CALIFORNIA MARINE LIFE PROTECTION ACT

Master Plan for Marine Protected Areas

FINAL August 2016

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

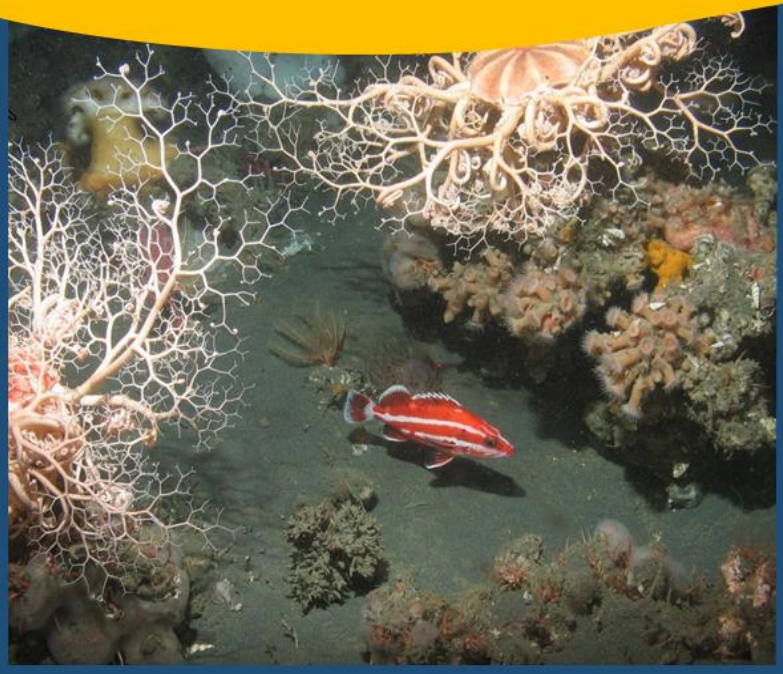


Photo Credits

Top left (North Coast): Image of a juvenile yelloweye rockfish, basket stars, and other species in Mattole Canyon State Marine Reserve, taken by California Department of Fish and Wildlife / Marine Applied Research & Exploration

Top right (North Central Coast): Image of the coastline in Stewarts Point State Marine Conservation Area, taken by Brian Owens, California Department of Fish and Wildlife

Bottom left (Central Coast): Image of elephant seals in Piedras Blancas State Marine Reserve, taken by Michelle Horeczko, California Department of Fish and Wildlife

Bottom right (South Coast): Image of a giant kelp forest in Laguna Beach State Marine Reserve, taken by Cameron Wertz

Acknowledgements

On August 24, 2016, the California Fish and Game Commission (Commission) adopted the final California Marine Life Protection Act Master Plan for Marine Protected Areas (2016 Master Plan). The 2016 Master Plan was developed by the California Department of Fish and Wildlife (CDFW), in close collaboration with the Commission, California Ocean Protection Council, and California Ocean Science Trust, and with assistance from Blue Earth Consultants, LLC. Insightful input was also received from other state and federal agencies, California Tribes and Tribal governments, non-governmental organizations, academic institutions, many other organizations, and the general public.

Suggested Citation

California Department of Fish and Wildlife. (2016). California Marine Life Protection Act Master Plan for Marine Protected Areas. Adopted by the California Fish and Game Commission on August 24, 2016. Retrieved from www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan.

Table of Contents

List of Figures

List of Tables

List of Boxes

Acronyms

Acronym	Definition
ARMP	Abalone Recovery and Management Plan
BRTF	Blue Ribbon Task Force
CASG	California Sea Grant
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CINMS	Channel Islands National Marine Sanctuary
CNRA	California Natural Resources Agency
Commission	California Fish and Game Commission
COPA	California Ocean Protection Act
FGC	Fish and Game Code
FMP	Fishery Management Plan
MLMA	Marine Life Management Act
MLPA	Marine Life Protection Act
MLPA Initiative	California Marine Life Protection Act Initiative
MLPP	Marine Life Protection Program
MMA	Marine Managed Area
MMAIA	Marine Managed Areas Improvement Act
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MSLT	MPA Statewide Leadership Team
NFMP	Nearshore Fishery Management Plan
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
NRDC	Natural Resources Defense Council
OPC	California Ocean Protection Council
OST	California Ocean Science Trust
PISCO	Partnership for Interdisciplinary Study of Coastal Oceans
RLF	Resources Legacy Fund
SAT	Science Advisory Team
SCC	State Coastal Conservancy
SCP	Scientific Collecting Permit
SLC	State Lands Commission
SMCA	State Marine Conservation Area
SMP	State Marine Park
SMR	State Marine Reserve
SMRMA	State Marine Recreational Management Area
SIG	Statewide Interests Group
SWQPA	State Water Quality Protection Area
SWQPA-GP	State Water Quality Protection Area- General Protection
SWRCB	State Water Resources Control Board
TEK	Traditional Ecological Knowledge
TK	Traditional Knowledge
US	United States

Executive Summary

Purpose and Approach

California's coastal ocean waters are among the most biologically productive in the world, and California's marine resources are vital to the state's coastal economy and provide numerous ecosystem benefits. In response to threats to marine ecosystems from human impacts and natural fluctuations, California has taken a proactive approach by managing marine resources for long-term sustainability. Since the 1990s, California has a history of numerous pieces of legislation, programs, and plans that chart a course for ocean management, including through marine protected areas (MPAs). In 1999, the California Legislature passed the Marine Life Protection Act (MLPA) requiring California to reevaluate all existing MPAs, which were at that time largely ineffective and disconnected, and design new MPAs that together function as an interconnected statewide network. The goals of the MLPA are:

1. Protect the natural diversity and abundance of marine life, and the structure, function and integrity of marine ecosystems.
2. Help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.
3. Improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and manage these uses in a manner consistent with protecting biodiversity.
4. Protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic values.
5. Ensure California's MPAs have clearly defined objectives, effective management measures, and adequate enforcement and are based on sound scientific guidelines.
6. Ensure the state's MPAs are designed and managed, to the extent possible, as a network.

The MLPA required the California Department of Fish and Wildlife (CDFW) to develop, and the California Fish and Game Commission (Commission) to adopt, a master plan that guides the implementation of the Marine Life Protection Program (MLPP) to redesign the state's MPA network. The MLPP includes all state MPA governance and management mechanisms and institutions as well as California's MPA network itself. A master plan framework was developed in 2005, and the Commission formally adopted the draft *California Marine Life Protection Act Master Plan for Marine Protected Areas* in 2008 following the implementation of the Central Coast MPAs. The 2008 Master Plan guided the three following regional siting and design processes, whereas this 2016 Master Plan sets a statewide foundation for MPA management moving forward to meet the goals of the MLPA. The 2016 Master Plan is also complemented by *The California Collaborative Approach: Marine Protected Area Partnership Plan* (the Partnership Plan).

The MPA network depends on the participation and support of numerous entities that provide specialized knowledge, ensure cost-effective management of the MPA network, and ensure participation from a wide array of stakeholders. Partners in MPA management have signed several memoranda of understanding (MOUs) committing to collaborative planning and adaptive management of the MPA network, including an updated 2015 MOU between 15 government and non-governmental entities. The Commission is the primary regulatory decision-making authority for California's MPA network, CDFW is the primary managing agency and implements and enforces regulations set by the Commission and provides scientific expertise, and the California Ocean Protection Council (OPC) is responsible for the direction of policy of the state's MPAs. The MLPP also seeks input from bodies

including California Tribes and Tribal governments, an MPA Statewide Leadership Team (MSLT) that is comprised of agencies and partners that have significant authority related to MPAs or marine sanctuaries, and partners in the California Collaborative Approach – which is documented in the Partnership Plan.

MPA Network Design and Siting Process

The six goals of the MLPA recognize the importance of protecting marine resources for various purposes, and therefore it is important to use multiple types of marine managed areas (MMAs) to achieve these distinct goals. MPAs are a subset of MMAs and include three MPA classifications (State Marine Reserve [SMR], State Marine Conservation Area [SMCA], and State Marine Park [SMP] and one MMA classification (State Marine Recreational Management Area [SMRMA]). Special closures are not MMAs, but also contribute to the goals of the MLPA. Each of these classifications includes varying levels and types of protection such as allowed take, scientific research, and recreational and commercial harvest.

The MLPA Initiative was a science-based and stakeholder-driven MPA planning process that utilized the best readily available science in a comprehensive, highly collaborative, and transparent process to establish MPAs. The MLPA Initiative directed and informed four iterative regional siting and design processes (Central Coast, North Central Coast, South Coast, and North Coast, in chronological order) between 2004 and 2012. Three planning bodies – the Blue Ribbon Task Force (BRTF), Science Advisory Team (SAT), and Stakeholder Advisory Group – supported the design and siting of each region. The overall aim of the process was for the BRTF to select a set of alternative MPA proposals, including a preferred alternative, for each region and for the Commission to adopt one of the alternatives.

Completed in 2012, California's MPA network generally reflects the integration of the science and science-based MPA design guidelines from the MLPA, the 2008 Master Plan, and SAT guidance. For example, compared to California's 63 MPAs in 1999, the existing network of 124 MPAs and 15 special closures represents increased proportion of state waters protected, number and size of all MPA types, and representation and replication of marine habitats within MPAs.

Management

The MLPA emphasizes the importance of effective management for California's MPAs, which consists of strong oversight and a process for implementing the legal mandates; outreach and education, enforcement, comprehensive management planning, monitoring and evaluation, research and development, permitting, and strong social capital and long-term sustainable financing that is enhanced by partnerships. To effectively manage California's MPA network, the MLPP is defining an adaptive process focusing on a variety of management activities related to the components of effective management.

Outreach and Education

Educating the public about the MPA network is one of the MLPP goals identified in the MLPA. CDFW is committed to work with partners throughout the state to build public awareness and understanding of California's MPA network, including the identification of priorities, approaches, and coordinated efforts. The dissemination of MPA based regulatory, interpretive, and educational materials can improve outreach efforts statewide by reaching out to California's diverse public in a consistent, cohesive and multi-faceted outreach approach.

Enforcement

The MLPA emphasizes the importance of adequate enforcement as a goal of the MLPP, and identifies CDFW as the primary agency responsible for MPA enforcement. With the key intent of ensuring compliance with regulations, the objectives of enforcement revolve around operational ability (e.g., identify areas of high priority, hire personnel, etc.); cooperative efforts (e.g., coordinate with allied agencies, utilize judicial system, etc.); and public awareness, outreach, and education (e.g., establish an outreach program, hold public forums, etc.).

CDFW is responsible for enforcing marine resource management laws and regulations, including MPAs, over a vast area spanning California's coastline out to three nautical miles, and will therefore emphasize patrol of priority areas. CDFW also enforces or shares jurisdiction for some federal laws and regulations. Given CDFW's broad enforcement mandates, additional personnel and assets will be needed to effectively enforce the entire MPA network.

Regional MPA Background and Priorities Documents

To help achieve the management goals of the MLPA, Regional MPA Background and Priorities documents provide historical planning information and regional MPA design considerations and priorities moving forward; which together provide important context to base 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.

Aligning MPAs and Other Marine Resource Management Efforts

Collaborative efforts will be crucial for taking an ecosystem-based approach in which managers across agencies and jurisdictions recognize the numerous interactions within an ecosystem, including humans, instead of focusing on a specific issue, species, or ecosystem service. The MLPA is aligning or could align with management of fisheries, water quality, climate change, marine debris, invasive species, and other existing and emerging marine management efforts. The effort to align MPA management with other marine resource management efforts is largely unprecedented and may lead to lessons learned regarding cooperative management.

MONITORING AND THE ADAPTIVE MANAGEMENT PROCESS

Defining Adaptive Management and Adaptive Management Objectives

The MLPP is coordinating with partners to develop a process of adaptive management for all core management activities. Adaptive management, required by the MLPA, is a process that facilitates learning from program actions and helps evaluate whether the MPA network is making progress toward achieving the six goals of the MLPA. An adaptive management approach provides a way to broadly share information about the effectiveness of the MPA network.

To inform the adaptive management process, the MLPP established a formal 10-year cycle of review for California's MPA network. The 10-year reviews will serve to evaluate network efficacy and for the Commission to determine whether changes in management are warranted. This timescale was chosen based on recent scientific findings on the time scales needed to demonstrate ecological change, lessons drawn from regional MPA implementation, and administrative feasibility. The formal 10-year

management review will emphasize ecological, socioeconomic, and governance aspects of the network, including scientific assessment of MPA monitoring results.

The MLPP has defined six adaptive management objectives, constructed from the MLPA goals that will determine whether the mandates of the MLPA are being met and thus help guide adaptive management. The adaptive management objectives include themes such as protecting and improving native marine life and ensuring MPA functioning as a network, while allowing sustainable opportunities for human use. These adaptive management objectives may be modified as part of the adaptive management process or in response to changing ocean conditions and threats.

Statewide MPA Monitoring Program

The need for long-term monitoring is described in the MLPA, requiring monitoring, research, and evaluation at selected sites to facilitate adaptive management and ensure that the MPA network meets its goals. Monitoring seeks to understand ecosystem condition and trends and to scientifically evaluate MPA design and to inform adaptive management. As such, long-term monitoring will form an important component of the formal 10-year management reviews.

Effective monitoring requires a partnership-based approach that leverages existing capacity across the state. CDFW partnered with OST to develop a scientifically rigorous statewide MPA monitoring framework, in the form of regional MPA monitoring plans and a statewide framework diagram. This approach was adopted by the Commission and to date, the framework has been used primarily to guide baseline monitoring efforts and provide a foundation for regional monitoring plans. Moving forward, CDFW, OPC, and OST are leading a process to develop a Statewide MPA Monitoring Program drawing from the existing statewide monitoring framework, regional monitoring plans, findings from the MPA baseline monitoring programs, and other related monitoring activities. This will be coordinated with the MSLT. Statewide MPA monitoring is composed of three interconnected components; the first two components satisfy the requirements of the MLPA, and thus take precedence over the third component, which goes beyond the scope of the MLPA.

1. **Network Scientific Evaluation Questions and Metrics:** CDFW, OST, and partners are committed to developing scientific network evaluation questions and metrics to be integrated in a statewide MPA monitoring plan. The regional MPA monitoring plans provide a starting point for developing network evaluation questions and metrics.
2. **Regional MPA Monitoring:** The state has launched a two-phase approach to MPA monitoring in each region: 1) baseline monitoring and 2) long-term monitoring. Data and information collected during baseline monitoring in the first five years of implementation describes the benchmark state from which to measure MPA performance during long-term monitoring. To date, regional monitoring plans for three regions have been developed and baseline monitoring has begun in all four regions. Following the completion of the baseline period, long-term monitoring activities will be designed to provide management decision support within the context of the Statewide MPA Monitoring Program and statewide adaptive management review process. Long-term monitoring will seek to understand conditions and trends of marine populations, habitats, and ecosystems across regions towards a statewide network scale.
3. **Beyond the MLPA:** While long-term MPA network monitoring is primarily informed by the requirements of the MLPA, it can also provide useful information for other aspects of California's ocean resource management, such as fisheries, climate change, marine debris, and invasive species.

To supplement monitoring, cutting-edge research and development can realize new possibilities for MPA monitoring and adaptive management. Research consists of scientific exploration to address relevant questions that are complementary to the goals and objectives of long-term monitoring.

Development can advance scientific knowledge and technological capacity, such as through the development of new methods or technical solutions for data collection.

Management Review Cycle

The MLPP has defined a process for adaptive management, described below.

1. **Identify and Update Objectives:** The MLPP will select statewide objectives that work toward the goals of the MLPA and other relevant policy and statutes. Baseline monitoring takes place based on the statewide goals and objectives.
2. **Long-Term Monitoring:** Following baseline monitoring and an associated five-year review, long-term monitoring based on regional and statewide objectives takes place. Concurrently, additional information may be collected to inform interim evaluation and assessment activities between 10-year reviews.
3. **10-Year Management Review:** Scientific evaluation, public scoping meetings, panel discussions, and other forums will draw on monitoring information to shed light on the status, function, and possible changes to the network for the Commission to consider at the 10-year reviews. Findings from the 10-year reviews may feed back into adaptive management of the objectives or the approach to long-term monitoring.

Throughout the entire adaptive management process, there will be the need for learning, communicating lessons, and developing and carrying out targeted research and development projects that can support monitoring and inform adaptive management.

Program Partners and Operations

The MLPP depends on collaboration to leverage existing human and financial resources, and CDFW and its partners are committed to working together to identify ways to continue to achieve the goals of the state in an efficient and effective way. The MLPP can work with partners to identify opportunities that consider jurisdictions and mandates to leverage core competencies related to MPA management. Based on their strengths and abilities, partners from different sectors will also have different roles relating to identifying, assessing, and securing funding sources. OPC, CDFW, and partners developed and updated a list of potential funding sources for the 2016 Master Plan, and will continually reevaluate existing and new potential funding sources to secure a diversified funding portfolio that ensures long-term financial sustainability.

Setting a Path Forward

To operationalize the elements of the 2016 Master Plan, the MLPP will implement a number of steps relating to its core MPA management responsibilities. Throughout the steps outlined below, the overall goal is statewide coordination to achieve effective adaptive management of California's MPA network to meet the goals and objectives of the MLPA.

- **Monitoring, Research, and Evaluation:** Select statewide metrics and evaluation questions, update and adapt regional monitoring plans as necessary, report results, link MPA and other monitoring efforts, and identify and support key MPA related research needs
- **Enforcement:** Identify tools to support enforcement
- **Partnership Coordination:** Build partnerships
- **Outreach and Education:** Prioritize outreach efforts
- **Identification of Long-Term Funding Sources:** Enhance capacity for CDFW's MPA project and prioritize potential funding sources

CHAPTER 1
Purpose and Approach

California's coastal ocean waters are among the most biologically productive in the world, enriched by seasonally persistent upwelling zones associated with coastal currents such as the California Current. California's marine resources are vital to the state's coastal economy and support a variety of economic sectors, including commercial and recreational fisheries, tourism, and non-consumptive recreation that together contribute tens of billions of dollars to California's gross domestic product.[1] These sectors provide services and benefits that enhance human well-being, including healthy sources of high-quality protein, recreational experiences, and employment and revenue in coastal communities. California's coastal ocean waters not only provide natural resources, but also spectacular scenery and aesthetic values enjoyed by Californians and visitors alike.

In the past century, humans and natural fluctuations have increased threats to marine ecosystems, which affect ocean habitats from the local to global scales. In response to these threats, California has set itself apart as a leader by taking a proactive approach to managing marine resources for long-term sustainability, thereby helping to ensure their existence for future generations. For example, the California Ocean Resources Management Act (CORMA), passed in 1990,[2] created an Ocean Resources Task Force[3] to prepare a report regarding existing ocean resources management activities and impacts.[4] In 1997, the California Resources Agency (now called the California Natural Resources Agency [CNRA]) released *California's Ocean Resources: An Agenda for the Future* (Ocean Agenda).[5] The Ocean Agenda recommended the state evaluate its array of over 20 coastal managed area classifications to develop a more effective and less complicated statewide system (Baird et al. 1999). Between 1998 and 2000, the California Legislature passed the Marine Life Management Act (MLMA, 1998),[6] the Marine Life Protection Act (MLPA, 1999),[7] and the Marine Managed Areas Improvement Act (MMAIA, 2000).[8] These foundational pieces of legislation have charted the course for ocean management, specifically regarding sustainable fisheries management and ecosystem conservation and protection, in California. In addition, the California Ocean Resources Stewardship Act (CORSA), and the California Ocean Protection Act (COPA) were integral in paving the way for the partnership-based approach to managing California's marine resources. Table 1 provides a list and descriptions of relevant legislation, programs, and plans enacted in California since 1990 (see Appendix A, Section 2 for more historical information on California's marine management policies and regulations).

[1] National Ocean Economics Program. (2015). *Ocean Economy Data*. Retrieved Sept 21, 2015 from http://www.oceaneconomics.org/Market/ocean/oceanEcon.asp
[2] California Public Resource Code (PRC) §36000-36003
[3] PRC §36300
[4] PRC §36500
[5] CNRA. (1997). *California's Ocean Resource: An Agenda for the Future*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/mlpa/pdfs/agenda011005_8.pdf
[6] California Fish and Game Code (FGC) §90-99.5, 105, 7050-7090, 8585-8589.7, 8842, and 9001.7
[7] FGC §2850-2863
[8] PRC §36600-36900

Table 1. Summary of recent ocean and coastal state legislation, programs, and plans in California.

Policy and Year	Overview
California Ocean Resources Management Act - 1990	Declares state policy for ocean resource planning and management[9]
Marine Life Management Act - 1998	Requires ecosystem-based management of ocean fisheries and establishes a process for such management[10]
Marine Life Protection Act - 1999	Requires California to reevaluate all existing MPAs and design new MPAs that together function as a statewide network;[11] amended by the legislature in 2013 to grant the California Ocean Protection Council (OPC) the responsibility for the direction of policy of MPAs[12]
Marine Managed Areas Improvement Act - 2000	Establishes a new, simplified classification system for state marine managed areas (MMAs)[13,14]
California Ocean Resources Stewardship Act - 2000	Aims to improve the coordination of ocean resource management science in California[15]
Coastal Non-Point Source Pollution Program - 2000	Provides a single unified, coordinated statewide approach to dealing with non-point source pollution[16]
California Ocean Protection Act - 2004	Improves integration and coordination of the state's efforts to protect and conserve ocean resources[17]
California's Ocean Action Plan - 2004	Guides the state's future resources protection and management efforts and seeks to maintain California's role as a national leader in ocean affairs[18]
West Coast Governors' Agreement on Ocean Health - 2006	Constitutes a proactive regional collaboration, which protects and manages the ocean and coastal resources along the entire West Coast[19]

Recognizing the importance of California's diverse marine species and ecosystems to public health and well-being, ecological health, and ocean-dependent industries, the California Legislature passed the MLPA in 1999. Prior to the MLPA and the ensuing MPA design and siting process, California's existing MPAs were largely ineffective and disconnected rather than a system designed to function as an interconnected network that could enhance conservation returns for Californians.

[9] Gurish, J. *Overview of California Ocean and Coastal Laws with Reference to the Marine Environmen*t. Prepared for OPC. Retrieved Sept 21, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/docs/Documents_Page/Noteworthy/Overview_Ocean_Coastal_Laws.pdf

[10] Ibid.

[11] FGC §2853(a). See CDFW's website for more information: https://www.wildlife.ca.gov/Conservation/Marine/MPAs/FAQs

[12] FGC §2850.5

[13] Ibid.

[14] MPAs are a subset of MMAs, however throughout this document the more common term "MPA" is used as an umbrella to refer to all types of protected areas (see Chapter 2.1)

[15] Ibid.

[16] California Coastal Commission. Water Quality Program Statewide Nonpoint Source (NPS) Program Information. Retrieved Sept 21, 2015 from http://www.coastal.ca.gov/nps/npsndx.html

[17] Ibid.

[18] Ibid.

[19] West Coast Governors Alliance on Ocean Health. *WCGA Overview*. Retrieved Sept 21, 2015 from http://www.westcoastoceans.org/wcga-overview

The MLPA requires the California Department of Fish and Game (now California Department of Fish and Wildlife [CDFW]) to develop, and the California Fish and Game Commission (Commission) to adopt, a master plan that guides the implementation of a Marine Life Protection Program (MLPP)[20] to address the siting of new MPAs and modifications of existing MPAs - thereby redesigning the state's MPA network.[21] To improve the design and management of California's MPAs, the MLPA guides the Commission to adopt the MLPP.[22] The MLPP has statewide goals that focus on protecting, sustaining, and conserving marine life; improving socioeconomic activities and marine heritage provided by marine ecosystems; and ensuring that the state's MPAs are designed and managed to the extent possible as a network and have clearly defined objectives, are based on scientific guidelines, and have effective management measures and enforcement.[23] Through extensive collaboration with partners, CDFW developed a master plan framework in 2005 and then a full master plan document following the adoption of the Central Coast MPAs. The Commission formally adopted the draft *California Marine Life Protection Act Master Plan for Marine Protected Areas* (2008 Master Plan)[24] as a "living" document in February 2008. The 2008 Master Plan integrated the 2005 framework, memorialized the guidance used to develop alternative MPA proposals in the Central Coast planning region, and successively guided the development of alternative MPA proposals in the North Central Coast, South Coast, and North Coast planning regions (see Chapter 2.2 and Appendix A).

Developed through partner collaboration, this 2016 Master Plan is a programmatic guidance document that describes how the MLPP will undertake tasks and activities to manage California's MPAs to the best of its ability to meet the goals of the MLPA and MMAIA.[25] Whereas the 2008 Master Plan described the process for designing and siting MPAs through a regional approach, the 2016 Master Plan focuses instead on setting a statewide foundation for MPA management, moving forward that will include regional components. Thus, the 2008 Master Plan and the 2016 Master Plan are complementary documents reflecting the continuing evolution of the MLPP. The 2016 Master Plan is intended to provide guidance to the MLPP and other natural resource management agencies, California Tribes and Tribal governments, the California Legislature, and the general public. The 2016 Master Plan is also complemented by *The California Collaborative Approach: Marine Protected Area Partnership Plan* (the Partnership Plan [see Chapter 1.1]),[26] and the MPA Statewide Leadership Team Work Plan (MSLT Work Plan).[27]

The 2016 Master Plan includes background information on California's heritage and a high-level description of California's MPA design and siting process; readers can refer to Appendix A and the 2008 Master Plan for more detailed information on these topics. The 2016 Master Plan primarily shares the operational and contextual information for management of the MPA network to meet the MLPA goals and objectives. This includes statewide guidance relative to the management and adaptive management – including monitoring, research, and development – as well as operations and funding of the MPA network and next steps to take for MPA management. In this document, management and adaptive management are discussed separately because, while the MLPP has defined its general approach to management of California's MPA network, the MLPA emphasizes the importance of an

[20] FGC §2853(b)
[21] FGC §2855
[22] FGC §2853(b)
[23] FGC §2853(b) – (c)
[24] CDFW. (2008). *Draft Master Plan for Marine Protected Areas*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan
[25] FGC §2861(a)
[26] OPC. (2014). *The California Collaborative Approach: Marine Protected Areas Partnership Plan*. Retrieved Sept 22, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/docs/mpa/APPROVED_FINAL_MPA_Partnership_Plan_12022014.pdf
[27] OPC. (2015). *Marine Protected Area (MPA) Statewide Leadership Team Work Plan FY 15/16-17/18*. Retrieved Sept 21, 2015 from http://www.opc.ca.gov/2015/08/8122/

adaptive and evolving approach to management. This adaptive management process, while closely tied to existing MPA management, is a distinct process meant to build upon and feed back into MPA management. For a more detailed historical description of MPA planning through the California Marine Life Protection Act Initiative (MLPA Initiative) that led to the designation of California's MPAs pursuant to the MLPA, see Appendix A. Also appended to the 2016 Master Plan are four Regional MPA Background and Priorities documents that capture region-specific MPA planning considerations and priorities moving forward; which together provide important context to base future informed statewide MPA management decisions upon (see Appendices C-F).

To enhance the effectiveness of California's MPAs, the MLPA has six primarily ecosystem-based goals that guided the design and siting, and continue to guide the management, of MPAs:

1. Protect the natural diversity and abundance of marine life, and the structure, function and integrity of marine ecosystems.

2. Help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.

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

4. Protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic values.

5. Ensure California's MPAs have clearly defined objectives, effective management measures, and adequate enforcement and are based on sound scientific guidelines.

6. Ensure the state's MPAs are designed and managed, to the extent possible, as a network.

Guided by these six goals, the MPA design and siting process (see Chapter 2.2) resulted in the creation of a true network of 124 MPAs (Figure 1).[28] Together, this network makes up 60% of the total MPA coverage in the contiguous United States (US), placing California as a leader on MPAs both nationally and globally (Saarman & Carr 2013). Furthermore, the actions undertaken to fulfill the mandates of the MLPA, MLMA, and MMAIA put California on track to help meet the vision of the US National Ocean Policy of stewardship that "ensures that the ocean, our coasts, and the Great Lakes are healthy and resilient, safe and productive, and understood and treasured so as to promote the well-being, prosperity, and security of present and future generations."[29]

[28] 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.

