CALIFORNIA MARINE LIFE PROTECTION ACT

MASTER PLAN FOR MARINE PROTECTED AREAS

# APPENDIX D

## North Central Coast: MPA Background and Priorities

August 24, 2016

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# 1. Introduction

The Marine Life Protection Act (MLPA), passed by the California Legislature in 1999, required the state to redesign its previously existing system of 63 marine protected areas (MPAs), covering approximately 2.7% of state waters (less than 0.25% of which occurred in no-take MPAs), to increase its coherence and effectiveness at protecting the state's marine life, habitats, and ecosystems.[1] From 2004 to 2012, the California Resources Agency (now California Natural Resource Agency [CNRA]), California Department of Fish and Game (now California Department of Fish and Wildlife [CDFW]), and Resources Legacy Fund Foundation (now Resources Legacy Fund [RLF], entered into a public-private partnership called the California Marine Life Protection Act Initiative (MLPA Initiative)[2] to implement the MLPA through science-based and stakeholder driven regional MPA planning processes (see Appendix A). By December 2012, the MPA planning processes for each of the four coastal regions were completed, resulting in a comprehensive, interconnected statewide network of 124 MPAs[3] and 15 special closures, constituting approximately 16% of state waters (9.4% of which in no-take MPAs).[4] Core to redesigning and siting California's MPAs, as well as to the ongoing management of the statewide MPA network, is the Marine Life Protection Program (MLPP), established pursuant to the MLPA.[5]

In recognition of the regional MPA planning processes and varying ecological, social, and economic conditions along California's approximately 1,100-mile coastline (Fox et al. 2013a), appended to the 2016 Master Plan are Regional MPA Background and Priorities documents (Appendices C-F). These four Regional MPA Background and Priorities documents have a standardized structure and correspond to each completed regional MPA network implemented through the MLPA Initiative from north to south, including the North Coast (Appendix C), North Central Coast (Appendix D), Central Coast (Appendix E), and South Coast (Appendix F). Regional MPA Background and Priorities documents include region-specific MPA design considerations and priorities moving forward; which together provide important context to base future informed statewide MPA management decisions upon. They are not meant to contain specific details for management protocols and methodologies; and instead are intended as living documents that are readily accessible for reference and adaptive management, and serve as a logical starting place for guiding regionally-based activities. Each Regional MPA Background and Priorities document includes unique regional features and considerations taken into account when designing the MPAs, regional goals and objectives, summaries of regional MPAs, and regional plans for scientific and enforcement considerations. For the purpose of keeping each Regional MPA Background and Priorities document concise and user friendly, many of these features are described in brief, and further in-depth information can be found through provided web links.

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[1] California Fish and Game Code (FGC) §2853(a)

[2] MLPA Initiative. (2004). Memorandum of Understanding among the California Resources Agency, the California Department of Fish and Game, and the Resources Legacy Fund Foundation for the California Marine Life Protection Act Initiative. Retrieved Apr 1, 2015 from https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=30339

[3] MPAs are a subset of Marine Managed Areas (MMAs), however throughout this document the more common term "MPA" is used as an umbrella to refer to all types of protected areas. Total number of MPAs includes 111 new or redesigned MPAs and 13 MPAs previously established in 2003 at the northern Channel Islands that were retained without change. Total number of MPAs does not include previously existing San Francisco Bay MPAs

[4] Options for a planning process in the fifth region, San Francisco Bay, have been developed for consideration at a future date. See Appendix A and CDFW's website for more information: http://www.wildlife.ca.gov/Conservation/Marine/MPAs/Network/San-Francisco-Bay

[5] FGC §2853(b)

# 2. Description of Region

## 2.1 Unique Regional Features

The North Central Coast regional planning process to design and site MPAs occurred from 2007 to 2010, and was the second of four planning regions completed through the MLPA Initiative. Encompassing 763 square miles (1,976 square kilometers) of coastal waters, the region extends from the shoreline (mean high tide) to the boundary between state and federal waters, three nautical miles from shore.[6] The North Central Coast region spans a straight-line distance of approximately 146 statute miles (235 kilometers) of the California coastline (with about 470 statute miles [756 kilometers] of actual coastline) from Alder Creek near Point Arena in Mendocino County to Pigeon Point in San Mateo County. The region also includes state waters surrounding the Farallon Islands. The region includes a broad array of habitats that range in depth. The edge of the continental shelf, where it transitions downward to become the continental slope, is called the shelf-slope break, which occurs at approximately 656 feet (200 meters); the continental slope is generally outside of the region, as the maximum depth in the region is 382 feet (116 meters). The continental shelf varies in width along the region from 3.6 miles (5.8 kilometers) at its narrowest location to 27.2 miles (43.8 kilometers) at its widest (where it extends beyond state waters) along the 328 foot (100 meter) contour. While much of the seafloor in the region is soft (sand or mud) bottom, there are also rocky reefs, pinnacles, and rocky outcrops. A detailed description of the North Central Coast region is found in the California MLPA Initiative Regional Profile of the North Central Coast Study Region.[7] Data sources can be found on CDFW's website,[8] data viewer,[9] and file transfer protocol (FTP) site.[10] The following section is intended to summarize that description, including the key features and considerations used in the design and implementation of MPAs in the region.

The North Central Coast region is part of the California Current Large Marine Ecosystem, one of only four temperate upwelling systems in the world, considered globally important for biodiversity because of its high productivity and the large numbers of species it supports.[11] Some of the unique features in the region include:

- A broad continental shelf with hard bottom (e.g., rocky reefs) and soft bottom habitats, all less than 656 feet (200 meters)
- The Farallon Islands, an important biological hotspot 28 miles west of San Francisco, that provides nesting sites for 12 species of seabirds (the largest concentration of nesting seabirds in the contiguous United States) and serves as a migratory stopover site for many other species of seabirds

[6] The boundary of state waters for the purposes of the 2016 Master Plan is from mean high tide to three nautical miles offshore of all intertidal rocks and mouths of embayments, including large open bays (excluding state waters in San Francisco Bay, which represent approximately 473 square miles). This method of measurement creates instances where the state water boundary is further offshore than three nautical miles (e.g., Monterey Bay and the area around the Farallon Islands).
[7] MLPA Initiative. (2005). *Regional Profile of the North Central Coast Study Region: Alder Creek/Point Arena to Pigeon Point, California*. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/mpa/nccprofile.asp
[8] Descriptions and summaries of California's MPAs are provided on the CDFW website: https://www.wildlife.ca.gov/MPAs
[9] CDFW's marine and coastal data viewer MarineBIOS can be found on the CDFW website: https://www.wildlife.ca.gov/MarineBIOS
[10] Additional data sources can be found on CDFW's FTP site: ftp://ftp.dfg.ca.gov/R7_MR/
[11] World Wildlife Fund. (2000). The Global 200 Ecoregions: A User's Guide. WWF. Washington D.C.

- A major upwelling center occurs at Point Arena, with cold nutrient rich waters flowing south along the entire Sonoma coast and deflecting offshore at Point Reyes and out into the Gulf of Farallones
- Estuaries are relatively rare in the region (i.e., Bolinas Lagoon, Drakes Estero, Tomales Bay, and others)
- Relative to other parts of the state, the North Central Coast region is vital to many species of top predators such as marine mammals and white sharks, including specific areas in the region (e.g., Gulf of the Farallones and the Farallon Islands) that provide significant foraging and breeding grounds
- Major urban center, San Francisco, located adjacent to the region
- During non-upwelling seasons and El Niño years, the nutrients that flow out from San Francisco Bay become important
- Kelp forests in the region include both bull kelp and giant kelp; bull kelp dominates north of Davenport (Santa Cruz County), particularly off rocky headlands in the northern portion of the region (Sonoma County coastline)

# 3. Considerations for Designing North Central Coast MPAs

During the MLPA Initiative, the members of the MLPA North Central Coast Regional Stakeholder Group (NCCRSG) committed and participated in activities that included developing "alternative proposals for marine protected areas within the North Central Coast planning region that meet the requirements [and goals] of the MLPA".[12] The NCCRSG agreed that regional goals, objectives, and design and implementation considerations were all crucial to develop an effective system of MPAs that stakeholders support. While the same general MPA planning process structure was used throughout the four coastal planning regions, specific details regarding alternative MPA proposal development varied and the iterative nature of the process allowed for adaptation based on lessons learned and unique characteristics of each region. Multiple rounds of MPA proposal development also provided stakeholder groups with evaluations of the extent to which their draft proposals would meet science and feasibility design guidelines, built trust among stakeholders, increased awareness of constituencies' particular interests, allowed the stakeholder group to develop improved cross-interest proposals, accommodated decision support-tools that allowed stakeholders to collaboratively develop MPA designs, and increased and facilitated interactions between MLPA Initiative bodies and interested members of the public (see Appendix A). This section provides specific overviews of the various design considerations used in the North Central Coast MPA planning process.

