MLPA North Coast Study Region External Array

COVER SHEET

Array Name: Foodshed Array

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Foodshed Array Submission Letter

To: MLPAI SAT, NCRSG, BRTF and Staff; and F&G Commission
From: Tom Shaver, Foodshed Array Creator
Re: Submission of external array for North Coast Study Region
Date: January 29, 2010

The MLPA North Coast "Foodshed" Array attempts to express the perspective of a growing movement of people in our region who are taking a deep look at where the food they eat comes from and what ecological footprint our food choices represent The Anderson Valley Foodshed Group is part of a global movement that seeks to avoid food produced far away, by ecologically destructive means, under unfair labor conditions. We favor food produced locally using organic methods or wildcrafted by people we know to the most intimate practical extent (see the bestseller The Omnivore's Dilemma by Michael Pollan). The aim is to reduce our individual and collective ecological footprint and to disengage from food production and marketing practices that might contribute to a massive ecological breakdown that many consider immanent unless we rapidly change to more ecologically benign ways of living.

We discourage people from buying fish from distant fisheries that are not sustainably managed. It is preferable to buy seafood caught by their neighbors from the nearby ocean. The fishing fleet on the North Coast is currently in steep decline. The placement of Marine Protected Areas (MPAs) in prime, easily accessible fishing grounds or near the mouths of ports, as has occurred in other regions of the state, creates hardship for the area's fishermen and risks a decline of the catch available to local consumers seeking opportunities to make responsible food choices.

This array sees the MLPAI Master Plan preferred size and spacing guidelines (18 to 36 square miles in area and no more than 31 miles apart) to be of dubious additional benefit toward meeting the original intent of the MLPA compared to a Fewer/Larger layout with adaptive and flexible MPAs in between [See http://www.dfg.ca.gov/mlpa/pdfs/agenda_092909iii.pdf for Master Plan overview]. The dearth of key data regarding how many key species are affected by fishing makes for great difficulty in designing MPAs for this region that would yield predictable benefit. The marine environment of the North Coast is among of the most productive and resilient ecosystems in the world. There are many regulatory means already in place to ensure adequate ecosystem protection. Wanton closures of vast areas of the North Coast is not warranted, especially in an atmosphere of vehement opposition coming from many stakeholders [Hilburn, et al Peer Review - http://www.cafisheriescoalition.org/docs/Final_HPW_Review.pdf].

Nevertheless, keeping in mind the intent of the MLPA to "reexamine and redesign California's system of marine protected areas" and the potential for MPAs to bring important benefits for the ecological health and scientific understanding of the region, the Foodshed Array puts forth a modest network of static MPAs, a conceptual framework for addressing fishery improvement issues in between, and a plea for initiating a collaborative multi-use planning and management process throughout the region.

None of the conditions that make MPAs clearly attractive - large depleted areas, critically endangered species (except possibly rockfish), warm water for snorkeling, weak regulatory environment, and species interactions (ie spiny lobster/urchin/kelp) - are present on the North Coast. [Lubchenco, et al The Science of Marine Reserves,

http://humboldtbay.org/harbordistrict/protected-area-workgroup/documents/Lubchenco%20et%20al.pdf]

Rather than an overly precautionary and hastily promulgated set of MPAs such as has been the pattern in other regions, this array urges a prudently judicious approach in which a few static MPAs are established to see how they work in reality, with more flexible MPAs in between to more fully and adaptively meet the goals of the MLPA in the short term, while more data and understanding are gathered of how MPAs might benefit the region in the long term. Further protective measures can be taken up in five years after state wide implementation of the MLPA has had a chance to operate and broader issues of ocean management can be addressed.

Once established, these MPAs will continue to be only a single component of a regional ecosystem protection strategy. What is needed is a comprehensive, integrated, multi-use, marine management plan for the North Coast. A potential model is the newly enacted Massachusetts Ocean Management Plan that was developed in a broadly collaborative process by the Massachusetts Ocean Partnership. It is unfortunate that the MLPAI process is proceeding in the absence of such a plan.

Fishermen in New Zealand, threatened with the closure of their fishing grounds in an MPA banded together to form their own marine stewardship plan and worked with scientists and regulatory authorities to institute commercial fishing spot closures, voluntary reductions in recreational bag limits and other measures that put those with the most intimate knowledge of the fishery out in front of efforts to protect the marine ecosystem. [http://www.fmg.org.nz/index.php?p=home]

A collaborative "Survey of Nearshore Fishes in and Near Central California Marine Protected Areas" is an example of how fishermen can be engaged in monitoring their own fishery [http://humboldtbay.org/harbordistrict/protected-area-workgroup/documents/Starr%20et%20al.pdf]. Standards for ecologically sensitive fishing could be refined for each fishery so that the entire zone or region could become known as a sustainable fishery for all species.

The bonds among stakeholders, scientists and the Department of Fish and Game being forged through the MLPAI process will be useful for subsequent, more comprehensive deliberations about the future of state and federal waters off the North Coast.

The array proposed in the Narrative Rationale and laid out in MarineMap is an attempt to fulfill the intent and goals of the MLPA in a way that better fits the ecological and socioeconomic context of the North Coast than approaches taken in other study regions. While previous approaches have assumed that overfishing will continue outside of MPAs, the Foodshed array proposes a strategy to stop overfishing in the entire region. This more adaptive approach may be seen as the future toward which other study regions may choose to evolve.

This Array chooses to incorporate Point Arena within the North Coast marine stewardship region to demonstrate how the Foodshed approach could move down the coast, improving fisheries, and fostering the cultural transformation toward ecological living that is needed for humans to survive on earth.

I could not, in good conscience, create an array that would follow the preferred guidelines. Based on my experience hand harvesting seaweed commercially and diving for abalone, and my rudimentary understanding of ecology, the science that I was able to access in the short time I was given does not support the establishment of MPAs on the North Coast of the size, proximity to ports, frequency and designation of those in previous study regions.

Please excuse the longer than normal Narrative Rationale and this submission letter. I have tried to be thorough, yet brief, in my explanation for choosing to deviate from the norm. I hope you will find it refreshing that I have thrown in some creative thinking.

I have included web links to references for your easy access and links to MLPA documents for readers unfamiliar with the MLPA who may read these documents.

I look forward to your assessment of how this array might more fully meet the goals of the MLPA than other approaches.

Yours,

Tom Shaver
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California MLPA North Coast Region
Foodshed External Array Narrative Rationale

January 29, 2010

This MLPA array assumes that:

1) North Coast marine ecosystems are, for the most part, healthy, highly productive, resilient and not in urgent need of protection by MPAs on the scale of previous MLPA regions.
2) The region is better served ecologically and socio-economically by a network of fewer Static MPAs of larger than minimum size with adaptive, locally designed Mobile MPAs in between, than an MPA system in any configuration that meets the preferred size and spacing guidelines.
3) Mobile MPAs can do a better job of protecting a larger area than Static MPAs.
4) Port-centered Marine Stewardship Zones overseen by integrative Local Marine Stewardship Councils can be more effective at adaptive marine management and ecosystem protection than top-down regulatory schemes and static "no take" MPAs.
5) A modest, flexible approach to establishing MPAs on the North Coast at this time will allow greater adaptability of MPAs within the future context of comprehensive, multi-use ocean management planning.
6) The core rationale for the preferred size and spacing guidelines is to protect rockfish.
7) The take of a negligible amount of a species or the numerically significant - yet ecologically inconsequential - take of a species does not substantially degrade an MPA's capacity for preserving biodiversity.

Static MPAs

This array proposes four MPAs of nearly identical size and location as some of those discussed by the Tri-County Working Group at Pyramid Point, Reading Rock, Punta Gorda, and Ten Mile, but with some modifications of configuration, designation, rationale and allowable take. The along-shore distance between the centers of any neighboring new MPAs falls within the maximum recommended spacing, except between Reading Rock and Punta Gorda. The Ten Mile Creek MPA falls within the spacing guidelines relative to both Point Arena and Saunders Reef MPAs in the North Central Region.

The only no take State Marine Reserve (SMR) proposed for preservation of its intrinsic value is at Ten Mile. All others are State Marine Conservation Areas that allow take of important food species whose predicted level of take is ecologically insignificant or its significant take would have little impact on the core species that the MPA is designed to protect.

Research would primarily be concerned with species of low to moderate range that are the target of static MPAs. Having a steady state population density figure for each species in an area with no fishing pressure would be helpful in adjusting regional and local quotas and bag limits and evaluating the success of efforts to rebuild fish stocks in depleted areas outside of the static MPA.

Estuary reserves are designated for Humboldt Bay, Ten Mile River, and Navarro River to capture habitat critical to the life cycles of many species.

The long distance between Reading Rock and Punta Gorda reflects the lack of an appropriate location for a static MPA in this area that would capture enough key habitat without causing undue socioeconomic harm. This situation is compensated for with the placement of two Mobile MPAs contained within large Port-Based Marine Stewardship Zones off Eureka and Trinidad.

Table 1. Static MPAs

Static MPA	Area (sq. miles)	Next MPA to S. (miles +/-)	Key Habitats Captured	Key Species Protected	Allowable Take
Pyramid Point SMCA	21.3	43	Rocky Shores, Beach, shallow reef, soft bottom, and kelp	Rockfish	Salmon, Dung. Crab, Smelt, Turf Algae, Bull Kelp
Reading Rock SMCA	24.4	76	Beach, Intertidal and Subtidal Softbottom, Subtidal Hardbottom	Rockfish	Dung. Crab
Punta Gorda SMCA	21.5	58	Marine Canyon, Rocky Shores	Rockfish	Dung. Crab, Abalone, Surf Perch, Kelp by Hand Harvest
Ten Mile SMR	13.8	52	Rocky Shores, Intertidal and Subtidal Hardbottom, Subtidal Softbottom, Kelp	Rockfish	No Take
(Saunders Reef SMCA)	(9.3)	(20) (Stewart's Point)	Beach, Rocky Intertidal, Subtidal Hard and Soft Substrate, Kelp	Rockfish	Salmon, Urchin

Mobile MPAs

This array also proposes the placement of adaptive, Mobile MPAs between each static MPA, except between Punta Gorda and Ten Mile, that could oscillate alternately to the north and to the south of the ports of Crescent City, Trinidad, Eureka, Shelter Cove, Noyo, Albion and Point Arena. According to Edward Game of the Center for Applied Environmental Decision Analysis:

> "Although MPAs are generally established as permanent closures, discussions in the recent conservation literature have argued that a shift to more dynamic and adaptive management of marine resources is demanded by the current challenges facing marine environments (4 references cited). Moveable MPAs are attractive for a host of reasons: managers can adaptively learn from present actions, and respond to new information (2 references cited); they can help ensure that MPAs adequately capture spatially dynamic resources (1 reference cited); they address the social reluctance of subsistence fishermen to permanently close important resources (1 reference cited); re-opening of closed areas to extraction allows material access to the benefits accrued in protected areas (1 reference cited)." [pg. 1336, *Ecology Letters*, vol. 12, issue 12, December, 2009]

The Mobile MPAs described and located in MarineMap in this array are examples of how this management tool can be used to improve fisheries. Neither the Mobile MPAs nor the Marine Stewardship Zones proposed in this array are intended to be adopted in proposed form together with the Static MPAs. The exact size, initial location, allowed take and schedule of progression of each Mobile MPA would be determined by the Local Marine Stewardship Council associated with each Mobile MPA. A collaborative process among scientists, Fish & Game, the commercial and recreational fishing

fleet and other relevant stakeholders in each port would craft the enforcement rules and monitoring procedures to obtain optimum benefit from their respective Mobile MPA.