[29] The White House Office of the Press Secretary. (2010). *Executive Order: Stewardship of the Ocean, our Coasts, and the Great Lakes.* Retrieved Sept 22, 2015 from http://www.whitehouse.gov/files/documents/2010stewardship-eo.pdf

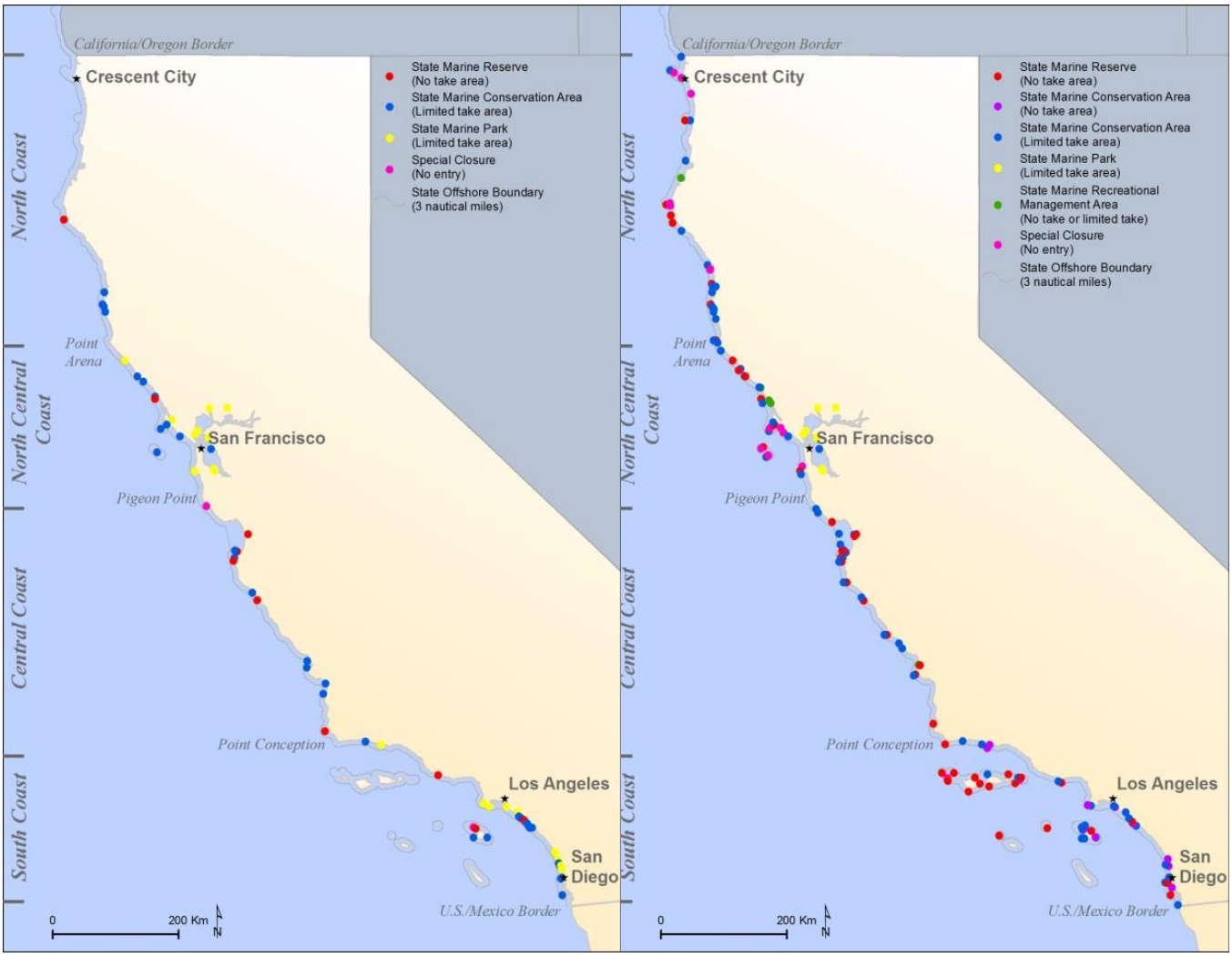


Figure 1. Map of California's MPA network before (left) and after (right) implementation of the MLPA.[30]

1.1 Natural and Human Dimensions of California's Coastal Resources

California's MPA network is situated in a geography of rich ecological and human heritage. The combination of California's bathymetry, ocean currents, and seasonal wind patterns provide the necessary conditions that lead to significant abundance and richness of its coastal ocean waters. California's shallow continental shelf is quite narrow, yet includes features such as underwater canyons, islands, offshore rocks, and rocky reefs (Johnson & Sandell 2014). Beyond this coastal zone two major currents meet around Point Conception, creating a rich transition zone that supports vast amounts of life. California's waters host a diversity of species of invertebrates, fish, reptiles, birds, mammals, marine plants, and algae, which can be found in a wide variety of habitats ranging from rocky intertidal shores to deep submarine canyons.

[30] In the pre-MLPA map, three ecological reserves, one state park and one natural preserve are shown as State Marine Conservation Areas (SMCAs) for comparative purposes. Regulations are consistent with current SMCAs.

California's inhabitants have depended on the state's marine and coastal resources for millennia (Walker & DeNiro 1986, Pritzker 2000, Erlandson et al. 2005, Rick et al. 2008). Since time immemorial, California Tribes have stewarded and utilized marine and coastal resources in the region. The foundation of their management is a collective storehouse of knowledge about the natural world, acquired through direct experience and contact with the environment, and gained through many generations of learning passed down by elders about practical as well as spiritual practices (Anderson 2005). This knowledge, which is the product of keen observation, patience, experimentation, and long-term relationships with the resources, today is commonly called "traditional ecological knowledge" (TEK) (Anderson 2005). While no single definition of TEK is universally accepted, it has been described as "a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment" (Berkes 1999). Traditional Knowledge (TK) encompasses TEK, science, and other relevant information from tribes. Many California Tribes continue to regularly harvest marine resources within their ancestral territories and maintain relationships with the coast for ongoing customary uses. Today, California's inhabitants and visitors continue to gain significant benefits from the state's coastal waters, including economic, nutritional, recreational, cultural, spiritual, and educational, as well as climate regulation and protection from coastal hazards.

California has the nation's second largest ocean economy and largest non-oil and/or gas economy,[31] with oceans contributing more than $44 billion to California's 2012 gross domestic product.[32] Ocean sectors that depend on marine and coastal ecosystems, including tourism, recreation, and fisheries, contributed nearly $18 billion. California's oceans also have direct impacts on the job market, producing almost 490,000 jobs in 2012, more than 365,000 of which were within the ocean and coastal tourism and recreation sectors alone.[33] The coasts also provide extensive recreational opportunities; beachgoers make more than 150 million trips to California' beaches per year[34] and in 2013 registered over 820,000 recreational vessels.[35]

A wide range of natural and human-caused factors directly and indirectly influence the abundance and diversity of populations of marine life and the habitats where they live, including shifts in oceanographic conditions (e.g., El Niño and La Niña) and numerous human activities (National Research Council 1995; Parrish & Tegner 2001; Sheehan & Tasto 2001). The development and growth of California's population and economy leads to stresses including chemical pollution and urban runoff, ocean acidification, alteration of physical habitat, invasion of exotic species, and harvest of marine resources (National Research Council 1995; Jackson et al. 2001; Sheehan & Tasto 2001, Doney et al. 2012; Samhouri & Levin 2012; Kelly et al. 2013). Climate change also poses a significant risk to California's marine resources (Ruckelshaus et al. 2008; Chen et al. 2014). While MPAs may not be appropriate for reducing the impacts of all the threats mentioned above, they can provide a tool for addressing and mitigating many of these threats.

[31] Texas has the largest ocean economy in the nation at $121 billion; however, $113 billion is contributed by the minerals sector.
[32] National Ocean Economics Program. (2015). Ocean Economy Data. Retrieved Sept 21, 2015 from http://www.oceaneconomics.org/Market/ocean/oceanEcon.asp
[33] Ibid.
[34] Kildow, J. & Colgan, C. S. (2005). *California's Ocean Economy: Report to the Resources Agency, State of Californi*a. http://www.opc.ca.gov/webmaster/ftp/pdf/docs/Documents_Page/Reports/CA_Ocean_Econ_Report.pdf
[35] US Department of Homeland Security, U.S. Coast Guard office of Auxiliary and Boating Safety. (2014). *2013 Recreational Boating Statistics*. Retrieved Sept 22, 2015 from http://www.uscgboating.org/assets/1/AssetManager/2013RecBoatingStats.pdf

1.2 Collaborative MPA Governance and Policy

To protect California's marine natural and cultural heritage, the MPA network depends on the participation and support of numerous entities. Throughout the world, the creation of management partnerships has been shown to greatly enhance the effectiveness of MPA network planning and implementation (Kelleher 1999).[36] By tapping into the specialized knowledge of state and federal agencies, California Tribes and Tribal governments, non-governmental organizations (NGOs), academic institutions, and community-based user groups, managing agencies can leverage existing capacities and increase efficiencies on activities such as outreach and education; monitoring, research, and evaluation; building compliance through enforcement; and policy and permitting. Leveraging existing human and financial resources can help ensure cost-effective management of the MPA network. Furthermore, the inclusion of a large and diverse group of stakeholders increases public knowledge, participation, and support for the network (Kelleher 1999).

As the science-based and stakeholder driven process to redesign the state's MPA network progressed in each region from design to designation and implementation (see Chapter 2.2), it became increasingly clear that the scale and scope of the redesign process required the state to revisit how management responsibilities were allocated. Although the primary management of the state MPA network is assigned by statute to CDFW,[37,38,39] no one agency or group has the authority, capacity, or resources to successfully manage the MPA network in isolation. The state has therefore committed to a partnership-based approach to fulfill its management obligations, which requires a sustained focus on implementing policies that facilitate communication and collaboration among both state and private partners in supporting MPA management.

To memorialize this approach, partner entities have signed several memoranda of understanding (MOUs) committing to collaborative planning and management of the MPA network. In August 2004, CNRA, CDFW, and the Resources Legacy Fund Foundation (now Resources Legacy Fund [RLF]) signed an MOU that launched an effort to implement the MLPA. The 2004 MOU established the MLPA Initiative, a public-private partnership, in all four planning regions (see Appendix A). The 2004 MOU was followed by amended MOUs in 2006/2007 and 2008. In 2010, a separate MOU was signed by 11 government and non-governmental entities to memorialize their commitments to effective management of California's MPA network. The 2010 MOU is titled "Memorandum of Understanding for Implementation of the California Marine Life Protection Act." The 2010 MOU was amended in 2015 to include additional federal signatories, signed by 15 government and non-governmental entities (Box 1). The MLPP's philosophy on governance and policy of the MPA network, as well as further activities and entities that are focused on a collaborative approach to management of California's MPA network, are described below.

---

[36] Blue Earth Consultants, LLC. (2012). *From Design to Action: Key Elements and Innovations for Effective Marine Protected Area Network Implementation - Lessons from Successful Case Studies*. Retrieved Sept 21, 2015 from http://www.blueearthconsultants.com/wp-content/uploads/2012/11/From_Design_to_Action_Key_Elements_for-Implementing_Californias_MPA_Network.pdf

[37] FGC §2855(b)(1)-2863

[38] PRC §36600-3690

[39] Pursuant to PRC §36725: California State Parks and Recreation (State Parks) may designate, delete, or modify State Marine Reserves (SMRs), State Marine Parks (SMPs), State Marine Conservation Areas (SMCAs), state marine cultural preservation areas, and State Marine Recreation Management Areas (SMRMAs). State Parks may not designate, delete, or modify a SMR, SMP, or SMCA without the concurrence of the Commission on any proposed restrictions upon, or change in, the use of living marine resources. State Parks may manage SMRs, SMPs, state marine cultural preservation areas, and SMRMAs. The State Water Resources Control Board (SWRCB) may designate, delete, or modify state water quality protection areas. The SWRCB and the California regional water quality control boards may take appropriate actions to protect state water quality protection areas. The SWRCB may request the Department or State Parks to take appropriate management action.

MPA Governance and Policy

Governance includes the interactions among structures, processes, and traditions that determine how and by whom decisions are made, and how stakeholders have a say in the process (Lockwood et al. 2010). MPA governance in California is comprised of three general categories of regulatory authority, management, and policy that interact to facilitate the design, implementation, and adaptive management of the MPA network to achieve the goals of the MLPA. These components are led by the Commission, DFW, and OPC, respectively.

The Commission is the primary regulatory decision-making authority for regulations related to California's MPAs. The Commission provides a venue for public comment and formal review to act upon MPA proposals, stakeholder petitions, and regulatory changes.

CDFW is responsible for implementing and enforcing the regulations set by the Commission, as well as providing biological data and expertise to inform the Commission's decision-making process.[40] CDFW manages California's MPAs through enforcement; monitoring, research, and evaluation; and outreach and education.

Box 1. Signatories of the 2015 MOU for MPA management.

- California Coastal Commission
- California Department of Fish And Wildlife
- California Department of Parks And Recreation
- California Environmental Protection Agency
- California Fish and Game Commission
- California Natural Resources Agency
- California Ocean Protection Council
- California Ocean Science Trust
- California State Lands Commission
- Resources Legacy Fund
- State Water Resources Control Board
- US Coast Guard
- US Department of Defense
- US National Oceanic and Atmospheric Administration
- US National Park Service

In 2013, Senate Bill 96 delegated to the OPC the responsibility for the direction of policy of the state's MPAs.[41] To fulfill this mandate, OPC works with both agency and private partners to identify areas that would benefit from policy development. Recommendations are developed collaboratively and then brought to the OPC for consideration. Once adopted, these policies direct all agencies under CNRA in their actions related to MPAs. This approach is grounded in the foundational relationship between OPC, CDFW, and the Commission that informs actions in support of the MPA network. This support takes several forms, from formalizing and leading coordination bodies like the MPA Statewide Leadership Team (MSLT) to actively engaging private partners in collaborative dialogues with state agencies.

Marine Life Protection Program

Core to the MPA design and siting process, as well as to the ongoing management of California's MPA network, is the MLPP, established pursuant to the MLPA. The MLPP is a diverse program that includes groups involved in MPA policy and permitting, enforcement and compliance, research and monitoring, and outreach and education. The MLPP also encompasses the California's MPA network itself, as designated under the MLPA and MMAIA. Therefore, the MLPP constitutes a wide range of entities and activities that all contribute to achieving the goals of the MLPA. Importantly, the components of the MLPP are described in statute[42] and may change based on evolving needs and the outcomes of the ongoing adaptive management process.

[40] Commission. (2012). *About the Fish and Game Commission.* Retrieved Sept 21, 2015 from http://www.fgc.ca.gov/public/information/

[41] FGC §2850.5

[42] FGC §2853 - 2856

Consultation with California Tribes and Tribal Governments

As the traditional users and stewards of California's marine resources, partnership with California Tribes and Tribal governments is particularly important to the state government and the MLPP for MPA management. The state is committed to engaging in meaningful collaborations with California Tribes and Tribal governments, and Tribes can participate in many facets of MPA management, including, but not limited to, education and outreach, stewardship, research and monitoring, and compliance and enforcement. CNRA,[43] CDFW,[44] and the Commission[45] all have approved Tribal consultation policies to guide effective cooperation, communication, and consultation with Tribes and to enable California Tribes and Tribal governments to provide meaningful input for natural resource management (see Appendix B).

MPA Statewide Leadership Team

California's MSLT, led by OPC and nested within the larger MLPP, currently includes agencies and partners that have significant authority related to MPAs or marine sanctuaries. The MSLT was convened with the goal of increasing communication and collaboration among state agencies and the Monterey Bay National Marine Sanctuary and partners to ensure the state is effectively managing the statewide MPA network. The MSLT has in effect been active through collaborations on organically occurring projects and products, but was formalized in 2015. Further formalizing a commitment to communication and collaboration for MPA management, the MSLT finalized its three-year MSLT Work Plan in September 2015.[46] The MSLT's work is also informed by discussions with key non-profit organizations, Tribes, fishermen, academics, and other federal agencies that play a direct or support role in the management of the MPA Network. The MSLT has identified four focal areas around which to organize its work:

- Outreach and education
- Research and monitoring
- Enforcement and compliance
- Policy and permitting

Partnership and the California Collaborative Approach

Partnership is a common theme and core strategy underlying the MLPP and the ongoing management of California's MPA network. This section specifically highlights the MLPP's approach to partnership and collaboration, which forms the foundation of all aspects of the state's MPA network, including siting and design, management and adaptive management, monitoring, operations, and other emerging aspects as the MLPP evolves.

Building on momentum from the publically-driven design and siting phase of California's network of MPAs (see Chapter 2.2 and Appendix A), CDFW, OPC, and other partners recognized the need to institutionalize an organized and mutually beneficial approach to partnership around management of the MPA network. Therefore, CDFW, OPC, and partners developed and agreed upon an experimental partnership model – the California Collaborative Approach. The California Collaborative Approach,

[43] CNRA. (2012). *California Natural Resources Agency Adoption of Final Tribal Consultation Policy*. Retrieved Sept 21, 2015 from http://resources.ca.gov/docs/tribal_policy/Final_Tribal_Policy.pdf

[44] CDFW. (2014). *Department of Fish and Wildlife Tribal Communication and Consultation Policy*.

[45] Commission. (2015). *Tribal Consultation Policy*. Retrieved Oct 23, 2015 from http://www.fgc.ca.gov/meetings/2015/Jun/Exhibits/0610_Item_3_Tribal_Consultation_Policy.pdf

[46] OPC. (2015). *Marine Protected Area (MPA) Statewide Leadership Team Work Plan FY 15/16-17/18*. Retrieved Sept 21, 2015 from http://www.opc.ca.gov/2015/08/8122/

which is documented in the Partnership Plan,[47] takes advantage of overlapping government mandates, public interest, and science to provide support and create opportunities for the management and governance of the MPA network across sectors and geographic and political scales. Because it is the first partnership model of its kind focused on MPA network management, it will be adapted as needed as new priorities, needs, and information arise.

Table 2 describes some examples of past and ongoing collaborations, partnerships, and efforts among diverse entities including agencies, researchers, citizen scientists, and more, aimed to inform MPA management as the MLPP evolves. Table 2 is not intended to be a comprehensive summary of all MPA collaborations, partnerships, and efforts aimed to inform MPA management. MLPP partners and others will continue to identify and build new partnerships as opportunities and needs arise.

Table 2. Examples of past and ongoing MPA Collaborations aimed to inform MPA management.

Partners	Description of Collaborative Effort
CDFW, Channel Islands National Marine Sanctuary (CINMS)	• Developed Channel Islands MPA network and federal extension (see Appendix A, Section 2.3 and 3.3)
CDFW, CNRA, RLF	• MLPA Initiative (see Chapter 2 and Appendix A)
CDFW, Channel Islands National Park, CINMS, Partnership for Interdisciplinary Study of Coastal Oceans (PISCO)	• Collaborated to produce a Channel Islands MPAs 5-year monitoring report[48]
CDFW, California Ocean Science Trust (OST), OPC	• Developing and implementing a long-term Statewide MPA Monitoring Program
California Sea Grant (CASG), CDFW, OST, State Coastal Conservancy (SCC)	• Developed and implemented Central Coast MPA Baseline Monitoring Program (see Appendix E for more detail)
CASG, CDFW, OST, OPC	• Developed and implemented MPA Baseline Monitoring Programs for North Central Coast, South Coast, and North Coast (see Appendix D, Appendix F, and Appendix C, respectively, for more detail)
CDFW, OPC, OST, California Department of Parks and Recreation (State Parks), MPA Collaborative Network	• Agency staff and partners attend meetings and regularly engage with the MPA Collaborative Network
OPC, OST, CDFW, citizen science groups	• Volunteer citizen scientists collect scientific data on coastal and marine resource use
CDFW, OPC	• Policy coordination for California Environmental Quality Act process on MPAs with California Coastal Commission (CCC), State Lands Commission (SLC), State Water Resources Control Board (SWRCB), and other permitting agencies
OPC, CDFW, California Sanctuary Foundation	• CDFW and OPC funding supported the production and installation of MPA interpretive panels, regulatory signs, brochures, and kiosks

[47] OPC. (2014).*The California Collaborative Approach: Marine Protected Areas Partnership Plan*. Retrieved Sept 22, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/docs/mpa/APPROVED_FINAL_MPA_Partnership_Plan_12022014.pdf

[48] CDFW, PISCO, CINMS, and Channel Islands National Park. (2008). *Channel Islands Marine Protected Areas First 5 Years of Monitoring: 2003-2008*. Airamé, S. and J. Ugoretz (Eds.). 20 pp. Retrieved Aug 7, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=31325&inline=true

Partners	Description of Collaborative Effort
CDFW, OPC-Science Advisory Team (SAT)	• Integrating technical support from University of California Santa Cruz staff and SAT members to analyze impacts from scientific collecting within MPAs and how to best manage those impacts while using a more structured, objective, and quantifiable approach when reviewing permit applications for scientific collecting within MPAs
CDFW, Natural Resources Defense Council (NRDC), WiLDways	• Developed "You Are Here Signs" with NRDC that were placed along the coast and Spanish translation of materials and "You Are Here Signs" with a South Coast emphasis with WiLDways
CDFW, Ocean Communicators Alliance	• Statewide docent guides and general MPA education
CDFW, State Parks	• Developed an educational module on MPAs that is utilized in classrooms throughout the state through the PORTS program
CDFW, US Department of Defense	• Developed military safety zones around Channel Islands (see Appendix A, Section 3.3: *MPA Design and Management Considerations*)

The MSLT created four overarching management objectives that span the entire network, linked to the six MLPA goals, and complement the regional objectives. The four management objectives, as described in the Partnership Plan, include the following:

1. Governance and management process is effective and adaptive.
2. Objective, reliable, and timely scientific information and enforcement data are used in management decisions for stewardship of the statewide network.
3. Compliance with the regulations and participation in management and stewardship of the statewide MPA network is high due to effective enforcement, education, and broad awareness of the MPAs across sectors and by all key stakeholder groups.
4. State MPA network is effectively financed and sustainable over the long term.

In working together to achieve these management objectives, partners will seek to follow the guiding principles of the California Collaborative Approach, including leveraging resources, ensuring transparency, and engaging in partnerships.

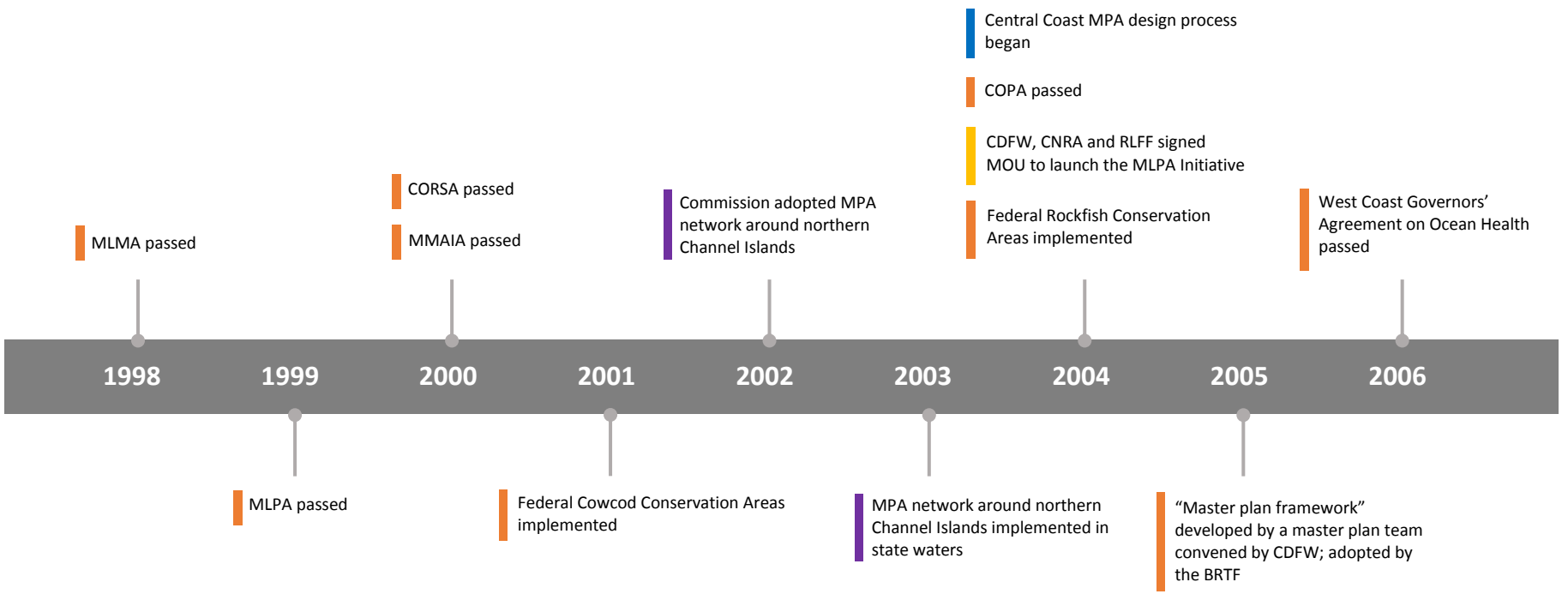
As one component of the Collaborative Approach, Community Collaboratives (Collaboratives) reflect the local-scale community focus. There are currently 14 Collaboratives, together comprising the MPA Collaborative Network.[49] Each Collaborative offers local partners and stakeholders an opportunity to engage with and have an active voice and participation to potentially inform MPA management in a way that reflects their unique community's priorities and needs. The Collaboratives are designed to be self-sufficient and provide a platform for locally-based stakeholders to organize around and support their local MPAs, while supporting the MSLT to achieve the network-wide management objectives and the MLPA goals.

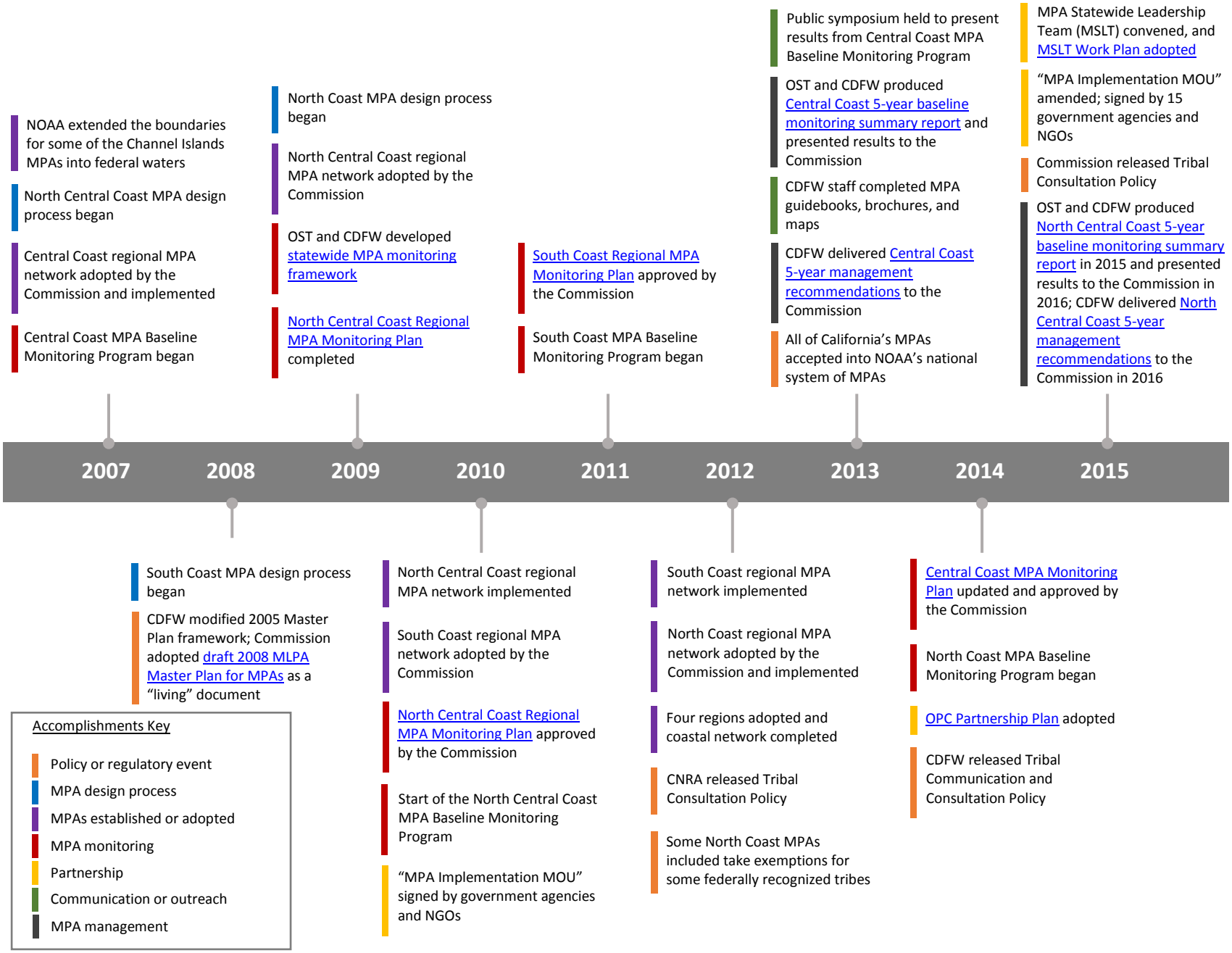
1.3 California's Marine Management Policies and MPA Milestones

Since the passage of the MLPA, the MLPA Initiative, MLPP, and the state achieved a number of accomplishments. These accomplishments relate to policies and regulation, MPA design and establishment, MPA monitoring, partnerships, communication and outreach, and other achievements. Figure 2 illustrates a timeline of some of these milestones between 1998 and 2015.

[49] MPA Collaborative Network. http://www.mpacollaborative.org/

Figure 2. California's key MPA-related milestones.




2007
NOAA extended the boundaries for some of the Channel Islands MPAs into federal waters
North Central Coast MPA design process began
Central Coast regional MPA network adopted by the Commission and implemented
Central Coast MPA Baseline Monitoring Program began
2008
South Coast MPA design process began
CDFW modified 2005 Master Plan framework; Commission adopted draft 2008 MLPA Master Plan for MPAs as a "living" document
2009
North Coast MPA design process began
North Central Coast regional MPA network adopted by the Commission
OST and CDFW developed statewide MPA monitoring framework
North Central Coast Regional MPA Monitoring Plan completed
2010
North Central Coast regional MPA network implemented
South Coast regional MPA network adopted by the Commission
North Central Coast Regional MPA Monitoring Plan approved by the Commission
Start of the North Central Coast MPA Baseline Monitoring Program
"MPA Implementation MOU" signed by government agencies and NGOs
2011
South Coast Regional MPA Monitoring Plan approved by the Commission
South Coast MPA Baseline Monitoring Program began
2012
South Coast regional MPA network implemented
North Coast regional MPA network adopted by the Commission and implemented
Four regions adopted and coastal network completed
CNRA released Tribal Consultation Policy
Some North Coast MPAs included take exemptions for some federally recognized tribes
2013
Public symposium held to present results from Central Coast MPA Baseline Monitoring Program
OST and CDFW produced Central Coast 5-year baseline monitoring summary report and presented results to the Commission
CDFW staff completed MPA guidebooks, brochures, and maps
CDFW delivered Central Coast 5-year management recommendations to the Commission
All of California's MPAs accepted into NOAA's national system of MPAs
2014
Central Coast MPA Monitoring Plan updated and approved by the Commission
North Coast MPA Baseline Monitoring Program began
OPC Partnership Plan adopted
CDFW released Tribal Communication and Consultation Policy
2015
MPA Statewide Leadership Team (MSLT) convened, and MSLT Work Plan adopted
"MPA Implementation MOU" amended; signed by 15 government agencies and NGOs
Commission released Tribal Consultation Policy
OST and CDFW produced North Central Coast 5-year baseline monitoring summary report in 2015 and presented results to the Commission in 2016; CDFW delivered North Central Coast 5-year management recommendations to the Commission in 2016
Accomplishments Key
Policy or regulatory event
MPA design process
MPAs established or adopted
MPA monitoring
Partnership
Communication or outreach
MPA management

CHAPTER 2
MPA Network Design and Siting Process

The MLPA, expertise provided by advisory groups, and rigorous stakeholder engagement processes informed the design and siting process for California's MPA network. Throughout the siting and design process, decision-makers used the best readily available science to designate MPAs with varying degrees of protection (i.e., no-take or limited take) and to integrate MPAs into a statewide network. This chapter describes the types of MPAs that comprise California's MPA network, the MLPA Initiative design and siting process, and summary statistics describing California's MPA network.