## 3.1 Regional Goals and Objectives

Regional goals are broad statements of what MPAs ultimately aim to achieve, objectives are more specific and measurable statements of what MPAs may accomplish to attain a related goal (Pomeroy et al. 2004). Once set, regional goals and objectives influence crucial design decisions regarding MPA size, location, boundaries, and management measures, while also helping to inform monitoring, evaluation, and the adaptive management process. Recognizing this, the regional MPA planning process included the development and application of regionally specific goals and objectives that were developed and adopted by the NCCRSG prior to the formal MPA design process with the intent they be used as guiding principles. Regional goals were largely taken directly from the six network goals of the MLPA itself while the more specific objectives were based on regional priorities and lessons learned from designing MPAs in the Central Coast planning region. Regional goals and objectives were utilized by the NCCRSG when identifying the intent for a particular MPA site. Included below are the regional goals and objectives of the North Central Coast planning region.

[12] MLPA Initiative. (2007). *Charter of the MLPA Second Phase Blue Ribbon Task Force, Master Plan Science Advisory Team, Statewide Interests Group, and North Central Coast Regional Stakeholder Group*. Retrieved Sept 21 from: http://www.dfg.ca.gov/marine/pdfs/agenda4_052207.pdf

**Goal 1. To protect the natural diversity and abundance[13] of marine life, and the structure, function, and integrity of marine ecosystems.**

1. Protect species diversity and abundance consistent with natural fluctuations by including and maintaining areas of high native species diversity and representative habitats.
2. Include areas with diverse habitat types in close proximity to each other.
3. Protect natural size and age structure and genetic diversity of populations in representative habitats.
4. Protect natural trophic structure and food webs in representative habitats.
5. Protect ecosystem structure, function, integrity and ecological processes to facilitate recovery of natural communities from disturbances both natural and human induced.

**Goal 2. To help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.**

1. Help protect or rebuild populations of rare, threatened, endangered, depressed, depleted, or overfished species, where identified, and the habitats and ecosystem functions upon which they rely.[14]
2. Sustain or increase reproduction by species most likely to benefit from MPAs through retention of large, mature individuals.[15]
3. Sustain or increase reproduction by species most likely to benefit from MPAs through protection of breeding, foraging, rearing or nursery areas.
4. Protect selected species and the habitats on which they depend while allowing the commercial and/or recreational harvest of migratory, highly mobile, or other species where appropriate through the use of state marine conservation areas and state marine parks.

**Goal 3. To improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbances, and to manage these uses in a manner consistent with protecting biodiversity.**

1. Ensure some MPAs are close to population centers, coastal access points, and/or research and education institutions and include areas of educational, recreational, and cultural use.

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[13] *Natural diversity* is the species richness of a community or area when protected from, or not subjected to, human-induced change (drawn from Allaby 1998 and Kelleher 1992). *Natural abundance* is the total number of individuals in a population protected from, or not subjected to, human-induced change (adapted from Kelleher 1992 and CDFW [2005]. Final Market Squid Fishery Management Plan. Retrieved Aug 10, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=33570&inline=true).

[14] The terms "rare," threatened," "endangered," "depressed," "depleted," and "overfished" referenced here are designations in state and federal legislation, regulations, and fishery management plans (FMPs), e.g., FGC, Marine Mammal Protection Act, Magnuson Stevens Fishery Conservation and Management Act (MSA), California Nearshore FMP, Federal Groundfish FMP. *Rare, endangered,* and *threatened* are designations under the California Endangered Species Act. *Depleted* is a designation under the federal Marine Mammal Protection Act. *Depressed* means the condition of a marine fishery that exhibits declining fish population abundance levels below those consistent with maximum sustainable yield (FGC, Section 90.7). *Overfished* means a population that does not produce maximum sustainable yield on a continuing basis (MSA) and in the California Nearshore FMP and federal Groundfish FMP also means a population that falls below the threshold of 30% or 25%, successively, of the estimated unfished biomass.

[15] An increase in lifetime egg production will be an important quantitative measure of an improvement of reproduction.

2. Sustain or enhance cultural, recreational, and educational experiences by improving catch rates, maintaining high scenic value, lowering congestion, or increasing size or abundance of species.
3. To enhance the likelihood of scientifically valid studies, replicate appropriate MPA designations, habitats, or control areas (including areas open to fishing) to the extent possible.
4. Develop collaborative scientific monitoring and research projects evaluating MPAs that link with fisheries management information needs, classroom science curricula, volunteer dive programs, and fishermen, and identify participants.

**Goal 4. To protect marine natural heritage, including protection of representative and unique marine life habitats in north central California waters, for their intrinsic value.**

1. Include within MPAs the following habitat types: estuaries, the intertidal zone at the Farallon Islands, and subtidal waters (including the water column and benthic habitats) around the Farallon Islands.
2. Include and replicate, to the extent possible [practicable], representatives of all marine habitats identified in the MLPA or the *California MLPA Master Plan for Marine Protected Areas* across a range of depths.

**Goal 5. To ensure that north central California's MPAs have clearly defined objectives, effective management measures, and adequate enforcement, and are based on sound scientific guidelines.**

1. Minimize negative socioeconomic impacts and optimize positive socioeconomic impacts for all users, to the extent possible, and if consistent with the MLPA and its goals and guidelines.
2. For all MPAs in the region, involve interested parties to help develop objectives, a long- term monitoring plan that includes standardized biological and socioeconomic monitoring protocols, and a strategy for MPA evaluation, and ensure that each MPA objective is linked to one or more regional objectives.
3. To the extent possible, effectively use scientific guidelines in the *California MLPA Master Plan for Marine Protected Areas*.

**Goal 6. To ensure that the North Central Coast's MPAs are designed and managed, to the extent possible, as a component of a statewide network.**

1. Develop a process to inform adaptive management that includes stakeholder involvement for regional review and evaluation of management effectiveness to determine if regional MPAs are an effective component of a statewide network.
2. Develop a mechanism to coordinate with future MLPA regional stakeholder groups in other regions to ensure that the statewide MPA network meets the goals of the MLPA.

## 3.2 Design Considerations

The NCCRSG recognized several issues that should be considered in the design and evaluation of MPAs. Like the MPA design considerations contemplated in the 2008 Master Plan,[16] these

[16] CDFW. (2008). *Draft Master Plan for Marine Protected Areas*. Retrieved Mar 5, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

considerations may apply to all MPAs and MPA proposals regardless of the specific goals and objectives of that MPA. The design considerations below were intended to be incorporated with the goals and objectives and provided to the MLPA Master Plan Science Advisory (SAT), MLPA Blue Ribbon Task Force (BRTF), and the California Fish and Game Commission (Commission). Design considerations with long-term monitoring components were used in developing monitoring plans and will be used to inform the adaptive management process.

Primary design considerations include the following:

- In evaluating the siting of MPAs, considerations shall include the needs and interests of all users.
- Recognize relevant portions of existing state and federal fishery management areas and regulations, to the extent possible, when designing new MPAs or modifying existing ones.
- To the extent possible, site MPAs to prevent fishing effort shifts that would result in serial depletion.
- When crafting MPA proposals, include considerations for design found in the Nearshore Fishery Management Plan (NFMP)[17] and the draft Abalone Recovery and Management Plan.[18]
- In developing MPA proposals, consider how existing state and federal programs address the goals and objectives of the MLPA and the North Central Coast region as well as how these proposals may coordinate with other programs.
- To the extent possible, site MPAs adjacent to terrestrial federal, state, county, or city parks, marine laboratories, or other "eyes on the water" to facilitate management, enforcement, and monitoring.
- To the extent possible, site MPAs to facilitate use of volunteers to assist in monitoring and management.
- To the extent possible, site MPAs to take advantage of existing long-term monitoring studies.