To provide a starting point for discussion and to facilitate comparison with Static MPAs, each Mobile MPA has been depicted on MarineMap to meet the MLPAI size guidelines by extending from shore to the 3 mile limit of state waters, with the northern border being 3 minutes of longitude from the southern border, except for the Shelter Cove Mobile MPA at 1.5 minutes wide. On the North Coast, where distance from one minute of longitude to the next is about 1.15 statute miles these Mobile MPAs work out to be about 3.5 miles wide in the north-south dimension and between 13 and 22 square miles in area. To be easily located by a GPS devise the northern and southern borders fall on whole or half minutes of longitude. Portable shore-based beacons could visually mark the Mobile MPA border.

The Mobile MPAs presented in this array would initially be placed so that the northern or southern border would fall on the whole or half minute of longitude closest to the mouth of the port. This placement would maintain easy access for small craft to open fishing on the side of the port not occupied by a reserve. The allowable take rules could be designed to protect a certain species, or set of species, subject to depletion and commonly caught with a particular fishing method while take of any other species is allowed. Alternatively a given Mobile MPA could be designated for no- or limited-take.

After being in its initial location near the port entrance for one year, the Mobile MPA would move one minute of longitude away form the port mouth, thus opening up a one mile wide trailing edge of presumably improved fishing in easy reach of the port. In these initial years, fishermen in small craft not wishing to pass over the MPA to fishing grounds on the other side of it would have easy access to the side of the port not covered by an MPA. The Mobile MPA would continue moving one minute of longitude away from port each year until the leading border reached a whole or half minute of longitude about 10 miles distant from the port mouth and remained for a final year before flipping to the other side of the port and proceeded moving away from the port in the opposite direction to its fullest extent about 10 miles from the port mouth before shifting back to the initial location.

While portions of the initial and final placement of the Mobile MPA may be in place for less than 3 years, each one minute band in the middle of the progression would be protected for 3 years. The Mobile MPAs proposed would exist for 6 to 8 years. This is plenty of time for local populations of reproductive adults to produce orders of magnitude more offspring than were they subject to fishing pressure. Fishing practices and regulatory regimes could be refined such that population gains are not totally wiped out at the trailing edge of the Mobile MPA, but built upon through successive passages of the Mobile MPA over a stewardship zone.

The southern and northern extent of these mobile MPAs are set at 10 miles to minimize the danger to boats choosing to pass over the MPA to catch the protected fish beyond the border of the MPA. The fishing fleet may prefer to reduce this distance for safety. The impetus for passing over the MPA in years when it is at its farthest extent from port would presumably be counterbalanced by more days of better fishing closer to port at the trailing edge of the MPA.

Rotational MPAs have been successful in the Alskan sea cucumber fishery and the New Zealand scallop fishery [Leal, et al Beyond IFQs in Marine Fisheries http://www.perc.org/files/IFQ%20booklet%20may08.pdf]

This array proposes that the current Static MPA placed just north of the Point Arena warf be changed into a Mobile MPA that moves within a Marine Stewardship Zone (It was not possible to depict the Point Arena Marine Stewardship Zone in MarineMap). Again, a Mobile MPA managed by a Marine Stewardship Council would do a better job of ecosystem protection and have a more positive effect on the fishery than the Static MPA adopted at Point Arena.

Marine Stewardship Zones

The area covered between the northernmost and southernmost extent of each Mobile MPA represents a port-based Marine Stewardship Zone to be overseen by a Local Marine Stewardship Council composed of local representatives of key stakeholders, research institutions, enforcement

agencies, and government entities. This council would be responsible for fine tuning the design and implementation of their corresponding Mobile MPA for optimum benefit to the local community and its neighboring marine ecosystem and for addressing other marine resource issues in ways other than MPAs. The final preferred alternative could stipulate the formation of a North Coast Marine Stewardship Initiative charged with nurturing the formation of Local Marine Stewardship Councils.

Table 2. Mobile MPAs and Marine Stewardship Zones

Port	**Mobile MPA Area (sq mi.)**	**Marine Steward-ship Zone Area (sq. mi.)**	**Miles to nearest static MPA to N. and S.**	**Primary habitats represented in Zone**	**Species Protected**	**Allowable Take**
Crescent City	22.3	112.9	N – 20 S - 23	Sandy Beaches, Hard Bottom 0-100 m, Soft Bottom 0-100 m	Rockfish	All species not related to Rockfish
Trinidad	17.7	87.8	N – 22 S – 54	Rocky Shores, Sandy Beaches, Hard Bottom 0-30 m, Soft Bottom 0-100 m	Rockfish	Salmon, Dung. Crab, Kelp by Hand Harvest Sea Urchin
Eureka	13.8	71.0	N – 44 S - 32	Hardened Shores, Sandy Beaches	Rockfish	Dung. Crab, Salmon
Shelter Cove	6.2	45.1	N – 22 S – 36	Rocky Shores, Sandy Beaches, Unknown, Kelp	Rockfish	Dung. Crab, Red Abalone, Sea Urchin, Kelp by Hand Harvest
Noyo	12.8	67.6	N – 12 S - 40	Rocky Shore, Sandy Beach, Hard Bottom 0-200 m, Soft Bottom 30-200 m, Kelp	Rockfish	Salmon, Dung. Crab, Red Abalone, Sea Urchin, Kelp by Hand Harvest
Albion	13.8	59.9	N – 26 S – 26	Rocky Shore, Hard Bottom 0-200 m, Soft Bottom 30-200 m, Kelp	Rockfish	Salmon, Dung. Crab, Red Abalone, Sea Urchin, Kelp by Hand Harvest
Point Arena	12.8	(70?)	N – 39 S - 13	Rocky Shore, Hard Bottom 0-100 m, Soft Bottom 0-100 m, Kelp	Rockfish	Salmon, Perch, Dung. Crab, Red Abalone, Sea Urchin, Kelp by Hand Harvest

Species Likely to Benefit

This array assumes that rockfish protection is at the core of the rationale for the size and spacing guidelines. Any MPA targeted to protect species with a larger larval dispersal area and adult migratory

range (salmon, pelagic finfish) would be impractically large. Stationary species (kelp, mussels), those with smaller ranges (abalone, copper rockfish, rock crab, urchin, clams) and those associated with specific locations (birds, marine mammals) could, were they the species targeted, be adequately protected in a smaller MPA. The intent, it seems, of the size and spacing guidelines is to ensure that rockfish (and other fish with similar dispersal and range patterns) are represented in order to contain the maximum biodiversity practicable. Take of any other species besides rockfish and allies may be considered insignificant from the biodiversity maintenance standpoint should the predictable amount of take be so small as to have negligible effect on its representation in the ecosystem. Significant take of an abundant species without an interdependent relationship with rockfish could also be allowed with minimal impact on biodiversity. MPAs should disallow take of species other than rockfish that are targeted with fishing methods that commonly or incidentally yield rockfish, especially those methods that risk bycatch of rockfish that are subject to barotraumas.

This array sees "No Take" as a designation for an MPA that is specifically set aside to highlight its intrinsic value. Ecosystem integrity can be functionally equivalent in "No Take" MPAs and those that allow ecologically insignificant take. There is little ecological gain from a large number of "No Take" MPAs along the vast expanses of little visited areas of the North Coast over those that allow take of socio-economically important species by methods that have negligible to very low ecological impact.

This array proposes just one "No Take" SMR at Ten Mile. All other Static MPAs allow take of species that are highly significant to the local community and whose customary method of take is ecologically inconsequential (i.e. kelp by hand harvest) and/or has a positive effect on biodiversity (i.e. urchin).

Allowable Take

This array assumes that hand harvesting of all **edible kelp** species is ecologically benign. It is intrinsic to the long term health and commercial vitality of the edible seaweed industry that an ecologically miniscule amount is harvested in such a manner that the plant is allowed to regrow and propagate to a degree ecologically equivalent to its natural potential.

While take of **red abalone** by free-diving can be ecologically disruptive in some highly popular spots, the take in any 3 to 6 mile long stretch of the North Coast that might be contained in an MPA is unlikely to have any serious impact on biodiversity. Where red abalone are particularly dense, their modest take has positive repercussions on species that compete with abalone for space and food. Abalone diving is an iconic activity on the North Coast with many passionate enthusiasts. Prohibiting the take of abalone in one area leads to over-harvesting at the most popular access points and the attendant safety risks associated with diving deeper and being in the water longer to find scarcer prey.

The tendency of **sea urchins** to form massive monoculture barrens points to the necessity of any Static MPA with fixed length of shoreline on the North Coast to allow sea urchin take to forestall the under-representation of species commonly pushed out or fed upon by sea urchins.

Habitats Protected

It was difficult to use the data provided to determine how to preserve key habitats as a set capable of supporting the various life cycle needs of rock fish. The habitat data provided was of inconsistent quality and provided late in the array creation process. Large portions of habitat for each MPA were listed as "Unknown." This array therefore defers to the judgement of Tri-County Working Group members on the habitat protection rationale for the Static MPAs.

Since they would have differing sets of habitat each time they are moved, each Mobile MPA depicted in the array would contain only a partial subset of the habitat make up of the entire Marine Stewardship zone it would move through. Since the Marine Stewardship Zones and Static MPAs together cover over ½ of the total area of the region, it is assumed that sufficient key habitat would be contained in this array.

The habitats listed in the charts above are the ones most highly represented in each Static MPA or Zone.

Research

Nearly all of the monitoring sites listed in the Regional Profile are contained in the Static MPAs or Marine Stewardship Zones. Scientists with local knowledge would play a pivotal role in the design and monitoring of Mobile MPAs.

Tribal Uses

It is the intention of this array that MPAs not infringe in any way upon sovereign tribal use rights.

Quantitative Summary

Total area contained in Static MPAs = 75.6 square miles

Percent of total region (1023 square miles) contained in Static MPAs = 7.3%

Total area contained in Mobile MPAs = 99.4 square miles

Percent of total region contained in Mobile MPAs = 9.7%

Combined % of total region contained in Static and Mobile MPAs = 17%

Total area contained in Marine Stewardship Zones = 454.3 square miles

Percent of total region contained in Marine Stewardship Zones (MSZs) = 44.4%

Combined % of total region contained in MSZs and Static MPAs = 51.7%

California Marine Life Protection Act Initiative
MLPA North Coast Study Region: Round 1 Evaluations
Staff Summary of Area and Habitats in External Proposed MPA Array A
Date Revised: March 9, 2010

Table 1. Summary of MPAs by Designation for External Proposed MPA Array A

Type of MPA[a]	# of MPAs	Area (mi^2)	% of Study Region
State Marine Reserve (SMR)	4	14.43	1.4%
State Marine Recreational Managed Area (SMRMA)	1	2.44	0.2%
State Marine Park (SMP)	0	0.00	0.0%
State Marine Conservation Area (SMCA)	10	161.50	15.7%
All MPAs combined	15	178.37	17.4%

[a] These are proposed marine protected area (MPA) designations, NOT levels of protection assigned by the MLPA Master Plan Science Advisory Team (SAT). SMRMA is not an MPA designation, but rather a marine managed area designation.

Table 2. Summary of MPAs by Level of Protection for External Proposed MPA Array A

Level of Protection (LOP)	# Proposed	Area (mi^2)	% of Study Region
Very High[b]	5	16.87	1.6%
High	0	0.00	0.0%
Moderate-High	2	32.84	3.2%
Moderate	0	0.00	0.0%
Low[c]	8	128.65	12.5%
Total	15	178.37	17.4%

[b] The “Very High” category includes MPAs with SMR designation, as well as SMRMA designations.