2.1 TYPES OF MARINE MANAGED AREAS

The six goals of the MLPA recognize the importance of protecting marine resources for various purposes (protecting natural diversity and abundance of marine life, sustaining and rebuilding species of economic value, and improving recreational and educational opportunities in areas subject to minimal disturbance). Thus, it is important to use multiple types of MMAs, as defined in the MMAIA, to achieve these distinct goals.[50] MPAs are a subset of MMAs (however throughout this document the more common term "MPA" is used as an umbrella to refer to all types of protected areas), and include three MPA classifications (State Marine Reserve [SMR], State Marine Conservation Area [SMCA], State Marine Park [SMP][51]) and one MMA classification (State Marine Recreational Management Area [SMRMA]). The special closure designation, which is not an MPA, is used by the Commission for relatively small, discrete marine areas to also contribute to the goals of the MLPA through protections complementary to MPAs.[52] General definitions for these classifications of the protected areas adopted pursuant to the MLPA are described in Table 3 below. For regulations pertaining to areas declared by the Commission to be MPAs, MMAs, and special closures, see California Code of Regulations (CCR), Title 14, Section 632[53,54] and the descriptions of California's MPAs on CDFW's website.[55]

To date, there has been relatively little direct comparison between the relative benefits of multiple use areas such as marine parks and marine conservation areas compared to no-take marine reserves (Lester & Halpern 2008; Coleman et al. 2013; Kelaher et al. 2014). Because approximately 40% of California's MPA area (or about 6.5% of California's total 5,285 square miles of state waters[56]) is in SMCAs, SMCA/SMPs, and SMRMAs – which allow multiple uses including limited take – California's MPA network will provide an opportunity to build scientific knowledge about the effects of different types of MPAs.

[50] FGC §2852[c]
[51] The State Park and Recreation Commission has purview over the addition of SMPs
[52] Special closures derive from the ecological reserve authority in FGC §1583 to protect terrestrial resources such as nesting sites and pup haul-out areas
[53] CCR. Retrieved Mar 4, 2015 from https://govt.westlaw.com/calregs/
[54] CCR, Title 14, Section 632 defines provisions for a number of prohibitions and allowances on topics such as access, anchoring, transit or drifting through MPAs or other MMAs, public safety, and Tribal take
[55] Descriptions of California's MPAs are provided on the CDFW website: https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Network
[56] 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 Reading Rock).

The MLPP recognizes that designating a network that includes multiple types of MPAs may prove to be problematic relative to enforcement and public understanding of different regulations within contiguous areas. Differences in regulations in MPAs can lead to unintentional infractions and a degradation of the function of MPA network. Therefore, as regulations are developed and continually updated, care must be taken to ensure that regulations are understandable, observed by the public, and enforced as necessary.

2.2 MLPA Initiative Process and Outcomes

The MLPA passed in 1999, followed by the MMAIA in 2000. Following two unsuccessful attempts to implement the MLPA due to lack of funding and resources, CDFW entered into a public-private partnership called the MLPA Initiative to undertake implementation of the MLPA. This section describes the MLPA Initiative and the design, siting, and implementation process that was carried out between 2004 and 2012 (see Appendix A). In addition, this section shares the results of this process at the statewide and regional scales.

Following the statewide goals, the MLPA outlined guidelines for the design and siting of the MPA network. The MLPA required the network to comprise areas with various levels of protection, including the following elements:[57]

1) An improved marine life reserve component [known as the backbone of the network] consistent with the guidelines for the preferred siting alternative (see Appendix A, Boxes 1 and 3).
2) Specific identified objectives, and management and enforcement measures, for all MPAs in the system.
3) Provisions for monitoring, research, and evaluation at selected sites to facilitate adaptive management of MPAs and ensure that the system meets the goals stated in this chapter.
4) Provisions for educating the public about MPAs, and for administering and enforcing MPAs in a manner that encourages public participation.
5) A process for the establishment, modification, or abolishment of existing MPAs or new MPAs established pursuant to this program.

MLPA Initiative: Establishment and Design and Siting Process

The MLPA Initiative was a comprehensive, highly collaborative, transparent, and iterative process guided by MOUs and enhanced by the advice of stakeholders, scientists, resource managers, and interested members of the public. Over the course of 2004 to 2012, the MLPA Initiative worked together to match public and private resources to direct and inform four regional science-based, stakeholder-driven processes (see Figure 3).

[57] FGC §2853(c)

Table 3. Definitions and overview of MPA classifications.

Classification	Definition	Summary	Additional Information
State Marine Reserve (SMR)	In a **state marine reserve**, it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the managing agency for research, restoration, or monitoring purposes. While, to the extent feasible, the area shall be open to the public for managed enjoyment and study, the area shall be maintained to the extent practicable in an undisturbed and unpolluted state. Access and use for activities including, but not limited to, walking, swimming, boating, and diving may be restricted to protect marine resources. Research, restoration, and monitoring may be permitted by the managing agency. Educational activities and other forms of non-consumptive human use may be permitted by the designating entity or managing agency in a manner consistent with the protection of all marine resources.[58]	• Prohibits all take and consumptive use (commercial and recreational, living or geologic); scientific research and non-consumptive uses are allowed[59] • Definition is consistent with "marine life reserve" in MLPA	• Scientific collecting permits (SCP) may be issued by CDFW pursuant to Section 650 of the CCR, Title 14, or specific authorization from the Commission for research, restoration, or monitoring purposes • Boating, diving, research, and education may be allowed, to the extent feasible, as long as the area is maintained "to the extent practicable in an undisturbed and unpolluted state," but activities may be restricted to protect marine resources, including non-extractive activities[60] • Restrictions must be based on specific objectives for an individual site and the goals and guidelines of the MLPA[61] • Does not imply that navigation will necessarily be restricted though MPAs or that other non-extractive activities will be regulated
State Marine Conservation Area (SMCA)	In a **state marine conservation area**, it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource for commercial or recreational purposes, or a combination of commercial and recreational purposes that the designating entity or managing agency determines would compromise protection of the species of interest, natural community, habitat, or geological features. The designating entity or managing agency may permit research, education, and recreational activities, and certain commercial and recreational harvest of marine resources.[62]	• May allow select recreational and commercial harvest to continue; scientific research and non-consumptive uses are allowed	• SCPs may be issued by CDFW pursuant to Section 650 of the CCR, Title 14, or specific authorization from the Commission for research, education, or recreational purposes and certain commercial and recreational harvest, provided it does not compromise protection • Fishing restrictions may vary by focal species, fishing gear, habitats, and goals and objectives of individual MPA[63]

[58] PRC §36710(a)
[59] PRC §36710(a)
[60] PRC §36710(a)
[61] FGC §2852(c)
[62] PRC §36710(c)
[63] At present, the large fishery closures known as the Cowcod Conservation Areas and the Rockfish Conservation Area may function as *de facto* SMCAs in that bottom fishing for finfishes is prohibited but other types of fishing are allowed, though the specific regulations in these areas are subject to change dependent on stock assessments

Classification	Definition	Summary	Additional Information
No-take State Marine Conservation Area (no-take SMCA)	See SMCA definition.	• Prohibits all take and consumptive use, except for the take incidental to existing permitted activities such as infrastructure maintenance or water quality operations	• Pre-existing activities and artificial structures including, but not limited to, wastewater outfalls, piers and jetties, maintenance dredging, and beach nourishment occur throughout heavily urbanized areas • Activities are regulated by other federal, state, and local agencies whose jurisdiction cannot be pre-empted through designation of MPAs pursuant to the MLPA[64] • The Commission identified MPAs with existing structures, and designated them as no-take SMCAs and *only* these regulated activities are allowed to continue under current permits
State Marine Park (SMP)	In a **state marine park**, it is unlawful to injure, damage, take, or possess any living or nonliving marine resource for commercial exploitation purposes. Any human use that would compromise protection of the species of interest, natural community or habitat, or geological, cultural, or recreational features, may be restricted by the designating entity or managing agency. All other uses are allowed, including scientific collection with a permit, research, monitoring, and public recreation, including recreational harvest, unless otherwise restricted. Public use, enjoyment, and education are encouraged, in a manner consistent with protecting resource values.[65]	• Prohibits commercial take, but may allow select recreational harvest to continue; scientific research and non-consumptive uses are allowed • Prohibits injuring, damaging, taking, or possessing for commercial use any living or non-living marine resources[66]	• Other uses that would compromise the protection of living resources, habitat, geological, cultural, or recreational features may be restricted, while all other uses are allowed, consistent with protecting resources • SCPs may be issued by CDFW pursuant to Section 650 of the CCR, Title 14, or specific authorization from the Commission for research, monitoring, and education and certain recreational harvest in a manner consistent with protecting resources • State Parks Commission designates SMPs • Fishing restrictions may vary by focal species, habitats, and goals and objectives of individual MPAs[67]

[64] For example, wastewater discharge permitted by the SWQCB is not considered to involve take within MPAs, and for the purposes of MPA management, the relation of wastewater discharge to allowable take is at the discretion and jurisdiction of the State and Regional Water Quality Control boards.
[65] PRC §36710(b)
[66] PRC §36700-36900
[67] At present, the large fishery closures known as the Cowcod Conservation Areas and the Rockfish Conservation Area may function as *de facto* SMCAs in that bottom fishing for finfishes is prohibited but other types of fishing are allowed, though the specific regulations in these areas are subject to change dependent on stock assessments

Classification	Definition	Summary	Additional Information
State Marine Conservation Area / State Marine Park (SMCA/SMP)	See SMP definition.	• MPA designated as SMCA by the Commission and SMP by California State Park and Recreation Commission	• Only one MPA (Cambria SMCA/SMP) currently has this dual designation, as it was adopted by both Commissions at separate times with the same set of regulations and boundaries (Pope 2014) • Cambria SMCA/SMP is jointly managed by CDFW and State Parks
State Marine Recreational Management Area (SMRMA)	In a **state marine recreational management area**, it is unlawful to perform any activity that, as determined by the designating entity or managing agency, would compromise the recreational values for which the area may be designated. Recreational opportunities may be protected, enhanced, or restricted, while preserving basic resource values of the area. No other use is restricted.[68] The Fish and Game Commission may designate, delete, or modify state marine recreational management areas for hunting purposes.[69]	• Provides subtidal protection equivalent to an MPA while allowing legal waterfowl hunting, scientific research, and non-consumptive uses	• MMA designation • Recreational opportunities may be protected, enhanced, or restricted while preserving basic resource values of the area
Special Closure	A special closure is an area designated by the Commission that prohibits access or restricts boating activities in waters adjacent to seabird rookeries or marine mammal haul-out sites.	• This designation, which is not categorized as an MMA, is used by the Commission for relatively small, discrete marine areas to also achieve the goals of the MLPA	• Integrated into the MLPA process and used to reduce disturbance of nesting or roosting seabirds or hauled out or breeding marine mammals that would not otherwise be protected by MPA designation within the same geographical region • Special closures provide an exception to allow CDFW employees and employees of other specified government agencies to enter the area • Special closures also include an allowance for CDFW to grant permission to access the area at its discretion

[68] PRC §36710(e)
[69] PRC §36725(a)

MLPA Initiative staff varied among planning regions, and worked with CDFW staff with scientific expertise and/or knowledge of state policy and resource management, CDFW enforcement staff, California Department of Parks and Recreation (State Parks) staff, Regional Stakeholder Groups, Master Plan Science Advisory Team (SAT) members, the Statewide Interests Group (SIG), and/or professional contract staff with other required skills to accomplish MPA planning, project management, decision support tool development, facilitation, and mediation. The MLPA Initiative established an MLPA Blue Ribbon Task Force (BRTF), together with a SAT and a stakeholder advisory group (Stakeholder Group) to oversee the achievement of several initial objectives for overall MPA planning in each region.[70] See Figure 4 for a description of the primary roles of each of the three main MLPA Initiative bodies.

The first of the planning objectives for the MLPA Initiative was to complete a master plan framework, adopted by the BRTF in 2005, which included guidance based on the MLPA for the development of alternative MPA proposals statewide. Other important early objectives included establishing a timeline, organizational structure, requirements, work products, and funding for MPA planning. Rather than attempting to design a single MPA network for the entire state at one time, the MLPA Initiative called for the redesign of a statewide network of MPAs by 2011 through a series of geographic planning regions. The state was split into five distinct regions – North Coast, North Central Coast, Central Coast, South Coast, and the San Francisco Bay (see Figure 3). Each region held its own regional MPA public planning process, except the San Francisco Bay. MPA planning in San Francisco Bay will be influenced by the results of the Sacramento-San Joaquin Rivers Delta process and, therefore, MPA planning will occur once that process is complete (see Appendix A).

Figure 3. Map highlighting the five MLPA planning regions and planning periods.

[70] Complete lists of BRTF, SIG, SAT, and Stakeholder Group (or Regional Stakeholder Group [RSG]) members can be found on CDFW's website: https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Planning-Process

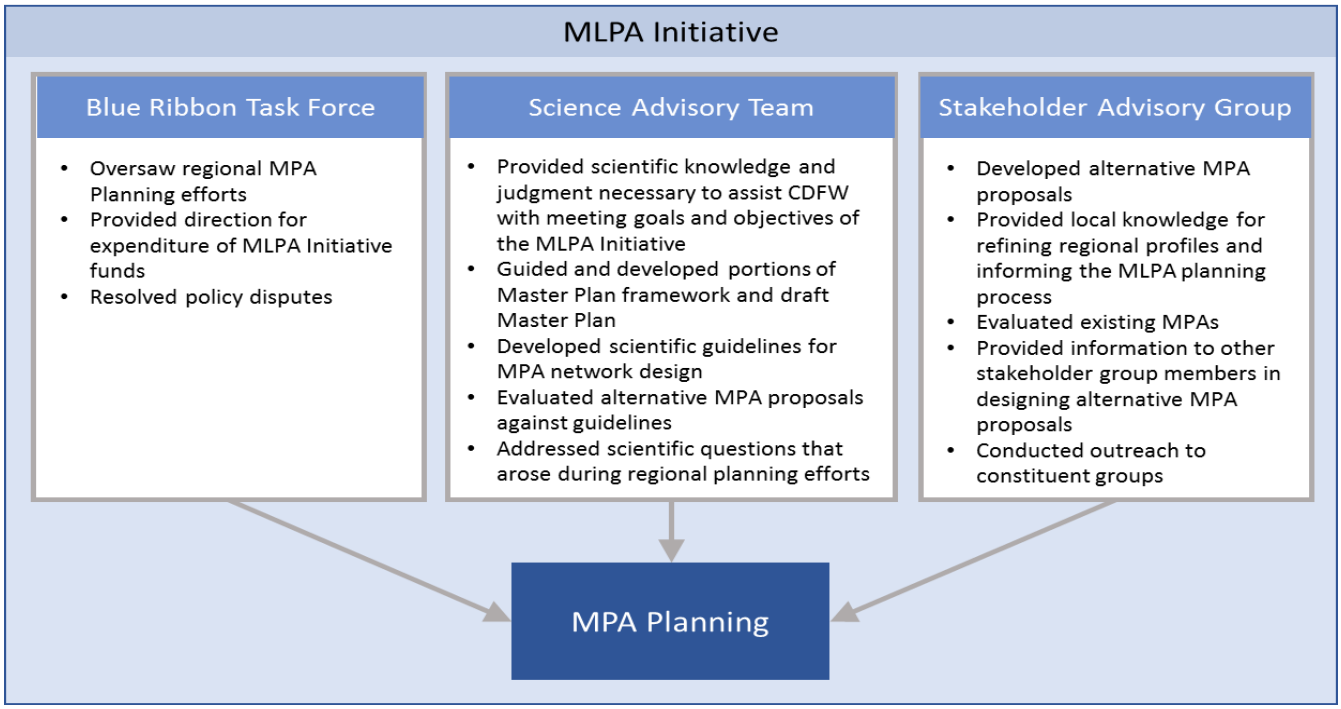


Figure 4. Description of three planning bodies that supported the MPA design and siting phase for each MLPA planning region.

Scientific Foundation for MPA Network Design

In order to prepare the master plan and take full advantage of scientific expertise on MPAs, the MLPA directed CDFW to appoint a Master Plan Team, including science advisors, for advice and assistance.[71] CDFW staff and Master Plan Team scientists played a significant role in guiding and developing components of both the master plan framework adopted by the BRTF in 2005 and the draft Master Plan adopted by the Commission in 2008, resulting in: 1) more specific guidelines for how to implement the broad guidance in the MLPA, and 2) detailed guidance on a variety of scientific considerations in the design of MPAs (see the 2008 Master Plan, Chapter 3). The overall MPA network design guidance addressed statutory requirements for MPA network design and provided a foundation for the SAT to apply a methodology to evaluate alternative MPA proposals in each planning region (Kirlin et al. 2013). The MLPA Initiative was a science-based and stakeholder-driven MPA planning process that utilized the best readily available science,[72] and accordingly, the MPA planning process drew from an existing body of work on both the science underlying MPA design and siting as well as previous MPA management efforts from around the world. Throughout the MPA design process, some of the top MPA scientists worldwide played active roles in both the development and review of regional proposals. To pave the way for positive outcomes of California's MPA network, the MLPP utilized three primary sources of scientific guidance to guide MPA network design: the MLPA, the 2008 Master Plan, and the SAT (see Appendix A, Section 4).

[71] FGC §2855(b)(1)

[72] For more information on CDFW's approach to using the best readily available science, see the California Fish and Game Commission, *Final Statement of Reasons for Regulatory Action* documents:
http://www.fgc.ca.gov/regulations/2007/165_632fsor.pdf for the Central Coast (2007);
http://www.fgc.ca.gov/regulations/2009/632fsor.pdf for the North Central Coast (2010);
http://www.fgc.ca.gov/regulations/2010/632fsor.pdf for the South Coast (2011); and
http://www.fgc.ca.gov/regulations/2012/632ncfsor.pdf for the North Coast (2012)

Influence of Science in California's MPA Network

California's MPA network generally reflects the integration of the science and science-based MPA design guidelines from the MLPA, the 2008 Master Plan, and SAT guidance. When compared to California's MPAs in 1999 (prior to the MLPA), there is a dramatic increase in the proportion of state waters protected and an increase in the number and size of all MPA types (see Table 4). The redesigned MPA network represents a substantial increase in the representation and replication of marine habitats within MPAs, including sandy beaches, rocky shores, kelp, shallow rocky reef/kelp forest (0-30m), mid-depth rocky reef (30-100m), deep rocky reef (100-3000m), shallow sand (0-30m), mid-depth sand (30-100m), deep sand (100-3000m), estuaries, marsh, and eelgrass habitats. There is also a reduction in the distance between habitats protected in MPAs (Saarman et al. 2013; see Tables 1-4 in Appendices C-F, Section 4 for more detailed statistics on each region).

Table 4. Comparison of protected areas prior to the MLPA in 1999 and present.

	Pre-MLPA (1999)[73,74]					Post-MLPA (2016)[75]				
Protected Area	**Count Number**	**Min Size**	**Max Size**	**Total Area**	**Mean Size**	**Count Number**	**Min Size**	**Max Size**	**Total Area**	**Mean Size**
No-take[76]	10	0.04	2.5	12.1	1.2	59	0.01	40.7	507.9	8.6
Limited Take[77,78]	53	0.01	30.8	129.8	2.4	65	0.06	23	344.1	5.3
Special Closure	2	0.64	2.2	2.8	1.4	15	0.01	1	3.3	0.2

While science guidelines strongly influenced the design of California's MPA network, the nature of the highly participatory, stakeholder-driven process led to some tradeoffs between ecosystem protection and socioeconomic considerations in California's MPA network (Gleason et al. 2013; Saarman et al. 2013). For example, one third of the MPAs considered sufficiently protective to contribute to the conservation goals of the MLPA fell below the minimum MPA size recommended by the SAT (Saarman et al. 2013). Examples like this, where science guidelines were not universally followed, highlight the multiple considerations taken into account during MPA planning, which encompass both ecological and socioeconomic priorities.

[73] Includes only coastal MPAs (excludes existing San Francisco Bay MPAs); area units are in square miles
[74] Pre-dates MMAIA; areas included are more variable in designation but are included due to similarity to current MPA take regulations
[75] Includes only coastal MPAs; area units are in square miles
[76] No-take includes SMRs and no-take SMCAs
[77] Limited take includes SMRMAs, SMCAs, SMPs, State Parks, State Marine Natural Preserves, and Ecological Reserves
[78] Restrictions are highly variable across all designations, however pre-MLPA areas are generally less restrictive compared to post-MLPA areas

Iterative Development of Alternative Regional MPA Proposals

The BRTF selected the Central Coast region as the initial planning region from which to launch the MLPA Initiative (2004-2007).[79] The Central Coast planning region was followed by the North Central Coast (2007-2010), South Coast (2008-2012), North Coast (2009-2012), and the San Francisco Bay (timing to be determined).[80] The same general iterative process for MPA design was used in each planning region (Box 2), most of which the stakeholder groups and SATs undertook. The overall aim was for the BRTF to select a set of alternative MPA proposals, including a preferred alternative, for each region and for the Commission to adopt one of the alternatives (see Appendix A).[81]

Box 2. Process for regional MPA planning.

1. **Regional Planning:** Preparation of a regional profile;[a] engagement of Stakeholder Group and SAT; development of additional advice; and identification of alternative approaches to networks and potential MPA sites.
2. **MPA Planning:** Stakeholder Group development of proposals for MPAs after evaluation of existing and new MPAs and other management activities.
3. **Evaluating Proposals:** SAT, BRTF, and CDFW analysis and evaluations; SAT evaluation of MPA proposals developed by the stakeholder group against the goals of the MLPA; BRTF evaluation of proposals based on factors including SAT guidelines, CDFW feasibility criteria, socioeconomic impacts, and cross-interest support[b] and forwarding a preferred alternative and other alternatives to the Commission; CDFW feasibility analysis, comments on alternatives, and development of initial regulatory documents based on Commission direction.
4. **Commission Action on Alternative MPA Proposals:** Preparation of regulatory analyses, including California Environmental Quality Act review; public testimony; and action by the Commission.

[a] Regional profiles for each planning region can be found on the CDFW website: https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Planning-Process

[b] MLPA Initiative. (2010). *Updated Summary of Key Guidance Provided in Previous Marine Life Protection Act Study Regions for the Development of Marine Protected Area Proposals*. Retrieved Sept 21, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=17238&inline=true

Alternative MPA proposal development in each planning region was an adaptive, flexible, and iterative process that incorporated multiple rounds of MPA design, evaluation, feedback, and redesign (Figure 5). 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. For example, in the North Coast MPA planning process, due mostly to relatively small population size and strength of public involvement, external groups were supported to develop MPA proposals for the first round prior to convening the stakeholder group. 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

[79] MLPA Initiative. (2005). *California MLPA Blue Ribbon Task Force Selects Central Coast Study Region for Developing Alternative Network Components of Marine Protected Areas*. Retrieved July 22, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=78000

[80] 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

[81] CDFW. (2015). *Overview of Alternative Marine Protected Area Proposals: The Marine Life Protection Act Initiative (2004 – 2012).* Retrieved Sept 21, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=107532&inline

group to develop improved cross-interest proposals, accommodated decision support-tools such as MarineMap that allowed stakeholders to collaboratively develop MPA designs, and increased and facilitated interactions between MLPA Initiative bodies and interested members of the public (Gleason et al. 2010; Fox et al. 2013a, b; Merrifield et al. 2013). In addition, in the South Coast and North Coast planning regions, State Parks and MLPA Initiative staff evaluated MPA proposals for recreation and public access opportunities. All alternative MPA proposals that were considered and reviewed by the Commission, but ultimately not selected for each planning region, can be found on the CDFW website.[82]

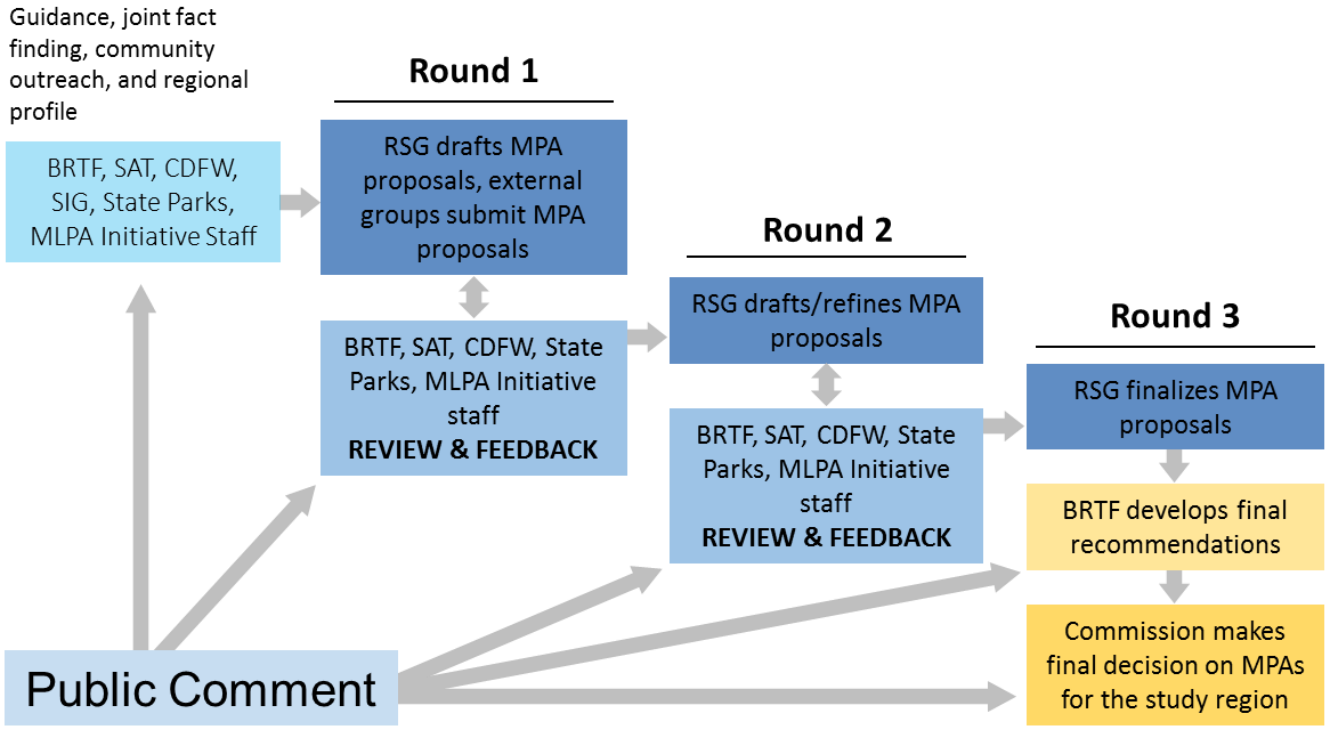


Figure 5. General process used by the MLPA Initiative to develop alternative MPA proposals in each regional MPA planning process or planning region.

[82] CDFW. (2015). *Overview of Alternative Marine Protected Area Proposals: The Marine Life Protection Act Initiative (2004-2012).* Retrieved Sept 23, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=107532&inline

MPAs Adopted Pursuant to the MLPA

Drawing from science guidance and expert advice, California redesigned its system of MPAs into a more cohesive statewide network (see Figure 1). Completed in December 2012, California's MPA network currently represents the largest scientifically-based network in the contiguous US to date, and thus the MLPA Initiative process may offer valuable insights for MPA network planning elsewhere in the US and around the world (Gleason et al. 2013).

Statewide MPA Summary

California's 63 existing MPAs prior to the MLPA were primarily established in an ad hoc manner, were mostly small (covering 2.7% of state waters with less than 0.25% in no-take MPAs), and were considered to be ineffective. Since the passage of the MLPA and the completed redesign of California's MPA network, California now has 124 MPAs and 15 special closures. California's MPA network encompasses about 852 square miles, or 16% of state waters, and approximately 9.6% of which is in no-take MPAs (about 9.0% in SMRs and 0.6% in no-take SMCAs). The majority of MPA coverage by designation type across California's MPA network is in SMRs (55.7%) and SMCAs (39.1%), with substantially less coverage in no-take SMCAs (3.9%), SMCA/SMPs (0.7%), and SMRMAs (0.5%), respectively (Figure 6).

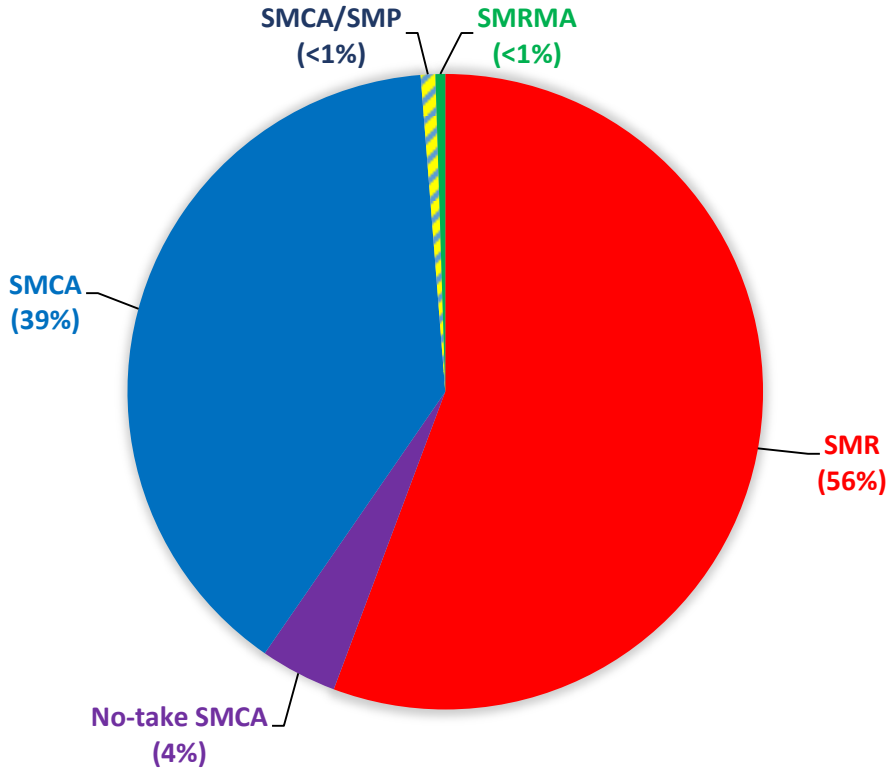


Figure 6. Percent of MPA coverage by designation type across California's MPA network.[83]

[83] All numbers represent rounded values and totals include all MPAs in the North Coast, North Central Coast, Central Coast, and South Coast regions; and do not include existing San Francisco Bay MPAs or special closures

Figure 7 illustrates the percent of 12 of California's most representative habitats protected statewide in MPAs, by MPA designation type. Deep rock, marsh, rocky shores, and mid-depth rock are the most represented habitats, with shallow sand and estuary showing the least representation. The majority of habitats are represented in SMRs and SMCAs. See Appendices C-F, Section 4 for detailed statistics of California's most representative habitats in individual MPAs.