[17] Design considerations from the NFMP:

1. Restrict take in any MPA [intended to meet the NFMP goals] so that the directed fishing or significant bycatch of the 19 NFMP species is prohibited.
2. Include some areas that have been productive fishing grounds for the 19 NFMP species in the past but are no longer heavily used by the fishery.
3. Include some areas known to enhance distribution or retain larvae of NFMP species
4. Consist of an area large enough to address biological characteristics such as movement patterns and home range. There is an expectation that some portion of NFMP stocks will spend the majority of their life cycle within the boundaries of the MPA.
5. Consist of areas that replicate various habitat types within each region including areas that exhibit representative productivity.

[18] Design considerations from Abalone Recovery and Management Plan:

Proposed MPA sites should satisfy at least four of the following criteria.

1. Include within MPAs suitable rocky habitat containing abundant kelp and/or foliose algae
2. Insure presence of sufficient populations to facilitate reproduction.
3. Include within MPAs suitable nursery areas, in particular crustose coralline rock habitats in shallow waters that include microhabitats of moveable rock, rock crevices, urchin spine canopy, and kelp holdfasts.
4. Include within MPAs the protected lee of major headlands that may act as collection points for water and larvae.
5. Include MPAs large enough to include large numbers of abalone and for research regarding population dynamics.
6. Include MPAs that are accessible to researchers, enforcement personnel, and others with a legitimate interest in resource protection.

- To the extent possible, design MPA boundaries that facilitate ease of public recognition and ease of enforcement.
- Consider existing public coastal access points when designing MPAs.
- MPA design should consider the benefits and drawbacks of siting MPAs near to or remote from public access.
- Consider the potential impacts of climate change, community alteration, and distributional shifts in marine species when designing MPAs.
- To the extent possible, preserve the diversity of recreational, educational, commercial, and cultural uses.
- To the extent possible, optimize the design of the MPA network to facilitate monitoring and research that answers resource management questions; an example is including MPAs of different protection levels in similar habitats and depths, adjacent or in otherwise comparable locations, to state marine reserves, to evaluate the effectiveness of different protection levels in meeting regional and statewide goals.

## 3.3 Unique Design Considerations

Regional MPA design and implementation considerations are additional factors that may help address enforcement and socioeconomic considerations, and encourage public involvement, while meeting the goals and design guidelines of the MLPA.[19] During the MLPA Initiative process, MPA design and implementation considerations were applied at the regional level. Each regional MPA planning process required the consideration of unique regional design and/or policy considerations (Fox et al. 2013a, b). For example, during the North Central Coast regional MPA planning process from 2007 to 2010, 16 memorandums specific to the North Central Coast were issued, including clarifying and reaffirming science design guidelines, and providing key guidance on private land ownership and MPAs. A complete historical record of all North Central Coast MPA design and implementation considerations can be found on CDFW's website.[20]

## 3.4 Implementation Considerations

Once implemented, a regional MPA network component requires effective management, strong public outreach, and a sound monitoring plan. Implementation considerations serve an important role in providing recommendations to the Commission and to managing agencies to ensure the success of the newly established MPAs. Recommended implementation considerations were based on local knowledge and took into account the regional MPA network component. Implementation considerations for the North Central Coast planning region include the following:

- Improve public outreach related to MPAs through the use of docents, improved signage, and production of an educational brochure for North Central Coast MPAs.
- When appropriate, phase the implementation of North Central Coast MPAs to ensure their effective management, monitoring, and enforcement.

[19] CDFW. (2008). *Draft Master Plan for Marine Protected Areas*. *Appendix O, page O-6*. Retrieved Mar 4, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

[20] North Central Coast recommendations: transmissions binders (Binder 1, Policy Context): http://www.dfg.ca.gov/marine/mpa/binders_ncc.asp

- Ensure adequate funding for monitoring, management, and enforcement is available for implementing new MPAs.
- Develop regional management and enforcement measures, including cooperative enforcement agreements, adaptive management, and jurisdictional maps, which can be effectively used, adopted statewide, and periodically reviewed.
- Incorporate volunteer monitoring and/or cooperative research, where appropriate.

The philosophy of participation from diverse stakeholder groups will continue throughout ongoing management of the MPAs. *The California Collaborative Approach: Marine Protected Area Partnership Plan* (the Partnership Plan)[21] describes the importance of engaging with unique and regionally diverse stakeholders for MPA implementation by leveraging the human and financial resources of state and local partners, ensuring transparent communication between management agencies and partners, and engaging in partnerships. The collaborative approach outlined in the Partnership Plan emphasizes that broad support and active engagement with marine policy and science across all partner and stakeholder groups are essential to the success of the implementation of the statewide network of MPAs.[22]

[21] Ocean Protection Council. (2014).*The California Collaborative Approach: Marine Protected Areas Partnership Plan*. Retrieved Mar 4, 2015 from http://www.opc.ca.gov/2014/05/draft-the-california-collaborative-approach-marine-protected-area-partnership-plan-open-for-public-comment/

[22] Ibid.

# 4. Summary of Regional MPAs

A network of 25 and six special closures, covering approximately 152 square miles (393.7 square kilometers) of state waters, or about 20% of the North Central Coast region, went into effect in May 2010. The North Central Coast MPA network was the second of four coastal regions to successfully establish MPAs pursuant to the MLPA (see Appendix A, Section 6.3). This section provides an overview of the North Central Coast's MPAs, including summary statistics on the area within different types of MPAs in the region, the size and depth of each individual MPA, and habitat representation by MPA type and by individual MPA. Types of MPAs in the North Central Coast planning region include State Marine Reserves (SMRs), State Marine Conservation Areas (SMCAs), three State Marine Recreational Management Areas (SMRMAs), and special closures. Throughout all tables and figures in this section, all statistics are from CDFW's Marine Region Geographic Information Systems (GIS) unit.[23] Statistics in this section were updated March 2016 and are subject to change as improvements in geographic data become available. Detailed profiles of each North Central Coast MPA can be found on the CDFW website, including designation type, size and location, key habitats protected, boundaries and regulations, rationale for why the MPA was chosen, species likely to benefit, and North Central Coast regional resources with additional information.[24]

[23] CDFW's Marine Region Geographic Information Systems Unit: https://www.wildlife.ca.gov/Conservation/Marine/GIS
[24] Individual MPA overview sheets can be found on the CDFW website: https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Outreach-Materials#la-26716428-mpa-overview-sheets