[c] The “Low” category groups together MPAs that are assigned a moderate-low and low level of protection.

Table 3. Individual MPAs in External Proposed MPA Array A[d]

MPA Name	Size[e] (mi^2)	Alongshore Span[f] (mi)	Depth Range[g] (ft)
Pyramid Point (FS) SMCA[h]	21.30	4.7	0 - 124
Crescent City Mobile SMCA[h]	22.27	4.4	0 - 245
Reading Rock (FS) SMCA	19.03	2.8	0 - 244
Trinidad Mobile SMCA[h]	17.69	3.7	0 - 172
Eureka Mobile SMCA[h]	13.81	3.7	0 - 143
Humboldt Bay SMRMA[h]	2.44	N/A	Depth data not available
Punta Gorda (FS) SMCA	21.46	5.7	0 - 1598
Shelter Cove Mobile SMCA[h]	6.21	1.8	0 - 823
Ten Mile (FS) SMR[h]	13.77	3.6	0 - 343
Ten Mile Estuary SMR	0.19	N/A	Depth data not available
Noyo Mobile SMCA[h]	12.85	3.4	0 - 346
Point Cabrillo (FS) SMR	0.37	0.8	0 - 40
Albion Mobile SMCA[h]	13.85	3.6	0 - 368
Navarro River Estuary SMR[h]	0.09	N/A	Depth data not available
Point Arena Mobile SMCA[h]	13.03	3.4	0 - 240

[d] This array proposes a new concept where mobile MPAs would rotate within a given area, referred to as a "stewardship zone." Please see External MPA Array A's supporting materials for a list of those stewardship zones.

[e] Statue mile is the unit of measurement used for this analysis.

[f] Alongshore span measured as direct line from one end of the MPA to the other, roughly paralleling the coastline. An alongshore span is not calculated for estuarine MPAs

[g] Comprehensive bathymetric data for all estuaries is not available. Though bathymetric data do exist in portions of some estuaries, depth ranges are not provided for estuarine MPAs for consistency in evaluations.

[h] Tribal uses are proposed in this MPA. However, pending further policy guidance, these uses are not currently considered in assigning the level of protection for this MPA.

Table 4. Habitat Representation in External Proposed MPA Array A

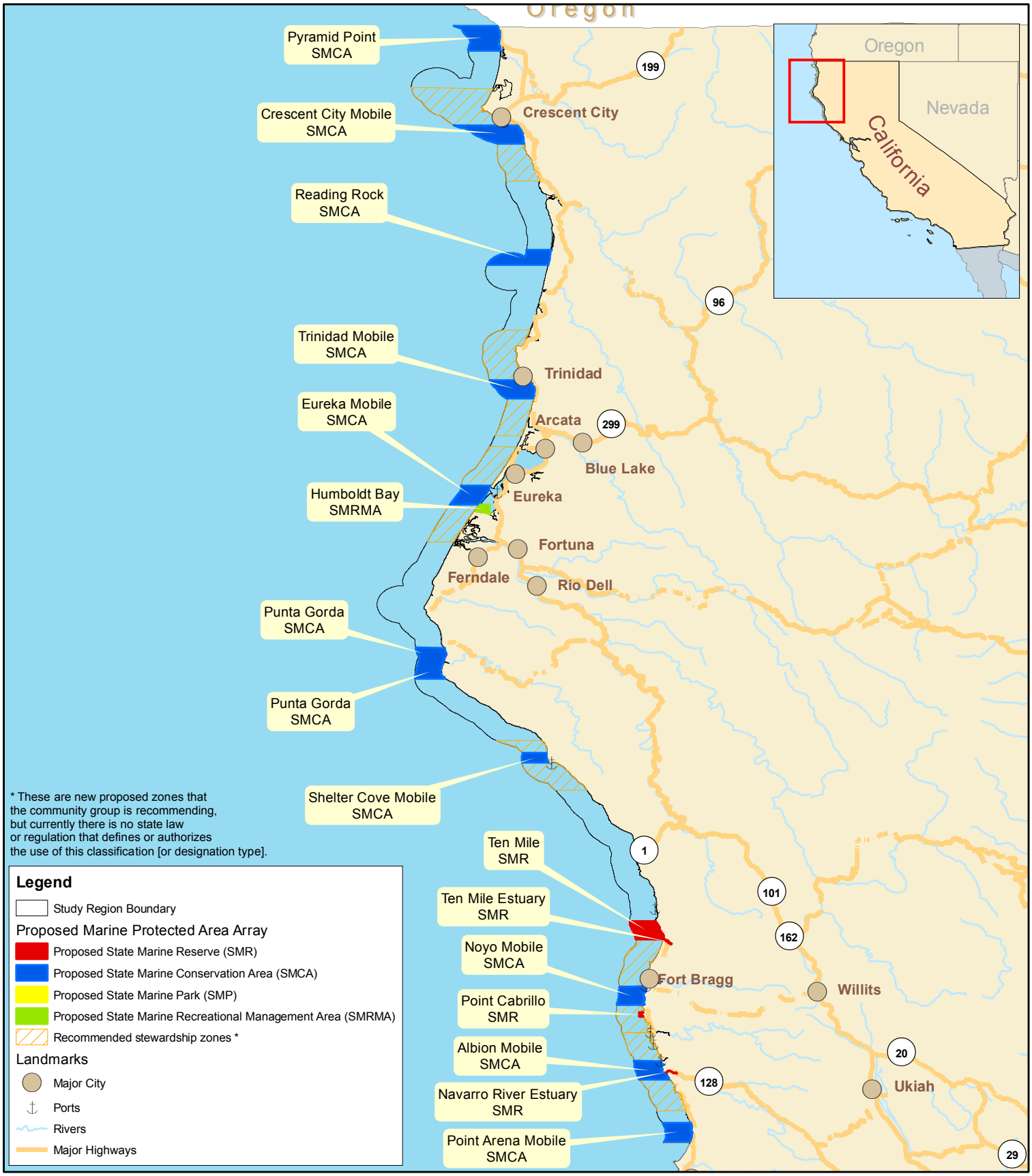
	SMR		SMRMA		SMP		SMCA		Total MPAs	
Habitat[i]	Area	%	Area	%	Area	%	Area	%	Area	%
Intertidal										
Sandy or gravel beach*	1.93	1%	0.00	0%	0.00	0%	22.69	13%	24.62	14%
Rocky shores*	10.70	7%	0.28	<1%	0.00	0%	24.14	15%	35.12	22%
Hardened shores*	0.00	0%	0.00	0%	0.00	0%	1.85	8%	1.85	8%
Coastal marsh*	2.94	3%	2.27	3%	0.00	0%	0.30	<1%	5.52	6%
Coastal marsh	0.06	2%	0.05	1%	0.00	0%	0.01	<1%	0.11	3%
Tidal flats*	0.33	<1%	1.09	2%	0.00	0%	0.00	0%	1.42	2%
Seagrass beds										
Humboldt Eelgrass	0.00	0%	0.92	13%	0.00	0%	0.00	0%	0.92	13%

	SMR		SMRMA		SMP		SMCA		Total MPAs	
Habitat[i]	Area	%	Area	%	Area	%	Area	%	Area	%
Estuarine										
Estuary	0.28	1%	2.44	6%	0.00	0%	0.00	0%	2.73	6%
Hard bottom										
0-30 meters proxy*,[j]	1.30	2%	0.00	0%	0.00	0%	10.15	19%	11.45	21%
0-30 meters	0.76	2%	0.00	0%	0.00	0%	6.26	15%	7.02	17%
30-100 meters	0.69	2%	0.00	0%	0.00	0%	6.65	15%	7.35	16%
100-200 meters	0.00	0%	0.00	0%	0.00	0%	0.23	23%	0.23	23%
>200 meters	0.00	0%	0.00	0%	0.00	0%	0.05	52%	0.05	52%
Soft bottom										
0-30 meters proxy*,[j]	2.60	2%	0.00	0%	0.00	0%	24.88	16%	27.48	17%
0-30 meters	1.92	1%	0.00	0%	0.00	0%	47.22	19%	49.14	19%
30-100 meters	9.20	2%	0.00	0%	0.00	0%	62.52	15%	71.72	17%
100-200 meters	0.53	1%	0.00	0%	0.00	0%	9.29	15%	9.82	16%
>200 meters	0.00	0%	0.00	0%	0.00	0%	2.12	28%	2.12	28%
Unknown										
0-30 meters proxy*,[j]	0.00	0%	0.00	0%	0.00	0%	3.47	18%	3.47	18%
0-30 meters	1.32	1%	2.44	1%	0.00	0%	22.19	13%	25.96	16%
30-100 meters	0.00	0%	0.00	0%	0.00	0%	4.96	19%	4.96	19%
100-200 meters	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.00	0%
>200 meters	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.00	0%
Other										
Offshore rocks*	4.42	3%	0.00	0%	0.00	0%	27.54	20%	31.96	23%
Linear kelp*	2.92	6%	0.00	0%	0.00	0%	9.10	17%	12.02	23%

[i] Note: Habitats are measured as an area (mi^2) except for those with a * notation. Habitats with a * notation are expressed in linear units (mi).

[j] There is limited fine scale data for nearshore habitat, shallower than 10-20 meters depth, in the north coast study region. A proxy for this area was created using a line parallel to the coast and classifying the substrate as either hard or soft substrate depending on the dominant habitat type for the 0-30 meter depth zone in that area based on available fine-scale substrate data, shoreline type, kelp abundance, and expert knowledge.

MLPA North Coast Study Region
Round 1- North Coast External Proposed MPA Array A



California Marine Life Protection Act (MLPA) Initiative

0 5 10 20 Nautical Miles
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N

Projection Information:
Name: NAD 1983 California Teale Albers
Projection: Albers
Datum: North American 1983

Printing Date: February 16, 2010
Created by Marine Map Cartographic Division, UCSB.
For more information, visit http://www.northcoast.marinemap.org/marinemap/

Disclaimer:

This map represents a proposed external marine protected area (MPA) array that has been submitted by a north coast community group or groups for consideration in the MLPA planning process. This external MPA array is under review; it is NOT a recommendation to the California Fish and Game Commission.

California MLPA North Coast Study Region
Description of Marine Protected Areas (MPAs) in Array A
Document Revised March 9, 2010

Name of Array: North Coast External Proposed MPA Array A (ExA)
Author: The Foodshed

Bioregions:
Northern: Oregon/California border to Mattole River
Southern: Mattole River to Alder Creek near Point Arena

Total number of MPAs:	**15**
Number of SMRs:	4
Number of SMCAs:	10
Number of SMPs:	0
Number of SMRMAs:	1
Number proposing tribal uses	11

MPA Name	MPA ID	Bioregion	MPA Boundaries (Exact or Approximate)	Designation	Level of Protection*	Propose Tribal Uses?	Proposed Take Regulations	Other Proposed Regulations
Pyramid Point (FS) SMCA	73903	Northern Bioregion	Northern Border: 42 00' Latitude Southern Border: 41 56' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide State waters from the Oregon Border(42 00') southward to rocks immediately south of the Smith River mouth(42 56')(not including the Smith River)	SMCA	Low	Yes	The take of all living marine resources is prohibited except: 1. The recreational take of salmon by troll; Dungeness crab by trap; smelts by dip net; turf algae by intertidal hand harvest; and bull kelp by hand harvest. 2. The commercial take of salmon by troll; Dungeness crab by trap; turf algae by intertidal hand harvest; and bull kelp by hand harvest.	Traditional Native American uses of this area, including subsistence and ceremonial shore use, have occurred for thousands of years. This SMCA shall in no manner infringe upon sovereign tribal usage rights.