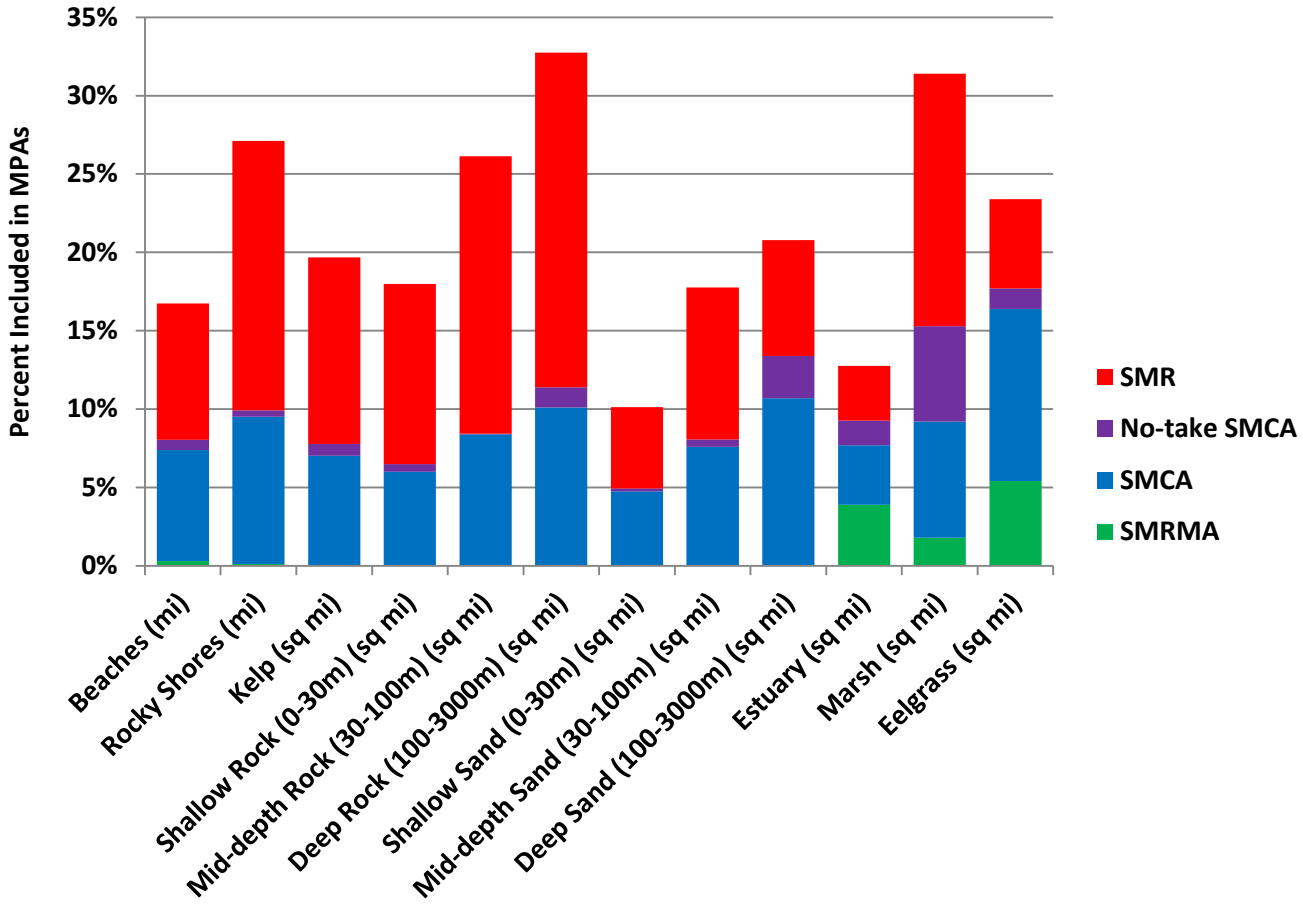


Figure 7. Percent of total known representative habitats in MPAs by designation throughout California's state waters.[84]

[84] All numbers represent rounded values and totals include all MPAs in the North Coast, North Central Coast, Central Coast, and South Coast regions; and do not include existing San Francisco Bay MPAs or special closures. The single SMCA/SMP designation in California's statewide network (Cambria SMCA/SMP) is too nominal to report.

Summary of Regional MPAs Adopted

Resulting from the design and siting phase, each planning region contained a unique set of MPAs of varying types (see Table 3 for an overview of MPA types). Table 5 provides a summary of the number of MPAs in each region and the area of coverage for each type. The North Central Coast has the largest coverage of MPAs (20.0%) and the North Coast has the least (13.4%). In addition, the South Coast has the largest area of state waters under protection (355.5 square miles and 15.1% of the region). Figure 8 provides an overview of the percent of coastal area within each type of MPA for each planning region; below is additional detail on each of the four planning regions.

Table 5. Summary statistics of MPAs within state waters across all planning regions.[85]

Type of MPA	North Coast		North Central Coast		Central Coast		South Coast	
	MPAs (number)	Area of State Waters (square miles)	MPAs (number)	Area of State Waters (square miles)	MPAs (number)	Area of State Waters (square miles)	MPAs (number)	Area of State Waters (square miles)
SMR	6	51.3	10	84.2	14	97.4	19	241.8
No-take SMCA[86]	0	0.0	0	0.0	0	0.0	10	33.2
SMCA	13	85.3	12	67.6	13	100.1	21	80.4
SMCA/SMP	0	0.0	0	0.0	1	6.3	0	0.0
SMRMA	1	0.8	3	0.6	1	3.1	0	0.0
Special Closures	7	0.2	6	1.2	0	0.0	2	1.9
Total[87]	**20**	**137.4**	**25**	**152.4**	**29**	**206.8**	**50**	**355.5**

North Coast: Covers approximately 1,027 square miles of state waters from the California/Oregon border south to Alder Creek near Point Arena (Mendocino County). MPAs and special closures were adopted June 6, 2012 by the Commission and went into effect on December 19, 2012.

North Central Coast: Covers approximately 763 square miles of state waters from Alder Creek near Point Arena south to Pigeon Point (San Mateo County). MPAs and special closures were adopted August 5, 2009 by the Commission and went into effect May 1, 2010.

Central Coast: Covers approximately 1,144 square miles of state waters from Pigeon Point, south to Point Conception (Santa Barbara County). MPAs were adopted April 13, 2007 by the Commission and went into effect September 21, 2007.

South Coast: Covers approximately 2,351 square miles of state waters from Point Conception south to the California/Mexico border, including state waters around the Channel Islands. MPAs and special closures were adopted December 15, 2010 by the Commission and went into effect on January 1, 2012.

[85] Statistics are from CDFW's Marine Region Geographic Information System unit. Values are current as of March 2016 and are subject to change as improvements in geographic data become available: https://www.wildlife.ca.gov/Conservation/Marine/GIS

[86] No-take SMCA is an administrative term for an SMCA that would have been an SMR but for certain pre-existing permitted activities onsite (see Table 3)

[87] Totals do not include existing San Francisco Bay MPAs or special closures

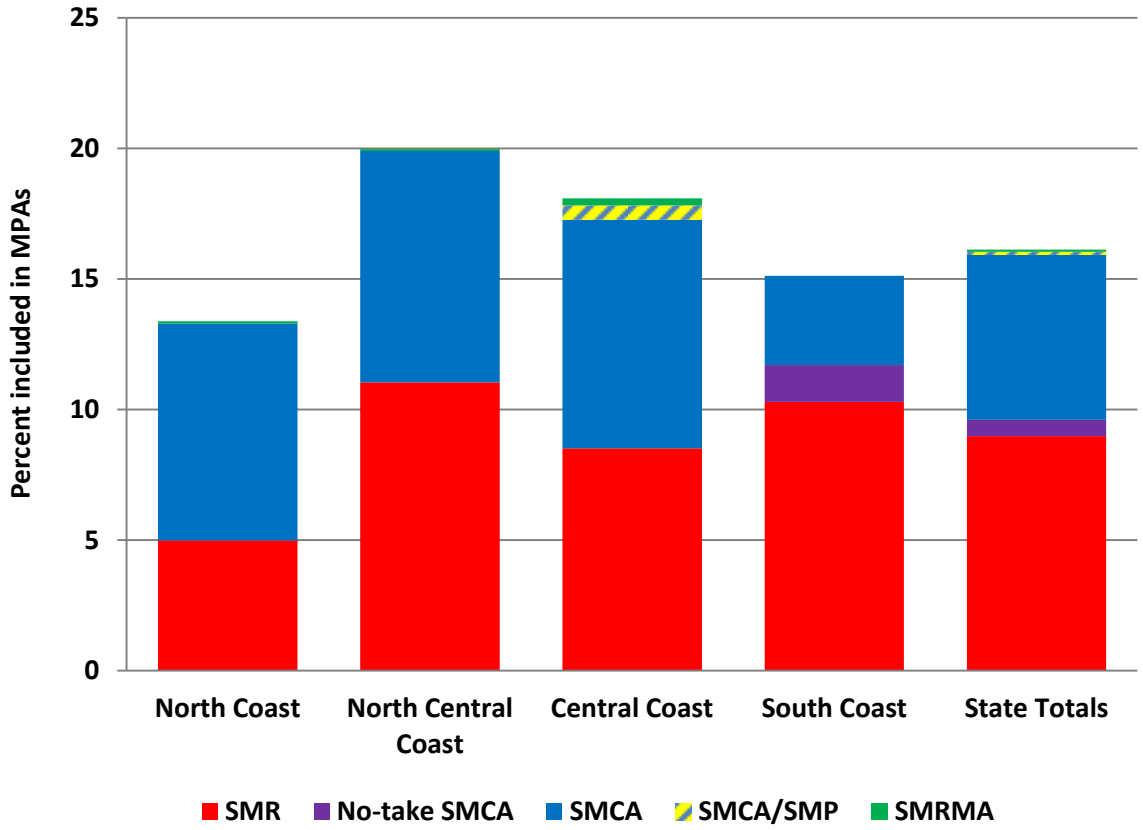


Figure 8. Percent of state waters for each MLPA planning region and statewide in MPAs.[88]

[88] Totals include all MPAs in the North Coast, North Central Coast, Central Coast, and South Coast regions; and do not include existing San Francisco Bay MPAs or special closures

CHAPTER 3
Management

The MLPA emphasizes the importance of effective management measures for California's MPAs. For California's MPA network, effective management consists of an MPA network that has strong oversight and a process for implementing the legal mandates; outreach and education, enforcement, comprehensive management planning, monitoring and evaluation, research and development, permitting, and strong social capital and long-term sustainable financing that is enhanced by partnerships. This chapter describes the MLPP's approach to managing California's MPA network. Chapter 4 describes a strong process for adaptive management that seeks to improve MPA management and enable learning and course-correction based on monitoring and evaluation, as well as lessons learned throughout ongoing management. Through these management elements, the MPA network may meet its stated goals and objectives.

The MLPA states that California's MPAs should be designed and managed, to the extent possible, as a statewide network.[89] Following this direction, significant efforts were made to ensure that MPAs were designed as science-based, stakeholder-driven, and ecologically connected statewide network during the MPA siting process (Gleason et al. 2013; Saarman et al. 2013; see Chapter 1 and Appendix A). To manage California's MPA network, the MLPP is focusing on a variety of management activities to support the MLPP and other legislated goals and requirements in the MLPA, MLMA, and MMAIA. See Table 6 for a summary of roles in MPA management, which together aim to meet the goals and objectives of the MLPA.

Table 6. Overview of MPA management responsibilities and roles to support the MLPP.

Responsibility	Role	Description
Enforcement	Enforcement of Regulations	• Ensure adequate enforcement of MPA regulations to increase compliance • Statutory authority to administer and enforce MPA regulations • Support the Commission through implementation of regulations • Conduct searches, inspections, and has citation authority
Identification of Long-Term Funding Sources	Secure Funding	• Continue to support the pursuit of long-term funding to adequately support MPA management activities into the future
Monitoring, Research, and Evaluation	MPA Monitoring Planning, Reporting, and Review	• Adhere to processes for MPA review and adaptive management, which are inherently linked to monitoring activities (see Chapter 4) • Continue to advance and provide oversight on all aspects of MPA monitoring, research, assessment/evaluation, and reporting to inform adaptive management • Support the Commission by reporting results of research and monitoring • Actively explore how MPAs may be incorporated into fisheries management

[89] FGC §2853(b)(6)

Responsibility	Role	Description
Partnership Coordination	Build and Participate in Partnerships	• Continue to work with the MSLT and explore potential new partnerships throughout the state • Collaborate with State Parks to manage marine parks and MPAs that are offshore of existing coastal State Park units • Engage in other partnership platforms, such as Collaboratives and/or the MPA Collaborative Network
	Integration with Management Efforts	• Actively communicate with other agencies on how MPAs may be incorporated into other management efforts
Outreach and Education	Guidelines and Partnerships	• Continue to work with partners throughout the state to build public awareness and understanding of California's MPA network through outreach, education, communication, and interpretation activities • Set guidelines for outreach materials (e.g., color scheme, messages, etc.) • Improve compliance through education and outreach materials
Permitting	Scientific Collection Permitting	• Maintain a decision framework for issuing SCPs within MPAs
Regulation, Policy, and Decision-Making	Regulatory Support	• Provide advice and information to the Commission to help inform management decisions • Make recommendations on management decisions • Develop rulemaking packages and scoping through the Administrative Procedure Act and Office of Administrative Law • Primary statutory authority for recommending designation of and managing MPAs

3.1 Outreach and Education

Building public awareness through outreach, education, communication, and interpretation efforts (collectively referred to as outreach) is an important component of an effective MLPP. Outreach has been identified as an activity that should be carried out at several levels even when other management activities (e.g., monitoring) are not yet fully implemented. Effective outreach efforts designed to inform potential user groups of MPA regulations and management requirements can have a direct bearing on MPA effectiveness. Increased compliance by an informed public that adheres to specific take regulations allows for MPAs to function in the manner they were designed.

A significant amount of outreach has been accomplished to date by CDFW and partners that include many of the components described in this section. Numerous regulatory guidebooks and brochures have been created and distributed to the public in printed and electronic form throughout the state. Informational kiosks, developed through a collaborative process with agencies and partners, are located in various ports and provide location specific information. A statewide signage project was completed by the MLPP and partners providing interpretive information on MPAs. In addition, no fishing signs were placed near SMRs. Partners and agencies have developed numerous posters, blogs, and videos to help disseminate information to the public about MPAs. CDFW and State Parks have also developed an MPA focused curriculum to incorporate into the Parks Online Resources for Teachers and Students (PORTS) program. To date more than 8,000 students have viewed this module.

While much has been accomplished, there is more to be done. The fundamental tools identified below include: a statewide outreach strategy with regional components, a CDFW guide to developing outreach materials, and staff support for the coordination and review of products developed by

outreach participants. Together, they provide a consistent structure and approach to the development and implementation of MPA outreach materials statewide. This enables all levels of government (federal, state, Tribal, and local), the private sector, NGOs, communities, educators, and stakeholders to work together to provide reliable, efficient, and appropriately focused MPA information to the public. This section describes CDFW's responsibilities regarding MPA outreach and actions the MLPP could take to implement effective outreach.

Outreach Priorities

CDFW, through the MLPP, has the responsibility to provide MPA regulations to the public. Recognizing this responsibility, CDFW's outreach goals are to: increase MPA awareness and understanding, facilitate MPA regulatory compliance, support enforcement, and encourage informed enjoyment and stewardship of MPAs while decreasing unintentional violations. In order to meet these goals, an approach focused on informing users of regulations is CDFW's core function. In this approach to outreach, the initial focus of providing user groups the basic knowledge needed to understand and enjoy MPAs (e.g., locations, boundaries, allowed uses) is an effective measure. It is expected that this approach will support the long-term positive effects of the MPA network, as over time there will be greater voluntary compliance with MPA take regulations.

Additional outreach efforts developed at a more interpretive level, which focus on closely related marine issues and how they interact with and relate to MPAs, would serve to supplement initial regulatory-based outreach efforts. This would allow for a layered outreach approach that uses a variety of actions designed to further increase public understanding and encourage acceptance, while providing incentive for shared stewardship commitments that go beyond the requirements of the law. For achieving its effective outreach and compliance-building goals, the MLPP have prioritized the following actions:

- **Broadly and collaboratively disseminate information:** Continue to distribute information/products to the public through agencies, ocean-related organizations and businesses, and local citizen groups, to improve public understanding of regulations
- **Develop statewide, regional, and local-scale outreach projects:** Statewide and regional outreach efforts can support individual outreach projects by providing information on MPA locations, allowed uses, and benefits; providing localized input on individual MPA signs, panels, and brochures; and helping bring attention to individual MPA habitats and marine resources, conservation objectives, and rules intended to achieve them
- **Encourage community involvement:** Community involvement can help foster compliance, especially when working directly with CDFW enforcement and outreach staff; guidance regarding community and citizen actions can be provided to support effective involvement and accurate messaging in materials development
- **Provide targeted outreach:** Conduct directed outreach as needs arise, adapted to address special compliance and enforcement concerns and address public misconceptions; employ a combination of traditional methods and newer technologies to reach a diversity of audiences
- **Focus interpretive outreach on the purpose of MPAs:** Focus additional outreach efforts on raising understanding about the conservation goals and values identified in the law, the role of MPAs as a tool for effective resource management, and the rationale and objectives for individual MPAs, and raise awareness about the particular habitats and/or species found within the specific location

Approach to MPA Outreach

To achieve the goal of the MLPA to "ensure that the state's MPAs are designed and managed, to the extent possible, as a network,"[90] a statewide MPA outreach strategy should be developed to:

- Identify overarching outreach goals, strategies, general priorities, and standards to apply statewide
- Identify the role of partners and CDFW in outreach and education activities
- Guide the development of regional outreach, interpretation, and education plans that implement the statewide strategy at the regional scale in a manner that supports statewide consistency and coherency.
- Develop regionally-specific outreach plans

Regionally-specific outreach plans for implementing the statewide outreach strategy should be developed as components of Regional MPA Background and Priorities document. Each regional outreach plan may:

- Consider the unique outreach needs of the region and identify appropriate regional approaches
- Identify existing regional programs and assets
- Identify information gaps, priorities, and prospective strategies to fill gaps
- Identify potential partners in the region with specific outreach expertise and capacity

Coordination of Outreach Efforts

Effective regional collaboration and coordination among outreach participants has been found to be helpful for sharing information and experiences, identifying common priorities, and finding collaborative solutions.[91] Therefore, a comprehensive MPA outreach program will utilize CDFW and other MLPP partner resources and build effective outreach partnerships. Directed partner contributions can assist and supplement existing outreach activities, leverage skills, expand resources and expertise beyond those of CDFW, and help to reach new target audiences (see the Partnership Plan for more information).

However, in order for materials developed by outreach participants to effectively serve the public and supplement CDFW efforts, they should adhere to specific product standards and be developed in coordination with CDFW. Product standards developed by CDFW and provided to outreach participants through written and verbal guidance along with a defined product review process will help to ensure accurate messaging, increase regulatory compliance, and ensure the use of biologically accurate information regardless of who developed the product. An MPA outreach program should be established with this in mind and work to provide a central point for coordination of, and responsibility for, activities associated with MPA outreach and its oversight at all levels. This will include the following core actions:

- **Establish structure and procedures for coordination:** Identify processes and associated procedures that facilitate coordination and cooperation between MLPP and other partners

[90] FGC §2853[b][6]
[91] National Marine Protected Area Center. (2014). *Updated Framework for the National System of Marine Protected Areas of the United States*. Retrieved Sept 21, 2015 from http://marineprotectedareas.noaa.gov/pdf/national-system/framework-mpa-oct14.pdf

- **Develop outreach standards:** Develop standards including protocols for outreach information and signage to achieve reliable outcomes both internally and from partners
- **Provide written outreach and partners guide:** Issue outreach standards and guidance in written format as a "Partners Guide." Provide an additional review process to augment the written guide
- **Conduct outreach product oversight and review:** Provide individual guidance, input, and product review where possible, to ensure that partner outreach products are delivered to the public consistent with laws, regulations, policies, standards, and best practices

3.2 Enforcement

The MLPA identified enforcement as one of the chief deficiencies in California's previously existing MPAs. Therefore, the MLPA emphasizes the importance of adequate enforcement as a goal of the MLPP[92] and the inclusion of enforcement measures for all MPAs,[93] and that the Master Plan includes recommendations for improving enforcement. This section describes enforcement objectives for the MPA network and, because CDFW is the primary agency responsible for MPA enforcement, describes CDFW's responsibilities for ongoing MPA enforcement.

Enforcement Plan Objectives

Because the main objective of an MPA enforcement plan is to ensure compliance with regulations, CDFW views outreach and education as a primary tool to support enforcement (see Chapter 3.1). Effective outreach and education of MPA regulations, including MPA boundaries, and the potential benefits of MPAs, builds understanding and buy-in for MPAs and leads people to follow regulations voluntarily, thereby helping alleviate demand on marine resources. In addition to these front-end efforts through outreach and education, compliance is enhanced through on-the-water enforcement efforts such as visible and consistent patrols. Given current CDFW resources, additional enforcement personnel and assets will be needed to effectively enforce the entire MPA network. Increased use of cooperative agreements with other agencies may be a partial solution, but additional funding for enforcement will also be necessary.

Within the primary objective of ensuring compliance with regulations, the objectives of the enforcement plan is comprised of the following categories:

Operational Ability

- Identify areas of high priority, biological sensitivity, or enforcement need (Box 3)
- Determine MPA network enforcement needs
- Hire additional enforcement officers
- Evaluate potential remote observation technology and techniques
- Develop a Records Management System to collect, organize, and track citation information[94]

Box 3. Priority area identification.

Enforcement priorities are developed based on the potential for resource impact, level of use, and potential for violations. High priority areas include habitats that are particularly vulnerable to damage, areas with high aggregations of critical species or species at low abundance, and areas where violations are likely to occur or have occurred at high rates in the past.

[92] FGC 2853(b)(5)
[93] FGC 2853(c)(2)
[94] OPC. (2015). *Marine Protected Area (MPA) Statewide Leadership Team Work Plan FY 15/16-17/18*. Retrieved Sept 21, 2015 from http://www.opc.ca.gov/2015/08/8122/

Cooperative Efforts

- Maintain and enhance cooperative enforcement efforts with allied agencies
- Effectively utilize judicial system resources
- Develop a standardized training program
- Seek and support ongoing and enhanced MOUs

Public Awareness, Outreach, and Education

- Establish an MPA outreach program (see Chapter 3.1)
- Develop outreach materials for enforcement staff to distribute
- Develop standardized signage protocols
- Establish an education advisory board
- Hold public forums to educate specific groups

CDFW Enforcement Responsibilities

CDFW's enforcement staff is charged with enforcing marine resource management laws and regulations over an area encompassing approximately 1,100 miles of coastline out to three nautical miles, resulting in 5,285 square miles of state waters.[95] To do so, CDFW will emphasize patrol of areas of particular concern or at particular risk (see Box 3) and use advanced technology and surveillance systems, to the extent practicable, as called for in the MLPA.

In addition to enforcing MPA laws in state waters, CDFW staff also provide enforcement of federal laws and regulations within state waters as well as federal waters, which extend from three to 200 nautical miles out to sea (the US Exclusive Economic Zone). Enforcement duties include all commercial and sport fishing statutes and regulations, all California Fish and Game Code (FGC) and Title 14, CCR, respectively, marine water pollution incidents, homeland security, and general public safety. General fishing regulations and other restrictions apply within MPAs in addition to MPA-specific restrictions.

CDFW shares jurisdiction for federal regulations including the Magnuson Stevens Fishery Conservation and Management Act, the Endangered Species Act, Marine Mammal Protection Act, the National Marine Sanctuaries Act, and the Lacey Act. A significant portion of both commercial and recreational fishing effort, and subsequently CDFW enforcement effort, occurs in federal waters. Therefore, the existing patrol effort beyond state waters and outside MPAs is important to consider in the plan. How effectively state and federal regulations are enforced within and around the MPAs will affect the MPAs' effect on conserving and protecting marine resources.
Given CDFW's other broad mandates to enforce both state and federal marine resource regulations, current assets are not adequate to redirect to MPA-specific patrols.[96] The increased focus on MPAs suggested by the MLPA and the comprehensive network the act mandates will necessitate not only a detailed enforcement plan, but additional enforcement assets as well (see Appendices C-F, Section 6).

[95] 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)
[96] Detailed information about existing enforcement assets and personnel can be found in Section 6 of each Regional MPA Background and Priorities document (Appendices C-F)

3.3 Regional MPA Background and Priorities Documents

The 2016 Master Plan focuses on statewide guidance relative to MPA management, and emphasizes the importance of an adaptive and evolving approach to management. In recognition of the science-based and stakeholder driven MPA design and siting processes that led to the completion of California's statewide MPA network (see Appendix A), Regional MPA Background and Priorities documents are included as appendices to the 2016 Master Plan to include region-specific MPA design considerations and priorities moving forward; which together provide important context to base future informed statewide MPA management decisions upon. In the 2008 Master Plan, previous iterations of these documents, then called "regional management plans," were contained in a single appendix.[97] The updated regional MPA Background and Priorities documents include unique regional features and design considerations, regional goals and objectives, summaries of regional MPAs, and regional plans for scientific and enforcement considerations moving forward (Table 7). Regional MPA Background and Priorities documents are not meant to contain specific details for management protocols and methodologies; they instead are intended to be living documents that are readily accessible for reference and adaptive management, and serve as a logical starting place for guiding regionally-based activities. While MPAs are actively managed at the local and regional scales, the MLPP will always consider management from the perspective of the statewide network as a whole, informed by lessons and best practices from finer scales across the state. All regional MPA Background and Priorities documents have a standardized structure and are included as separate appendices, recognizing the varying ecological, social, and economic conditions along California's coast (see Appendices C-F).

Table 7. Overview of Regional MPA Background and Priorities documents' standardized structure.

Section	Description
Introduction	Describes the role of Regional MPA Background and Priorities documents and their relationship to the Master Plan, and provides a brief overview of the information they contain
Description of Region	Provides a description of information unique to the region that is relevant to MPA management
Considerations for Designing Regional MPAs	Describes region-specific goals and objectives, stakeholder priorities and objectives, design considerations, and implementation considerations
Summary of Regional MPAs	Summarizes MPAs in the region, including information on area, along-shore span, depth, primary habitat types, regulations, boundaries, a summary of objectives, detailed objectives, and a map depicting the location
Scientific Information	Describes scientific information relevant to regional MPA management, including information on the regional monitoring plan, with links to the specific baseline and long-term monitoring plans, and a description of and link to a list of species most likely to benefit from MPA protection, which may inform monitoring and evaluation of MPA effectiveness
Enforcement Plan	Includes information pertaining to enforcement challenges and opportunities specific to each MPA, an inventory of personnel and equipment, and current and potential enforcement partnerships

[97] CDFW. (2008). *Draft Master Plan for Marine Protected Areas*. *Appendix O, page O-6*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

3.4 Aligning MPAs and Other Marine Resource Management Efforts

The MLPP is coordinating to connect MPA science and management with other efforts and activities, such as fisheries, water quality, climate change, and other management efforts as they emerge. As such, collaborative efforts will be crucial for taking an ecosystem-based approach to management, in which managers recognize the numerous interactions within an ecosystem, including humans, instead of focusing on a specific issue, species, or ecosystem service (Christensen et al. 1996). Furthermore, coordination will be essential for planning and carrying out an effective approach to adaptive management.

While CDFW and the Commission retain jurisdiction over the management and take of species within state waters, including within MPAs, the MLPA cannot supersede otherwise lawful activities that are not within the authority of the Commission to regulate.[98] Regulatory agencies should take into consideration the existence of MPAs in their review of the environmental impacts of authorizing a given activity. CDFW may also coordinate with non-regulatory entities such as the OPC and other key partners.

The effort to align MPA management with other marine resource management efforts is largely unprecedented and therefore experimental in nature (see Fox et al. 2013b; Appendix A, Section 3.3: *MPA Design and Management Considerations*). This section shares an overview of how the MLPP is aligning or could align with management of fisheries, water quality, climate change, marine debris, invasive species, which are among some of the most pressing areas for management (Halpern et al. 2009). In addition, this section shares brief summaries of other current and emerging efforts.