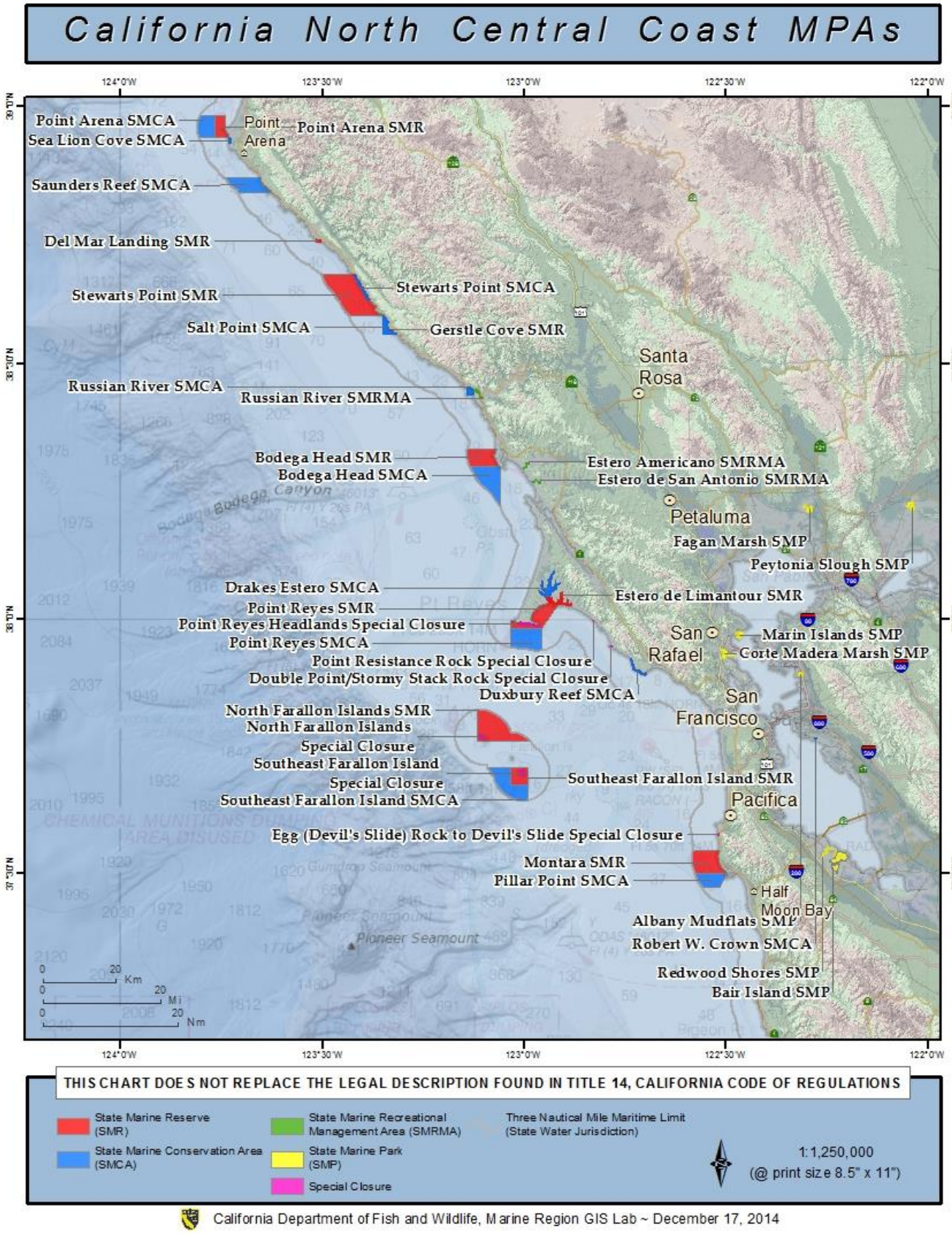


*Figure 1. Adopted MPAs in the North Central Coast region.*

*Table 1. Summary statistics for protected areas within state waters in the North Central Coast region.*

| Protected Area Designation | Count | Area (square miles) | Area (Percent) |
|---|---|---|---|
| **SMR** | 10 | 84.24 | 11.04 |
| **SMCA** | 12 | 67.61 | 8.86 |
| **SMRMA** | 3 | 0.56 | 0.07 |
| **Special Closures** | 6 | 1.16 | 0.15 |
| **Total**[25] | **25** | **152.41** | **19.98** |

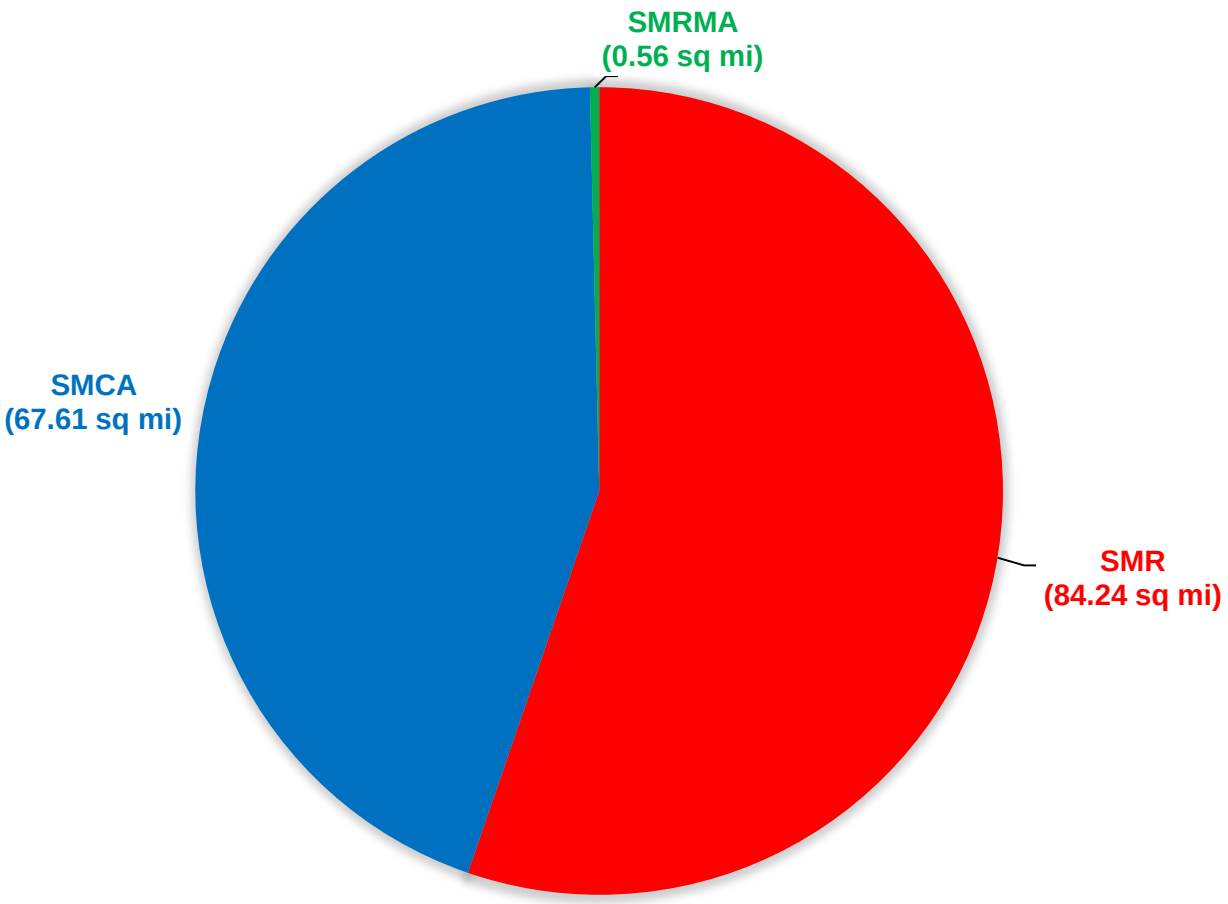


*Figure 2. Area (square miles) in North Central Coast state waters of each MPA designation.*

[25] Totals do not include special closures

*Table 2. Descriptive statistics for individual North Central Coast region MPAs.*

| MPA Name | Size (square miles) | Along-Shore Span (miles)[26] | Depth Range (feet) |
|---|---|---|---|
| **Point Arena SMR** | 4.38 | 3.1 | 0-173 |
| **Point Arena SMCA** | 6.74 | 2.9 | 153-324 |
| **Sea Lion Cove SMCA** | 0.22 | 0.7 | 0-39 |
| **Saunders Reef SMCA** | 9.36 | 2.5 | 0-276 |
| **Del Mar Landing SMR** | 0.22 | 0.7 | 0-87 |
| **Stewarts Point SMCA** | 1.19 | 3.9 | 0-134 |
| **Stewarts Point SMR** | 24.06 | 7.3 | 0-294 |
| **Salt Point SMCA** | 1.84 | 2.8 | 0-226 |
| **Gerstle Cove SMR** | 0.01 | 0.1 | 0-10 |
| **Russian River SMRMA** | 0.36 | 0.2 | 0-10 |
| **Russian River SMCA** | 0.84 | 1.4 | 0-57 |
| **Bodega Head SMR** | 9.34 | 2.4 | 0-266 |
| **Bodega Head SMCA** | 12.31 | 0.2 | 0-267 |
| **Estero Americano SMRMA** | 0.13 | 0.2 | 0-10 |
| **Estero de San Antonio SMRMA** | 0.07 | 0.1 | 0-10 |
| **Point Reyes SMR** | 9.55 | 6.4 | 0-132 |
| **Point Reyes SMCA** | 12.27 | 4.2 | 51-217 |
| **Estero de Limantour SMR** | 1.45 | 1.2 | 0-10 |
| **Drakes Estero SMCA** | 2.50 | 0.6 | 0-10 |
| **Duxbury Reef SMCA** | 0.69 | 2.8 | 0-10 |
| **North Farallon Islands SMR** | 18.07 | 8.3 | 0-275 |
| **Southeast Farallon Island SMR** | 5.36 | 2.4 | 0-238 |
| **Southeast Farallon Island SMCA** | 12.95 | 4.2 | 130-382 |
| **Montara SMR** | 11.81 | 3.2 | 0-168 |
| **Pillar Point SMCA** | 6.70 | 0.3 | 0-174 |