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California MLPA North Coast Study Region
Description of Marine Protected Areas (MPAs) in Array A
Document Revised March 9, 2010

MPA Name	Regional Goals/Objectives	Site-specific Rationale	Other Considerations
Pyramid Point (FS) SMCA	N/A	An MPA at Pyramid Point was originally proposed by the Del Norte MlPA Work Group. This MPA was modified by the Foodshed Group to be an SMCA with allowed uses that are important to maintain for the people in the area and have negligible impact on the ecosystem using the methods specified in the current regulatory environment. SMCA designation allows for adaptive management over time. Protects a diversity of habitats from the Oregon Border to the Smith River, seaward to federal waters. Includes rocky shores, beaches, shallow reef, soft bottom, and kelp forest habitats, a large off-shore island (Prince Island), and several off-shore rocks important for sea bird colonies and waterfowl (Aleutian geese). The reserve will enhance protections for marine mammals and Chinook salmon, steelhead and coastal cutthroat trout, and Threatened southern Oregon/Northern California Coastal Coho stocks, and protect kelp forest, red tail surf perch, nearshore rockfish, and red abalone.	Provides clear and enforceable boundaries with abundant coastal road, highway and trail access and vantage points. Provides vessel access (Port of Brookings, OR) for study or enforcement. Reduces distance from Crescent City to fishing grounds and improves safety of Crescent City fishermen. Reduces economic impacts to sport and commercial fisheries in California's highest poverty level area. MLPA Goals achieved: 1,2,3,5 and 6

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MPA Name	MPA ID	Bioregion	MPA Boundaries (Exact or Approximate)	Designation	Level of Protection*	Propose Tribal Uses?	Proposed Take Regulations	Other Proposed Regulations
Crescent City Mobile SMCA	73904	Northern Bioregion	Boundaries of initial placement: Northern Border: 41 44' Latitude Southern Border: 41 41' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	SMCA	Low	Yes	The take of all living marine resources is prohibited except: 1. The recreational take of salmon by troll; coastal pelagic finfish by hook and line; Dungeness crab by trap; smelts by dip net; redtail surfperch by hook and line from shore; clams by intertidal hand harvest; turf algae by intertidal hand harvest; rock scallop by diving; ghost shrimp by hand harvest; mussels by hand harvest; uching by diving; and bull kelp by hand harvest. 2. The commercial take of salmon by troll; coastal pelagic finfish by hook and line; Dungeness crab by trap; redtail surfperch by hook and line from shore; coonstripe shrimp and spot prawn by trap; clams by intertidal hand harvest; turf algae by intertidal hand harvest; mussels by hand harvest; bull kelp by hand harvest; and urchin by diving.	This MPA shall not infringe in any way upon sovereign tribal uses.

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California MLPA North Coast Study Region
Description of Marine Protected Areas (MPAs) in Array A
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MPA Name	Regional Goals/Objectives	Site-specific Rationale	Other Considerations
Crescent City Mobile SMCA	N/A	This Mobile MPA is preferable to a Static MPA in this location for the reasons laid out in the Foodshed Array Narrative Rationale. This mobile MPA is intended to be more effective at filling the gap in protection between distant MPAs than placing a static MPA anywhere in the zone covered by this mobile MPA. The mapped location shows the potential initial placement of this Mobile MPA within the Crescent City Marine Stewardship Zone. Instead of lining up the middle of the MPA with the mouth of the harbor which would force very small craft to go too far to reach open fishing, the edge of the MPA is at the mouth of the harbor to allow easy access to the open side of the harbor for very small water craft. See Crescent City Marine Stewardship Zone goals for list of primary habitats captured. MLPA Goals achieved: 1,2,3,5 and 6	Procedures for regulation and monitoring would be determined by the Crescent City Marine Stewardship Council. The large number of allowable uses specified merely shows that the intent is to target specific species or sets of species for protection. Instead of such a long list of allowable take it would be preferable to specify: No Take of Rockfish, Greenling, Cabezon and Perch. Determination of which species to protect would be made through the collaborative process among the Crescent City fishing fleet, scientists familiar with the area, CA Fish and Game and relevant stakeholders. The proposed location, size, and allowable take are designated for discussion purposes only. The exact parameters and function of this Mobile MPA would be determined by a Point Arena Marine Stewardship Council.

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California MLPA North Coast Study Region
Description of Marine Protected Areas (MPAs) in Array A
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MPA Name	MPA ID	Bioregion	MPA Boundaries (Exact or Approximate)	Designation	Level of Protection*	Propose Tribal Uses?	Proposed Take Regulations	Other Proposed Regulations
Reading Rock (FS) SMCA	73914	Northern Bioregion	Northern Border: 41 24' Latitude Southern Border: 41 21.5' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	SMCA	Moderate high	No	The take of all living marine resources is prohibited except: 1. The recreational take of Dungeness crab by trap. 2. The commercial take of Dungeness crab by trap.	None specified
Trinidad Mobile SMCA	73912	Northern Bioregion	Boundaries of initial placement: Northern Border: 41 03' Latitude Southern Border: 41 00' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	SMCA	Moderate low	Yes	The take of all living marine resources is prohibited except: 1. The recreational take of salmon by troll; Dungeness crab by trap; urching by diving; and turf algae by intertidal hand harvest. 2. The commercial take of salmon by troll; Dungeness crab by trap; turf algae by intertidal hand harvest; and urchin by diving.	This MPA shall not infringe in any way upon sovereign tribal uses.

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MPA Name	Regional Goals/Objectives	Site-specific Rationale	Other Considerations
Reading Rock (FS) SMCA	N/A	To locate a static MPA for permanent ecosystem protection within the maximum spacing guidelines relative to Pyramid Point. The Reading Rock area is the next point north of Punta Gorda where there is adequate diversity of habitat and where adverse socioeconomic impact from an MPA can be avoided. Habitats Captured: Beach, Intertidal and Subtidal Softbottom, Subtidal Hardbottom Avoids important fishing grounds immediately adjacent to Reading Rock. MLPA Goals achieved: 1,2,3,5 and 6	Take of Dungeness Crab allowed because it is economically important in this area.
Trinidad Mobile SMCA	N/A	This Mobile MPA is preferrable to a Static MPA in this location for the reasons laid out in the Foodshed Array Narrative Rationale. The mapped location shows the potential initial placement of this Mobile MPA within the Trinidad Marine Stewardship Zone. Instead lining up the middle of the MPA with the mouth of the harbor which would force very small craft to go too far to reach open fishing, the edge of the MPA is at the mouth of the harbor to allow easy access to the open side of the harbor for very small water craft (kayak, row boat,etc.) See Trinidad Marine Stewardship Zone goals for list of primary habitats captured. MLPA Goals achieved: 1,2,3,5 and 6	Procedures for regulation and monitoring would be determined by the Trinidad Marine Stewardship Council. Allowable take are socioeconomically important species whose predictable level of take would have inconsequential ecological impact and/or have a positive effect on biodiversity. The proposed location, size, and allowable take are designated for discussion purposes only. The exact parameters and function of this Mobile MPA would be determined by a Trinidad Marine Stewardship Council.

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California MLPA North Coast Study Region
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MPA Name	MPA ID	Bioregion	MPA Boundaries (Exact or Approximate)	Designation	Level of Protection*	Propose Tribal Uses?	Proposed Take Regulations	Other Proposed Regulations
Eureka Mobile SMCA	73910	Northern Bioregion	Boundaries of initial placement: Northern Border: 40 46' Latitude Southern Border: 40 43' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	SMCA	Moderate high	Yes	The take of all living marine resources is prohibited except: 1. The recreational take of salmon by troll; and Dungeness crab by trap. 2. The commercial take of salmon by troll; and Dungeness crab by trap.	This MPA shall not infringe in any way upon sovereign tribal usec
Humboldt Bay SMRMA	73920	Northern Bioregion	Northern Border: 40 43' Latitude Southern Border: Mean high tide Western Border: Mean high tide Eastern Border: 124 14' Longitude	SMRMA	Very high	Yes	Take of all living marine resources is prohibited.	Traditional Tribal subsistence and ceremonial uses shall be allowed. Hunting shall be allowed.
Punta Gorda (FS) SMCA	73902	Southern Bioregion	Northern Boundary = 40 20'N (The Brothers Rock formation) Southern Boundary = 40 15' (Gorda Rock) Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	SMCA	Low	No	The take of all living marine resources is prohibited except: 1. The recreational take of salmon by troll; Dungeness crab by trap; redtail surfperch by hook and line from shore; turf algae by intertidal hand harvest; red abalone by free-diving; and bull kelp by hand harvest. 2. The commercial take of salmon by troll; Dungeness crab by trap; turf algae by intertidal hand harvest; and bull kelp by hand harvest.	None specified

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MPA Name	Regional Goals/Objectives	Site-specific Rationale	Other Considerations
Eureka Mobile SMCA	N/A	This Mobile MPA is preferrable to a Static MPA in this location for the reasons laid out in the Foodshed Array Narrative Rationale. The mapped location shows the potential initial placement of this Mobile MPA within the Eureka Marine Stewardship Zone. Instead lining up the middle of the MPA with the mouth of the harbor which would force very small craft to go too far to reach open fishing, the edge of the MPA is at the mouth of the harbor to allow easy access to the open side of the harbor for very small water craft. See Eureka Marine Stewardship Zone goals for list of primary habitats captured. MLPA Goals achieved: 1,2,3,5 and 6	Procedures for regulation and monitoring would be determined by the Eureka Marine Stewardship Council. Allowable take are socioeconomically important species whose predictable level of take would have inconsequential ecological impact. The proposed location, size, and allowable take are designated for discussion purposes only. The exact parameters and function of this Mobile MPA would be determined by a Eureka Marine Stewardship Council.
Humboldt Bay SMRMA	N/A	Estuary protection.	Proposed by Tri-County Working Group.
Punta Gorda (FS) SMCA	N/A	Expansion of existing MPA. Protects special habitat for rare blue coral and other unique marine species. This stretch of remote Northern California coastline,is the point furthest west in the state. It has a variety of diverse habitats including upwelling zones, submarine canyons, reef structures, and improves study opportunities provided by marine ecosystems that are subject to minimal human impacts. Habitats Captured: Marine Canyon, Rocky Shores MLPA Goals achieved: 1,2,3,5 and 6	Captures off-shore marine canyons on both sides of the bio-regional split. Meets or exceeds sizing guidelines and spacing criterion. Species listed for allowable take are those that Residents of the area would have very far to go to fish and collect if this area were a "no take" zone. Allowable take are socioeconomically important species whose predictable level of take would have inconsequential ecological impact and/or have a positive effect on biodiversity.

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MPA Name	MPA ID	Bioregion	MPA Boundaries (Exact or Approximate)	Designation	Level of Protection*	Propose Tribal Uses?	Proposed Take Regulations	Other Proposed Regulations
Shelter Cove Mobile SMCA	73918	Southern Bioregion	Boundaries of initial placement: Northern Border: 40 03' Latitude Southern Border: 40 01.5' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	SMCA	Low	Yes	The take of all living marine resources is prohibited except: 1. The recreational take of Dungeness crab by trap; turf algae by intertidal hand harvest; urching by diving; and red abalone by free-diving. 2. The commercial take of Dungeness crab by trap; turf algae by intertidal hand harvest; bull kelp by hand harvest; and urchin by diving.	This MPA shall not infringe in any way upon sovereign tribal use rights.
Ten Mile (FS) SMR	73909	Southern Bioregion	Northern border: 39 36' Southern border: 39 33' Western Border: 3 mile limit of state waters Eastern Border: Mean high tide SE corner is just south of the mouth of Ten Mile River	SMR	Very high	Yes	Take of all living marine resources is prohibited.	This MPA shall not infringe in any way upon sovereign tribal use rights.

