

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://humboldtby.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.

[\[http://www.fmg.org.nz/index.php?p=home\]](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 [\[http://humboldtby.org/harbordistrict/protected-area-workgroup/documents/Starr%20et%20al.pdf\]](http://humboldtby.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 device 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 from 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 Alaskan 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 Stewardship 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%