Fisheries Management

Overall, while the MLPA calls for by-in-large ecosystem protection,[99] it also envisions integration of MPAs and fishery management.[100] The MLPA states that "MPAs and sound fishery management are complementary components of a comprehensive effort to sustain marine habitats and fisheries"[101] and requires that MPA management be carried out "with the advice, assistance, and involvement of participants in the various fisheries." For example, MPAs can serve as an effective conservation and recovery tool for species at risk, vulnerable species, and species with the greatest conservation need by providing protections for essential fisheries habitat and ecosystems. This connection is further reinforced in California's 2015 State Wildlife Action Plan, which includes linking MPA monitoring as a component of its Data Collection and Analysis conservation strategy.[102] Efforts have been made to align MPAs with fisheries management. For example, CDFW convened a 2011 workshop focused on MPA and fisheries integration[103] to share information and ideas, and OST and CDFW have developed options to better align fisheries monitoring and MPA monitoring through the development of regional MPA monitoring plans.[104,105,106] The MLMA Master Plan for Fisheries is slated to undergo revision by

[98] FGC §2852(d)
[99] FGC §2853(b)(1)
[100] FGC §2851(d). See also FGC 7059(a)(3)
[101] FGC §2850-2863
[102] CDFW. (2015). *State Wildlife Action Plan*. Draft Retrieved Sept 24, 2015 from https://www.wildlife.ca.gov/SWAP
[103] Wertz, S., D. Aseltine-Neilson, T. Barnes, J.Vasques, S. Ashcraft, K. Barsky, A. Frimodig, M. Key, T. Mason, and B. Ota. (2011). *Proceedings of the Marine Protected Areas and Fisheries Integration Workshop*. Retrieved Aug 7, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=42306&inline=true
[104] MPA Monitoring Enterprise, OST. (2010). *North Central Coast MPA Monitoring Plan. Appendix A-1: Possible Supplemental Fisheries Monitoring Module*. Retrieved Sept 21, 2015 from http://oceanspaces.org/sites/default/files/regions/files/ncc_monitoring_plan_and_appendices.pdf
[105] MPA Monitoring Enterprise, OST. (2011). *South Coast MPA Monitoring Plan. Appendix A-1: Supplemental Fisheries Monitoring Module*. Retrieved Sept 21, 2015 from http://oceanspaces.org/sites/default/files/regions/files/sc_mpa_monitoring_plan_full.pdf

2017, and represents an opportunity to build upon existing efforts to integrate MPAs and fisheries management.[107]

Water Quality

Water quality is closely tied to the health of California's coastal ecosystems, including within MPAs. Point-source and non-point source pollution lead to harmful algal blooms, human health issues, heavy metal sedimentation, and beach closures, which can have impacts on local coastal economies (Abrahim & Parker 2000; Bay et al. 2003; Anderson et al. 2002; He & He 2008). Aquaculture effluent, once-through cooling from power plants, and brine run-off from desalination plants can also impact water quality.[108] To reduce negative impacts on water quality,[109] the SWRCB, which is named as a managing agency in the MMAIA, sited and implemented State Water Quality Protection Areas (SWQPAs) along the California coast, with the purpose of supporting biodiversity and unique species. These areas are called areas of special biological significance and general protection areas (SWQPA-GP), with SWQPA-GPs being designated specifically to protect water quality within MPAs. In addition, SWRCB amended their California Ocean Plan in 2012 to address the designation of new SWQPAs and MPAs.[110] The regional MPA monitoring plans developed by OST, in partnership with CDFW, include guidance for monitoring of species that are sensitive to water quality and encourage partnerships with existing water quality monitoring programs that maintain and gather water quality data.

Climate Change

MPAs are also linked to marine management efforts related to climate change. CDFW recognizes the effects that climate change has on marine resources[111] and partners on numerous climate change-related projects and issues such as hypoxia, ocean acidification, and the State Wildlife Action Plan process. Although the MLPA does not require consideration of climate change in MPA management, the MLPP recognizes that climate change will likely have an effect on MPAs. At the same time, California's MPAs could potentially help buffer California's marine resources against the negative impacts of climate change by providing areas of reduced pressures exerted on the resources (Micheli et al. 2012). Furthermore, MPAs can act as "living laboratories" to help scientists and decision-makers understand differences in ecosystem responses to climate change both within and outside MPAs. The MLPP is building partnerships with groups that have aligned and complementary expertise and missions regarding the impacts of climate change on California's MPAs in order to ensure coordination and reduce duplication of effort.

---

[106] MPA Monitoring Enterprise, OST. (2014). *Central Coast MPA Monitoring Plan. Appendix A: Integrating Fisheries Monitoring and MPA Monitoring*. Retrieved Sept 21, 2015 from http://oceanspaces.org/sites/default/files/regions/files/central_coast_monitoring_plan_final_october2014.pdf

[107] FGC §2851(d); see also FGC §7059(a)(3)

[108] California Environmental Protection Agency. *Ocean Standards: Desalination Facilities and Brine Disposal*. 25 Feb 2015. Retrieved Sept 21, 2015 from http://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/

[109] California Law. *California Water Code*. Division 7: Water Quality. Retrieved Sept 21, 2015 from http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=wat&codebody=&hits=20

[110] SWRCB. (2012). *Water Quality Control Plan – Ocean Waters of California – California Ocean Plan.* Retrieved Sept 21, 2015 from http://www.swrcb.ca.gov/water_issues/programs/ocean/docs/cop2012.pdf

[111] CDFW. *Unity – Integration – Action: CDFW's Approach to Confronting Climate Change*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/Climate_and_Energy/Climate_Change/

Marine Debris

Marine debris can lead to mortality of marine life through ingestion, entanglement, and ecosystem alteration.[112] CDFW's Office of Spill Prevention and Response maintains a Marine Wildlife Veterinary Care and Research unit that conducts opportunistic research on marine debris' impacts on marine life and is coordinating with CDFW staff to link MPA and marine debris monitoring (Rosevelt et al. 2013). Additional collaborations to address the impact of marine debris are also occurring with organizations including the University of California Davis, OPC, the SCC, the Northwest Straits Commission, and the National Oceanic and Atmospheric Administration's (NOAA) Marine Debris Program. In addition, beach clean-up programs such as the Coastal Clean-up Day managed by the CCC, while offering only temporary alleviation from marine debris, can help to reduce entry of land- and ocean-based marine debris into the oceans. Current research and monitoring of marine debris may help document the extent to which marine debris impacts MPAs and can help to inform efforts to reduce marine debris within or adjacent to MPAs.

Invasive Species

The impact of aquatic invasive species is not widely understood, especially related to MPAs. MPAs could be effective tools for limiting the spread of invasive species and providing safe harbors for native marine species within their boundaries (Francour et al. 2010). However, there is also some research indicating that invasive species thrive in MPAs, which could thereby undermine the MPAs' integrity (Otero et al. 2013). The MLPP will work to identify opportunities to link MPAs and aquatic invasive species management, both internally and with other agencies responsible for managing invasive species, such as the SLC. In addition, OSPR's Marine Invasive Species Program (MISP) conducts biological monitoring in coastal and estuarine waters to determine the level of invasion by non-native species and works to coordinate with the SLC. CDFW Marine Region staff will work to integrate MPA considerations into future biological monitoring by MISP and help to detect new introductions that may impact MPAs.

Other Marine Management Efforts

In addition to fisheries, water quality, climate change, marine debris, and invasive species, the MLPP may take into consideration the relative impacts of other activities occurring in MPAs when managing the MPA network. This section briefly describes marine management efforts related to these other activities.

- **Non-extractive Uses:** While MPAs can provide opportunities and enhance non-extractive uses of MPAs, such as scuba diving or boating, these uses should be effectively managed to avoid negative impacts caused by overuse beyond the carrying capacity of an MPAs. The MLPP is aware of the potential impact of these uses and will be available to coordinate management of non-extractive uses in MPAs in a way that is consistent with the goals, objectives, and regulations of each individual MPA. Furthermore, the MLPP will take lessons from individual cases and apply them to other sites and the broad network.

[112] United States Environmental Protection Agency. *Marine Debris Impacts.* Retrieved Sept 21, 2015 from http://water.epa.gov/type/oceb/marinedebris/md_impacts.cfm

- **Oil and Gas Drilling and Transport:** There are currently federal and state moratoriums or bans on leasing of offshore areas for oil and gas mining activities.[113,114] However, offshore oil drilling in federal and state waters on existing leases and gas extraction, including hydraulic fracturing, are occurring in federal waters. Therefore, it is important to consider that potential risks from oil or chemical spills could impact MPAs if they were to occur. CDFW and the Commission do not have the authority and are not responsible for managing these operations, but regularly communicate, coordinate, and train with other agencies, including the Bureau of Ocean and Energy Management, SLC, CCC, and the US Coast Guard to ensure that oil spill prevention and response plans consider catastrophic impacts to MPAs. In addition, the MSLT provides another opportunity for state agencies and others to engage in collaborative and cooperative dialogues.
- **Hydrokinetic Power Projects:** California currently has no hydrokinetic power projects, although a past project proposed near Point Cabrillo SMR by Pacific Gas and Electric Company was denied by the Federal Energy Regulatory Commission.[115]
- **Military Exercises (including Naval Sonar):** MPA classifications may not be inconsistent with US military activities deemed mission critical by the US Military (see Appendix A, Section 3.3: *MPA Design and Management Considerations*; Appendix F, Section 3.3; and Fox et al. 2013b).[116,117]
- **Other Forms of Acoustic Pollution:** Regulatory agencies and commissions, such as the CCC, have the authority to protect and oversee coastal uses that may impact MPAs, including seismic imaging for various uses (e.g., oil and gas exploration). The CCC is now beginning to consider the impacts of acoustic pollution on MPAs in their decision-making. For example, the CCC rejected a permit application requesting use of seismic air guns in central California due to potential "damage to marine protected areas."[118] CDFW and the Commission provided consultation on this ruling by raising concerns that there could be impacts on four MPAs within or adjacent to the proposed survey area, based on the project as proposed.[119]

The MLPP will continue to work to determine if and how to link MPA management to these growing or emerging management themes in the future.

[113] PRC §6870 - 6879
[114] Bureau of Ocean and Energy Management. (2012). *Outer Continental Shelf Oil and Gas Leasing Program Final Programmatic EIS.* United States Department of Interior, Bureau of Ocean Energy Management. Retrieved Sept 21, 2015 from http://www.boem.gov/uploadedFiles/BOEM/Oil_and_Gas_Energy_Program/Leasing/Five_Year_Program/2012-2017_Five_Year_Program/01_Introduction_Purpose_Need.pdf
[115] Federal Energy Regulatory Commission (2012). *Order Denying Preliminary Permit Application July 19, 2012.* Retrieved Sept 22, 2015 from http://elibrary.ferc.gov/idmws/file_list.asp?document_id=14039276
[116] PRC §36711
[117] FGC §2863
[118] Dettmer, A. (2012). *Addendum to Staff Report for CDP Application E-12-005 and Consistency Certification CC-027-12, Pacific Gas & Electric Company*. California Coastal Commission. Retrieved Sept 21, 2015 from http://documents.coastal.ca.gov/reports/2012/11/W13b-11-2012.pdf
[119] Ibid.

CHAPTER 4
Monitoring and the Adaptive Management Process

The MLPP is coordinating with partners to develop a process of adaptive management for California's MPA network that helps evaluate whether the MPA network is making progress toward achieving the six goals of the MLPA. This section describes the purpose and objectives of adaptive management of the MLPP; monitoring, research, and development that is used to inform adaptive management; and the process used to carry out adaptive management.

4.1 DEFINING ADAPTIVE MANAGEMENT

Adaptive management, as defined by the MLPA, is a process that seeks to improve management by learning from program actions such as monitoring and evaluation of ecosystem, and management effectiveness (Box 4). Based on this definition, the MLPP will follow a process for adaptive management of California's MPA network.

Box 4. MLPA definition of adaptive management.

The MLPA describes adaptive management as:

"Adaptive management," with regard to marine protected areas, means *a management policy that seeks to improve management of biological resources, particularly in areas of scientific uncertainty, by viewing program actions as tools for learning. Actions shall be designed so that, even if they fail, they will provide useful information for future actions, and monitoring and evaluation shall be emphasized so that the interaction of different elements within marine systems may be better understood* (FGC §2852[a]).

CDFW already carries out many activities that fit under the umbrella of adaptive management. For example, in 2014, CDFW proposed and the Commission adopted amendments to clarify complex regulations to improve compliance and enforceability.[120] Soon thereafter, in 2015, CDFW proposed and the Commission adopted amendments to improve boundary accuracy and clarify regulatory language to improve network compliance and enforceability.[121] In the near future, regulatory amendments may also be drafted to address existing and emerging management issues with the network, such as extending Tribal take allowances within MPAs in all the regions.[122] As with any new program, especially of the magnitude of California's MPA network, ongoing regulatory adjustments to align MPAs with their original intent or to address management or enforcement concerns may be warranted. Continued collaboration with partners to inform MPA management, guided in part by the Partnership Plan and MSLT, will support additional partnership-based adaptive management efforts into the future. The adaptive management process (outlined in Chapter 4.5) below will provide a framework for implementing future adaptive management measures.

[120] California Fish and Game Commission. (2014). *Marine Protected Areas Clean Up*. Approved regulatory language: http://www.fgc.ca.gov/regulations/2014/632fregs.pdf; regulations took effect on October 1, 2014

[121] California Fish and Game Commission. (2015). Approved regulatory language: http://www.fgc.ca.gov/regulations/2015/index.aspx#632; regulations took effect on March 1, 2016

[122] CCR, Title 14, Section 632(a)(11) and (b)(1-2, 6, 8-9, 15-16, 20-21, 25, 27)

Purpose of Adaptive Management

The MLPP recognizes that adaptive management is appropriate in cases where there is uncertainty about the impacts of management actions[123] or about the costs and benefits of collecting different types of data and information, as in the case of California's MPAs. Adaptive management can also serve an important role in resource management by providing a framework for responsive change in management measures based on current or emerging stressors. Importantly, the MLPP also views adaptive management as a mechanism for sharing information about the effectiveness of the MPA network in reaching its goals not only with agencies, but also with Californians at large.

Ten-Year Formal MPA Management Reviews

To inform the adaptive management process (see Chapter 4.5), there is the need for a formal review cycle of California's MPA network on a time scale that is biologically appropriate, administratively feasible, and cost effective. Furthermore, the MLPA requires California's MPAs are designed and managed, to the extent possible, as a network.[124] Significant efforts were made to ensure California's MPAs were designed to function as an ecologically connected statewide network (see Appendix A, Boxes 1-3), through four incremental science-based and stakeholder driven regional MPA planning processes resulting in the staggered adoption of MPAs across the state; the Central Coast MPAs in September 2007, North Central Coast MPAs in May 2010, South Coast MPAs in January 2012, and North Coast MPAs in December 2012 (see Chapter 2.2 and Appendix A). Prior to the completion of the statewide MPA network in 2012, the 2008 Master Plan recommended comprehensive reviews of monitoring results to the Commission every five years for each of the four regional MPA networks, in addition to annual reporting on monitoring results, and triennial MPA petition hearings scheduled by the Commission.[125] However, based on the best readily available science and lessons drawn from regional MPA implementation, an ongoing five-year MPA review cycle for incrementally adopted MPAs across four regions is not biologically appropriate or administratively sustainable. The MLPP has therefore set a 10-year cycle of formal management reviews for the statewide MPA network, and is leading the design of a Statewide MPA Monitoring Program, which includes and draws from regional components, to gather sufficient information to evaluate network efficacy and inform the formal 10-year MPA management review (see Chapter 4.3).

The timeframe for the 10-year review is more biologically appropriate, drawing from scientific empirical research and theoretical modeling demonstrating that variables such as biomass, species density, species richness, and size of marine organisms increase with time in no-take reserves (Lester et al. 2009, McCook et al. 2010, Caselle et al. 2015), but may not be realized or easily detected on short timeframes (Babcock et al. 2010, Moffitt et al. 2013, White et al. 2013). This is particularly true in highly dynamic temperate ecosystems such as the California Current and for species such as rockfishes that are long-lived, slow growing, and late to mature (Botsford et al. 2014, Starr et al. 2015). For example, monitoring fish biomass on nearshore rocky reefs in the northern Channel Islands MPAs over the first five years of implementation did not allow enough time to observe dramatic changes,[126] but after 10 years, Caselle et al. (2015) demonstrated that the biomass of target fish species increased consistently inside MPAs. However, monitoring nearshore fishes in Central Coast MPAs over seven years, Starr et

[123] Ballard, A., Birss, H., Botta, R., Cantrell, S., Gonzales, A., Johnson, B., Spautz, H., Torres, S., & Yamamoto, J. (2014). *Incorporation of Adaptive Management into Conservation Planning and Resource Management.* Retrieved Mar 4, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=86989&inline=1

[124] FGC §2853(b)(6)

[125] FGC §2861(a)

[126] CDFW, PISCO, CINMS, and Channel Islands National Park. (2008). *Channel Islands Marine Protected Areas First 5 Years of Monitoring: 2003-2008*. Airamé, S. and J. Ugoretz (Eds.). 20 pp. Retrieved Aug 7, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=31325&inline=true

al. (2015) determined that 20 years or more may be needed to detect significant changes due to MPA implementation. The timing (i.e., short or long response times), direction (i.e., increase, decrease, or no change), and magnitude of these changes to MPA implementation depends on factors such as MPA age (number of years implemented), size, geography (i.e., whether an MPA is located in southern California versus northern California), and degree of protection (i.e., no-take or limited take), the life history characteristics of target species (i.e., age of maturity, movement, natural mortality rate, lifespan, and larval dispersal pattern), habitat, fishing intensity outside MPAs, and environmental factors such as complex oceanographic patterns or other indirect effects (Babcock et al. 2010, White & Rogers-Bennet 2010, Carr et al. 2011, White et al. 2011, Moffitt et al. 2013; Botsford et al. 2014, Baskett & Barnett 2015, Caselle et al. 2015, Starr et al. 2015, Young & Carr 2015). These interdependent factors may cause difficulty interpreting monitoring data on short timeframes; for example, fished species may slowly increase, decrease, or oscillate immediately after MPA implementation, even when the long-term trajectory would include an increase in abundance (White et al. 2013). In summary, both empirical evidence from California and theoretical modeling affirm the need for long-term monitoring to detect changes that are attributable to MPAs and an appropriately long timeframe, such as every 10 years, for a management review cycle. Monitoring and the ability to detect and adapt to ecological changes is key to track progress and determine whether changes in management are warranted (Lubchenco & Grorud-Colvert 2015, Schindler & Hilborn 2015). Management adjustments should be made with caution to allow sufficient time to effectively evaluate MPA effects before adjustments are made (Gleason et al. 2013, Moffitt et al. 2013).

The formal 10-year management review will emphasize ecological, socioeconomic, and governance aspects of the network and may include, but not be limited to, a scientific evaluation, public scoping meetings, and panel discussions to determine the status, function, and possible changes to the network. The scientific evaluations that inform the formal 10-year management review will encompass multiple elements, including a scientific assessment of ecological and socioeconomic MPA monitoring results (see Chapter 4.3), together with other data streams such as MPA enforcement data. Based on the 10-year reviews, the Commission may take adaptive management actions if data and information support a change. During the adaptive management cycle, the MLPP may also refine and adjust management tools, measures, and strategies based on the management review and progress made toward achieving the specified objectives. Management tools, measures, and strategies fall into four primary categories: 1) MPA Design, including size and spacing; 2) MPA Access, including permitting, take in relevant MPA types, and use; 3) Enforcement; and, 4) Outreach and Education.

4.2 Adaptive Management Objectives

The six goals of the MLPA are inextricably connected and provide guidance for developing management objectives to determine how the MPA network is performing and, ultimately, if the mandates of the MLPA are being met. The MLPA goals recognize the intrinsic value of marine natural heritage for all Californians, including Tribes and Tribal governments, and establishing objectives helps take steps towards protecting these places of importance. This section outlines management objectives to effectively and adaptively manage the MLPP, which includes California's MPA network as well as all state MPA governance and management mechanisms and institutions (for information about the management activities to support the MLPP, see Table 6). Management objectives provide guidance to the MLPP and increase partner and public understanding of MPA management priorities.

These adaptive management objectives are not intended to be comprehensive, nor specific to each of the six goals of the MLPA, but rather to address the goals holistically, inform the design of the Statewide MPA Monitoring Program, and enable the evaluation of MPA network performance towards meeting the goals of the MLPA. Some objectives speak to the MLPA goals at a high level, while others

focus on management tools, measures, and strategies available to support and advance the MLPP. Furthermore, the adaptive management objectives may change during the ongoing adaptive management cycle (see Chapter 4.5). The MLPP will also need to evaluate the objectives in the context of changing ocean conditions and multiple ocean threats, such as climate change, fishing pressure, water quality degradation, marine debris, invasive species, and other existing and emerging issues. As traditional understanding and the components of ecosystem structure (i.e., species and functional groupings) and function (i.e., ecological interactions) may change significantly in the future. Evaluating the effectiveness of the MPA network at achieving the management objectives will need to account for this reality.

Below are the management objectives that the MLPP will address to effectively manage California's MPA network and provide management recommendations to the Commission for the formal 10-year management review, as a part of the adaptive management cycle.

Adaptive Management Objectives:

- Protect the structure and function of marine ecosystems
- Improve native marine life populations, including those of economic value
- Ensure minimal disturbance while allowing for sustainable opportunities for recreation, education and research
- Ensure comprehensive representation of all key habitats, including unique habitats
- Use learning acquired through administration of the MLPP to adaptively manage the objectives, management measures, enforcement efforts, and scientific guidelines to inform management decisions
- MPAs function as a cohesive statewide network

4.3 Statewide MPA Monitoring Program

Knowledge about the efficacy of MPA networks that cover a geographic scale as large as California is limited due to the limited empirical data from large-scale MPA networks (Gaines et al. 2010a, b; Grorud-Colvert et al. 2011, 2014). Therefore, California's MPA network offers a unique testing grounds for collecting data and information to learn about the effects of a large-scale MPA network and inform management (NOAA 2013). Based on scientific findings which suggest relatively long time scales for detecting the effects of MPAs, there is the need for long-term monitoring to gather sufficient information to evaluate network efficacy and inform adaptive management (see Chapter 4.1: *Ten-Year Formal MPA Management Reviews*).

This need is described in the MLPA, which requires "monitoring, research, and evaluation at selected sites to facilitate adaptive management of MPAs and ensure that the [MPA] system meets the goals."[127] Therefore, monitoring results and additional information potentially collected from TK, other scientific data, governance and management review, workshops, and public forums are an accumulation of information that could be used to inform adaptive management which is a response to that information (see Chapter 4.5). The North Coast Regional MPA Baseline Monitoring Program is the first regional MPA baseline monitoring program in California to incorporate a TK research project (see Appendix C,

[127] FGC §2853(c)(3), §2852(a), and §2856(a)(2)(H)

Section 5).[128] The MLPA, together with policy guidance including the Partnership Plan and the MSLT Work Plan, have guided and will continue to guide the MPA monitoring approach outlined in this section, which will be used to inform adaptive management of California's MPA network.

Current Status of MPA Monitoring

CDFW partnered with OST to develop a scientifically rigorous statewide MPA monitoring framework relative to the goals of the MLPA, in the form of regional MPA monitoring plans. Adopted by the Commission as an appendix to the MLPA Master Plan, this framework guides monitoring across the California's MPA network through an ecosystem-based approach. With this approach, monitoring seeks to understand ecosystem condition and trends (including human uses), and to scientifically evaluate MPA design and management decisions. Figure 9 illustrates this high-level, statewide approach to MPA monitoring. Notably, although evaluation activities are distinct from monitoring, evaluation constitutes one of the core components of the monitoring framework, as illustrated in Figure 9. Furthermore, as described in the MLPP adaptive management process (see Chapter 4.5), research and development play important roles throughout the MPA monitoring framework (see Chapter 4.4).

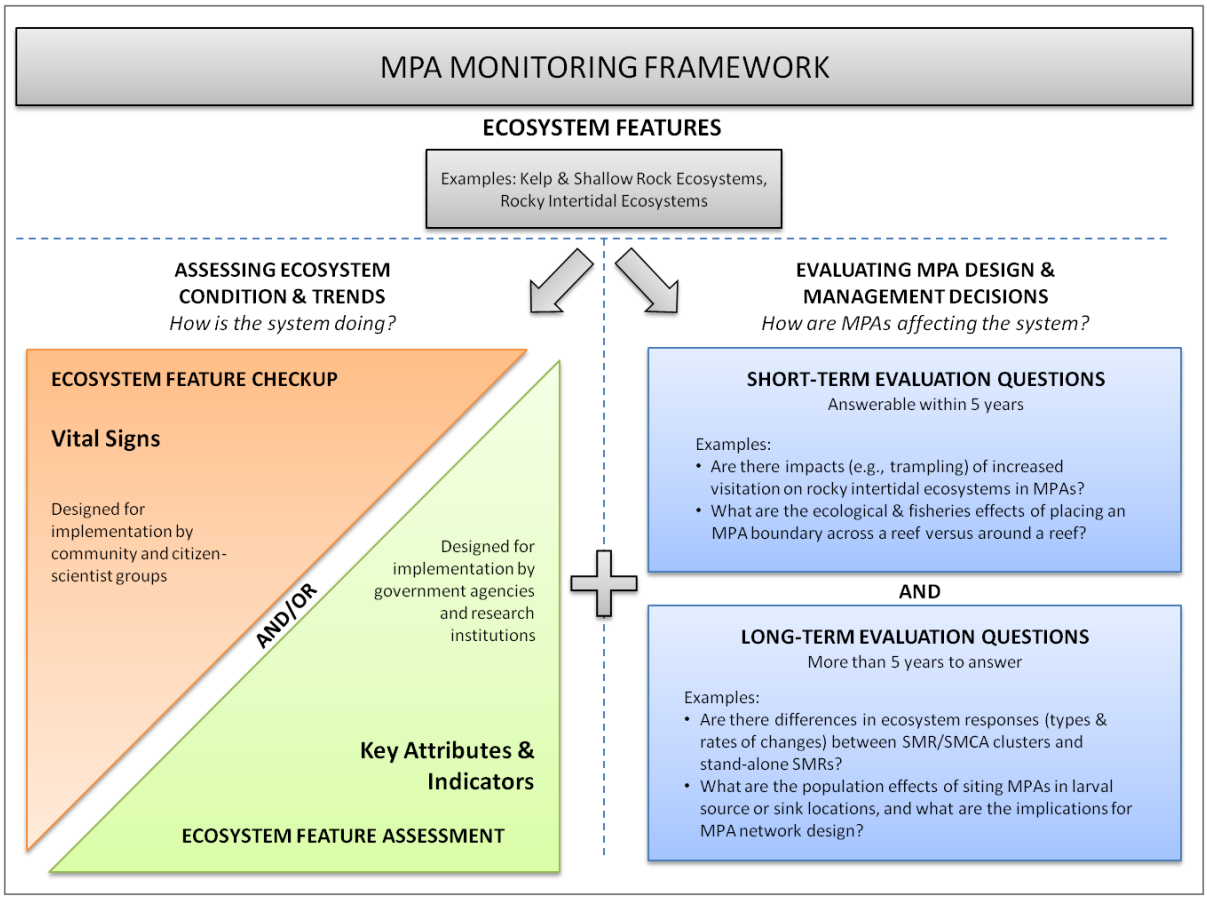


Figure 9. California's statewide MPA monitoring framework.[129]

[128] Rocha, M., Rosales, H., Sundberg, R., and T. Torma. Traditional Ecological Knowledge of Keystone Marine Species and Ecosystems. Retrived Feb 18, 2016 from https://caseagrant.ucd.edu/news/new-projects-to-take-snapshot-of-north-coasts-mpas#keystone-marine-species

[129] 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

To date, the statewide monitoring framework has been used primarily to guide baseline monitoring efforts and has served as the foundation for the development of regional monitoring plans and long-term monitoring needs. Moving forward, it will inform the process of building out a more detailed plan for statewide MPA network monitoring.

CDFW, OST, and OPC have taken significant steps towards establishing a long-term, Statewide MPA Monitoring Program drawing from the existing statewide monitoring framework, regional monitoring plans, findings from the regional MPA baseline monitoring programs, and other related monitoring activities. Figure 10 below illustrates the timeline and milestones of baseline monitoring activities in each region and the first formal 10-year management review, anticipated to take place in 2022. Baseline monitoring will be followed by long-term monitoring across the statewide network, and results from monitoring will inform the formal 10-year management review.

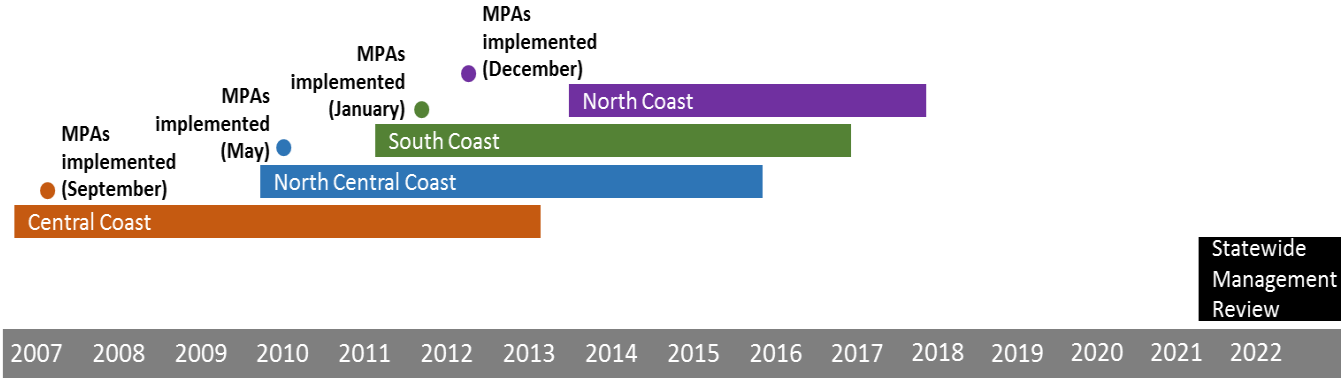


Figure 10. Timeline for baseline regional monitoring and anticipated formal 10-year statewide MPA management review.[130]

Regional monitoring plans have been developed to provide guidance on implementation of both baseline and long-term monitoring (see Appendices C-F, Section 5). The regional monitoring plans align with the statewide MPA monitoring framework while incorporating unique characteristics of each region.

Following MPA planning in each region, baseline monitoring data is collected to inform a five-year management review of the baseline conditions, followed by a transition to long-term monitoring. At the time of development of this document, the Central Coast region is the only region to have completed its baseline data collection and five-year review of baseline conditions. Beginning in 2015, efforts are underway between OST, CDFW, and OPC to develop a long-term MPA monitoring plan which will serve as the first example of an approach to long-term monitoring that can be adapted across regions and scaled towards the entire state (see Chapter 4.3: *Long-Term Monitoring*).

MPA monitoring results will inform the ongoing process of scientific assessment and evaluation, such as interim evaluations and assessments (see Chapter 4.5), and the evaluation and assessment of data and information for Commission consideration in the formal 10-year MPA management reviews. MPA management will therefore evolve over time through adaptive management and based on monitoring results, and MPA monitoring will likewise be adaptive to remain useful and rigorous as science advances and as management needs change.

[130] Adapted from: OST. *MPA Timeline and Milestones.* Retrieved Aug 4, 2015 from http://oceanspaces.org/sites/default/files/mparegiondiagram_v2.pdf

Using a Partnership-Based Approach

The MLPA states that monitoring and evaluation shall take into account existing and planned monitoring and evaluation efforts.[131] Monitoring California's MPA network is not a small task, and thus cannot be carried out by any one agency or organization. Effective, cost-efficient monitoring requires a partnership-based approach that leverages existing capacity across the state and engages the existing wealth of expertise in data collection, analysis and synthesis, and results sharing.