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California MLPA North Coast Study Region
Description of Marine Protected Areas (MPAs) in Array A
Document Revised March 9, 2010

MPA Name	Regional Goals/Objectives	Site-specific Rationale	Other Considerations
Shelter Cove Mobile SMCA	N/A	To provide a Shelter Cove Marine Stewardship Council with a powerful management tool to improve and maintain the important commercial and recreational fisheries of the Shelter Cove Marine Stewardship Zone. See Shelter Cove Marine Stewardship Zone goals for a list of primary habitats captured. The mapped location shows the potential initial placement of this Mobile MPA within the Point Arena Marine Stewardship Zone. Instead of lining up the middle of the MPA with the mouth of the harbor which would force very small craft to go too far to reach open fishing, the edge of the MPA is at the mouth of the harbor to allow easy access to the open side of the harbor for very small water craft. MLPA Goals achieved: 1,2,3,5 and 6	This Mobile MPA is preferrable to a Static MPA in this location for the reasons laid out in the Foodshed Array Narrative Rationale. Procedures for regulation and monitoring would be determined by the Shelter Cove Stewardship Council. Allowable take are socioeconomically important species whose predictable level of take would have inconsequential ecological impact and/or have a positive effect on biodiversity. The proposed location, size, and allowable take are designated for discussion purposes only. The exact parameters and function of this Mobile MPA would be determined by a Shelter Cove Marine Stewardship Council. The Shelter Cove Mobile MPA at 1.5 minutes of longitude wide is 1/2 the size of the other Mobile MPAs presented in this array. This is to accomodate the safety needs of the small craft that use this harbor which would be hesitant to pass over a 3.5 mile wide closure. This Mobile MPA would progress by 0.5 minute of longitude each year.
Ten Mile (FS) SMR	N/A	This MPA has great diversity in unique marine habitats including; exposed high energy rocky shoreline, sand and gravel beaches, offshore islets, surf grass, kelp beds, hard and soft substrates, while interfacing with the complex estuarine habitats consisting of eelgrass beds, marshlands and mudflat ecosystems. This area is little visited by crab and rockfish fisheries. Few red abalone are harvested on this stretch of the coast. This is the one area of the North Coast where a static "no take" MPA, preserved for its intrisic value will do very little socioeconomic harm. MLPA Goals achieved: 1,3,4,5 and 6	This MPA is adjacent to the mouth of the Ten Mile estuary (proposed SMR). Located at the North end of this MPA is an established marine monitoring site, that along with numerous coastal access points makes it easy for research, recreation and enforcement.

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California MLPA North Coast Study Region
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MPA Name	MPA ID	Bioregion	MPA Boundaries (Exact or Approximate)	Designation	Level of Protection*	Propose Tribal Uses?	Proposed Take Regulations	Other Proposed Regulations
Ten Mile Estuary SMR	73906	Southern Bioregion	Estuary extends from the mouth of Ten Mile River to an area upstream of approximately 1.4 miles.	SMR	Very high	No	Take of all living marine resources is prohibited.	None specified

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MPA Name	Regional Goals/Objectives	Site-specific Rationale	Other Considerations
Ten Mile Estuary SMR	N/A	This SMR protects larval source and enhance reproductive capacity of numerous invertebrate species such as dungeness crabs, ghost shrimp et al. (G1, G2, G4) This MPA expands on long-term protections for complex estuarine habitats, including eelgrass beds, marshlands and mudflat ecosystems.(G1, G2) Supports current DFG coho salmon and steelhead salmon habitat conservation projects while protecting essential nursery for federal and state listed threatened anadromous fish including Coho, King and Steelhead salmon. (G2) Almost the entire stretch of this array is close to population centers, with numerous coastal access points making it easy for research, long- term monitoring, recreation and enforcement possible. (G3, G5)	None specified

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California MLPA North Coast Study Region
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MPA Name	MPA ID	Bioregion	MPA Boundaries (Exact or Approximate)	Designation	Level of Protection*	Propose Tribal Uses?	Proposed Take Regulations	Other Proposed Regulations
Noyo Mobile SMCA	73901	Southern Bioregion	Boundaries of initial placement: Northern Border: 39 25.5' Latitude Southern Border: 39 22.5' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	SMCA	Low	Yes	The take of all living marine resources is prohibited except: 1. The recreational take of salmon by troll; Dungeness crab by trap; turf algae by intertidal hand harvest; red abalone by free-diving; urchin by diving; and bull kelp by hand harvest. 2. The commercial take of salmon by troll; Dungeness crab by trap; turf algae by intertidal hand harvest; bull kelp by hand harvest; and urchin by diving.	This MPA shall not infringe in any way upon sovereign tribal use rights.
Point Cabrillo (FS) SMR	73908	Southern Bioregion	Northern Border: 30 21.6' Latitude Southern Border: 30 20.6' Latitude Western Border: 123 50' Longitude Eastern Border: Mean high tide	SMR	Very high	No	Take of all living marine resources is prohibited.	None specified

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California MLPA North Coast Study Region
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MPA Name	Regional Goals/Objectives	Site-specific Rationale	Other Considerations
Noyo Mobile SMCA	N/A	To provide a Noyo Marine Stewardship Council with a powerful management tool to improve and maintain the important commercial and recreational fisheries of the Point Arena Marine Stewardship Zone. See Noyo Marine Stewardship Zone goals for list of primary habitats captured. The mapped location shows a potential initial placement of this Mobile MPA within the Noyo Marine Stewardship Zone. Instead lining up the middle of the MPA with the mouth of the harbor which would force very small craft to go too far to reach open fishing, the edge of the MPA is at the mouth of the harbor to allow easy access to the open side of the harbor for very small water craft. MLPA Goals achieved: 1,2,3,5 and 6	This Mobile MPA is preferrable to a Static MPA in this location for the reasons laid out in the Foodshed Array Narrative Rationale. Procedures for regulation and monitoring would be determined by the Noyo Marine Stewardship Council. Allowable take are socioeconomically important species whose predictable level of take would have inconsequential ecological impact and/or have a positive effect on biodiversity. The proposed location, size, and allowable take are designated for discussion purposes only. The exact parameters and function of this Mobile MPA would be determined by a Noyo Marine Stewardship Council.
Point Cabrillo (FS) SMR	N/A	Maintains research site that has been in place for many years. MLPA Goals achieved: 1,2,3,4,5 and 6	Borders of existing MPA adjusted to fit nearest convenient coordinates rather than original irregular border.

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California MLPA North Coast Study Region
Description of Marine Protected Areas (MPAs) in Array A
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MPA Name	MPA ID	Bioregion	MPA Boundaries (Exact or Approximate)	Designation	Level of Protection*	Propose Tribal Uses?	Proposed Take Regulations	Other Proposed Regulations
Albion Mobile SMCA	73899	Southern Bioregion	Boundaries of initial placement: Northern Border: 39 13.5' Latitude Southern Border: 38 10.5' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	SMCA	Low	Yes	The take of all living marine resources is prohibited except: 1. The recreational take of Dungeness crab by hoop net; turf algae by intertidal hand harvest; red abalone by free-diving; bull kelp by hand harvest; and urchin by diving. 2. The commercial take of salmon by troll; Dungeness crab by trap; turf algae by intertidal hand harvest; bull kelp by hand harvest; and urchin by diving.	This MPA shall not infringe in any way upon sovereign tribal use rights.
Navarro River Estuary SMR	73907	Southern Bioregion	Mouth of the Navarro to three miles inland in estuary waters effected by tidal influence.	SMR	Very high	Yes	Take of all living marine resources is prohibited.	This MPA shall not infringe in any way upon sovereign tribal use rights.
Point Arena Mobile SMCA	73900	Southern Bioregion	Boundaries of initial placement: Northern Border: 39 03.5' Latitude Southern Border: 38 00.5' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	SMCA	Low	Yes	The take of all living marine resources is prohibited except: 1. The recreational take of salmon by troll; Dungeness crab by trap; redtail surfperch by hook and line from shore; turf algae by intertidal hand harvest; red abalone by free-diving; urching by diving; and bull kelp by hand harvest. 2. The commercial take of salmon by troll; Dungeness crab by trap; turf algae by intertidal hand harvest; bull kelp by hand harvest; and urchin by diving.	This MPA shall not infringe in any way upon sovereign tribal use rights.

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Albion Mobile SMCA	N/A	To provide an Albion Marine Stewardship Council with a powerful management tool to improve and maintain the important commercial and recreational fisheries of the Albion Marine Stewardship Zone. See Albion Marine Stewardship Zone goals for list of primary habitats captured by this MPA. The mapped location shows a potential initial placement of this Mobile MPA within the Albion Marine Stewardship Zone. Instead of lining up the middle of the MPA with the mouth of the harbor which would force very small craft to go too far to reach open fishing, the edge of the MPA is at the mouth of the harbor to allow easy access to the open side of the harbor for very small water craft. MLPA Goals achieved: 1,2,3,5 and 6	This Mobile MPA is preferrable to a Static MPA in this location for the reasons laid out in the Foodshed Array Narrative Rationale. Procedures for regulation and monitoring would be determined by the Albion Marine Stewardship Council. Allowable take are socioeconomically important species whose predictable level of take would have inconsequential ecological impact and/or have a positive effect on biodiversity. The proposed location, size, and allowable take are designated for discussion purposes only. The exact parameters and function of this Mobile MPA would be determined by an Albion Marine Stewardship Council.
Navarro River Estuary SMR	N/A	Estuary protection (Goals 1.2.3.4 & 6) All species protected as well as prime shorebird habitat and anadromous fish refugia.	Recreational kayaking and canoeing destination.
Point Arena Mobile SMCA	N/A	To provide a Point Arena Marine Stewardship Council with a powerful management tool to improve and maintain the important commercial and recreational fisheries of the Point Arena Marine Stewardship Zone. It is proposed in this location to demonstrate how a formerly Static MPA could be changed into a Mobile MPA that is more adaptable, effective and balanced in its approach to meeting MLPA goals. A special closure around Arena Rock could remain in place, covering an area similar in size to its former configuration as a Marine Natural Preserve, but with boundaries more in keeping with MLPA guidelines for designating boundaries. MLPA Goals achieved: 1,2,3,5 and 6	This Mobile MPA is preferrable to a Static MPA in this location for the reasons laid out in the Foodshed Array Narrative Rationale. Procedures for regulation and monitoring would be determined by the Point Arena Marine Stewardship Council. The mapped location shows the furthest northern extent of this Mobile MPA within the Point Arena Marine Stewardship Zone. Allowable take are socioeconomically important species whose predictable level of take would have inconsequential ecological impact and/or have a positive effect on biodiversity. The proposed location, size, and allowable take are designated for discussion purposes only. The exact parameters and function of this Mobile MPA would be determined by a Point Arena Marine Stewardship Council.

