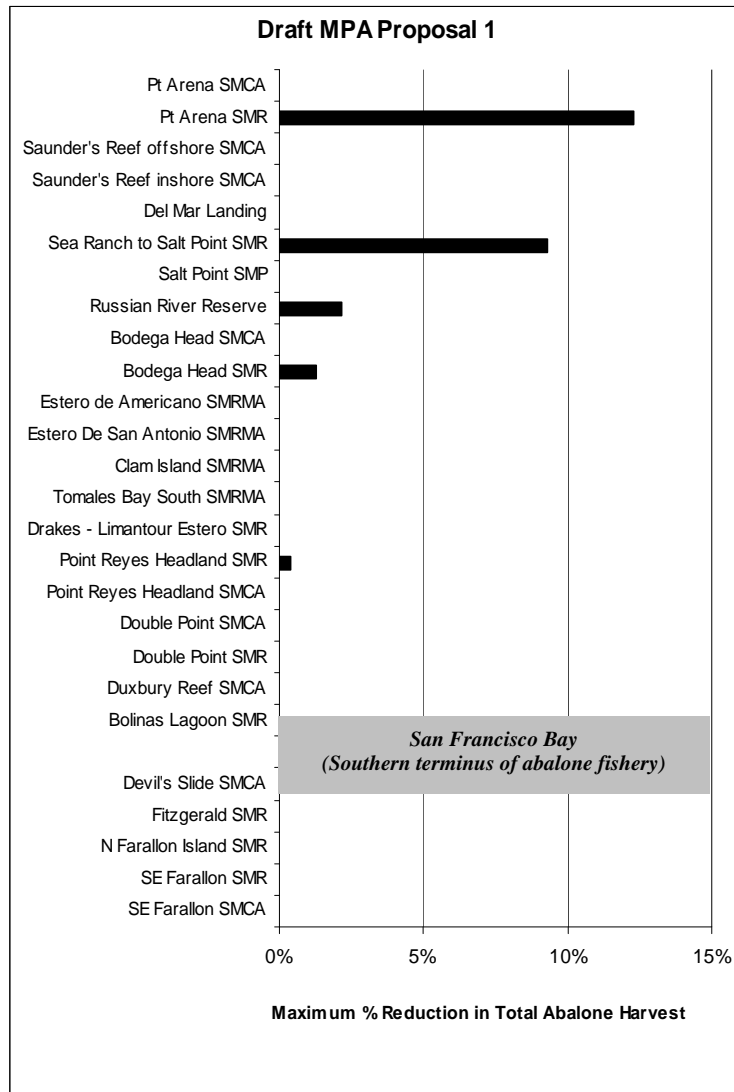
Tables 3-7 and graphs 1-5 below illustrate the potential reduction in total abalone harvest for the study region by each proposed MPA, as indicated by 2005 report card data. This analysis is provided as a gauge for the maximum potential impacts that may be associated with the establishment of proposed MPAs assuming that abalone harvesters would not relocate their effort to another site.

For each proposal, MPAs are listed according to geographic location from the north (top) to the south (bottom). The location of San Francisco Bay is indicated on each graph as a reference, because current state regulations do not allow abalone harvest south of this location.

**Table 2. Abalone report card landing sites and associated 2005 reported landings. Note Ref.# provides a quick reference to subsequent tables in this document.**