California's approach of establishing a public-private partnership increased the capacity of the state to implement monitoring and builds value and durability for California beyond simply meeting the requirements of the MLPA. To complement the public-private partnership, the Partnership Plan (see Chapter 1) contributes policy guidance for MPA monitoring.[132]

To date, the partnership-based approach to MPA management has involved more than 70 agencies, California Tribes and Tribal governments, and organizations in regional MPA baseline monitoring programs. Long-term monitoring will build on this experience, continuing to leverage capacity and establish partnerships to build a cost-effective, sustainable monitoring program statewide. Incorporating TK can improve the understanding of historical and current ocean conditions. The MSLT has developed an MSLT Work Plan that emphasizes the ongoing need to build partnerships, broaden participation, include knowledge from diverse sources, and build a deeper understanding of ocean health.[133] The MSLT Work Plan reflects the philosophy that all quality science may be useful in building a robust monitoring program, including academic, local, traditional, and citizen science contributions. Citizen science programs provide monitoring support through activities such as trainings to gather biological data in key habitats and recording observations of consumptive and non-consumptive uses of MPAs.

Furthermore, a valuable source of scientific and research expertise lies in California's university systems. California is home to some of the top marine science researchers in the world, and those researchers have an important role to play in enhancing monitoring efforts. These and other top academic institutions can ideally direct their research priorities to align with marine monitoring needs.

Statewide MPA Monitoring

CDFW, OPC, OST, and partners are leading the design of a collaborative process to develop a Statewide MPA Monitoring Program drawing from the existing statewide monitoring framework, regional monitoring plans, findings from the baseline MPA monitoring programs, and other related monitoring activities. The Statewide MPA Monitoring Program will integrate across the existing policy and management responsibilities of multiple state partners to guide a scientifically rigorous, sustainable program that fulfills the mandates of the MLPA and advances California's policy goals for a healthy and productive coast and ocean. Many of the technical and programmatic pieces built during MPA baseline monitoring will readily support this process.

Statewide MPA monitoring is comprised of three interconnected components: 1) scientific network evaluation questions and metrics; 2) regional MPA monitoring; and 3) beyond the MLPA. The first two components satisfy the requirements of the MLPA, and thus take precedence over the third component, which goes beyond the scope of the MLPA. However, the third component may be useful in identifying how MPA monitoring can help inform other state priorities, such as fisheries, water quality,

[131] FGC §2856(a)(2)(H)

[132] OPC. (2014). *The California Collaborative Approach: Marine Protected Areas Partnership Plan*. Retrieved Sept 22, 2015 from http://www.opc.ca.gov/2014/11/ocean-protection-council-meeting-december-2-2014/

[133] OPC. (2015). *Marine Protected Area (MPA) Statewide Leadership Team Work Plan FY 15/16-17/18*. Retrieved Sept 21, 2015 from http://www.opc.ca.gov/2015/08/8122/

climate change, marine debris, and invasive species, thereby driving progress towards a shared vision of a healthy and productive coast and ocean. This component will also play into the adaptive management process, which will help to effectively deploy resources to achieve management goals (Douvere & Ehler 2011; Williams 2011; Steltzenmuller et al. 2012; also see Chapter 4.1).

In summary, network scientific evaluation questions and metrics inform the design of a statewide MPA monitoring plan, and regional MPA monitoring results can, to a large extent, be integrated across regions to inform network-wide evaluation. In the third component, considering the significance of MPAs within the context of other state priorities allows for greater efficiency among ocean management efforts. The three components of the Statewide MPA Monitoring Program inform the formal 10-year management review (see Figure 11) and are described in more detail below.

Scientific Network Evaluation Questions and Metrics

To meet the adaptive management objectives, CDFW, OPC, OST, and partners are committed to developing scientific network evaluation questions and select metrics, based on network-wide objectives (see Chapter 4.2), to inform the development of a statewide MPA monitoring plan. Evaluation questions and metrics within regional monitoring plans provide a starting point for the development of network evaluation questions and metrics, specifically to gain an understanding of ecosystem condition and trends across the state and to assess network performance and thus progress towards MLPA goals.

Like other aspects of MPA management, scientific network evaluation questions and metrics are subject to the process of adaptive management, and therefore may evolve over time. To capture a holistic view of the statewide network performance and effectively guide monitoring, network evaluation questions and metrics will focus on primarily ecological and socioeconomic information. Though the collection of new socioeconomic data is not required by the MLPA, current and future partners who are putting effort toward MPA social sciences, such as economics, management, and governance, can be engaged by incorporating their data into MPA monitoring. For example, as stated in the Partnership Plan, OPC is leading the effort to undertake a management effectiveness evaluation and will utilize data collected from long-term monitoring, including on socioeconomic, management, and governance metrics. This information can feed into the formal 10-year management review. The following are examples of metrics that could be included in the Statewide MPA Monitoring Program:

- **Biological and ecological metrics:** Focal species (commercial and non-commercial) abundance, biomass, size frequency, diversity, and density; biogenic habitat condition; productivity; and/or community structure and composition
- **Socioeconomic metrics:** Governance and management effectiveness, use of marine resources (consumptive and non-consumptive), number of participants in MPA-related activities, geographic patterns of use in and around MPAs, and/or volunteer and community engagement in monitoring and education

Regional MPA Monitoring

Regional monitoring of MPAs helps track progress toward meeting the goals of the MLPA and provides important local-scale results to help inform regulatory and management decisions. Regional MPA monitoring plans are guided by the statewide MPA monitoring framework, and underpinned by the same basic principles and programmatic priorities. Furthermore, the process for building long-term MPA monitoring plans will consider activities across regions as well as the need for connectivity and consistency across the entire state on issues such as site selection. The state has developed a two-phase approach to MPA monitoring in each region: 1) establishing a benchmark through baseline monitoring and 2) long-term monitoring. These two phases are explained in more detail below.

Baseline Monitoring

Data and information collected during baseline monitoring establishes a regional benchmark of the ecological and socioeconomic conditions when each regional MPA network took effect and documents any initial changes resulting from MPA implementation. As such, the baseline serves as an important set of data against which future MPA performance can be measured. Baseline programs have been launched or completed in each of the four coastal MPA regions. These programs are designed, implemented, and coordinated by CDFW, OPC, OST, and CASG. Each regional MPA baseline program is administered near MPA implementation (see Figure 10), and consists of securing funding, establishing a mechanism for disbursing funds, 1-3 years of data collection, data analyses and reporting, disseminating results to as wide an audience as possible, and a five-year monitoring and management review of baseline conditions.

When all baseline programs are completed in 2018 (see Figure 10), California will have an unprecedented understanding of ecological and socioeconomic conditions along the entire California coast. Results from baseline monitoring, all of which are made publicly available through OceanSpaces.org, inform the initial five-year monitoring and management reviews of the regional MPA baseline conditions. In addition, results guide the development of a collaborative, efficient, and cost-effective long-term MPA monitoring program.

The model established through the first regional management review in the Central Coast includes summarizing baseline monitoring results into a five-year 'State of the Region' report shared broadly in advance of the five-year management review. This information can inform the development of management recommendations, including recommendations to continue to improve monitoring and research, education and outreach, enforcement and compliance, and policy and permitting. If management recommendations are identified, they will contribute to the formal 10-year management reviews.

Long-Term Monitoring

Building on existing capacity in the state and guided by regional activities, long-term monitoring will seek to understand conditions and trends of marine populations, habitats, and ecosystems across regions towards a statewide network scale. Planning for long-term monitoring will begin following the completion of the baseline period. Long-term monitoring activities will be designed to provide management decision support within the context of the statewide adaptive management review process.

Long-term MPA monitoring plans will specify monitoring activities for a stated duration based on available funding, partnership opportunities and capacity in the region, and priorities of CDFW and other partners. These documents may include detailed information about recommended budget allocations and funding mechanisms, the specific questions that monitoring should seek to address, design features of ecosystem condition assessments such as temporal frequency and spatial sampling, and incentive structures for encouraging relevant and useful work on the part of organizations and researchers operating in the region.

Not every MPA can be monitored each year, and baseline monitoring results are useful in making strategic choices for long-term monitoring. As directed in the MLPA, long-term monitoring of the MPA network will occur in selected sites. These sites are within the subset of MPAs in the statewide network where the MLPP will focus continued monitoring efforts, and will serve as a frame of reference for assessing the effects of the network as a whole. The process for selecting sites for long-term monitoring will balance rigorous scientific design considerations including local priorities and funding availability, management priorities, and opportunities to align with neighboring regions and advance statewide monitoring priorities. For example, a plan for long-term MPA monitoring may include

prioritization of sites for tracking change in particular ecosystem features and also considers likely monitoring sites in neighboring regions towards a statewide scale.

Beyond the MLPA

California's MPAs compose a network of living laboratories from which we can gain a greater understanding of the effects of existing and emerging stressors and begin to understand how MPAs may improve resilience to various impacts. While long-term MPA network monitoring is primarily informed by the mandated requirements of the MLPA, it is also developed to provide useful information for other aspects of California's ocean resource management, such as fisheries, climate change, marine debris, and invasive species, as well as other existing and emerging marine management efforts. Comprehensive, partnership-based MPA monitoring can help realize the value of the MPA network in aligning with these other ocean issues.

The MLPP can ensure that the adaptive management process provides a responsive framework for changes in management measures by linking statewide MPA monitoring to ocean issues that go beyond the MLPA.

4.4 Research and Development

Progress in science and technology changes what is possible in MPA monitoring and adaptive management. Realizing those possibilities requires engagement with relevant cutting-edge research and innovative development (see Box 5 for an explanation of the difference between monitoring and research). Just as the design and siting process of the MPA network relied on cutting-edge science, long-term monitoring and adaptive management of the network must continue to do so as well.

Box 5. Making the distinction between monitoring and research.

While monitoring and research can be closely linked and inter-related, they can serve distinct purposes for natural resource management. For the purposes of the 2016 Master Plan, monitoring and research are defined as follows:

Monitoring: An ongoing process, sometimes directed by law, of data collection to inform evaluation of changes and progress over time toward goals and objectives. Monitoring can take place on a set of key metrics at representative sites. Consistent monitoring at an appropriate frequency can shed light on the effectiveness of management actions, and this information can inform adaptive management efforts.

Research: Scientific exploration that addresses emerging or otherwise relevant questions that are complementary to the goals and objectives of long-term MPA monitoring. Research questions can be driven by monitoring gaps or findings and feed into monitoring, such as by testing new scientific methods or providing insight on emerging threats that could affect management. Research can provide pure science to continue learning about MPAs, but is not necessary for ongoing monitoring and evaluation.

Given the size and scope of MPAs in California's statewide network, research activities will be needed to gain a better understanding of the underlying biological, chemical, and physical phenomena and human dimensions (such as socioeconomic effects and effectiveness of governance and management measures) relevant to particular MPAs or the network as a whole. Information gleaned from regional and statewide monitoring about a specific ecosystem or metric may raise questions that can only be addressed through a program of focused research. In addition, research will almost certainly make use of the datasets collected through baseline and long-term monitoring. Applied research will be needed to develop new monitoring methods, metrics, modeling approaches, or other analytical methods as needs arise during the adaptive management process.

To complement research, development can play an important role in learning about marine ecosystems and the effects of MPAs. While research can gain information about MPAs through the use of systematic hypothesis testing, development can advance scientific knowledge and technological capacity beyond the scope of traditional research endeavors. This can include the development of new or improved methods and approaches for increasing accuracy, efficiency, and effectiveness of data and information collection. Development can play an important role in supporting research, such as by creating technological solutions that enable researchers to carry out projects more effectively or efficiently. Research can similarly support monitoring; for example, new developments in technology for monitoring ocean chemistry could be implemented to increase monitoring capacity of the MLPP (Boehm et al. 2015).

Existing partnerships, especially with academic institutions including the University of California and California State University can be drawn upon to assess research and monitoring gaps and technological development needs, and identify and carry out focused research programs or development projects to fill those gaps. Funding can provide specific incentives to conduct relevant and useful research and development that includes engagement with natural resource managers and other ocean users.

Through these activities, CDFW, OST, OPC, and state partners will continue to foster the naturally occurring overlap and feedback between monitoring, research, and development and the evaluation and adaptive management processes at the individual MPA, regional, and statewide levels. The results of each of these activities will help ensure that the Statewide MPA Monitoring Program utilizes the best readily available science, as required by the MLPA.

Both research and monitoring, as well as potential development, if unregulated and unchecked, have the potential to have negative impacts on marine environments, such as through collection of specimens. In an effort to prevent negative impacts, CDFW has a process for evaluating and coordinating the permitting of scientific collection activities, as described in Box 6. High-level planning by the MSLT and individual state partners will focus on increasing coordination between permitting agencies.

Box 6. Scientific collection in MPAs.

CDFW uses a decision tree to determine whether to approve or deny SCP requests within MPAs. CDFW reviews proposals for scientific collection and educational activities on an individual, case-by-case basis, but it does not resolve potential cumulative impacts from the effects of multiple activities permitted within an MPA. Therefore, CDFW and OPC's SAT are developing an ecological impact assessment tool to identify potential cumulative impacts prior to issuing an SCP. The ecological impact assessment tool will be used by CDFW to objectively evaluate SCP requests within MPAs.

4.5 Management Review Cycle

The MLPA goals and statutory directives, MPA objectives, and design considerations will serve as the cornerstone for adaptive management actions, in a manner that recognizes the original intent identified through the science-based and stakeholder driven process by which California's MPAs were developed. For example, in recognition that individual MPA goals and objectives are not static, a review of whether an MPA's stated goals and objectives are still relevant or may need to be adjusted is an appropriate adaptive management action.

The adaptive management process for the MLPP is illustrated in Figure 11 below. The process begins with the selection of statewide objectives (step 1 in Figure 11; also see Chapter 4.2) that work toward the goals of the MLPA and other relevant policy and statutes. Informed by the statewide goals and objectives, the MLPP developed and is implementing a program of baseline monitoring for the four regions. After the baseline monitoring period concludes for each region, long-term monitoring, which will be based on the regional and statewide objectives, will begin and continue into the future (step 2 in Figure 11; also see Chapter 4.3). Long-term 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 and support for the MPAs. These assessments and evaluations can also feed into the formal 10-year management review (step 3 in Figure 11, and this Chapter 4.5).

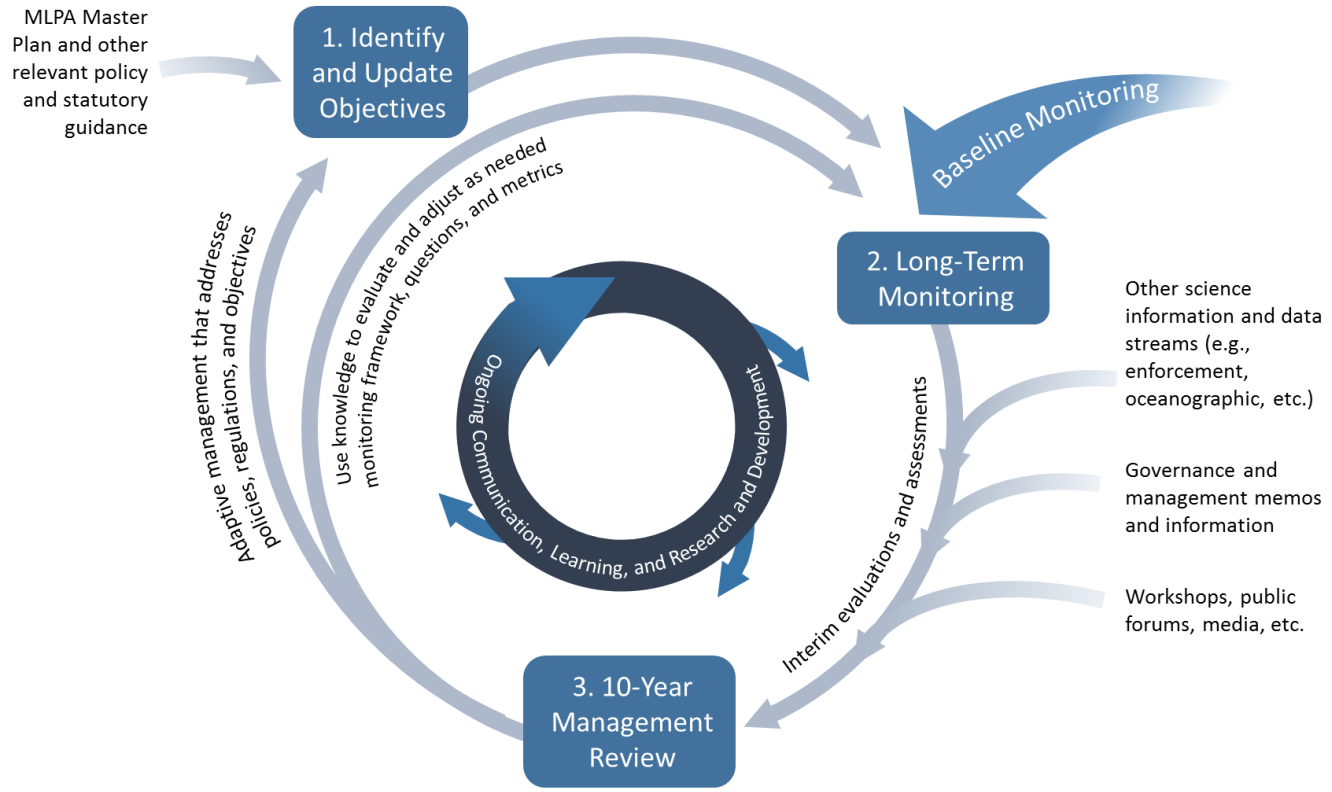


Figure 11. MLPP adaptive management process.

A process for MPA management review is an important component of the adaptive management process. Therefore, the Commission will initiate a formal management review of statewide MPA network performance at least once every decade (step 3 in Figure 11; also see Chapter 4.1: *Ten-Year Formal MPA Management Reviews*). This review will emphasize ecological, socioeconomic, and governance aspects of the network and may include, but not be limited to, a scientific evaluation, public scoping meetings, and panel discussions to determine the status, function, and possible changes to the network. In addition, the Commission receives petitions for the additions, modifications, or deletions of

MPAs on a continual basis,[134] favoring those petitions that are compatible with the goals and guidelines of the MLPA. Meritorious petitions at the discretion of the Commission may be incorporated into the decadal review unless circumstances dictate addressing the petition earlier.[135] Exceptions to the decadal review process may be considered if a petitioner makes a substantial case that not taking immediate action will cause significant harm to public safety or public welfare, or identifies scientific or technical issues that significantly impact MPA management or compromise MPA performance. Based on the findings of the Commission's formal 10-year management review, there may be the need for management actions, such as refining management objectives, policies, and strategies or revising long-term monitoring questions and metrics.

Throughout the entire adaptive management process, there will be the need for learning, communicating lessons, and developing and carrying out targeted research and development projects that can support monitoring and inform adaptive management (see Chapter 4.4). Learning serves an important role in the adaptive management process, specifically by sharing findings with and engaging a broader audience beyond scientists and management bodies. The MLPP can increase public knowledge about California's MPA network by translating and sharing the results of the evaluation, assessment, and review process and providing opportunities for partners to be involved in MPA management. Toward this end, the MLPP can identify and develop platforms for broader learning, which could include workshops, symposia, public forums, or web and print media. In addition to building knowledge, learning can help support the MPA network further by building public interest and compliance with MPA regulations. Increasing the reach of knowledge about the state's MPAs can also lead to new collaborations and partnerships that will build on monitoring and research capabilities. Due to the unprecedented nature of California's MPA network, the MLPP's approach to monitoring, evaluation, and adaptive management is accordingly a pioneering effort that will inevitably lead to significant learning that can help inform future efforts in California, the US, and beyond.

[134] FGC §2861a
[135] CCR, Title 14, Section 660.1

CHAPTER 5
Program Partners and Operations

Operational support as well as adequate funding for CDFW and partners will be crucial for leading effective management of California's MPA network. This section describes the core competencies of partners supporting ongoing management of California's MPA network, potential funding sources that CDFW and its partners could pursue, and the importance of leveraging the human and financial resources of CDFW and partners to achieve sustainable funding.

5.1 PARTNERS AND OPERATIONAL CAPACITY

Building from the roles and responsibilities described in Section 4.2 of the Partnership Plan, the MSLT Work Plan, and the MPA management roles and responsibilities described in Table 6. CDFW can work with partners to identify opportunities that consider jurisdictions and mandates to leverage human resources. Table 8 below provides a brief overview of CDFW's current partners in ongoing MPA management, along with a summary of their core competencies in relation to MPA management.

Table 8. Current partners supporting management of California's MPA network and their core competencies related to MPA management.

Partner	Sample of Core Competencies Related to MPA Management
CDFW[136]	• Marine science design and implementation, including MPA siting and design • Management and enforcement to implement natural resource trustee agency responsibilities including the MLPA • MPA monitoring, research, evaluation, including issuance of scientific collection permits • Outreach and education relating to MPAs
Commission[137]	• Primary regulatory decision-making authority for regulations and rules related to SMRs and SMCAs • Authority and expertise to review MPA proposals and petitions and decide on management actions • Provides venue for public comment and review of the Master Plan
CNRA[138,139]	• Restoration, protection, and management of California natural resources, including terrestrial, coastal, and marine • High-level direction to agencies including CDFW and State Parks • Oversight on state actions regarding ocean resources including through OPC, OST, West Coast Governors' Agreement on Ocean Health, Thank You Ocean Campaign, and Coastal Impact Assistance Program
State Parks[140]	• Management and enforcement of state parks, including terrestrial, coastal, and marine • Designated management agency under the MMAIA, including designation and administration of MMAs • Administration of funds to support grants relating to state parks • Funding generation to support sustainable financing streams for ongoing management of state parks

[136] CDFW. *California Marine Protected Areas*. Retrieved Aug 3, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs
[137] Commission, *About the Fish and Game Commission*. Retrieved Aug 3, 2015 from http://www.fgc.ca.gov/public/information/
[138] CNRA. *California Natural Resources Agency*. Retrieved Aug 3, 2015 from http://resources.ca.gov/
[139] CNRA. *Oceans*. Retrieved Aug 3, 2015 from http://resources.ca.gov/oceans
[140] State Parks. *About Us.* Retrieved Aug 3, 2015 from http://www.parks.ca.gov/?page_id=91

Partner	Sample of Core Competencies Related to MPA Management
State and Regional Water Boards[141]	• Protection of water quality through setting statewide policy and implementing the Clean Water Act • Expertise and authority to set standards, issue permits such as for waste discharge, determine compliance with permits, and enforce requirements • Compilation of information on surface water, ground water, water rights, and other programs to the public and stakeholders
OPC[142]	• Direction of policy of MPAs to support the California's MPA network • Identification of recommended changes to state and federal law relating to the oceans and coasts • Identification of opportunities to improve efficiency among agencies to achieve their mandated responsibilities including coordination and sharing of scientific data • Engagement of partners and the public through meetings, workshops, public conferences, and leading the coordination of leadership bodies including the MSLT
OST[143,144]	• As a boundary NGO mandated by CORSA, expertise in seeking and providing funds for ocean resource science projects and facilitation of ocean resource science projects and application of science to policy • MPA monitoring program development, design and implementation • Translation of scientific information for multiple audiences
MSLT[145]	• Assurance of communication and collaboration among agencies and partners participating in ongoing management of California's MPA network, including permitting activities • Ensures that team members work together on outreach and education, research and monitoring, enforcement and compliance, and policy and permitting relating to MPAs
SLC[146,147]	• Coastal hazard removal, marine invasive species, marine oil terminals, offshore oil permitting, oil spill prevention, sea level rise, renewable energy • Safe and environmentally sound development, regulation, and management of inland and offshore energy and mineral resources
CCC[148,149]	• Protection, conservation, restoration, and enhancement of environmental and human-based resources of the California coast and ocean • Planning and regulation of the use of land and water in the coastal zone through a permitting process • Implementation of the California Coastal Act
California Environmental Protection Agency[150]	• Restoration, protection, and enhancement of the environment • Environmental health, hazard assessment, toxic substances control, water resources control, emergency response, and enforcement
SCC[151]	• Protection, restoration, and enhancement of coastal resources • Expansion of public access to the shore in partnership with local governments, agencies, non-profits, and private landowners

[141] SWRCB. *California Water Boards*. Retrieved Aug 3, 2015 from http://www.waterboards.ca.gov/publications_forms/publications/factsheets/docs/boardoverview.pdf
[142] OPC. *About the Council.* Retrieved Aug 3, 2015 from http://www.opc.ca.gov/about/
[143] OST. *Our Work*. Retrieved Aug 3, 2015 from http://www.oceansciencetrust.org/work/
[144] OST. *CA Ocean Science Trust Releases Progress Report*. Retrieved Aug 3, 2015 http://www.opc.ca.gov/2013/05/ca-ocean-science-trust-releases-progress-report/
[145] OPC. *Marine Protected Area Statewide Leadership Team.* Retrieved Aug 3, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20150729/Item7-OPC-July2015-MPAStatewideLeadershipTeam-Memo.pdf
[146] SLC. *California State Lands Commission*. Retrieved Aug 3, 2015 from http://www.slc.ca.gov/
[147] SLC. *About the California State Lands Commission*. Retrieved Aug 3, 2015 from http://www.slc.ca.gov/About/About.html
[148] CCC. *About Us.* Retrieved Aug 3, 2015 from http://www.coastal.ca.gov/whoweare.html
[149] Gurish, J. *Overview of California Ocean and Coastal Laws with Reference to the Marine Environmen*t. Prepared for OPC. Retrieved Mar 4, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/docs/Documents_Page/Noteworthy/Overview_Ocean_Coastal_Laws.pdf
[150] California Environmental Protection Agency. *About Us.* Retrieved Aug 3, 2015 from http://www.calepa.ca.gov/About/
[151] SCC. *About the Conservancy*. Retrieved Sept 21, 2015 from http://scc.ca.gov/about/

Partner	Sample of Core Competencies Related to MPA Management
	• Distribution of grant funds to improve things like public access to beaches, coastal zone restoration, protection of coastal land, and other issues that help achieve the Conservancy's goals
West Coast Regional Office of National Marine Sanctuaries[152]	• Conduct monitoring and data collection that could inform adaptive management • Maintain authority to patrol, research, inspect, and cite violations of federal regulations (NOAA office of Law Enforcement) • Foster partnerships with State, Tribal, Federal, and non-governmental organizations • Support Joint Enforcement Agreement with CDFW • Provide funding to State to enforce federal regulations in state waters, in federal offshore waters, and in bays, estuaries, rivers, and streams

5.2 Potential Funding Sources

Securing a diversified funding portfolio can help ensure long-term financial stability that is able to withstand future shifts in funding availability. Areas that have been identified as priority gaps in need of support through partners include monitoring, compliance and enforcement, engagement with Collaboratives, and Tribal collaboration and coordination.[153] The 2008 Master Plan contains a list of potential funding sources the MLPA Initiative identified (Appendix N).[154] Building on the list of potential funding sources identified in the MLPA Initiative process, OPC, CDFW, and its partners developed an updated list of potential funding sources in the Partnership Plan[155], including federal, state, and local government; private philanthropy; and the private sector to help cover priority gaps. As funding sources are continuously changing and CDFW is now solidifying its operational needs for MPA management, there is the need to continually reevaluate existing and new potential funding sources.

5.3 Role of Partners in Leveraging Financial and Human Resources

The MLPP depends on collaboration to leverage existing human and financial resources, and CDFW and its partners are committed to working together to identify ways to continue to achieve the goals of the state in an efficient and effective way. CDFW, OPC, RLF, and the Commission have contributed human or financial resources to support MPA management in the past. Additional partnerships could provide more diversified funding on multiple scales and through various sectors, especially in cases where partners have access to funding sources that CDFW cannot tap into itself, such as foundation or other charitable sources. Based on their strengths and abilities, partners from different sectors will have different roles relating to identifying, assessing, and securing various funding sources.

[152] West Coast Regional Office of National Marine Sanctuaries. *About Sanctuaries*. Retrieved Sept 21, 2015 from http://sanctuaries.noaa.gov/about/

[153] See the Partnership Plan for a list of potential funding sources that could provide opportunities for supporting MPA enforcement, monitoring, and outreach.

[154] CDFW. (2008). *Draft Master Plan for Marine Protected Areas. Appendix N: Task Force Memos and Consultants' Report on Options for Funding the MLPA*. Retrieved July 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

[155] OPC. (2014).*The California Collaborative Approach: Marine Protected Areas Partnership Plan*. Retrieved Sept 22, 2015 from http://www.opc.ca.gov/2014/11/ocean-protection-council-meeting-december-2-2014/

CHAPTER 6
Setting a Path Forward

California's MPA network is unique in the world due to its size and coast-wide extent, as well as its strong emphases on science-based design principles and scientifically-informed adaptive management (see Section 2.2 and Appendix A).[156] Therefore, MPA management will involve an adaptive management approach with a continual learning process, which will provide an opportunity from which California and other states and countries can learn. The MLPP will use the adaptive management framework laid out by the MLPA, as well as their experiences in data collection, management, and governance, to address and adapt to new threats and challenges, both environmental and socioeconomic.

To operationalize the elements of the 2016 Master Plan, the MLPP will implement a number of steps to set a course for its core MPA management responsibilities including monitoring and evaluation, enforcement, and outreach and education. The following steps are built from the MPA management responsibilities outlined in Table 6 and will be implemented on either a regional or statewide basis, depending on the scope and focus of the action. Throughout all steps, the overall goal is statewide coordination to achieve effective adaptive management of California's MPA network to meet the goals and objectives of the MLPA. This section details the steps that the MLPP will take to continue to meet the goals and objectives of the MLPA.