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California MLPA North Coast Study Region
List of Proposed Stewardship Zones in External MPA Array A
Document Created February 16, 2010

Name of Array: North Coast External Proposed MPA Array A (ExA)
Author: The Foodshed

Bioregions:
Northern: Oregon/California border to Mattole River
Southern: Mattole River to Alder Creek near Point Arena

Name	Shape ID	Bioregion	MPA Boundaries (Exact or Approximate)	Proposed Take Regulations	Other Proposed Regulations
Crescent City Marine Stewardship Zone	73905	Northern Bioregion	Northern Border: 41Âº 50' Latitude Southern Border: 41Âº 35' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	The take of all living marine resources is prohibited except: 1. The recreational take of salmon by troll; coastal pelagic finfish by hook and line; Dungeness crab by trap; smelts by dip net; redtail surfperch by hook and line from shore; clams by intertidal hand harvest; turf algae by intertidal hand harvest; rock scallop by diving; ghost shrimp by hand harvest; mussels by hand harvest; and bull kelp by hand harvest. 2. The commercial take of salmon by troll; coastal pelagic finfish by hook and line; Dungeness crab by trap; redtail surfperch by hook and line from shore; coonstripe shrimp and spot prawn by trap; clams by intertidal hand harvest; turf algae by intertidal hand harvest; mussels by hand harvest; and bull kelp by hand harvest.	None specified

California MLPA North Coast Study Region
List of Proposed Stewardship Zones in External MPA Array A
Document Created February 16, 2010

Name	Site-specific Rationale	Other Considerations
Crescent City Marine Stewardship Zone	To define a zone for which the Crescent City community could collaborate among diverse stakeholders and institutions to develop an integrated, multi-use marine management plan that addresses all of the goals of the MLPA. This zone would be overseen by a Crescent City Marine Stewardship Council. The proposed borders of this zone are for discussion purposes only. The exact borders would be determined through an iterative process involving the Crescent City Marine Stewardship Council. The southern and northern borders are set to contain the most frequently visited fishing grounds out of Crescent City Harbor, yet not prohibitively far for boats that want to access open fishing beyond the Mobile MPA when it is in effect at its furthest extent. The Crescent City Mobile MPA would operate within this zone. Habitats captured:Sandy Beaches, Hard Bottom 0-100 m, Soft Bottom 0-100 m MLPA Goals achieved: 1,2,3,5 and 6	The more intimately the local community is involved in the design and implementation of sustainable marine management practices, the more effective those strategies will be at protecting marine life.

California MLPA North Coast Study Region
List of Proposed Stewardship Zones in External MPA Array A
Document Created February 16, 2010

Name	Shape ID	Bioregion	MPA Boundaries (Exact or Approximate)	Proposed Take Regulations	Other Proposed Regulations
Trinidad Marine Stewardship Zone	73913	Northern Bioregion	Northern Border: 41Âº 11' Latitude Southern Border: 40Âº 54' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	None specified	None specified
Eureka Marine Stewardship Zone	73911	Northern Bioregion	Northern Border: 40Âº 54' Latitude Southern Border: 40Âº 38' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	None specified	None specified

California MLPA North Coast Study Region
List of Proposed Stewardship Zones in External MPA Array A
Document Created February 16, 2010

Name	Site-specific Rationale	Other Considerations
Trinidad Marine Stewardship Zone	To define a zone for which the Trinidad community could collaborate among diverse stakeholders and institutions to develop an integrated, multi-use marine management plan that addresses all of the goals of the MLPA. This zone would be overseen by a Trinidad Marine Stewardship Council. The proposed borders of this zone are for discussion purposes only. The exact borders would be determined through an iterative process involving the Trinidad Marine Stewardship Council. The southern and northern borders are set to contain the most frequently visited fishing grounds out of Trinidad Harbor, yet not prohibitively far for boats that want to access open fishing beyond the Mobile MPA when it is in effect at its furthest extent. The Trinidad Mobile MPA would operate within this zone. Habitats Captured: Rocky Shores, Sandy Beaches, Hard Bottom 0-30 m, Soft Bottom 0-100 m MLPA Goals achieved: 1,2,3,5 and 6	The more intimately the local community is involved in the design and implementation of sustainable marine management practices, the more effective those strategies will be at protecting marine life.
Eureka Marine Stewardship Zone	To define a zone for which the Eureka community could collaborate among diverse stakeholders and institutions to develop an integrated, multi-use marine management plan that addresses all of the goals of the MLPA. This zone would be overseen by an Eureka Marine Stewardship Council. The proposed borders of this zone are for discussion purposes only. The exact borders would be determined through an iterative process involving the Eureka Marine Stewardship Council. The southern and northern borders are set to contain the most frequently visited fishing grounds out of Humboldt Bay, yet not prohibitively far for boats that want to access open fishing beyond the Mobile MPA when it is in effect at its furthest extent. The Point Arena Mobile MPA would operate within this zone. Habitats Captured: Hardened Shores, Sandy Beaches MLPA Goals achieved: 1,2,3,5 and 6	The more intimately the local community is involved in the design and implementation of sustainable marine management practices, the more effective those strategies will be at protecting marine life.

California MLPA North Coast Study Region
List of Proposed Stewardship Zones in External MPA Array A
Document Created February 16, 2010

Name	Shape ID	Bioregion	MPA Boundaries (Exact or Approximate)	Proposed Take Regulations	Other Proposed Regulations
Shelter Cove Marine Stewardship Zone	73919	Southern Bioregion	Northern Border: 40Âº 05' Latitude Southern Border: 39Âº 57' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	None specified	None specified
Noyo Marine Stewardship Zone	73915	Southern Bioregion	Northern Border: 39Âº 33' Latitude Southern Border: 39Âº 18' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	None specified	None specified

California MLPA North Coast Study Region
List of Proposed Stewardship Zones in External MPA Array A
Document Created February 16, 2010

Name	Site-specific Rationale	Other Considerations
Shelter Cove Marine Stewardship Zone	To define a zone for which the Shelter Cove community and fishermen who launch from Shelter Cove could collaborate among diverse stakeholders and institutions to develop an integrated, multi-use marine management plan that addresses all of the goals of the MLPA. Primary Habitat Types: Rocky Shores, Sandy Beaches, Unknown, Kelp This zone would be overseen by a Shelter Cove Marine Stewardship Council. The proposed borders of this zone are for discussion purposes only. The exact borders would be determined through an iterative process involving the Shelter Cove Marine Stewardship Council. The southern and northern borders are set to contain the most frequently visited fishing grounds out of Shelter Cove, yet not prohibitively far for boats that want to access open fishing beyond the Mobile MPA when it is in effect at its furthest extent. Since most of the boats launching from Shelter Cove are very small, this zone is smaller than the others depicted in this array. The Shelter Cove Mobile MPA would operate within this zone.	The more intimately the local community is involved in the design and implementation of sustainable marine management practices, the more effective those strategies will be at protecting marine life.
Noyo Marine Stewardship Zone	To define a zone for which the Fort Bragg community could collaborate among diverse stakeholders and institutions to develop an integrated, multi-use marine management plan that addresses all of the goals of the MLPA. This zone would be overseen by a Noyo Marine Stewardship Council. The proposed borders of this zone are for discussion purposes only. The exact borders would be determined through an iterative process involving the Noyo Marine Stewardship Council. The southern and northern borders are set to contain the most frequently visited fishing grounds out of Noyo Harbor, yet not prohibitively far for boats that want to access open fishing beyond the Mobile MPA when it is in effect at its furthest extent. The Noyo Mobile MPA would operate within this zone. Habitats Captured: Rocky Shore, Sandy Beach, Hard Bottom 0-200 m, Soft Bottom 30-200 m, Kelp MLPA Goals achieved: 1,2,3,5 and 6	The more intimately the local community is involved in the design and implementation of sustainable marine management practices, the more effective those strategies will be at protecting marine life.

California MLPA North Coast Study Region
List of Proposed Stewardship Zones in External MPA Array A
Document Created February 16, 2010

Name	Shape ID	Bioregion	MPA Boundaries (Exact or Approximate)	Proposed Take Regulations	Other Proposed Regulations
Albion Marine Stewardship Zone	73916	Southern Bioregion	Northern Border: 39Âº 18' Latitude Southern Border: 39Âº 05.5' Latitude Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	None specified	None specified
Point Arena Marine Stewardship Zone	73917	Southern Bioregion	Northern Border: 39Âº 03.5' Latitude Southern Border: 38Âº 52' Latitude (Northern Border of Saunders Reef SMCA) Western Border: 3 mile limit of state waters Eastern Border: Mean high tide	None specified	None specified

California MLPA North Coast Study Region
List of Proposed Stewardship Zones in External MPA Array A
Document Created February 16, 2010

Name	Site-specific Rationale	Other Considerations
Albion Marine Stewardship Zone	To define a zone for which the Albion community could collaborate among diverse stakeholders and institutions to develop an integrated, multi-use marine management plan that addresses all of the goals of the MLPA. Primary Habitats Captured: Rocky Shore, Hard Bottom 0-200 m, Soft Bottom 30-200 m, Kelp This zone would be overseen by an Albion Marine Stewardship Council. The proposed borders of this zone are for discussion purposes only. The exact borders would be determined through an iterative process involving the Albion Marine Stewardship Council. The southern and northern borders are set to contain the most frequently visited fishing grounds out of Albion Harbor, yet not prohibitively far for boats that want to access open fishing beyond the Mobile MPA when it is in effect at its furthest extent. The Albion Mobile MPA would operate within this zone. Habitats Captured: Rocky Shore, Hard Bottom 0-200 m, Soft Bottom 30-200 m, Kelp MLPA Goals achieved: 1,2,3,5 and 6	The more intimately the local community is involved in the design and implementation of sustainable marine management practices, the more effective those strategies will be at protecting marine life.
Point Arena Marine Stewardship Zone	To define a zone for which the Point Arena community could collaborate among diverse stakeholders and institutions to develop an integrated, multi-use marine management plan that addresses all of the goals of the MLPA. The proposed borders of this zone are for discussion purposes only. The exact borders would be determined through an iterative process involving the local community, scientists and government agencies. The southern and northern borders are set to contain the most frequently visited fishing grounds from the Point Arena warf, yet not prohibitively far for boats that want to access open fishing beyond the Mobile MPA when it is in effect at its furthest extent. It is impossible to depict the entire zone on MarineMap. The southern border would be contiguous with the northern border of Saunders Reef SMCA. See Boundary Description for coordinates. The Point Arena Mobile MPA would operate within this zone. Habitats Captured: Rocky Shore, Hard Bottom 0-100 m, Soft Bottom 0-100 m, Kelp MLPA Goals achieved: 1,2,3,5 and 6	The more intimately the local community is involved in the design and implementation of sustainable marine management practices, the more effective those strategies will be at protecting marine life.

California Marine Life Protection Act Initiative
North Coast Study Region
Consideration of Existing Marine Protected Areas
Revised January 12, 2010

Please indicate how each to the five existing marine protected areas (MPAs) in the MLPA North Coast Study Region listed below should be addressed. You may propose that the existing MPA be retained without change, be retained with changes to either the boundaries or regulations, or removed. Please also describe the rationale for your proposed action in the space provided. For your reference, the existing regulations and boundaries for these MPAs are included in Tables 1 and 2.

Existing MPA	**Retain** (no changes to boundaries or regulations)	**Modify** (included with boundary or regulation change)	**Remove** (not included)	**Rationale for Decision**
Punta Gorda SMR		Enlarge Boundary		Protect greater biodiversity
MacKerricher SMCA			Remove	With other larger MPAs in place, this very small reserve is not needed.
Point Cabrillo SMCA		Modify Boundary		For simplicity of determining borders in mapping and reality
Russion Gulch SMCA			Remove	With other larger MPAs in place, this very small reserve is not needed.
Van Damme SMCA			Remove	With other larger MPAs in place, this very small reserve is not needed.

SMR = State Marine Reserve, SMCA = State Marine Conservation Area

Table 1. Regulation summary for existing state MPAs in the north coast study region.