[26] Alongshore span measured as direct line from one end of the MPA to the other

*Table 3. Percentage of total known habitat representation in North Central Coast region MPAs.*

| | Habitats in the North Central Coast Region MPAs (Percentage) | | | |
|---|---|---|---|---|
| **Habitat Type** | **SMR** | **SMCA** | **SMRMA** | **Total (all MPAs)** |
| **Intertidal** | | | | |
| **Sandy or gravel beaches** | 8.3 | 5.8 | 1.2 | 15.2 |
| **Rocky intertidal and cliff** | 16.5 | 15.6 | 0.5 | 32.6 |
| **Coastal marsh** | 8.9 | 13.8 | 4.1 | 26.7 |
| **Tidal flats** | 11.1 | 19.8 | 0.8 | 31.7 |
| **Surfgrass beds (0-30m)** | 17.8 | 6.7 | 0 | 24.5 |
| **Eelgrass beds (0-30m)** | 21.0 | 38.3 | 1.6 | 60.8 |
| **Estuary (total area)** | 6.5 | 12.3 | 2.6 | 21.4 |
| **Soft bottom** | | | | |
| **0-30 meters** | 2.5 | 2.1 | 0.4 | 5.0 |
| **30-100 meters** | 13.6 | 10.7 | 0 | 24.3 |
| **100-200 meters** | 0 | 70.0 | 0 | 70.0 |
| **>200 meters** | 0 | 0 | 0 | 0 |
| **Hard bottom** | | | | |
| **0-30 meters** | 12.2 | 10.3 | 0 | 22.5 |
| **30-100 meters** | 17.1 | 16.0 | 0 | 33.1 |
| **100-200m** | 0 | 0 | 0 | 0 |
| **>200 meters** | 0 | 0 | 0 | 0 |
| **Kelp forest** | | | | |
| **Average kelp (‘89, ‘99, ‘02, ’03-‘08)** | 8.7 | 23.1 | 0 | 31.8 |
| **Submarine canyon** | | | | |
| **0-30 meters** | 0 | 0 | 0 | 0 |
| **30-100 meters** | 0 | 0 | 0 | 0 |
| **100-200 meters** | 0 | 0 | 0 | 0 |
| **>200 meters** | 0 | 0 | 0 | 0 |

*Table 4. Habitat representation for individual North Central Coast region MPAs.*[27]

| Habitat Type | | Point Arena SMR | Point Arena SMCA | Sea Lion Cove SMCA | Saunders Reef SMCA | Del Mar Landing SMR | Stewarts Point SMCA | Stewarts Point SMR | Salt Point SMCA | Gerstle Cove SMR | Russian River SMRMA | Russian River SMCA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sandy or gravel Beaches** | mi | 0.17 | 0 | 0.36 | 1.83 | 0.16 | 1.42 | 0.89 | 0.59 | 0.04 | 1.44 | 1.51 |
| **Rocky intertidal and cliff** | mi | 1.63 | 0 | 2.26 | 4.29 | 1.05 | 6.85 | 4.57 | 4.03 | 0.27 | 0 | 0.53 |
| **Tidal flats** | mi | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Coastal marsh** | mi | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.02 | 0 |
| **Surfgrass** | mi | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Eelgrass** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Estuary** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.33 | 0 |
| **Hard 0 - 30m** | $mi^2$ | 0.26 | 0 | 0.05 | 1.03 | 0.04 | 0.60 | 0.71 | 0.60 | 0 | 0 | 0.02 |
| **Hard 30 - 100m** | $mi^2$ | 1.47 | 0.24 | 0 | 1.65 | 0.02 | 0.07 | 0.88 | 0.54 | 0 | 0 | 0 |
| **Hard 100 - 200m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Hard 200 - 3000m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Soft 0 - 30m** | $mi^2$ | 0 | 0 | 0 | 0.03 | 0 | 0 | 0.11 | 0.03 | 0 | 0.34 | 0 |
| **Soft 30 - 100m** | $mi^2$ | 1.54 | 6.42 | 0 | 5.25 | 0 | 0.03 | 21.89 | 0.37 | 0 | 0 | 0 |
| **Soft 100 - 200m** | $mi^2$ | 0 | 0.07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Soft 200 - 3000m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Average Kelp** | $mi^2$ | 0.04 | 0 | 0.01 | 0.17 | 0 | 0.10 | 0.10 | 0.11 | 0 | 0 | 0 |
| **Submarine Canyon 0 - 30m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Submarine Canyon 30 - 100m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Submarine Canyon 100 - 200m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Submarine Canyon 200 - 3000m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[27] Mile (mi) is a linear measurement of a statute mile equal to 5,280 feet, and square mile ($mi^2$) is an area measurement of statute miles squared

| Habitat Type | | Bodega Head SMR | Bodega Head SMCA | Estero Americano SMRMA | Estero de San Antonio SMRMA | Point Reyes SMR | Point Reyes SMCA | Point Reyes Headlands Special Closure | Estero de Limantour SMR | Drakes Estero SMCA | Point Resistance Rock Special Closure | Double Point/ Stormy Stack Rock Special Closure |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sandy or gravel Beaches** | mi | 1.32 | 0 | 0.30 | 0.51 | 8.38 | 0 | 2.11 | 2.54 | 2.11 | 0 | 0 |
| **Rocky intertidal and cliff** | mi | 2.74 | 0.29 | 0.44 | 0.34 | 5.37 | 0 | 2.78 | 1.65 | 4.63 | 0 | 0.19 |
| **Tidal flats** | mi | 0 | 0 | 0 | 0.50 | 0.48 | 0 | 0 | 6.25 | 12.05 | 0 | 0 |
| **Coastal marsh** | mi | 0 | 0 | 0.08 | 0 | 0 | 0 | 0 | 4.60 | 7.14 | 0 | 0 |
| **Surfgrass** | mi | 1.86 | 0.22 | 0 | 0 | 5.07 | 0 | 3.07 | 0 | 0 | 0.07 | 0 |
| **Eelgrass** | $mi^2$ | 0 | 0 | 0.09 | 0 | 0.01 | 0 | 0 | 1.26 | 2.31 | 0 | 0 |
| **Estuary** | $mi^2$ | 0 | 0 | 0.12 | 0.07 | 0 | 0 | 0 | 1.27 | 2.40 | 0 | 0 |
| **Hard 0 - 30m** | $mi^2$ | 1.17 | 0.76 | 0 | 0 | 0.18 | 0.05 | 0.11 | 0 | 0 | 0 | 0 |
| **Hard 30 - 100m** | $mi^2$ | 1.85 | 5.11 | 0 | 0 | 0.09 | 0.12 | 0 | 0 | 0 | 0 | 0 |
| **Hard 100 - 200m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Hard 200 - 3000m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Soft 0 - 30m** | $mi^2$ | 0.24 | 0.03 | 0.12 | 0.06 | 1.44 | 0.60 | 0.13 | 1.34 | 2.39 | 0 | 0.01 |
| **Soft 30 - 100m** | $mi^2$ | 5.38 | 6.31 | 0 | 0 | 1.20 | 11.48 | 0 | 0 | 0 | 0 | 0 |
| **Soft 100 - 200m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Soft 200 - 3000m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Average Kelp** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Submarine Canyon 0 - 30m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Submarine Canyon 30 - 100m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Submarine Canyon 100 - 200m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Submarine Canyon 200 - 3000m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Habitat Type | | Duxbury Reef SMCA | North Farallon Islands SMR | North Farallon Islands Special Closure | Southeast Farallon Island SMR | Southeast Farallon Island Special Closure | Southeast Farallon Island SMCA | Egg (Devil's Slide) Rock to Devil's Slide Special Closure | Montara SMR | Pillar Point SMCA |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sandy or gravel Beaches** | mi | 3.02 | 0 | 0 | 0.08 | 0.05 | 0 | 0.19 | 2.14 | 0.07 |
| **Rocky intertidal and cliff** | mi | 3.03 | 0.66 | 0.66 | 6.36 | 5.34 | 0 | 0.16 | 3.45 | 0.30 |
| **Tidal flats** | mi | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Coastal marsh** | mi | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Surfgrass** | mi | 3.32 | 0 | 0 | 0.18 | 0.10 | 0 | 0.31 | 3.06 | 0.30 |
| **Eelgrass** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Estuary** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Hard 0 - 30m** | $mi^2$ | 0 | 0 | 0 | 0.87 | 0.08 | 0 | 0 | 0.92 | 0.43 |
| **Hard 30 - 100m** | $mi^2$ | 0 | 2.17 | 0.20 | 1.70 | 0 | 0 | 0 | 0.72 | 0.63 |
| **Hard 100 - 200m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Hard 200 - 3000m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Soft 0 - 30m** | $mi^2$ | 0 | 0 | 0 | 0.14 | 0.10 | 0 | 0 | 0.45 | 0.09 |
| **Soft 30 - 100m** | $mi^2$ | 0 | 15.90 | 0.01 | 2.63 | 0 | 9.20 | 0 | 7.75 | 5.43 |
| **Soft 100 - 200m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 3.75 | 0 | 0 | 0 |
| **Soft 200 - 3000m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Average Kelp** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Submarine Canyon 0 - 30m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Submarine Canyon 30 - 100m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Submarine Canyon 100 - 200m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Submarine Canyon 200 - 3000m** | $mi^2$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# 5. Scientific Information