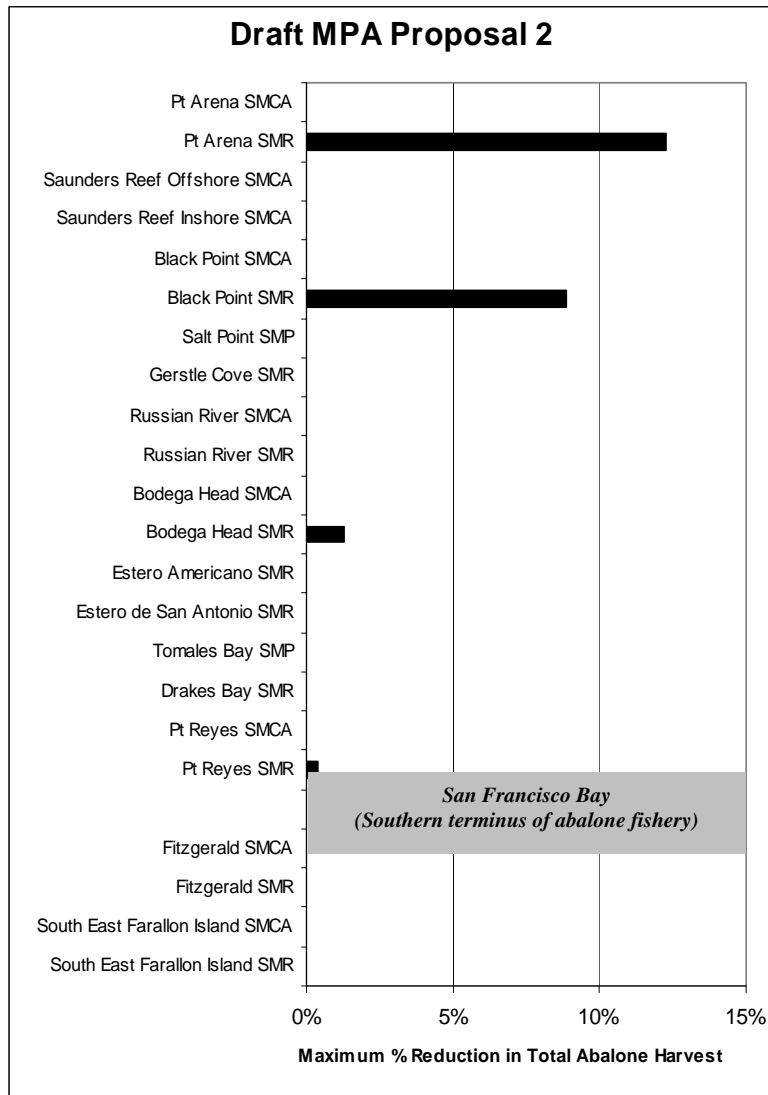
Ref.#	Abalone Report Card Landing Site	Total Reported Landings for 2005
1	Point Arena Lighthouse	15602
2	Arena Cove	7364
3	Moat Creek	5520
4	Schooner Gulch	803
5	Saunders Landing	1338
6	Anchor Bay	4759
7	Gualala Point	817
8	Sea Ranch	10941
9	Black Point	310
10	Stewarts Point	1155
11	Rocky Point	760
12	Horseshoe Cove	1479
13	Fisk Mill Cove	8125
14	Salt Point	8533
15	Ocean Cove	5280
16	Stillwater Cove	4872
17	Timber Cove	8209
18	Fort Ross & Reef Camp	32767
19	Jenner	2746
20	Salmon Creek	803
21	Bodega Head	1633
22	Tomales Point	2211
23	Robinson Point	605
24	Point Reyes	465
	<b>NCCSR total</b>	<b>127,097</b>

**Graph 1 (Left)/Table 3 (Right). Draft MPA Proposal 1 - Maximum potential reductions in total abalone harvest by each proposed MPA, as indicated by 2005 report card data, assuming no displacement of effort.**