6.1 MONITORING, RESEARCH, AND EVALUATION

- **Implement a Statewide MPA Monitoring Plan:** CDFW, OST, and other partners, will develop a statewide monitoring plan to serve as the foundation for assessing MPA network performance. A set of network evaluation questions will also be developed, which will build from the network-wide objectives described in Chapter 4.
- **Update Monitoring Plans:** The MLPP will coordinate to update and adapt regional monitoring plans as necessary based on their learning from long-term monitoring and management actions
- **Report Results:** The MLPP will develop an approach that concisely displays the results of monitoring and evaluation. This approach will be used for communicating the results of California's MPAs to broad audiences.
- **Link MPA and Other Monitoring Efforts:** The MLPP will partner with other monitoring entities, such as state fisheries managers and ocean acidification researchers (e.g., West Coast Governors Alliance and the West Coast Ocean Acidification and Hypoxia Science Panel). These groups can identify data collection that is relevant to MPA monitoring and assist in efforts to integrate that data into MPA monitoring, evaluation, research, and adaptive management.
- **Identify and Support Key MPA Related Research Needs:** The MLPP will identify and support research projects that focus on key science questions, including those related to network functioning as well as the effect of MPAs on fisheries

[156] Ballard, A., Birss, H., Botta, R., Cantrell, S., Gonzales, A., Johnson, B., Spautz, H., Torres, S., & Yamamoto, J. (2014). *Incorporation of Adaptive Management into Conservation Planning and Resource Management.* Retrieved Mar 4, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=86989&inline=1

6.2 Enforcement

- **Identify Tools to Support Enforcement:** New and emerging technology options such as remote surveillance, vessel management systems, global positioning system data logger systems, and others may provide options for increased enforcement efficiency. CDFW's Law Enforcement Division would also benefit from a Records Management System as an effective way to collect, organize, and track the vast amount of information that is collected. This will help document CDFW's patrol effort and help identify any geographical or technological areas where changes are needed. Activities associated with research and development can support the identification of these tools.

6.3 Partnership Coordination

- **Build Partnerships:** Through the Partnership Plan and the MSLT, as well as other partnership tools, the MLPP and its constituent partners will renew their commitments to existing, effective partnerships and build new partnerships to help further the MLPP's objectives and fulfill the MLPA mandate. The MLPP will pursue partnerships, such as among local, state, and federal governments, California Tribes and Tribal governments, the University of California and California State University systems, NGOs, the private sector, and citizen science groups.

6.4 Outreach and Education

- **Prioritize Outreach Efforts:** CDFW, in collaboration with partners through the MLPP, will prioritize the key messages, audiences, and communication mechanisms to raise awareness, support, and participation in MPA management. CDFW will also coordinate its outreach with other outside efforts of organizations with aligned priorities.

6.5 Identification of Long-Term Funding Sources

- **Enhance Capacity for MPA Project:** To fulfill its commitment to the MLPP, CDFW established an MPA project under the Habitat Conservation Program. Through the MPA project, CDFW ensures that staff time and resources are allocated to MPA management. However, enhanced capacity will be important to meet the ongoing commitments of the MLPP, and the future needs of California, as the MLPP evolves.
- **Prioritize Potential Funding Sources:** To help secure the resources necessary for continued investment in the MPA network, the MLPP will support OPC and other appropriate partners, including CDFW, to identify the top potential funding sources to fill gaps in financial support for MPA management activities.

Appendices

Appendix A: Marine Protected Area Planning through the Marine Life Protection Act Initiative

Appendix B: Communication and Consultation with California Tribes and Tribal Governments

Appendix C: North Coast: MPA Background and Priorities

Appendix D: North Central Coast: MPA Background and Priorities

Appendix E: Central Coast: MPA Background and Priorities

Appendix F: South Coast: MPA Background and Priorities

Glossary

Abundance: *Natural abundance* is the total number of individuals in a population protected from, or not subjected to, human-induced change (adapted from CDFW 2005a and Kelleher 1992). *Relative abundance* is an index of fish population numbers used to compare populations from year to year (CDFW 2005b).

Adaptive management: With regard to marine protected areas, is a management policy that seeks to improve management of biological resources, particularly in areas of scientific uncertainty, by viewing program actions as tools for learning. Actions shall be designed so that, even if they fail, they will provide useful information for future actions, and monitoring and evaluation shall be emphasized so that the interaction of different elements within marine systems may be better understood (FGC §2852[a]).

Biodiversity: A component and measure of ecosystem health and function. It is the number and genetic richness of different individuals found within the population of a species, of populations found within a species range, of different species found within a natural community or ecosystem, and of different communities and ecosystems found within a region (PRC §12220[b]).

Baseline monitoring: Baseline monitoring establishes a regional benchmark of the ecological and socioeconomic conditions when each regional MPA network took effect and documents any initial changes resulting from MPA implementation. As such, the baseline serves as an important set of data against which future MPA performance can be measured.

Biogeographical regions: The following oceanic or near shore areas, seaward from the high tide line or the mouth of coastal rivers, with distinctive biological characteristics, unless the master plan team establishes an alternative set of boundaries (FGC §2852[b]):

1. The area extending south from Point Conception
2. The area between Point Conception and Point Arena
3. The area extending north from Point Arena

Bycatch: In fishing, take of species other than the declared target species.

Deep: Greater than 330 feet (100 meters).

Ecosystem: The physical and climatic features and all the living and dead organisms in an area that are interrelated in the transfer of energy and material, which together produce and maintain a characteristic type of biological community (CDFW 2002).

Habitat: The living place of an organism or community, characterized by its physical or biotic properties (Allaby 1998).

Intrinsic value: The value that that thing has “in itself,” or “for its own sake,” or “as such,” or “in its own right” (Zimmerman 2004).

Marine life reserve: A marine protected area in which all extractive activities, including the taking of marine species, and, at the discretion of the Commission and within the authority of the Commission, other activities that upset the natural ecological functions of the area, are prohibited. While, to the

extent feasible, the area shall be open to the public for managed enjoyment and study, the area shall be maintained to the extent practicable in an undisturbed and unpolluted state" (FGC §2852[d]).

FGC §2860(b) further clarifies permissible activities in "marine life reserves": "Notwithstanding any other provision of this code, the taking of a marine species in a marine life reserve is prohibited for any purpose, including recreational and commercial fishing, except that the Commission may authorize the taking of a marine species for scientific purposes, consistent with the purposes of this chapter, under a scientific collecting permit issued by CDFW."

Marine managed areas: A broad group of named, discrete geographic areas along the coast that protect, conserve, or otherwise manage a variety of resources and uses, including living marine resources, cultural and historical resources, and recreational opportunities (FGC §2852[c], also see PRC §36602[d]).

Marine protected area (MPA): A named, discrete geographic marine or estuarine area seaward of the high tide line or the mouth of a coastal river, including any area of intertidal or subtidal terrain, together with its overlying water and associated flora and fauna that has been designated by law, administrative action, or voter initiative to protect or conserve marine life and habitat. An MPA includes marine life reserves and other areas that allow for specified commercial and recreational activities, including fishing for certain species but not others, fishing with certain practices but not others, and kelp harvesting, provided that these activities are consistent with the objectives of the area and the goals and guidelines of this chapter. MPAs are primarily intended to protect or conserve marine life and habitat, and are therefore a subset of marine managed areas, which are broader groups of named, discrete geographic areas along the coast that protect, conserve, or otherwise manage a variety of resources and uses, including living marine resources, cultural and historical resources, and recreational opportunities (FGC §2852[c], also see PRC §36602[e]).

Natural community: A distinct, identifiable, and recurring association of plants and animals that are ecologically interrelated (FGC §2702[d]).

Natural diversity: 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).

Shallow: 330 feet (100 meters) or less.

Literature Cited

Abrahim, G. M. S., & Parker, R. J. (2007). Assessment of heavy metal enrichment factors and the degree of contamination in marine sediments from Tamaki Estuary, Auckland, New Zealand. *Environmental Monitoring and Assessment 136(1-3)*, 227-38.

Allaby, M. (1998). *Concise Oxford dictionary of ecology*. UK: New York Oxford University Press.

Anderson, D. M., Glibert, P. M., & Burkholder, J. M. (2002). Harmful algal blooms and eutrophication: Nutrient sources, composition, and consequences." *Estuaries 25(4)*, 704-26.

Anderson, K. (2005). Tending the wild: Native American knowledge and the management of California's natural resources. Berkeley and Los Angeles, California: University of California Press.

Babcock, R. C., Shears, N. T., Alcala, A. C., Barrett, N. S., Edgar, G. J., Lafferty, K. D., McClanahan, T. R., & Russ, G. R. (2010). Decadal trends in marine reserves reveal differential rates of change in direct and indirect effects. *Proceedings of the National Academy of Sciences of the United States of America, 107(43)*, 18256-18261.

Baird, B. E., Miller-Henson, M. A., & Semmens, B. X. (1999). Analyzing California's marine managed areas: Existing classifications and options for the future. *CalCOFI Rep., 40*, 67-70.

Baskett, M. L. & Barnett, L. A. K. (2015). The ecological and evolutionary consequences of marine reserves. *Annual Review of Ecology, Evolution, and Systematics*, *46,* 49-73.

Bay, S., Jones, B. H., Schiff, K., & Washburn, L. (2003). Water quality impacts of stormwater discharges to Santa Monica Bay. *Marine Environmental Research, 56(1-2)*, 205-223.

Berkes, F. (1999). Sacred ecology: traditional ecological knowledge and management systems. Taylor and Francis, Philadelphia and London, UK.

Boehm, A. B., Jacobson, M. Z., O'Donnell, M. J., Sutula, M., Wakefield, W. W., Weisberg, S. B. & Whiteman, E. (2015). Ocean acidification science needs for natural resource managers of the North American west coast. *Oceanography*, *28(2)*, 170–181.

Botsford, L. W., White, J. W. W., Carr, M. H. & Caselle, J. E. (2014). Marine protected area networks in California, USA. *Advances in Marine Biology, 69,* 205-251.

CDFW. (2002). Nearshore Fishery Management Plan. California Natural Resources Agency, California Department of Fish and Wildlife, Marine Region.

CDFW. (2005a). Market Squid Fishery Management Plan. California Natural Resources Agency, California Department of Fish and Wildlife, Marine Region.

CDFW. (2005b). Abalone Recovery and Management Plan. California Natural Resources Agency, California Department of Fish and Wildlife, Marine Region.

Carr, M. H., Woodson, C. B., Cheriton, O. M., Malone, D., McManus, M. A. & Raimondi, P. T. (2011). Knowledge through partnerships: integrating marine protected area monitoring and ocean observing systems. *Frontiers in Ecology and the Environment, 9*, 342-350.

Caselle, J. E., Rassweiler, A., Hamilton, S. L., & Warner, R. (2015). Recovery trajectories of kelp forest animals are rapid yet spatially variable across a network of temperate marine protected areas. *Scientific Reports, 5*, Article number 14102.

Chen, C., Lopez-Carr, D., & Endemano Walker, B. L. (2014). A framework to assess the vulnerability of California commercial sea urchin fishermen to the impact of MPAs under climate change. *GeoJournal, 79(6)*, 755-773.

Christensen, N. L., Bartuska, A., Brown, J. H., Carpenter, S., D'Antonio, C., Francis, R., Franklin, J. F., MacMahon, J. A., Noss, R. F., Parsons, D. J., Peterson, C. H., Turner, M. G., & Moodmansee, R. G. (1996). The report of the Ecological Society of America Committee on the scientific basis for ecosystem management. *Ecological Applications 6*, 665-691.

Coleman, M. A., Palmer-Brodie, A., & Kelaher, B. P. (2013). Conservation benefits of a network of marine reserves and partially protected areas. *Biological Conservation, 167*, 257-264.

Doney, S. C., Muckelshaus, M., Emmett Duffy, J., Barry, J. P., Chan, F., English, C. A., Galindo, M. H., Grebmeier, J. M., Hollowed, A. B., Knowlton, N., Polovina, J., Rabalais, N. N., Sydeman, W. J., & Talley, L. D. (2012). Climate change impacts on marine ecosystems. *Annual Review of Marine Science, 4(11)*, 11-37.

Douvere, F., & Ehler, C. N. (2011). The importance of monitoring and evaluation in adaptive maritime spatial planning. *Journal of Coastal Conservation, 15*, 305-311.

Erlandson, J. M., Rick, T. C., Graham, M., Estes, J., Braje, T., and R. Vellanoweth. (2005). Sea otters, shellfish, and humans: 10,000 years of ecological interaction on San Miguel Island, California. In D. K. Garcelon & C. A. Schwemm (Eds.) *Proceedings of the Sixth California Islands Conference* (pages 56-68). Arcata: Institute for Wildlife Studies and National Park Service.

Fox, E., Poncelet, E., Connor, D., Vasques, J., Ugoretz, J., McCreary, S., Monié, D., Harty, M., & Gleason, M. (2013a). Adapting stakeholder processes to region-specific challenges in marine protected area network planning. *Ocean & Coastal Management, 74*, 24-33.

Fox, E., Hastings, S., Miller-Henson, M., Monié, D., Ugoretz, J., Frimodig, A., Shuman, C., Owens, B., Garwood, R., Connor, D., Serpa, P., & Gleason, M. (2013b). Addressing policy issues in a stakeholder-based and science-driven marine protected area network planning process. *Ocean & Coastal Management, 74*, 34-44.

Francour, P., Mangialajo, L., & Pastor, J. (2010). Mediterranean marine protected areas and non-indigenous fish spreading. In D. Golani & B. Appelbaum-Golani (Eds.), *Fish invasions of the Mediterranean Sea: Change and renewal.* 127-144. Sofia-Moscow: Pensoft Publishers.

Gaines, S. D., Lester, S. E., Grorud-Colvert, C., Costello, C., & Pollnac, R. (2010a). Evolving science of marine reserves: New developments and emerging research frontiers. *Proceedings of the National Academy of Sciences, 107(43)*, 18251-18255.

Gaines, S. D., White, C., Carr, M. H., & Palumbi, S. (2010b). Designing marine reserve networks for both conservation and fisheries management. *Proceedings of the National Academy of Sciences, 107(43)*, 18286-18293.

Gleason, M., Fox, E., Ashcraft, S., Vasques, J., Whiteman, E., Serpa, P., Saarman, E., Caldwell, M., Frimodig, A., Miller-Henson, M., Kirlin, J., Ota, B., Pope, E., Weber, M. & Wiseman, K. (2013). Designing a network of marine protected areas in California: Achievements, costs, lessons learned, and challenges ahead. *Ocean & Coastal Management, 74*, 90-101.

Gleason, M., McCreary, S., Miller-Henson, M., Ugoretz, J., Fox, E., Merrifield, M., McClintock, W., Serpa, P., & Hoffman, K. (2010). Science-based and stakeholder-driven marine protected area network planning: A successful case study from north central California. *Ocean & Coastal Management, 53(2)*, 52-68.

Grorud-Colvert, K., Claudet, J., Carr, M., Caselle, J., Day, J., Friedlander, A., Lester, S., Lison de Loma, T., Tissot, B., & Malone, D. (2011). *Marine protected areas: Effects, networks and monitoring - a multidisciplinary approach* (293-321). Cambridge, UK: Cambridge University Press.

Grorud-Colvert, K., Claudet, J., Tissot, B. N., Caselle, J. E., Carr, M. H., Day, J. C., Friedlander, A. M., Lester, S. E., Thierry Lison de Loma, Malone, D., & Walsh, W. J. (2014). Marine protected area networks: Assessing whether the whole is greater than the sum of its parts. *PLoS ONE, 9(8)*, e102298.

Halpern, B. S., Kappel, C. V., Selkoe, K. A., Fiorenza, M., Ebert, C. M., Kontgis, C., Crain, C. M., Martone, R. G., Shearer, C., & Teck, S. J. (2009). Mapping cumulative human impacts to California Current marine ecosystems. *Conservation Letters, 2(3)*, 138-148.

He, L.-M., & He, Z.-L. (2008). Water quality prediction of marine recreational beaches receiving watershed baseflow and stormwater runoff in Southern California, USA. *Water Research, 42(10-11)*, 2563-573.

Jackson, J. B. C., Kirby, M. X., Berger, W. H., Bjorndal, K. A., Botsford, L. W., Bourque, B. J., Bradbury, R. H., Cooke, R., Erlandson, J., Estes, J. A., Hughes, T. P., Kidwell, S., Lange, C. B., & Warner, R. R. (2001). Historical overfishing and the recent collapse of coastal ecosystems. *Science, 293*, 629-637.

Johnson, M. L. & Sandell, J. (2014). *Advances in marine biology: Marine managed areas and fisheries.* London, UK: Elsevier.

Kelaher, B. P., Coleman, M. A., Broad, A., Rees, M. J., Jordan, A., & Davis, A. R. (2014). Changes in fish assemblages following the establishment of a network of no-take marine reserves and partially protected areas. *PLoS ONE, 9(1)*, e85825.

Kelleher, G. (Ed.). (1999). *Guidelines for Marine Protected Areas*. Wales, UK: IUCN. Retrieved from http://www.iucn.org/themes/wcpa/pubs/pdfs/mpa_guidelines.pdf.

Kelleher, K. & Kenchington, R. (1992). Guide-lines for establishing marine protected areas. *International Union for the Conservation of Nature.*

Kelly, R. P., Foley, M. M., Fisher, W. S., Reely, R. A., Halpern, B. S., Waldbusser, G. G., & Caldwell, M. R. (2013). Mitigating local causes of ocean acidification with existing laws. *Science, 322,* 1036-1037.

Lester, S. E. & Halpern, B. S. (2008). Biological responses in marine no-take reserves versus partially protected areas. *Marine Ecology Progress Series, 367*, 49-56.

Lester, S. E., Halpern, B. S., Grorud-Colvert, K., Lubchenco, J., Ruttenberg, B. I., Gaines, S. D., Airamé, S., & Warner, R. R. (2009). Biological effects within no-take marine reserves: a global synthesis. *Marine Ecology Progress Series, 384*, 33-46.

Lockwood, M., Davidson, J., Curtis, A., Stratford, E. & Griffith, R. (2010). Governance principles for natural resource management. *Society & Natural Resources: An International Journal, 23*(10), 986-1001.

Lubchenco, J. & Grorud-Colvert, K. (2015). Making waves: The science and politics of ocean protection. *Science, 350(6259),* 382-383.

McCook, L. J., Ayling, T., Cappo, M., Choat, J. H., Evans, R. D., De Freitas, D. M., Heupel, M., Hughes, T. P., Jones, G. P., Mapstone, B., Marsh, H., Mills, M., Molloy, F. J., Pitcher, C. R., Pressey, R. L., Russ, G. R., Sutton, S., Sweatman, H., Tobin, R., Wachenfield, D. R., & Williamson, D. H. (2010). *Proceedings of the National Academy of Sciences of the United States of America, 107(43)*, 18278-18285.

Merrifield, M. S., McClintock, W., Burt, C., Fox, E., Serpa, P., Steinback, C., & Gleason, M. (2013). MarineMap: A web-based platform for collaborative marine protected area planning. *Ocean & Coastal Management, 74*, 67-76.

Micheli, F., Saenz-Arroyo, A., Greenley, A., Vazquez, L., Montes, J. A. E., Rossetto, M., & De Leo, G. A. (2012). Evidence that marine reserves enhance resilience to climatic impacts." *PLoS ONE 7(7)*, e40832.

Moffitt, E. A., White, J. W., & Botsford, L, W. (2013). Accurate assessment of marine protected area success depends on metric and spatiotemporal scale of monitoring. *Marine Ecology Progress Series, 487*, 17-28.

National Oceanic and Atmospheric Administration. (2013). Marine protected areas of the United States: Conserving our oceans one place at a time.

Nies, J. (2012). *Native American History.* New York: Random House Publishing Group.

National Research Council. (1995). *Understanding marine biodiversity: A research agenda for the nation*. Washington, D.C.: National Academy Press.

Otero, M., Cebrian, E., Francour, P., Galil, B., & Savini, D. (2013). Monitoring marine invasive species in Mediterranean marine protected areas (MPAs): A strategy and practical guide for managers. *IUCN*.

Parrish, R. R. & Tegner M. J. (2001). California's Variable Ocean Environment. In *California's Living Marine Resources: A status report* (pages 21-28). California Department of Fish and Game.

Pope, E. (2014). Overview of the creation and management of California's marine protected area network. *California Fish and Game, 100(2)*, 343-347.

Pritzker, B. (2000). California. In B. Pritzker (Ed.), *A Native American Encyclopedia: History, Culture, and Peoples* (pages 112-161). New York: Oxford University Press.

Rick, T. C., Erlandson, J. M., Braje, T. J., Estes, J. A., Graham, M. H., and R. L. Vellanoweth. (2008). Historical ecology and human impacts on coastal ecosystems of the Santa Barbara Channel Region, California. In T. C. Rick & J. M. Erlandson (Eds.), *Human Impacts on Ancient Marine Ecosystems* (pages 77-101). Berkeley: University of California Press.

Rosevelt, C., Los Huertos, M. Garza, C. & Nevins, H.M. (2013). Marine debris in central California: Quantifying type and abundance of beach litter in Monterey Bay, CA. *Marine Pollution Bulletin, 71,* 299-306.

Ruckelshaus, M., Klinger, T., Knowlton, N., & DeMaster, D. P. (2008). Marine ecosystem-based management in practice: Scientific and governance challenges. *BioScience 58(1)*, 53-63.

Saarman, E., Gleason, M., Ugoretz, J., Airamé, S., Carr, M., Fox, E., Frimodig, A., Mason, T., & Vasques, J. (2013). The role of science in supporting marine protected area network planning and design in California. *Ocean & Coastal Management, 74*, 45-56.

Saarman, E. T. & Carr, M. H. (2013). The California Marine Life Protection Act: A balance of top down and bottom up governance in MPA planning. *Marine Policy, 41*, 41-49.

Samhouri, J. F. & Levin, P. S. (2012). Linking land- and sea-based activities to risk in coastal ecosystems. *Biological Conservation, 145,* 118-129.

Schindler, D. E. & Hilborn, R. (2015). Prediction, precaution, and policy under global change. *Science, 347(6225)*, 953-954.

Sheehan, L. & Tasto, R. (2001). The status of habitats and water quality in California's coastal and marine environment. *California's Living Marine Resources: A Status Report* (pages 29-45). California Department of Fish and Game.

Starr, R. M., Wendt, D. E., Barnes, C. L., Marks, C. I., Malone, D., Waltz, G., Schmidt, K. T., Chiu, J., Launer, A. L., Hall, N. C. & Yochum, N. (2015). Variation in Responses of Fishes across Multiple Reserves within a Network of Marine Protected Areas in Temperate Waters. *PLoS ONE, 10(3),* e0118502.

Stelzenmuller, V., Breen, P., Stamford, T., Thomsen, F., Badalamenti, F., Borja, A., Buhl-Mortensen, L., Carlstrom, J., D'Anna, G., Danker, N., Degraer, S., Dujin, M., Fiorentino, F., Galparsoro, I., Giakoumi, S., Gristina, M., Johnson, K., Jones, P. J. S., Katsanevakis, S., Knittweis, L., Kyriazi, Z., Pipitone, C., Piwowarczyk, J., Rabaut, M., Sorensen, T. K., van Dalfsen, J., Vassilopoulou, V., Fernandes. T. V., Vincx, M., Voge, S., Weber, A., Wijkmark, N., Jak, R., Qiu, W., & ter Hofstede, R. (2012). Monitoring and evaluation of spatially managed areas: A generic framework for implementation of ecosystem based marine management and its application. *Marine Policy, 37*, 149-164.

Walker, P. L., & M. J. DeNiro. (1986). Stable nitrogen and carbon isotope rations in bone collagen as indices of prehistoric dietary dependence on marine and terrestrial resources in southern California. *American Journal of Physical Anthropology, 71*, 51-61.

White, J. W. & Rogers-Bennett, L. (2010). Incorporating physical oceanographic proxies of recruitment into population models to improve fishery and marine protected area management. *CalCOFI Rep. 51*, 128-149.

White, J. W., Botsford, L. W., Baskett, M. L., Barnett, L. A. K., Barr, R. J., & Hastings, A. (2011). Linking models with monitoring data for assessing performance of no-take marine reserves. *Front. Ecol. Environ, 9(7)*, 390-399.

White, J. W., Botsford, L. W., Hastings, A., Baskett, M. L., Kaplan, D. M. & Barnett, L. A. K. (2013). Transient responses of fished populations to marine reserve establishment. *Conservation Letters, 6,* 180-191.

Williams, B. K. (2011). Adaptive management of natural resources – framework and issues. *Journal of Environmental Management, 92*, 1346-1353.

Wilson, J. R., Prince, J. D., & Lenihan, H. S. (2010). A management strategy for sedentary nearshore species that uses marine protected areas as a reference. *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science, 2(1)*, 14-27.

Wilson-Vandenberg, D., Larinto, T., & Key, M. (2014). Implementing California's Nearshore Fishery Management Plan – twelve years later. *California Fish and Game, 100(2)*, 186-217.

Young, M. & Carr, M. (2015). Assessment of habitat representation across a network of marine protected areas with implications for the spatial design of monitoring. *PLoS ONE, 10(3)*, e0116200.

Zimmerman, M. J. (2004). Intrinsic vs. extrinsic value., E. N. Zalta (Ed.). *The Stanford Encyclopedia of Philosophy (Fall 2004 Edition).* Retrieved from http://plato.stanford.edu/archives/fall2004/entries/value-intrinsic-extrinsic/.

California Marine Life Protection Act

MASTER PLAN FOR MARINE PROTECTED AREAS

APPENDIX A

Marine Protected Area Planning through the Marine Life Protection Act Initiative

August 24, 2016

Table of Contents

List of Figures

List of Tables

List of Boxes

1. Introduction and Purpose

The 2016 Master Plan is a programmatic guidance document that describes how the Marine Life Protection Program (MLPP) will manage California's marine protected areas (MPAs) network to the best of its ability to meet the goals of the Marine Life Protection Act (MLPA)[1] and Marine Managed Areas Improvement Act (MMAIA).[2] To supplement and provide additional context for the 2016 Master Plan, this appendix provides more detailed historical information on the process used to design, site, and establish California's network of MPAs. This appendix also provides context for Appendices C-F to the 2016 Master Plan, which contain more detailed region-specific MPA background and priorities for each MLPA Initiative planning region.

The MLPA, passed by the California Legislature in 1999, required the state to redesign its existing system of MPAs to more coherently and effectively protect the state's marine life, habitat, and ecosystems.[3] Following two unsuccessful attempts to implement the MLPA due to lack of funding and resources,[4] the California Resources Agency (now California Natural Resources 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) to undertake implementation of the MLPA.[5] For the purposes of MPA planning, the MLPA was implemented through an incremental approach in which California's state waters[6] were separated into five study regions, four coastal and the San Francisco Bay. Each coastal region undertook a science-based and stakeholder driven regional MPA planning processes, while MPA planning in San Francisco Bay has yet to occur (see Appendix A, Section 6.3). To describe MPA planning through the MLPA Initiative, this appendix provides the following information: historical context of marine management legislation, policies and regulations; a detailed description of the planning and redesign process and the leadership involved, the scientific foundation for MPA design, an accounting of public participation in the MPA design and siting process, a description of the redesigned network adopted by the California Fish and Game Commission (Commission), and recommendations gleaned from the MLPA Initiative process.[7]

[1] California Fish and Game Code (FGC) §2850-2863
[2] California Public Resources Code (PRC) §36600-36900
[3] FGC §2853(a)
[4] CDFW. (2008). *Draft Master Plan for Marine Protected Areas. Appendix C: Implementation of the Marine Life Protection Act: 1999-2004*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/revisedmp0108c.pdf
[5] 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 Sept 21, 2015 from https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=30339
[6] The boundary of state waters is from mean high tide to three nautical miles offshore of all intertidal rocks and mouths of embayments, including large open bays. 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 Reading Rock).
[7] For a more detailed description of the various elements of the MLPA Initiative's planning process (i.e., public policy implementation and enabling conditions, regional approaches and differences, policy development, science application, stakeholder and public participation, use of planning tools, and accomplishments) from the perspective of staff and contractors, and how those elements evolved over time, see the March 2013 special issue of *Ocean and Coastal Management* (Gleason et al. 2013a)

2. California's Marine Management Legislation, Policies, and Regulations

California has a long history of marine legislation, policy, proactive marine management, and regulation. This section provides a brief description of California's management approaches that formed the foundation leading to current ocean management measures including the MLPA, from the 19th century through the post-World War II era.

2.1 The Early Years

Beginning in its first days as a state in 1850, California has adopted statutes and regulations addressing the ocean, fisheries, and protection of resources, commerce, and industry. In a historic sense, California's involvement with coastal and marine management (similar to most other coastal states) began through early steps to regulate fishing, define health and safety requirements for those who earn a living on the waters, and protect special areas and features along the coast and in state waters.

In the early decades of statehood, California's natural resource policies reflected the desire of government at all levels to promote economic expansion by bringing natural resources into production (McEvoy 1986). Even so, lawmakers in California became concerned that the expansion of fishing could threaten the long-term economic health of the fishing industry. In 1852, the California Legislature passed its first fishing statute to regulate the Sacramento River salmon fishery, and continued to pass more regulations over the next several decades. In 1870, the California Legislature responded to the concerns of sport fishermen by establishing a State Board of Fish Commissioners, which later became the Fish and Game Commission. Through these and other actions, California led the nation. By the end of the 19th century, the California Legislature had adopted a body of fisheries management laws that was a model for its time.

At the same time, the courts repeatedly upheld the importance of the state's role in protecting its resources. In 1894, for instance, the California State Supreme Court found that "[t]he wild game within a state belongs to the people in their collective, sovereign capacity; it is not the subject of private ownership, except in so far as the people may elect to make it so; and they may, if they see fit, absolutely prohibit the taking of it, or any traffic or commerce in it, if deemed necessary for its protection or preservation, or the public good."

Californians often feel strongly about both fisheries availability and regulations on fishery access. Some assert that Article 1, Section 25, of the California Constitution gives the public a "right to fish." It states: "The people shall have the right to fish upon and from the public lands of the state and in the waters thereof…provided, that the California Legislature may by statute, provide for the season when and the conditions under which the different species of fish may be taken."

However, this "right to fish" is not absolute. In 1918, the California Supreme Court considered whether a law providing for the licensing of fishermen was unconstitutional because it violated Article 1, Section 25, of the California Constitution. The court rejected the argument, finding that the provision authorizing the California Legislature to fix the seasons and conditions under which fish are taken was intended to

leave the matter under the California Legislature's discretion.[8] As recently as 1995, a court reaffirmed the qualified, not fundamental, right to fish, and that the language of the State Constitution was not intended to curtail the ability of the California Legislature (or the Commission through legislated authority) to regulate fishing.[9]

Also, Article 1, Section 25 must be read in connection with Article 4, Section 20 (formerly Section 25½) of the California Constitution, which states that the California Legislature may enact appropriate laws for protection of fish and game, and may delegate to the Commission such powers relating to protection and propagation of fish and game.[10] In that respect, the California Supreme Court found it "most apparent" that the purpose of (now) Article 4, Section 20 "was to clothe the California Legislature with ample power to adequately protect the fish and game of the state." Further, the California Supreme Court has long declared that the power to regulate fishing has always existed as an aspect of the inherent power of the California Legislature to regulate the terms under which a public resource may be taken by private citizens.[11] This regulatory power clearly includes the regulation of fishing within MPAs.[12]

Like other economic activities, from agriculture to manufacturing, fishing began expanding rapidly in the first few decades of the 1900s. In 1912, the California Legislature responded by authorizing staff for the Commission, which found itself with increasing responsibilities for managing industrial fisheries. In 1927, the California Legislature created a Department of Natural Resources (now CNRA), within which it housed a Division of Fish and Game (now CDFW).