Adhering to the provisions of the MLPA requiring monitoring, research, and evaluation, the MLPP has defined a process around a 10-year management review cycle to facilitate adaptive management (Figure 3). Partners in the MLPP provide oversight on all aspects of MPA monitoring and the adaptive management process, including developing regional MPA monitoring plans, regional MPA baseline monitoring programs, and long-term MPA monitoring activities; and contribute to five-year baseline management review, interim assessment and evaluation, and management review at the statewide level.

## 5.1 Overview of Regional Monitoring

California's MPAs were designed to generally reflect the integration of science and science-based MPA design guidelines from the MLPA, the 2008 Master Plan, and SAT guidance (see Appendix A, Section 4). While science guidelines strongly influenced MPA design, the iterative nature of the highly participatory, stakeholder-driven process led to some tradeoffs between ecosystem protection and socioeconomic considerations; which varied by region (Fox et al. 2013a, Saarman et al. 2013, Gleason et al. 2013). The development of science guidelines and methodologies, and how well MPA proposals met science and feasibility design guidelines and evaluations also varied among regions (see Appendix A, Section 3.3 and Section 4.3).

Following MPA design and implementation, the first step in MPA monitoring is regional monitoring planning. The goal of regional monitoring planning is to produce objective scientific data to inform management decisions at a regional, and ultimately at a statewide, scale through the development and implementation of regional MPA monitoring plans and MPA baseline monitoring programs. Regional monitoring plans developed to date include actions for baseline monitoring and guidance for long-term monitoring needs. Long-term monitoring and research activities will be designed to provide management decision support within the context of the Statewide MPA Monitoring Program and statewide adaptive management review process (see 2016 Master Plan, Chapters 4.3 – 4.5). A tremendous amount of data, often including large and varied datasets, can be generated from such programs. Therefore, an intensive phase of data analysis and reporting follows the implementation of MPA monitoring programs, which necessitates working collaboratively among many partners including principal investigators. Following data collection, monitoring results are communicated to managers and decision-makers, such as through baseline monitoring reviews, interim evaluations and assessments, and formal 10-year management reviews. Findings from these reviews, especially the formal 10-year management review in which the Commission may adopt changes in management measures, will sync back into the monitoring planning phase of the adaptive MPA management cycle (see 2016 Master Plan, Chapter 4.5).

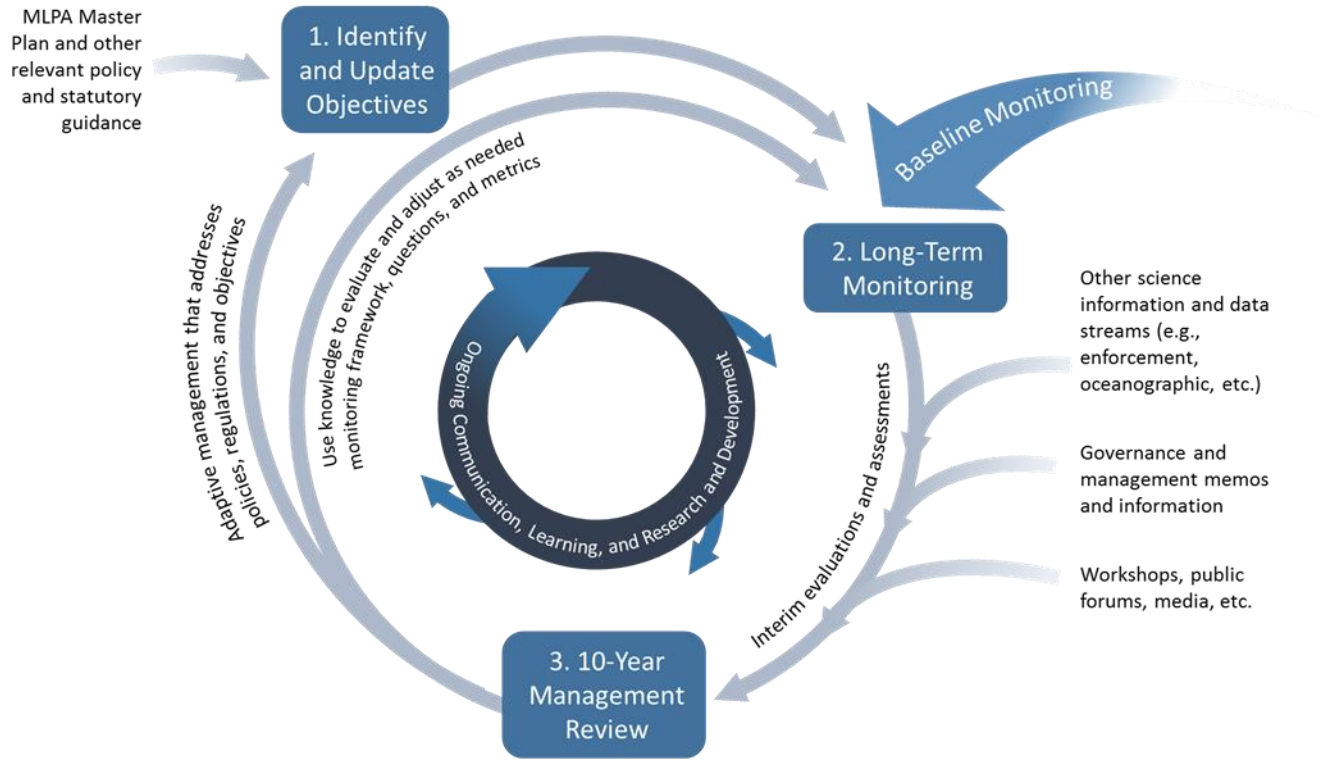


*Figure 3. MLPP adaptive management process.*

## 5.2 Regional Monitoring Plan

To develop regional MPA monitoring plans and update them over time, the MPA Monitoring Enterprise (now California Ocean Science Trust [OST]), in partnership with CDFW, created a framework for statewide MPA monitoring (see Figure 4). The statewide MPA monitoring framework to date serves as the primary basis for developing and updating regional MPA monitoring plans and guiding statewide monitoring. Overall, the goals of the statewide monitoring framework are to develop metrics that track trends in ecosystem condition and evaluate MPA design and governance to inform adaptive management. Consistent application of the statewide MPA monitoring framework will allow for regional and statewide approaches to monitoring.

Following a collaborative process with stakeholders and scientists, OST and CDFW completed the North Central Coast MPA Monitoring Plan in late 2009. The monitoring plan was adopted by the Commission in 2010.[28] As with the Central Coast and South Coast MPA monitoring plans,[29,30] the North

[28] MPA Monitoring Enterprise, OST. (2010). *North Central Coast MPA Monitoring Plan*. Retrieved Apr 1, 2015 from http://oceanspaces.org/sites/default/files/regions/files/ncc_monitoring_plan_and_appendices.pdf
[29] MPA Monitoring Enterprise, OST. (2014). *Central Coast MPA Monitoring Plan.* Retrieved Apr 1, 2015 from http://oceanspaces.org/sites/default/files/regions/files/central_coast_monitoring_plan_final_october2014.pdf
[30] MPA Monitoring Enterprise, OST. (2011). *South Coast MPA Monitoring Plan.* Retrieved Apr 1, 2015 from http://oceanspaces.org/sites/default/files/regions/files/sc_mpa_monitoring_plan_full.pdf

Central Coast MPA Monitoring Plan applies the statewide MPA monitoring framework, and may be updated to reflect baseline program results.