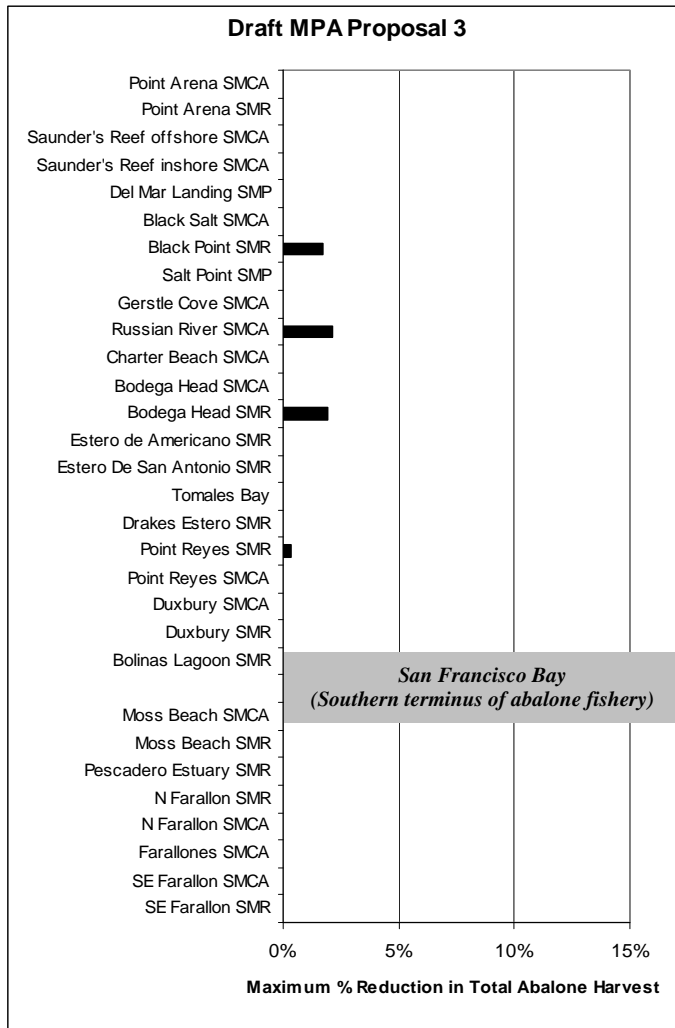
Proposed MPA	Number of Report Card Sites in MPA	2005 Harvest (Number of abalone)	Maximum % Reduction in Harvest Due to MPA	Note (Ref. #- see Table 2 for corresponding report cards sites)
Pt Arena SMCA	0	0	0.00%	
Pt Arena SMR	1	15602	12.28%	Proposed reduction is likely overestimated because the popular Stornetta Ranch area will not be closed. Ref.# 1
Saunders' Reef offshore SMCA	0	0	0.00%	
Saunders' Reef inshore SMCA	2	2141	0.00%	Proposed MPA allows abalone harvest so a harvest reduction is not expected. Ref.# 4-5
Del Mar Landing	0	0	0.00%	
Sea Ranch to Salt Point SMR	5	11829	9.31%	Ref. # 9-13
Salt Point SMP	1	8533	0.00%	Proposed MPA allows abalone harvest so a harvest reduction is not expected. Ref.# 14
Russian River Reserve	1	2746	2.16%	Percent reduction is likely overestimated due to the small size and sandy bottom habitat within the proposed MPA. Ref.# 19
Bodega Head SMCA	0	0	0.00%	
Bodega Head SMR	1	1633	1.28%	Ref.# 21
Estero de Americano SMRMA	0	0	0.00%	
Estero De San Antonio SMRMA	0	0	0.00%	
Clam Island SMRMA	0	0	0.00%	
Tomales Bay South SMRMA	0	0	0.00%	
Drakes - Limantour Estero SMR	0	0	0.00%	
Point Reyes Headland SMR	1	465	0.37%	Ref.# 24
Point Reyes Headland SMCA	0	0	0.00%	
Double Point SMCA	0	0	0.00%	
Double Point SMR	0	0	0.00%	
Duxbury Reef SMCA	0	0	0.00%	
Bolinas Lagoon SMR	0	0	0.00%	
Devil's Slide SMCA	0	0	0.00%	
Fitzgerald SMR	0	0	0.00%	
N Farallon Island SMR	0	0	0.00%	
SE Farallon SMR	0	0	0.00%	
SE Farallon SMCA	0	0	0.00%	
Regional Total Landings		127,097		

**Graph 2 (Left)/Table 4 (Right). Draft MPA Proposal 2 - Maximum potential reductions in total abalone harvest by each proposed MPA, as indicated by 2005 report card data, assuming no displacement of effort.**