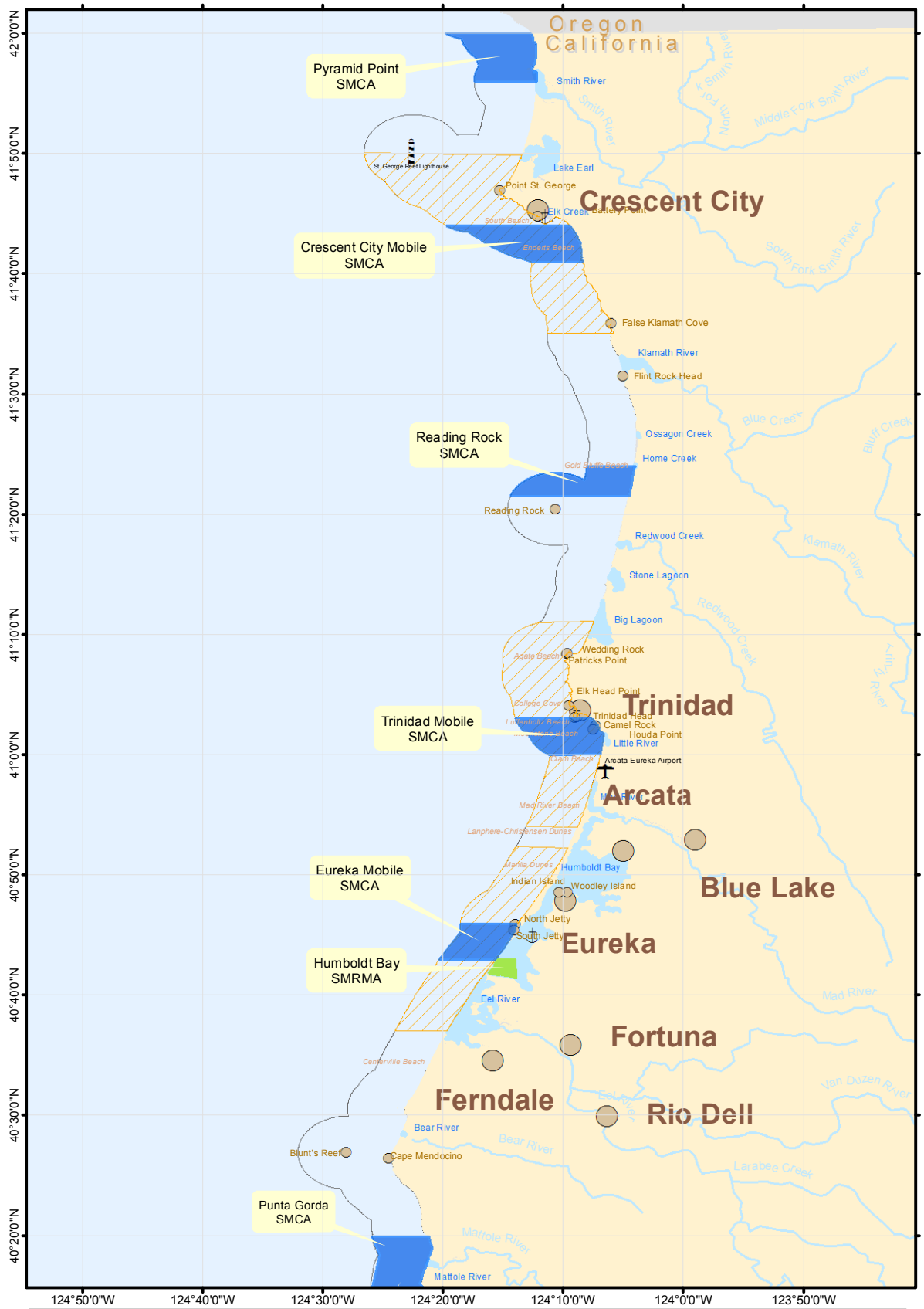
MPA Name	Allowed Take: Recreational	Allowed Take: Commercial	Other Restrictions
Punta Gorda SMR	Take of all living marine resources is prohibited.	Take of all living marine resources is prohibited.	Other restrictions exist regarding: swimming, boating, firearms, public entry, pesticides, herbicides and other regulated chemicals, litter, aircraft, pets, potential memorandums of understanding, and scientific research.
MacKerricher SMCA	Finfish, red abalone, chiones, clams, cockles, rock scallops, native oysters, crabs, lobster, ghost shrimp, sea urchins, mussels and marine worms except that no worms may be taken in any mussel bed unless taken incidentally to the take of mussels.	Finfish, crabs, ghost shrimp, jackknife clams, sea urchins, squid, algae except giant kelp and bull kelp and worms except that no worms may be taken in any mussel bed, nor may any person pick up, remove, detach from the substrate any other organisms, or break up, move or destroy any rocks or other substrate or surfaces to which organisms are attached.	None
Point Cabrillo SMCA	None	Finfish and marine aquatic plants.	None
Russian Gulch SMCA	Finfish, red abalone, chiones, clams, cockles, rock scallops, native oysters, crabs, lobster, ghost shrimp, sea urchins, mussels and marine worms except that no worms may be taken in any mussel bed unless taken incidentally to the take of mussels.	Finfish, crabs, ghost shrimp, jackknife clams, sea urchins, algae except giant kelp and bull kelp and worms except that no worms may be taken in any mussel bed, nor may any person pick up, remove, detach from the substrate any other organisms, or break up, move or destroy any rocks or other substrate or surfaces to which organisms are attached.	None
Van Damme SMCA	Finfish, red abalone, chiones, clams, cockles, rock scallops, native oysters, crabs, lobster, ghost shrimp, sea urchins, mussels and marine worms except that no worms may be taken in any mussel bed unless taken incidentally to the take of mussels.	Finfish, crabs, ghost shrimp, jackknife clams, sea urchins, algae except giant kelp and bull kelp and worms except that no worms may be taken in any mussel bed, nor may any person pick up, remove, detach from the substrate any other organisms, or break up, move or destroy any rocks or other substrate or surfaces to which organisms are attached.	None

Table 2. Boundaries for existing state MPAs in the north coast study region.

MPA Name	Boundaries
Punta Gorda SMR	This area is bounded by the three-fathom inshore depth contour, the 30- fathom depth contour and the following points: 40o 16.43' N. lat. 124o 22.00' W. long.; 40o 16.43' N. lat. 124o 23.50' W. long.; 40o 14.83' N. lat. 124o 23.18' W. long.; and 40o 15.23' N. lat. 124o 21.62' W. long.
MacKerricher SMCA	This area is bounded by the mean high tide line, the 3-fathom depth contour and the following points: 39o 29.81' N. lat. 123o 47.50' W. long.; 39o 29.95' N. lat. 123o 47.80' W. long.; 39o 27.62' N. lat. 123o 48.80' W. long.; and 39o 27.55' N. lat. 123o 48.52' W. long.
Point Cabrillo SMCA	This area is bounded by the mean high tide line, a distance of 1000 feet seaward of mean lower low water, and the following points: 39o 21.24' N. lat. 123o 49.25' W. long.; 39o 21.33' N. lat. 123o 49.64' W. long.; 39o 20.66' N. lat. 123o 49.68' W. long.; and 39o 20.57' N. lat. 123o 49.27' W. long.
Russian Gulch SMCA	This area is bounded by the mean high tide line, the 3-fathom depth contour and the following points: 39o 19.86' N. lat. 123o 48.84' W. long.; 39o 19.85' N. lat. 123o 48.89' W. long.; 39o 19.52' N. lat. 123o 48.46' W. long.; and 39o 19.52' N. lat. 123o 48.23' W. long.
Van Damme SMCA	This area is bounded by the mean high tide line, the 3-fathom depth contour and the following points: 39o 16.45' N. lat. 123o 47.60' W. long.; 39o 16.355' N. lat. 123o 47.60' W. long.; 39o 16.27' N. lat. 123o 47.545' W. long.; and 39o 16.27' N. lat. 123o 47.43' W. long.

MLPA North Coast Study Region Round 1 - North Coast External Proposed MPA Array A

Northern Bioregion (Oregon/California border to Mattole River)



California Marine Life Protection Act (MLPA) Initiative

0 2.5 5 10 Nautical Miles

0 3 6 12 Statute Miles

0 3.5 7 14 Kilometers

N

Date: 16 February 2010

Created by:
Marine Map Cartographic Division, UCSB.

For more information visit:
http://www.northcoast.marinemap.org/marinemap/

marine map

www.marinemap.org

Disclaimer:

This map represents a proposed external marine protected area (MPA) array that has been submitted by a north coast community group or groups for consideration in the MLPA planning process. This external MPA array is under review; it is NOT a recommendation to the California Fish and Game Commission.

Legend

Proposed Marine Protected Area Array
- Proposed State Marine Reserve (SMR)
- Proposed State Marine Conservation Area (SMCA)
- Proposed State Marine Park (SMP)
- Proposed State Marine Recreational Management Area (SMRMA)
- Recommended stewardship zones *

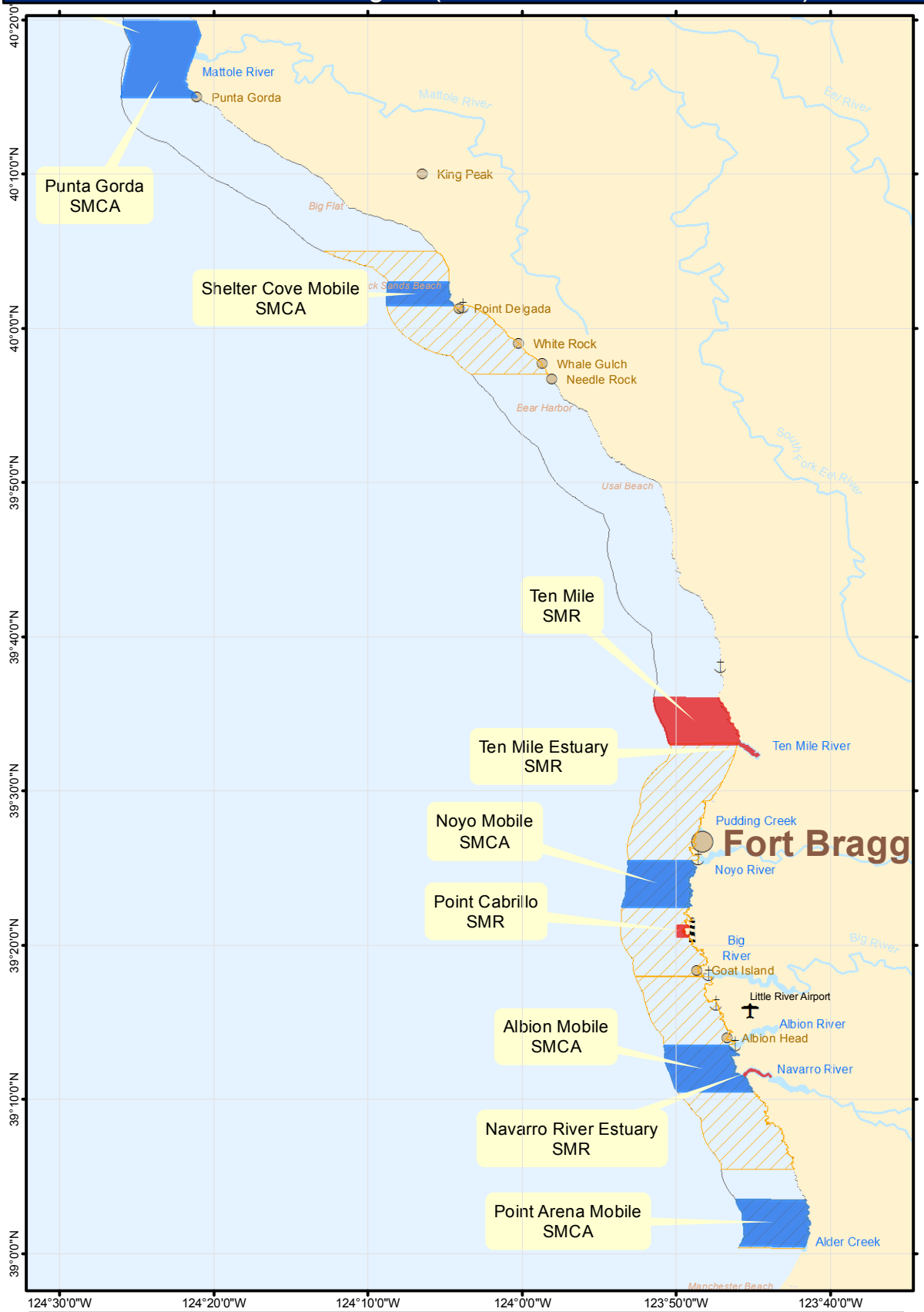
- North Coast Study Region Boundary
- Estuaries
- Rivers

- Lighthouse
- Airport
- Coastal Point
- Major City
- Ports

* These are new proposed zones that the community group is recommending, but currently there is no state law or regulation that defines or authorizes the use of this classification [or designation type].