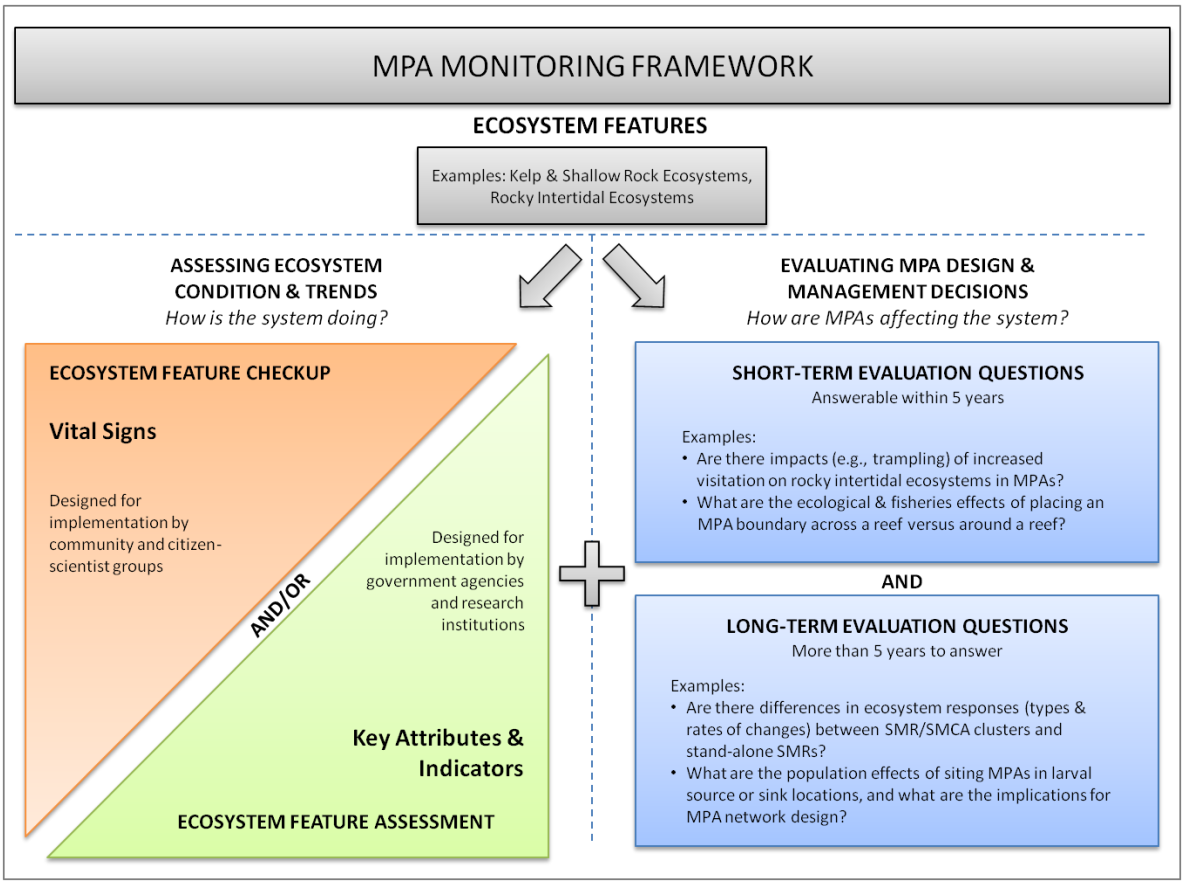


*Figure 4. Statewide MPA monitoring framework, displaying the two primary monitoring elements: 1) assessing ecosystem condition and trends, and 2) evaluating MPA design and management decisions.*[31]

## 5.3 Regional MPA Monitoring Programs

Informed by the MLPA goals and objectives, the MLPP developed and implemented a program of baseline monitoring. After the baseline monitoring period concludes for each region, long-term monitoring will begin and continue into the future (see 2016 Master Plan, Chapter 4.3).

### Baseline Monitoring

The North Central Coast MPA Baseline Program, a collaboration between OST, CDFW, Ocean Protection Council (OPC), and California Sea Grant (CASG), launched in 2010 to assess baseline ecological and socioeconomic conditions of the North Central Coast regional MPA network. The baseline program encompasses 11 projects selected to monitor a broad range of habitats from sandy beaches, rocky reefs, and kelp forests to the deep waters around the Farallon Islands, and examine patterns of ocean currents across the whole region. Data were also collected on human activities

[31] MPA Monitoring Enterprise, OST. (2010). *North Central Coast MPA Monitoring Plan*. Retrieved Sept 21, 2015 from http://oceanspaces.org/sites/default/files/regions/files/ncc_monitoring_plan_and_appendices.pdf

including commercial and recreational fishing, beach use, and boating activities. All baseline monitoring data can be accessed on the OceanSpaces website.[32]

The North Central Coast region is the second of four regional MPA baseline programs. In 2014, OST, in partnership with CDFW, OPC, and CASG, and in collaboration with the baseline program Principal Investigators, produced a summary report based on peer-reviewed technical reports.[33] In November 2015, OST and CDFW collaborated with OPC, the baseline program principal investigators, and other local researchers to develop a State of the California North Central Coast (State of the Region) report including a summary of the North Central Coast MPA Baseline Program and other related monitoring activities during the first five years of MPA implementation in the region.[34] The State of the Region report informed management recommendations from the first five years of MPA implementation in the region.[35]

### Long-Term Monitoring

After the baseline monitoring period concludes for the North Central Coast region, long-term monitoring based on regional and statewide objectives, will begin and continue into the future (Figure 3; also see 2016 Master Plan, Chapter 4.3). Long-term monitoring will seek to understand conditions and trends of marine populations, habitats, and ecosystems across regions towards a statewide scale. For more information on North Central Coast MPA monitoring, please visit the North Central Coast page of the OceanSpaces website.[36]

## 5.4 Informing Adaptive Management

MPA monitoring results, as well as additional information potentially collected from other scientific data, governance and management review, workshops, and public forums could be used to inform interim evaluation and assessment activities. These activities may take place at the regional scale and serve to inform the public about the state of the network and build understanding support for the MPAs. These assessments and evaluation can also feed into the formal 10-year management review (see 2016 Master Plan, Chapter 4.5).

[32] OceanSpaces. Retrieved Apr 1, 2015 from http://oceanspaces.org/

[33] OST. (2014). *Summaries of Baseline Marine Protected Area Monitoring Projects, 2010-2013*. Retrieved Aug 13, 2015 from http://oceanspaces.org/sites/default/files/ncc-regional-snapshot.pdf

[34] OST and CDFW. (2015). *State of the California North Central Coast: A Summary of the Marine Protected Area Monitoring Program 2010-2015*. California, USA. November 2015. Retrieved Dec 21, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=133100&inline

[35] CDFW. (2016). *Memorandum to the California Fish and Game Commission: Management Review of the North Central Coast Marine Protected Areas*. Retrieved Apr 15, 2016 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=133098&inline

[36] OceanSpaces. *North Central Coast*. Retrieved Apr 1, 2015 from http://oceanspaces.org/monitoring/regions/north-central-coast/long-term

# 6. Enforcement Plan

In order to facilitate enforcement, the CDFW proposes using a multi-tiered effort that targets high-risk areas (i.e., areas prone to infractions) with higher levels of enforcement while maintaining sufficient enforcement in all MPAs. In certain areas, CDFW will rely upon formal and informal partnerships to increase the number of "eyes-on-the-water," person-hours of enforcement, and visibility of enforcement personnel. In some cases, formal memoranda of understanding will be developed to allow fund transfer between partner agencies. Table 5 lists MPA-specific enforcement considerations for each MPA in the North Central Coast region.