Proposed MPA	Number of Report Card Sites in MPA	2005 Harvest (Number of Abalone)	Maximum % Reduction in Harvest Due to MPA	Note (Ref. #- see Table 2 for corresponding report cards sites)
Pt Arena SMCA	0	0	0.00%	
Pt Arena SMR	1	15602	12.28%	Proposed reduction is likely overestimated because the popular Stornetta Ranch area will not be closed. Ref.# 1
Saunders Reef Offshore SMCA	0	0	0.00%	
Saunders Reef Inshore SMCA	2	2141	0.00%	Proposed MPA allows abalone harvest so a reduction in harvest is not expected. Ref.# 4-5
Black Point SMCA	0	0	0.00%	Proposed MPA allows abalone harvest so a reduction in harvest is not expected.
Black Point SMR	2	11251	8.85%	Ref.# 8-9
Salt Point SMP	3	18137	0.00%	Proposed MPA allows abalone harvest so a reduction in harvest is not expected. Ref.# 12-14
Gerstle Cove SMR	0	0	0.00%	
Russian River SMCA	1	2746	0.00%	Proposed MPA allows abalone harvest so a reduction in harvest is not expected. Ref.# 19
Russian River SMR	1	2746	0.00%	Though a report card site occurs within the boundaries of the MPA, abalone harvest does not occur within the waters of the estuary. A reduction in harvest is not expected. Ref.#19
Bodega Head SMCA	0	0	0.00%	
Bodega Head SMR	1	1633	1.28%	Ref.# 21
Estero Americano SMR	0	0	0.00%	
Estero de San Antonio SMR	0	0	0.00%	
Tomales Bay SMP	0	0	0.00%	
Drakes Bay SMR	0	0	0.00%	
Pt Reyes SMCA	0	0	0.00%	
Pt Reyes SMR	1	465	0.37%	Ref.# 24
Fitzgerald SMCA	0	0	0.00%	
Fitzgerald SMR	0	0	0.00%	
South East Farallon Island SMCA	0	0	0.00%	
South East Farallon Island SMR	0	0	0.00%	
Regional Total Landings		127,097		

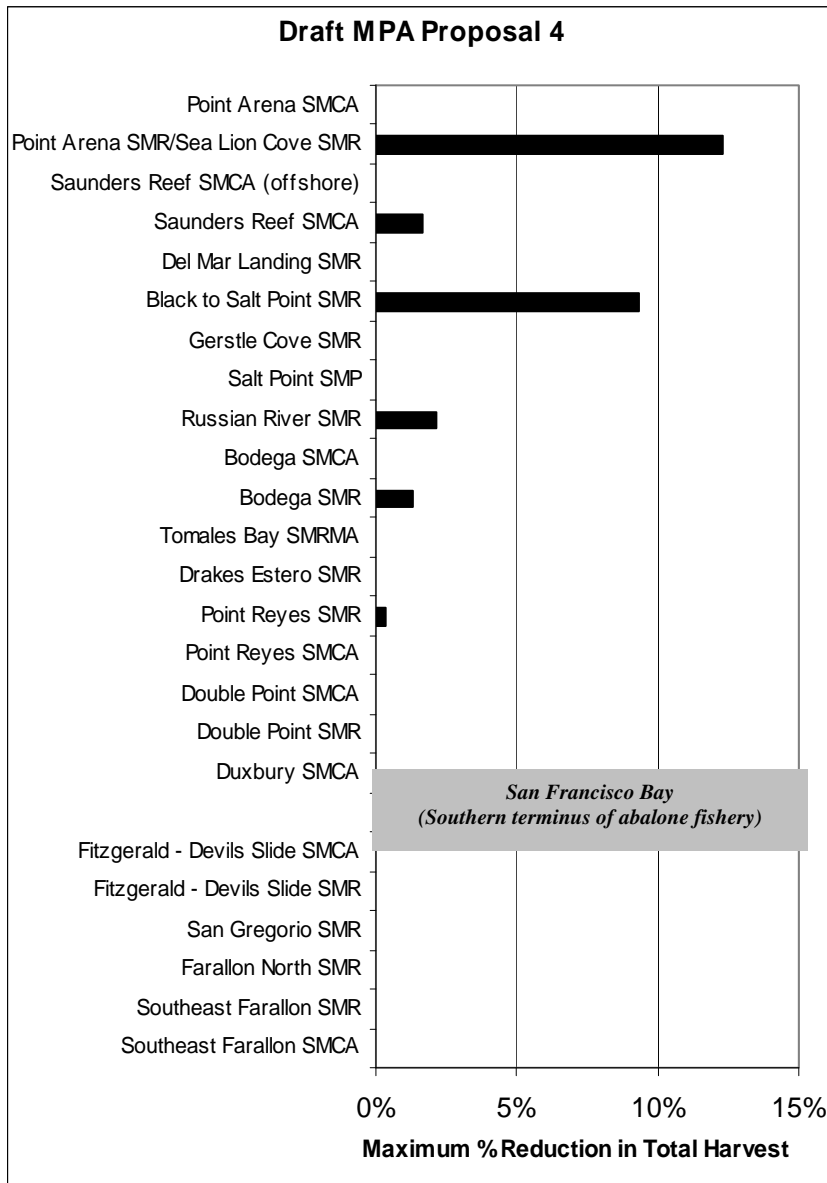
**Graph 3 (Left)/Table 5 (Right). Draft MPA Proposal 3 - Maximum potential reductions in total abalone harvest by each proposed MPA, as indicated by 2005 report card data, assuming no displacement of effort.**