MLPA North Coast Study Region Round 1 - North Coast External Proposed MPA Array A

Southern Bioregion (Mattole River to Alder Creek)



California Marine Life Protection Act (MLPA) Initiative

0 2 4 8 Nautical Miles

0 2.5 5 10 Statute Miles

0 2.5 5 10 Kilometers

N

Date: 16 February 2010

Created by:
Marine Map Cartographic Division, UCSB.

For more information visit:
http://www.northcoast.marinemap.org/marinemap/

marine map

www.marinemap.org

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Legend

Proposed Marine Protected Area Array

- Proposed State Marine Reserve (SMR)
- Proposed State Marine Conservation Area (SMCA)
- Proposed State Marine Park (SMP)
- Proposed State Marine Recreational Management Area (SMRMA)
- Recommended stewardship zones *

- North Coast Study Region Boundary
- Estuaries
- Rivers

- Lighthouse
- Airport
- Coastal Point
- Major City
- Ports

* These are new proposed zones that the community group is recommending, but currently there is no state law or regulation that defines or authorizes the use of this classification [or designation type].

California MLPA North Coast Project
Habitat Calculations for North Coast External Proposed MPA Array A (ExA)
Document Revised on: March 3, 2010

	How Measured	Total Available Habitat	Pyramid Point (FS) SMCA	Crescent City Mobile SMCA	Reading Rock (FS) SMCA	Trinidad Mobile SMCA	Eureka Mobile SMCA
MPA ID			73903	73904	73914	73912	73910
MPA Designation			SMCA	SMCA	SMCA	SMCA	SMCA
Level of Protection			Low	Low	Moderate high	Moderate low	Moderate high
SAT Evaluation Bioregion			Northern	Northern	Northern	Northern	Northern
Area	sq miles	1,027.23	21.30	22.27	19.03	17.69	13.81
Alongshore Span	miles	NA	4.66	4.42	2.82	3.75	3.66
ESI Shoreline	miles	516.66	5.87	4.37	2.89	5.26	5.13
Min Depth	feet	0.00	0.00	0.00	0.00	0.00	0.00
Max Depth	feet	1,667.00	124.00	245.00	244.00	172.00	143.00
Beaches	miles	180.42	4.27	3.44	2.89	2.96	3.28
Rocky Shores	miles	159.08	1.60	0.92	0.00	2.30	0.00
Hardened Shores	miles	22.10	0.00	0.00	0.00	0.00	1.85
Coastal Marsh	miles	88.60	0.00	0.00	0.00	0.00	0.00
Coastal Marsh (area)	sq miles	3.51	0.00	0.00	0.00	0.00	0.00
Tidal Flats	miles	66.46	0.00	0.00	0.00	0.00	0.00
Humboldt Eelgrass	sq miles	7.07	0.00	0.00	0.00	0.00	0.00
Estuary	sq miles	43.49	0.00	0.00	0.00	0.00	0.00
Offshore Rocks	miles	140.73	2.84	2.00	0.00	4.09	0.00
Linear Kelp	miles	52.10	0.00	0.00	0.00	0.20	0.00
Hard (0 - 30m) Proxy	miles	54.01	0.43	0.95	0.00	0.00	0.00
Hard (0 - 30m)	sq miles	42.32	0.99	1.06	0.00	0.04	0.01
Hard (30 - 100m)	sq miles	45.08	0.00	2.05	0.00	0.00	0.00
Hard (100 - 200m)	sq miles	0.99	0.00	0.00	0.00	0.00	0.00
Hard (> 200m)	sq miles	0.09	0.00	0.00	0.00	0.00	0.00
Soft (0 - 30m) Proxy	miles	159.39	4.22	3.35	2.88	4.06	0.38
Soft (0 - 30m)	sq miles	252.26	14.82	6.61	7.70	10.56	0.32
Soft (30 - 100m)	sq miles	420.79	2.53	10.43	9.88	4.59	0.00
Soft (100 - 200m)	sq miles	62.48	0.00	0.00	0.00	0.00	0.00
Soft (> 200m)	sq miles	7.67	0.00	0.00	0.00	0.00	0.00
Unknown (0 - 30m) Proxy	miles	19.10	0.00	0.00	0.00	0.00	3.47
Unknown (0 - 30m)	sq miles	164.96	2.69	2.06	1.40	2.34	9.08
Unknown (30 - 100m)	sq miles	26.74	0.28	0.05	0.04	0.16	4.40
Unknown (100 - 200m)	sq miles	0.15	0.00	0.00	0.00	0.00	0.00
Unknown (> 200m)	sq miles	0.20	0.00	0.00	0.00	0.00	0.00

SMCA = state marine conservation area SMP = state marine park SMR = state marine reserve SMRMA = state marine recreational management area

California MLPA North Coast Project
Habitat Calculations for North Coast External Proposed MPA Array A (ExA)
Document Revised on: March 3, 2010

	Humboldt Bay SMRMA	Punta Gorda (FS) SMCA	Shelter Cove Mobile SMCA	Ten Mile (FS) SMR	Ten Mile Estuary SMR	Noyo Mobile SMCA	Point Cabrillo (FS) SMR
MPA ID	73920	73902	73918	73909	73906	73901	73908
MPA Designation	SMRMA	SMCA	SMCA	SMR	SMR	SMCA	SMR
Level of Protection	Very high	Low	Low	Very high	Very high	Low	Very high
SAT Evaluation Bioregion	Northern	Southern	Southern	Southern	Southern	Southern	Southern
Area	2.44	21.46	6.21	13.77	0.19	12.85	0.37
Alongshore Span	N/A	5.70	1.76	3.58	N/A	3.42	0.81
ESI Shoreline	3.64	3.22	2.66	8.49	3.24	8.04	2.59
Min Depth	N/A	0.00	0.00	0.00	N/A	0.00	0.00
Max Depth	N/A	1598.00	823.00	343.00	N/A	346.00	40.00
Beaches	0.00	1.10	0.94	1.50	0.42	1.13	0.00
Rocky Shores	0.28	2.12	1.72	6.99	0.51	6.91	2.59
Hardened Shores	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coastal Marsh	2.27	0.00	0.00	0.00	2.30	0.00	0.00
Coastal Marsh (area)	0.05	0.00	0.00	0.00	0.05	0.00	0.00
Tidal Flats	1.09	0.00	0.00	0.00	0.00	0.00	0.00
Humboldt Eelgrass	0.92	0.00	0.00	0.00	0.00	0.00	0.00
Estuary	2.44	0.00	0.00	0.00	0.19	0.00	0.00
Offshore Rocks	0.00	0.85	0.20	2.77	0.00	9.27	1.65
Linear Kelp	0.00	0.38	0.23	2.56	0.00	3.20	0.36
Hard (0 - 30m) Proxy	0.00	2.39	0.25	1.11	0.00	2.77	0.19
Hard (0 - 30m)	0.00	1.28	0.19	0.61	0.00	1.13	0.15
Hard (30 - 100m)	0.00	1.90	0.00	0.69	0.00	1.51	0.00
Hard (100 - 200m)	0.00	0.22	0.00	0.00	0.00	0.00	0.00
Hard (> 200m)	0.00	0.05	0.00	0.00	0.00	0.00	0.00
Soft (0 - 30m) Proxy	0.00	3.81	1.53	2.45	0.00	0.72	0.15
Soft (0 - 30m)	0.00	1.59	2.17	1.84	0.00	0.35	0.08
Soft (30 - 100m)	0.00	9.47	2.95	9.20	0.00	7.29	0.00
Soft (100 - 200m)	0.00	3.00	0.56	0.53	0.00	1.85	0.00
Soft (> 200m)	0.00	2.00	0.12	0.00	0.00	0.00	0.00
Unknown (0 - 30m) Proxy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown (0 - 30m)	2.44	1.95	0.22	0.90	0.19	0.72	0.13
Unknown (30 - 100m)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown (100 - 200m)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown (> 200m)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SMCA = state marine conservation area SMP = state marine park SMR = state marine reserve SMRMA = state marine recreational management area

California MLPA North Coast Project
Habitat Calculations for North Coast External Proposed MPA Array A (ExA)
Document Revised on: March 3, 2010

	Albion Mobile SMCA	Navarro River Estuary SMR	Point Arena Mobile SMCA
MPA ID	73899	73907	73900
MPA Designation	SMCA	SMR	SMCA
Level of Protection	Low	Very high	Low
SAT Evaluation Bioregion	Southern	Southern	Southern
Area	13.85	0.09	13.03
Alongshore Span	3.57	N/A	3.43
ESI Shoreline	6.96	1.58	4.57
Min Depth	0.00	N/A	0.00
Max Depth	368.00	N/A	240.00
Beaches	0.82	0.00	1.85
Rocky Shores	5.85	0.61	2.73
Hardened Shores	0.00	0.00	0.00
Coastal Marsh	0.30	0.64	0.00
Coastal Marsh (area)	0.00	0.01	0.00
Tidal Flats	0.00	0.33	0.00
Humboldt Eelgrass	0.00	0.00	0.00
Estuary	0.00	0.09	0.00
Offshore Rocks	7.77	0.00	0.52
Linear Kelp	3.37	0.00	1.73
Hard (0 - 30m) Proxy	2.46	0.00	0.89
Hard (0 - 30m)	0.83	0.00	0.74
Hard (30 - 100m)	0.91	0.00	0.29
Hard (100 - 200m)	0.01	0.00	0.00
Hard (> 200m)	0.00	0.00	0.00
Soft (0 - 30m) Proxy	1.36	0.00	2.58
Soft (0 - 30m)	0.44	0.00	2.65
Soft (30 - 100m)	7.12	0.00	8.26
Soft (100 - 200m)	3.88	0.00	0.00
Soft (> 200m)	0.00	0.00	0.00
Unknown (0 - 30m) Proxy	0.00	0.00	0.00
Unknown (0 - 30m)	0.66	0.09	1.08
Unknown (30 - 100m)	0.00	0.00	0.02
Unknown (100 - 200m)	0.00	0.00	0.00
Unknown (> 200m)	0.00	0.00	0.00