*Table 5. Enforcement considerations.*

| MPA Name | Primary Enforcement Method | Special Considerations |
|---|---|---|
| **Point Arena SMR** | • Shoreline Patrol<br>• Ocean/Vessel Patrol<br>• Small Skiff Patrol | • Boat Hoist off Pier |
| **Point Arena SMCA** | • Ocean/Vessel Patrol<br>• Small Skiff Patrol | None |
| **Sea Lion Cove SMCA** | • Shoreline Patrol<br>• Ocean/Vessel Patrol<br>• Small Skiff Patrol | None |
| **Saunders Reef SMCA** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |
| **Del Mar Landing SMR** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |
| **Stewarts Point SMR** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |
| **Stewarts Point SMCA** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |
| **Salt Point SMCA** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |
| **Gerstle Cove SMR** | • Shoreline Patrol<br>• Kayak Patrol | None |
| **Russian River SMRMA** | • Shoreline Patrol<br>• Kayak Patrol | None |
| **Russian River SMCA** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |
| **Bodega Head SMR** | • Shoreline Patrol<br>• Ocean/Vessel Patrol<br>• Small Skiff Patrol | None |
| **Bodega Head SMCA** | • Shoreline Patrol<br>• Ocean/Vessel Patrol<br>• Small Skiff Patrol | None |
| **Estero Americano SMRMA** | • Shoreline Patrol<br>• Kayak Patrol | None |
| **Estero de San Antonio SMRMA** | • Shoreline Patrol<br>• Kayak Patrol | None |
| **Point Reyes SMR** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |

| MPA Name | Primary Enforcement Method | Special Considerations |
|---|---|---|
| **Point Reyes SMCA** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |
| **Point Reyes Headlands Special Closure** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |
| **Estero de Limantour SMR** | • Shoreline Patrol<br>• Kayak Patrol | None |
| **Drakes Estero SMCA** | • Shoreline Patrol<br>• Kayak Patrol | None |
| **Point Resistance Rock Special Closure** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |
| **Double Point/Stormy Stack Rock Special Closure** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |
| **Duxbury Reef SMCA** | • Shoreline Patrol<br>• Ocean/Vessel Patrol | None |
| **North Farallon Islands SMR** | • Ocean/Vessel Patrol | None |
| **North Farallon Island Special Closure** | • Ocean/Vessel Patrol | None |
| **Southeast Farallon Island SMR** | • Ocean/Vessel Patrol | None |
| **Southeast Farallon Island SMCA** | • Ocean/Vessel Patrol | None |
| **Southeast Farallon Islands Special Closure** | • Ocean/Vessel Patrol | None |
| **Egg (Devil's Slide) Rock to Devil's Slide Special Closure** | • Shoreline Patrol<br>• Ocean/Vessel Patrol<br>• Small Skiff Patrol | None |
| **Montara SMR** | • Shoreline Patrol<br>• Ocean/Vessel Patrol<br>• Small Skiff Patrol | None |
| **Pillar Point SMCA** | • Shoreline Patrol<br>• Ocean/Vessel Patrol<br>• Small Skiff Patrol | None |

## 6.1 Personnel and Equipment

CDFW has 18 enforcement staff located within the North Central Coast region, covering the area between Point Arena and Pigeon Point. The four lieutenants and 14 wardens have a primary emphasis on at-sea and shore-based marine patrol within this area, and there are additional inland wardens that work non-marine issues along the same area of the North Central Coast. These wardens may respond to inland hunting, fishing, pollution, habitat loss, and other related enforcement issues. This group of marine emphasis and land-based wardens can be diverted from normal regulatory activities to respond to MPA activity. However, such diversions may cause delays in service or coverage and increased costs for overtime shifts. Current MPA enforcement is accomplished using existing personnel resources, and positions cannot be redirected to concentrate on MPA enforcement due to duties and responsibilities currently facing enforcement. Therefore, current staff may not be able to adequately handle the added responsibilities of enforcement of these MPAs without assistance.

MPAs are patrolled by many techniques including large patrol boats, small patrol skiffs, aircraft, and foot patrols by wardens along the coast. Each MPA has special needs requiring specialized patrol efforts. For example, areas closer to ports will require less effort to access, but due to their proximity to population centers, these areas are likely to have a higher use than remote areas. Conversely, remote areas may have fewer users, but require a more significant travel for enforcement officers to access.

New and emerging technology options such as remote surveillance, Vessel Management Systems, and other technologies may provide options for increased efficiency of enforcement efforts.

*Table 6. Personnel and equipment.*

| Point Arena to Point Reyes MPAs | | Point Reyes to Pillar Point MPAs | | Totals |
|---|---|---|---|---|
| **Land-Based** | **Patrol Boat** | **Land-Based** | **Patrol Boat** | |
| 2 Lieutenants | | 1 Lieutenants | 1 Lieutenant | 4 Lieutenants |
| 5 Wardens | | 5 Wardens | 4 Wardens | 14 Wardens |
| 2 Patrol Skiffs | N/A | 2 Patrol Skiffs | N/A | 4 Patrol Skiffs |
| N/A | Same Patrol Boat and crew as Point Reyes to Pillar Point MPAs | N/A | 1 Patrol Boat | 1 Patrol Boat |
| **Individual MPAs** | | **Individual MPAs** | | |
| Point Arena SMR<br>Point Arena SMCA<br>Sea Lion Cove SMCA<br>Saunders Reef SMCA<br>Del Mar Landing SMR<br>Stewarts Point SMR<br>Stewarts Point SMCA<br>Salt Point SMCA<br>Gerstle Cove SMR<br>Russian River SMRMA<br>Russian River SMCA<br>Bodega Head SMR<br>Bodega Head SMCA<br>Estero Americano SMRMA<br>Estero de San Antonio SMRMA<br>Point Reyes SMR<br>Point Reyes SMCA<br>Point Reyes Headlands Special Closure | | Estero de Limantour SMR<br>Drakes Estero SMCA<br>Point Resistance Rock Special Closure<br>Double Point/Stormy Stack Rock Special Closure<br>Duxbury Reef SMCA<br>North Farallon Islands SMR<br>North Farallon Island Special Closure<br>Southeast Farallon Island SMR<br>Southeast Farallon Island SMCA<br>Southeast Farallon Islands Special Closure<br>Egg (Devil's Slide) Rock to Devil's Slide Special Closure<br>Montara SMR<br>Pillar Point SMCA | | |

## 6.2 Training

Wardens working within the North Central Coast region of California will receive training as necessary on the MPA regulations and the MPAs in their patrol districts. This training will include, but is not limited to, area boundaries and area-specific regulations.

## 6.3 Additional CDFW Enforcement Resources

CDFW has one large patrol boat in the 54 to 65 foot class range stationed along the North Central Coast's coastline, which is staffed by one lieutenant and two wardens. CDFW also has a fleet of single and twin engine fixed wing aircraft that work in conjunction with both marine and land-based wardens to help identify and investigate violations.

## 6.4 Contingencies and Emergency Planning

Details on contingencies for natural disasters and/or unforeseen changes in local conditions will be added if necessary.

# 7. Additional Resources

Please refer to the following documents for additional historical information pertaining to the North Central Coast Regional MPA Background and Priorities document.

1. Regional Profile of the North Central Coast Planning Region[37]
2. North Central Coast Regional Goals and Objectives[38]
3. North Central Coast BRTF Integrated Preferred Alternative Description[39]
4. MLPA Master Plan SAT List of Species Likely to Benefit from MPAs in the NCCSR[40]
5. Marine Life Protection Act, North Central Coast Study Region, Final Environmental Impact Report and Draft Environmental Impact Report[41]
6. North Central Coast Regulatory and Environmental Review Process Documents[42,43]

[37] MLPA Initiative. (2007). *Regional Profile of the North Central Coast Study Region (Alder Creek/Point Arena to Pigeon Point, California)*. California Natural Resources Agency. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/pdfs/nccprofile/profile.pdf

[38] MLPA Initiative. (2008). *North Central Coast Regional Goals and Objectives*. Retrieved Jul 29, 2015 from http://www.dfg.ca.gov/mlpa/pdfs/binders/b4da.pdf

[39] MLPA Initiative (2008). *North Central Coast Project Integrated Preferred Alternative MPA Proposal*. Retrieved Jul 29, 2015 from http://www.dfg.ca.gov/marine/pdfs/ipa_description.pdf

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[42] CDFW. (2008). *Regulatory and Environmental Review Process Documents*. Retrieved Aug 7, 2015 from http://www.dfg.ca.gov/marine/mpa/regulatorydocs_nc.asp

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