Proposed MPA	Number of Report Card Sites in MPA	2005 Harvest (Number of abalone)	Maximum % Reduction in Harvest Due to MPA	Note (Ref. #- see Table 2 for corresponding report cards sites)
Point Arena SMCA	0	0	0.00%	
Point Arena SMR	1	15602	0.00%	Report card site is located within the proposed MPA, but the boundaries are drawn largely offshore so abalone harvest activity should not be affected. Ref.# 1
Saunders' Reef offshore SMCA	0	0	0.00%	
Saunders' Reef inshore SMCA	2	2141	0.00%	Proposed MPA allows abalone harvest so a reduction in harvest is not expected. Ref.# 4-5
Del Mar Landing SMP	0	0	0.00%	Proposed MPA allows abalone harvest so a reduction in harvest is not expected.
Black Salt SMCA	0	0	0.00%	
Black Point SMR	3	2225	1.75%	Ref.# 9-11
Salt Point SMP	3	9604	0.00%	Proposed MPA allows abalone harvest so a reduction in harvest is not expected. Ref.# 12-13
Gerstle Cove SMCA	0	0	0.00%	
Russian River SMCA	1	2746	2.16%	Ref.# 19
Charter Beach SMCA	0	0	0.00%	
Bodega Head SMCA	0	0	0.00%	
Bodega Head SMR	2	2436	1.92%	Percent reduction in harvest may be overestimated by a maximum of 0.63%. A report card site located on the border of the proposed MPA was included in these calculations, though some of the associated landings may not originate in the MPA. Ref.# 20-21
Estero de Americano SMR	0	0	0.00%	
Estero De San Antonio SMR	0	0	0.00%	
Tomales Bay	0	0	0.00%	
Drakes Estero SMR	0	0	0.00%	
Point Reyes SMR	1	465	0.37%	Ref.# 24
Point Reyes SMCA	0	0	0.00%	
Duxbury SMCA	0	0	0.00%	
Duxbury SMR	0	0	0.00%	
Bolinas Lagoon SMR	0	0	0.00%	
Moss Beach SMCA	0	0	0.00%	
Moss Beach SMR	0	0	0.00%	
Pescadero Estuary SMR	0	0	0.00%	
N Farallon SMR	0	0	0.00%	
N Farallon SMCA	0	0	0.00%	
Farallones SMCA	0	0	0.00%	
SE Farallon SMCA	0	0	0.00%	
SE Farallon SMR	0	0	0.00%	
Regional Total Landings		127,097		

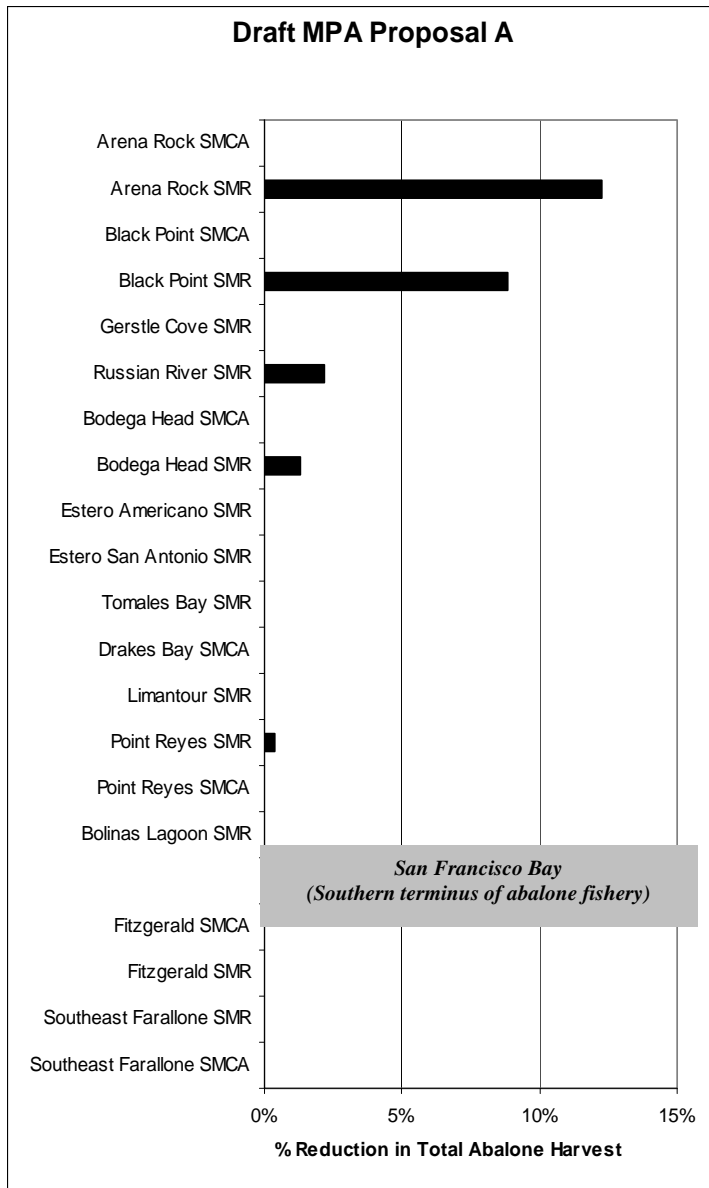
Note: Draft Proposal 3, Point Arena SMR includes a small and exposed portion of the Point Arena Lighthouse report card landing site. The actual impacts cannot be measured accurately with available data and we expect they would be minimal.

**Graph 4 (Left)/Table 6 (Right). Draft MPA Proposal 4 - Maximum potential reductions in total abalone harvest by each proposed MPA, as indicated by 2005 report card data, assuming no displacement of effort.**



Proposed MPA	Number of Report Card Sites in MPA	2005 Harvest (Number of abalone)	Maximum % Reduction in Landings due to MPA	Note (Ref. #- see Table 2 for corresponding report card sites)
Point Arena SMCA	0	0	0.00%	
Point Arena SMR/ Sea Lion Cove SMR	1	15602	12.28%	These adjacent proposed MPAs are combined in this evaluation because landings from both sites are reported to the Point Arena Lighthouse report card site. Ref.# 1
Saunders Reef SMCA (offshore)	0	0	0.00%	
Saunders Reef SMCA	2	2141	1.68%	Percent reduction in harvest may be overestimated by a maximum of 0.63%. A report card site located on the border of the proposed MPA was included in these calculations, though some of the associated landings may not originate within the MPA. Ref.# 4-5
Del Mar Landing SMR	0	0	0.00%	
Black to Salt Point SMR	6	11829	9.31%	Percent reduction in harvest is likely underestimated. A report card site is located immediately outside the southern boundary of the proposed MPA, and landings associated with that site were not included in this calculation. Ref.# 9-13
Gerstle Cove SMR	0	0	0.00%	
Salt Point SMP	2	13813	0.00%	Proposed MPA allows abalone harvest so a reduction in harvest is not expected. Ref.# 14-15
Russian River SMR	1	2746	2.16%	Percent reduction in harvest is likely overestimated due to the small size and predominately sandy bottom habitat within the proposed MPA. Ref.# 19
Bodega SMCA	0	0	0.00%	
Bodega SMR	1	1633	1.28%	Ref.# 21
Tomales Bay SMRMA	0	0	0.00%	
Drakes Estero SMR	0	0	0.00%	
Point Reyes SMR	1	465	0.37%	Ref.# 24
Point Reyes SMCA	0	0	0.00%	
Double Point SMCA	0	0	0.00%	
Double Point SMR	0	0	0.00%	
Duxbury SMCA	0	0	0.00%	
Fitzgerald - Devils Slide SMCA	0	0	0.00%	
Fitzgerald - Devils Slide SMR	0	0	0.00%	
San Gregorio SMR	0	0	0.00%	
Farallon North SMR	0	0	0.00%	
Southeast Farallon SMR	0	0	0.00%	
Southeast Farallon SMCA	0	0	0.00%	
Regional Total Landings		127,097		

**Graph 5 (Left)/Table 7 (Right). Draft MPA External Proposal A - Maximum potential reductions in total abalone harvest by each proposed MPA, as indicated by 2005 report card data, assuming no displacement of effort.**



Proposed MPA	Number of Report Card Sites in MPA	2005 Harvest (Number of abalone)	Maximum % Reduction in Landings due to MPA	Note (Ref. #- see Table 2 for corresponding report cards sites)
Arena Rock SMCA	0	0	0.00%	
Arena Rock SMR	1	15602	12.28%	Proposed reduction is likely overestimated because the popular Stornetta Ranch area will not be closed. Ref.# 1
Black Point SMCA	0	0	0.00%	
Black Point SMR	2	11251	8.85%	Ref.# 8-9
Gerstle Cove SMR	0	0	0.00%	
Russian River SMR	1	2746	2.16%	Percent reduction in harvest is likely an overestimation due to the small size and predominately sandy bottom habitat within the proposed MPA. Ref.# 19
Bodega Head SMCA	0	0	0.00%	
Bodega Head SMR	1	1633	1.28%	Ref.# 21
Estero Americano SMR	0	0	0.00%	
Estero San Antonio SMR	0	0	0.00%	
Tomales Bay SMR	0	0	0.00%	
Drakes Bay SMCA	0	0	0.00%	
Limantour SMR	0	0	0.00%	
Point Reyes SMR	1	465	0.37%	Ref.# 24
Point Reyes SMCA	0	0	0.00%	
Bolinas Lagoon SMR	0	0	0.00%	
Fitzgerald SMCA	0	0	0.00%	
Fitzgerald SMR	0	0	0.00%	
Southeast Farallone SMR	0	0	0.00%	
Southeast Farallone SMCA	0	0	0.00%	
<b>Regional Total Landings</b>		<b>127,097</b>		



**Graph 6. Maximum potential impact to abalone harvest for MPA proposals in the North Central Coast Study Region.** Data is based on 2005 abalone report card data. Proposal 0 represents the “no change alternative”, or currently established marine protected areas in the state.