2.2 Post–World War II

Historically, the marine policies of California and other state and federal governments were based largely on several assumptions. First, the abundance of marine wildlife was thought to be nearly without practical limits. Second, scientists and fishery managers believed that we possessed enough knowledge to exploit marine populations at very high levels over long periods of time without jeopardizing them. Third, the value of marine wildlife was principally viewed as a commodity to be processed and traded. Finally, the chief challenge in commercial fisheries management was to expand domestic fishing fleets in order to exploit the assumed riches of the sea.

After World War II, several factors combined to challenge these assumptions. Changing fishing technologies and expanding fleets increased harvests. Poor forestry practices resulted in sediment loading to coastal watersheds that impeded spawning. Furthermore, coastal development led to depleted wetlands, thus impeding upon their important capacities in marine life cycles and filtering coastal run-off.

In 1945, the California Legislature granted the Commission discretionary authority over recreational fisheries. In 1947, the California Legislature instituted a tax on sardine landings that was used to fund research into causes for the decline in sardine abundance. These activities led to the inauguration of one of the world's longest series of fisheries research cruises, the California Cooperative Oceanic Fisheries Investigations, a cooperative venture of CDFW, Scripps Institution of Oceanography, and the National Marine Fisheries Service.

[8] Paladini v. Superior Court. (1918). 178 Cal. 369
[9] California Gillnetters Association v. Department of Fish and Game. (1995). 39 Cal.App.4th 1145
[10] Ex parte Parra. (1914). 24 Cal. App. 339, 340
[11] In re Phoedovius. (1918). 177 Cal. 238, 245-246; *People v. Monterey Fish Products Company* (1925) 195 Cal. 548, 563
[12] FGC §2860

By the 1960s, disturbing declines in a number of fisheries spurred several management changes. Recreational fishermen convinced the California Legislature to prohibit commercial exploitation of certain species of fish such as calico bass and striped marlin. Meanwhile, state and federal fisheries agencies around the country began an intensive review of prevailing fisheries policies. In 1967, the California Legislature passed the California Marine Resources Conservation and Development Act to develop a long-range plan for conservation and development of marine and coastal resources.[13] In the same year, Governor Ronald Reagan imposed an emergency two-year moratorium on commercial sardine fishing.[14]

Traditional views of marine fish populations as commodities began shifting more rapidly throughout the 1970s. During this time, marine wildlife and ecosystems were increasingly regarded for their intrinsic value and for uses such as tourism, education, and scientific research. Recognition of the need to balance the capacity of fishing fleets with the often limited and uncertain productive capacity of marine species grew. Rather than seeking to extract the maximum yield from marine species, fisheries managers began seeking levels that would be sustainable into the distant future.

Changes also occurred in marine recreational activities. Catch and release programs became important in some fisheries. The value of the experience of fishing was recognized as being greater than just the monetary value of fishing to local businesses. Non-consumptive recreation, including surfing, diving, sightseeing, and other activities increased dramatically. Additionally, the public became more interested in the value of healthy marine environments for both recreational use and the intrinsic value of the ocean itself.

Growing awareness and concern of the impacts of coastal development led to the enactment of a number of regulatory and other programs at the federal and state level. The Federal Water Pollution Control Act of 1972 aimed at regulating discharges of pollutants into United States (US) waters. As amended in 1972, this law became commonly known as the Clean Water Act, which launched an enormous effort to reduce the flow of sewage and industrial pollutants into coastal waters (Sheehan & Tasto 2001). In 1972, the National Pollution Discharge Elimination System (NPDES) was created to prohibit discharges of pollutants from any point source into the nation's waters except as allowed under an NPDES permit. In 1987, the US Congress also passed the Water Quality Act, which called for increased monitoring and assessing of water bodies. Passage and implementation of state coastal legislation also slowed the rate of loss of sensitive coastal habitats, and in some areas efforts were made to restore converted wetlands.

Despite federal and state efforts, the health of the marine environment continued to decline. In response, the California Legislature has passed or adopted a number of new laws, programs, and plans since the 1990s to reduce threats to and protect the marine environment. These efforts were intended to improve California's management of its marine resources (see 2016 Master Plan, Chapter 1, Table 1 for a detailed list of recent legislation). As one of these laws, passage of the Marine Life Management Act (MLMA) initiated a shift in resource management philosophy towards a more ecosystem-based approach. For example, through the MLMA the state recognized the need to broaden ecosystem goals beyond the narrower goal of conserving fishery resources, recognizing that marine resources and habitats are interdependent and thus a more holistic ecosystem approach to management may enhance conservation goals. Furthermore, the state recognized that the MLMA

[13] 1967 California Statutes Ch. 1,642
[14] 1967 California Statues Ch. 278

alone would not accomplish broad ecosystem protection, reinforcing the need for the MLPA and its focus on broad ecosystem-based management objectives.

2.3 Early Marine Protected Area History in California

California also has a long history of marine resource protection and using MPAs as an approach to marine resource management.[15] From 1900-1913, the California Legislature passed several laws designed to prevent the overexploitation of marine species including the development of six MPAs that limited or prohibited take. By 1950, all six of these MPAs were repealed. Between 1950 and when the MLPA was enacted in 1999, 63 MPAs were established throughout the state by the California Legislature and Commission using at least nine different designations; however most of the MPAs were small, often had confusing regulations, provided limited ecological protection, and were established in an ad hoc manner (McArdle 1997, 2002, Gleason et al. 2013b).

In 1998, the Channel Islands Marine Resources Restoration Committee, a group of concerned citizens, requested the Commission to establish a network of MPAs around the northern Channel Islands. The Commission directed CDFW and the Channel Islands National Marine Sanctuary (CINMS) to jointly support a process to discuss MPAs in the Channel Islands area. After more than two years of meetings involving a broad based constituent group, CDFW and the CINMS drafted a recommendation for northern Channel Islands MPAs which became part of a range of alternatives. The Commission adopted 13 MPAs in the northern Channel Islands in 2002,[16] and regulations took effect in 2003. The implementation of the Channel Islands MPA network marked the completion of the first science-based MPA network design process in California (Airamé et al. 2003, Botsford et al. 2014). Then in 2007, the National Oceanic and Atmospheric Administration extended the boundaries for 8 of these 13 state MPAs into federal waters. For more information, visit the CDFW website[17] and the CINMS website.[18]

[15] CDFW. (2004). *Marine Protected Areas Past Processes Overview*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/mlpa/pdfs/agenda8_052207.pdf

[16] Commission. *New and Proposed Regulations - 2002*. http://www.fgc.ca.gov/regulations/2002/

[17] CDFW. *MPA Planning Process Historical Information – Channel Islands.* https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Planning-Process#26189705-channel-islands

[18] CINMS. *Marine Reserves*. http://channelislands.noaa.gov/marineres/welcome.html

3. MPA Planning and Redesign Process

The MLPA process represents a significant step in California's history of proactive marine resource management. This section describes the process taken to redesign and implement a statewide network of MPAs to achieve the goals of the MLPA. Aspects of the process described here include goals and guidelines of the MLPA, agreements established by the MLPA Initiative to implement the MLPA, an overview of steps and management bodies involved in the MLPA Initiative, and the criteria used to develop alternative MPA proposals through a regionally-based, iterative approach.

3.1 MLPA Goals and Guidelines

As set forth in the MLPA,[19] an effective statewide network of MPAs would require designing the MPAs specifically to achieve the following goals of the MLPP:

1) To protect the natural diversity and abundance of marine life, and the structure, function, and integrity of marine ecosystems.
2) To help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.
3) To improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity.
4) To protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic value.
5) To ensure that California's MPAs have clearly defined objectives, effective management measures, and adequate enforcement, and are based on sound scientific guidelines.
6) To ensure that the state's MPAs are designed and managed, to the extent possible, as a network.

The MLPA also states that the preferred siting alternative for MPA networks must include an "improved marine life reserve component"[20] and must be designed according to the following guidelines:

1) Each MPA shall have identified goals and objectives. Individual MPAs may serve varied primary purposes while collectively achieving the overall goals and guidelines of the MLPA.
2) Marine Life Reserves in each bioregion shall encompass a representative variety of marine habitat types and communities, across a range of depths and environmental conditions.
3) Similar types of marine habitats shall be replicated, to the extent possible, in more than one marine life reserve in each biogeographical region.
4) Marine life reserves shall be designed, to the extent practicable, to ensure that activities that upset the natural functions of the area are avoided.

[19] FGC §2853(b)
[20] Marine life reserve in the context of the MLPA is synonymous with a State Marine Reserve

5) The MPA network and individual MPAs shall be of adequate size, number, type of protection, and location to ensure that each MPA meets its objectives and that the network as a whole meets the goals and guidelines of the MLPA.

3.2 Agreements Established to Implement the MLPA

In August 2004, after two unsuccessful attempts by the state to implement the MLPA, CNRA, CDFW, and RLF signed a memorandum of understanding (MOU)[21] launching a public-private partnership to help the state achieve the goals of the MLPA. This public-private partnership, known as the MLPA Initiative, was designed to use the best readily available science and the advice and assistance of scientists, resource managers, experts, stakeholders, and other members of the public to achieve objectives related to the MLPA.

A number of key actions were important to the new strategy:

1) Divide the state into several planning regions (formerly called "study regions") to allow a regional approach that could take into account the unique character of different regions in developing the statewide system of MPAs.

2) Create a policy oversight body (task force) to guide the process and develop final recommendations to forward to the state, since state agencies were already overwhelmed with mandates and responsibilities.

3) Expand the scientific expertise with a science team that would build upon the legislatively-mandated master plan team[22] and include a broader range of scientific expertise for each planning region to help apply the best readily available science.

4) Create a stakeholder group for each planning region, composed of stakeholders who live, work, and recreate in the region under consideration, to bring first-hand knowledge and expertise to the MPA redesign process.

5) Hire a group of staff and contractors (hired and overseen by the task force) to supplement state staff and resources, implement the new strategy, and provide day-to-day support for the task force, science team, and regional stakeholder groups (RSGs).

Under the new strategy, the MLPA Initiative began with five objectives:

1) Develop a draft master plan framework to guide MPA planning and serve as the basis for an MPA Master Plan.

2) Prepare a comprehensive strategy for long-term funding of MPA planning, management, and enforcement.

3) Develop a draft proposal for alternative MPA designs, consistent with the MLPA and the draft master plan framework, in a general geographic area.

4) Develop recommendations for improved MPA management coordination with federal agencies.

[21] 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 Sept 21, 2015 from https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=30339

[22] FGC §2855(b)(1)

5) Secure an agreement among state agencies with MPA management responsibilities to complete statewide implementation of an MPA Master Plan by 2011.

To test the ability to achieve the stated objectives, the MLPA Initiative was first established through the initial MOU in 2004 as a pilot project along the Central Coast of California. In December of 2006, near the end of the planning process for the Central Coast study region, CNRA, CDFW, and RLF signed an amended MOU to go into effect on January 1, 2007. The amended MOU clarified the process of transmitting recommendations to the Commission, the handling of funding requests, and the relationship between the Commission and the BRTF (Kirlin et al. 2013). The 2007 MOU launched the second phase of the MLPA Initiative in the North Central Coast planning region.[23] The planning process for the region was completed in June of 2008 when final recommendations were submitted to the Commission.

In 2008, CNRA, CDFW, and RLF signed another amendment and extension to the 2007 MOU to allocate funding for MPA planning in the first four study regions (Fox et al. 2013a). The 2008 MOU launched the third phase of MPA planning in the South Coast and North Coast planning regions; the MOU also set the stage for a potential planning process in San Francisco Bay.[24] It established that the primary objectives in these three planning regions were to develop alternative MPA proposals and build capacity within state agencies and local communities to ultimately manage a statewide system of MPAs that function as a network. The South Coast recommendations were submitted in December 2009 and the North Coast recommendations were submitted in December 2010. In September of 2011, the MLPA Initiative delivered a report to the MOU signatories regarding possible MPA planning options for San Francisco Bay. An MPA planning process in the San Francisco Bay will be considered subsequent to the Sacramento-San Joaquin Delta process (see Appendix A, Section 6.3: *Fifth Phase: San Francisco Bay Planning Region (2011-2012)*).

To help achieve the objectives of the MOUs, the MLPA Initiative created the MLPA Blue Ribbon Task Force (BRTF), the MLPA Master Plan Science Advisory Team (SAT), RSGs, and the Statewide Interests Group (SIG). Each of the groups had a specific role and membership varied among regions to ensure regional participation from various knowledge bases and constituencies. In general, the BRTF oversaw the planning process and made final recommendations to the Commission, RSGs developed alternative MPA proposals, and the SAT applied the best readily available science and data to developing science guidelines and evaluating alternative MPA proposals. The SIG provided an additional, broader forum to improve public involvement in the process (see Appendix A, Section 2.3: *MLPA Staff and Advisory Bodies*).

In 2010, a separate MOU was signed by 11 government and non-governmental entities to memorialize their commitments to effective management of the statewide network of MPAs. The 2010 MOU is titled "Memorandum of Understanding for Implementation of the California Marine Life Protection Act". Following the completion of the MLPA Initiative in December 2012 when the north coast MPAs went into effect, the 2010 MOU was amended in 2015 to include additional federal signatories, signed by 15 government and non-governmental entities (see 2016 Master Plan, Box 1 for a full list of signatories).

[23] MLPA Initiative. (2007). 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 Second Phase. Retrieved Sept 21, 2015 from https://nrmsecure.dfg.ca.gov/FileHandler.ashx?DocumentID=42806

[24] MLPA Initiative. (2008). Amendment and Extension of 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 Sept 22, 2015 from http://www.dfg.ca.gov/marine/pdfs/agenda_090808a1.pdf

3.3 Implementation of the MLPA Initiative: 2004–2012

From 2004 to 2012, the MLPA Initiative process resulted in the completion of four regional MPA planning processes (including the pilot Central Coast planning region). Ultimately, the Commission adopted 124 MPAs and 15 special closures by December 2012.[25,26,27]

This section provides further details on aspects of the MLPA Initiative process, including stipulations for the master plan, identification of planning regions, roles of the various planning bodies involved, the approach to designing MPAs as ultimately a cohesive network, the regional MPA planning and evaluation process, the approach to setting regional and individual MPA goals and objectives, and guidelines for developing MPA boundaries and regulations.

MLPA Stipulations for the Master Plan

The MLPA directed CDFW to convene a master plan team to prepare a master plan to guide the adoption and implementation of the MLPP to redesign the statewide MPA network[28]. The MLPA stipulated that the master plan include the following components, summarized from the statutory language:[29]

1) Recommendations for the extent and types of habitat that should be represented in the MPA network, including: rocky reefs, intertidal zones, sandy or soft ocean bottoms, underwater pinnacles, seamounts, kelp forests, submarine canyons, and seagrass beds.

2) Identification of select species or groups of species likely to benefit from MPAs, including information about species habitat and the impact of oceanographic features on selected species.

3) Recommendations for updating, if necessary, the guidelines for preferred siting alternatives so that they reflect the most current science, particularly when considering the size, number, level of protection, and location of MPAs.

4) Recommended alternative networks of MPAs, including marine life reserves in each biogeographical region that can achieve MLPA goals and meet the guidelines for preferred siting alternatives.

5) A simplified classification system, consistent with the MLPA goals and guidelines for preferred siting alternatives, which may, if necessary, include protections for specific habitats or species.

6) Recommendations for a preferred siting alternative for a network of MPAs that is consistent with MLPA goals and guidelines for preferred siting alternatives.

7) An analysis of the state's current MPAs, based on the preferred siting alternative, and recommendations as to whether any specific MPAs should be modified or deleted so that the network meets the goals of the MLPA.

[25] 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
[26] Special closures are not categorized as an MMA, and are used by the Commission for relatively small, discrete marine areas to also achieve the goals of the MLPA
[27] 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
[28] FGC §2855
[29] FGC §2856(a)(2)

8) Recommendations for monitoring, research, and evaluation in selected areas of the preferred alternative, including existing and long-established MPAs, to assist in adaptive management of the MPA network, taking into account existing and planned research and evaluation efforts.

9) Recommendations for management and enforcement measures for the preferred alternative that apply statewide or to specific types of sites and that would achieve the goals of the MLPA.

10) Recommendations for improving the effectiveness of enforcement practices.

11) Recommendations for funding sources to ensure all MPA management activities are carried out and the MLPP is implemented.

The MLPA Initiative design process and the adoption of the draft *California Marine Life Protection Act Master Plan for Marine Protected Areas* by the Commission in February 2008 (2008 Master Plan)[30] satisfied requirements 1-7, 10, and 11 as stipulated by the MLPA.

Identifying Planning Regions ("Study Regions")

Previous efforts to implement the MLPA attempted to address the entire coast of California in a single planning process, which proved to be extremely difficult. The unique combination of varying physical, biological, social, and economic conditions along the coast necessarily affected the region-specific application of the MLPA, which suggested taking a regional approach to the planning process.

In 2004, the first MLPA Initiative MOU identified the Central Coast as the pilot project planning region, though it did not define the boundaries; through a series of workshops and meetings to discuss and apply a set of boundary evaluation criteria, the MLPA Initiative engaged scientists and stakeholders to ultimately select Pigeon Point (San Mateo County) south to Point Conception (Santa Barbara County) as the planning boundaries for the Central Coast. A number of criteria were used to evaluate potential planning region boundaries; those criteria and their descriptions can be found in Chapter 2.1 of the 2008 Master Plan.[31]

Using the same criteria that were applied during the initial pilot project to the Central Coast, the MLPA Initiative developed a draft master plan framework that divided the remainder of the coast into four additional planning regions. With the goal of completing a separate planning process in each region to ultimately recommend a statewide network of MPAs, the five planning regions and their boundaries were (from north to south):

- North Coast planning region: California/Oregon border south to Alder Creek near Point Arena in Mendocino County)
- North Central Coast planning region: Alder Creek near Point Arena (Mendocino County) south to Pigeon Point (San Mateo County)
- San Francisco Bay planning region (waters within San Francisco Bay, from the Golden Gate Bridge northeast to the Carquinez Bridge)
- Central Coast planning region: Pigeon Point (San Mateo County) south to Point Conception (Santa Barbara County)

[30] CDFW. (2008). *Draft Master Plan for Marine Protected Areas*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

[31] Ibid.

- South Coast planning region: Point Conception (Santa Barbara County) south to the California/Mexico border.

MLPA Initiative Structure and Roles

The three signatory bodies to the MLPA Initiative MOUs described above each played a different role in the public-private partnership, described below.

California Resources Agency (now California Natural Resources Agency)

The CNRA provided general oversight and public leadership for MLPA implementation, and CNRA staff led a steering committee planning process. The secretary of the CNRA selected the chair and other members of a BRTF and convened and charged the BRTF members with meeting their objectives. The CNRA provided policy direction for coordinating funding and staffing, sought funding for CNRA and other state agency personnel committed to the MLPA Initiative, and committed to completing all phases of the MLPA Initiative.

California Department of Fish and Game (now California Department of Fish and Wildlife)

CDFW served as the lead agency for designing and implementing the MLPA Master Plan and statewide network of MPAs. The CDFW director selected the members of the SAT, RSGs, and the SIG. CDFW assisted in developing a draft master plan framework adopted by the BRTF in 2005 to guide the development of alternative MPA proposals in the Central Coast pilot project, a draft Master Plan approved by the Commission in 2008 to guide the development of alternative MPA proposals in the North Central, South, and North Coast regions, and, largely through the application of feasibility criteria, evaluated alternative proposals for MPAs in each planning region. CDFW provided biological, enforcement, and other relevant data and information; participated in all meetings; developed and reviewed working documents; and acted as lead agency under the California Environmental Quality Act (CEQA). CDFW also provided support to CNRA and the Commission.

Resources Legacy Fund Foundation (now Resources Legacy Fund)

RLF supplemented public funding for the MLPA Initiative with philanthropic investments, provided strategic advice to CNRA on public-private funding, and supported MLPA Initiative staff in managing private contracts for the planning processes.

MLPA Staff and Advisory Bodies

Several advisory bodies were created to meet the mandates of the MLPA and stipulations of the MOUs for including the best readily available science as well as the advice, assistance, and involvement of experts, stakeholders, and the public to help develop alternative MPA proposals in each planning region.

MLPA Steering Committee

During the Central Coast pilot project, a steering committee coordinated all the work necessary to achieve the objectives of the MLPA Initiative. The MLPA Initiative executive director chaired the committee, which included senior staff from the MLPA Initiative, CDFW, CNRA, and the Commission. Participation of CNRA and Commission staff on the steering committee was meant to ensure that all policy issues in the regional processes were quickly and adequately addressed and/or presented to the primary overseers and decision-makers. The steering committee's work was limited beyond the Central Coast pilot project.

MLPA Blue Ribbon Task Force

The BRTF was composed of distinguished, knowledgeable, and highly credible public leaders selected by the CNRA secretary. The BRTF oversaw regional projects to develop alternative MPA proposals that

could be recommended to the Commission (the decision-making body under the MLPA), prepared information and recommendations for coordinating management of MPAs with federal agencies, and directed the expenditure of private funds from five foundations to supplement state monies. The BRTF also worked to resolve policy disputes and provide direction in the face of uncertainty, while meeting the objectives of the MLPA Initiative. The chair of the BRTF oversaw the work of the MLPA Initiative's executive director, worked with the CDFW director to convene RSGs, and served as the principal link between the BRTF and MLPA Initiative staff. Members of the BRTF were also expected to serve as liaisons to the RSGs.

MLPA Master Plan Science Advisory Team

The CDFW director, in consultation with the CNRA secretary, BRTF chair, and Commission president, convened the MLPA Master Plan SAT, with membership varying for each planning region. The SAT was composed of the members required by the MLPA, including staff from CDFW, the California Department of Parks and Recreation (State Parks), and the State Water Resources Control Board; one member appointed from a list provided by California Sea Grant; and an expanded group of scientists knowledgeable in marine ecology, fisheries science, MPAs, economics, and the social sciences. The SAT provided scientific knowledge and judgment necessary to assist in meeting the objectives of the MLPA Initiative, including input to the BRTF and stakeholders in developing alternative MPA proposals and developing the Master Plan for MPAs. Principally, the SAT was charged with reviewing and commenting on scientific documents relevant to developing and implementing MPAs, reviewing alternative MPA proposals, reviewing draft Master Plan documents, addressing scientific issues presented by those documents, and addressing scientific questions raised by the BRTF, stakeholders, and the public. A sub-team of the SAT served each planning region by directly assisting stakeholders in developing scientifically sound alternatives.

Regional Stakeholder Groups

The RSGs were composed of individuals from each planning region who were able and willing to assist in developing alternative MPA proposals in their region, including staff of federal and state agencies such as the California Coastal Commission and the Office of National Marine Sanctuaries. Regionally representative Individuals were nominated by their constituencies and selected by the BRTF chair and CDFW director. The stakeholder groups met regularly over the course of each regional process, provided local knowledge and information for refining regional profiles and informing the MLPA planning process, evaluated existing MPAs, provided information to other stakeholder group members that might be helpful in designing alternative MPA proposals, developed alternative MPA proposals, conducted outreach to constituent groups, and helped to identify panel speakers to present RSG recommendations and commentary at BRTF and other public meetings.

MLPA Statewide Interests Group

Appointed by the MLPA Initiative executive director in consultation with the BRTF chair and CDFW director, the MLPA SIG was composed of individuals from key interest groups with a statewide perspective on redesigning MPAs and MLPA implementation. The SIG provided a forum for enhanced communication between the BRTF and stakeholders regarding the MLPA Initiative and statewide policy issues. The group also provided outreach to constituent groups regarding opportunities for involvement in the planning processes and assisted with finding panel speakers for BRTF meetings. The group did not vote or otherwise take formal positions on any procedural or substantive issues, but instead discussed issues and opportunities that could improve public participation in the MPA planning process with the BRTF and MLPA Initiative staff.

MLPA Initiative Staff

Staff to the MLPA Initiative included contractors hired by the BRTF (through the executive director), CDFW staff, and in the South Coast and North Coast planning regions, State Parks staff. In the Central

Coast and North Central Coast planning regions, State Parks staff participated through the RSGs. Staff areas of expertise included science, administration, policy, facilitation, planning, outreach and education, research, writing, and GIS. Ultimately, all recommendations developed through the MLPA Initiative were delivered to the Commission for evaluation of MPA proposals under CEQA and proposed regulatory changes.

California Fish and Game Commission

The Commission is the decision-making authority under the MLPA. Specifically, the Commission engaged in state regulatory and environmental review processes for regional MPA proposals and made decisions regarding the Master Plan for MPAs. The principal mission of the other partners in the MLPA Initiative was to support the Commission in making sound policy decisions consistent with the MLPA. Although the Commission was not involved in the day-to-day work of the MLPA Initiative, the MLPA Initiative provided regular opportunities for informational meetings and strategic consultation with the Commission.

Design of MPAs as Networks

One of the goals of the MLPP calls for improving and managing the state's MPAs as a network, to the extent possible. Although neither statute nor legislative history defines "network," the ordinary dictionary usage contemplates *interconnectedness* as a characteristic of the term. The first finding of the MLPA highlights the fact that California's MPAs "were established on a piecemeal basis rather than according to a coherent plan."[32] The term "reserve network" has been defined as a group of reserves which is designed to meet objectives that single reserves cannot achieve on their own (Roberts & Hawkins 2000). In general, this definition may infer some direct or indirect connection of MPAs through the dispersal of adult, juvenile, and/or larval organisms or other biological interactions. In most cases, larval and juvenile dispersal rates are not known and oceanography or ocean current patterns may be combined with larval biology to help determine connectivity.

The MLPA also requires that MPAs be managed as a network, to the extent possible, implying a coordinated system of MPAs. MPAs might be linked through biological function, as in the case of adult and juvenile movement or larval transport. However, MPAs managed as a network might also be linked by administrative function. The important aspects of this interpretation are that MPAs are linked by common goals and a comprehensive management and monitoring plan, and that they protect areas with a wide variety of representative habitats as required by the MLPA. MPAs in a network should be designed based on the same guiding principles, design criteria, and processes for implementation. In this case, a statewide network could be one that has connections through design, funding, process, and management. At a minimum, the Master Plan should insure that the statewide network of MPAs reflects a consistent approach to design, funding, and management. The desired outcome would include components of both biological connectivity and administrative function to the extent that each are practicable and supported by available science.

Because of the long-term approach taken by the MLPA Initiative, the statewide network of MPAs called for by the MLPA was developed in phases, region by region. Within each region, components of the statewide network were designed consistent with the MLPA, with regional goals and objectives intended to complement the goals of the MLPA while also serving to direct the regional development of MPAs. Each regional component ultimately was presented as a series of options, developed in a

[32] FGC §2851(a)

regional process involving a RSG and a sub-group of the SAT. Each region included a preferred alternative identified by the BRTF and delivered to the Commission (see Appendix A, Section 6.3).[33]

Regional Planning and MPA Design Process

The regional planning processes and subsequent iterative MPA design process included a number of key steps for designing alternative MPA proposals (called "MPA packages" in the Central Coast, but collectively here referred to as alternative MPA proposals). The same general iterative process for regional planning is described in Box 2 of the 2016 Master Plan. A more detailed summary of the process for regional planning is included in the six steps below.

1) **Gathering relevant information for regional MPA planning:** MLPA Initiative staff gathered relevant biological, oceanographic, socioeconomic, and governance information, as well as evaluations of existing MPAs and other management activities. The best readily available data on each planning region were compiled within regional profiles for each of the planning regions.[34,35,36,37] The regional profiles were intended to provide basic regional information to support stakeholders and policy makers in building their understanding of each region's marine resources and heritage, so that they could be prepared to effectively redesign the regions' MPAs.

2) **Convening regional planning groups:** Following the compilation of relevant information, MLPA Initiative staff convened a regional planning process with a RSG. The RSGs were comprised of representatives from stakeholder groups including government agencies, California Tribes and Tribal governments, recreational fishing and diving interests, commercial fishing and other ocean-dependent businesses, ports and harbors, conservation groups, and educational and research groups. RSG members conducted outreach to encourage participation from other interested members of the public. For more detailed descriptions of each of the RSGs, see the MLPA Initiative memos announcing the formation of each RSG.[38,39,40,41]

3) **Setting regional goals and objectives:** MLPA Initiative staff and stakeholder groups developed regional and MPA-specific goals and objectives based on the regional profile; in all

[33] An exception was during the first regional planning and MPA design process, the Central Coast, where the BRTF forwarded a range of alternative MPA proposals to CDFW. CDFW then forwarded alternative MPA proposals to the Commission

[34] MLPA Initiative. (2010). *Regional Profile of the North Coast Study Region (California-Oregon Border to Alder Creek).* California Natural Resources Agency. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/mpa/ncprofile.asp

[35] 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 Sept 21, 2015 from http://www.dfg.ca.gov/marine/mpa/nccprofile.asp

[36] MLPA Initiative. (2005). *Regional Profile of the Central Coast Study Region (Pigeon Point to Point Conception, California).* California Natural Resources Agency. Retrieved Sept 212015 from http://www.dfg.ca.gov/marine/mpa/documentarchives_phase1.asp

[37] MLPA Initiative. (2009). *Regional Profile of the South Coast Study Region (Point Conception to the California-Mexico Border).* California Natural Resources Agency. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/mpa/regionalprofile_sc.asp

[38] MLPA Initiative. (2010). *MLPA Blue Ribbon Bask Force Chair and California Department of Fish and Game Director Announce North Coast Regional Stakeholder Group*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/binders_nc/b3_35.pdf

[39] MLPA Initiative. (2007). *MLPA Initiative, California Department of Fish and Game Announce North Central Coast Regional Stakeholder Group*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/newsrelease051607.pdf

[40] MLPA Initiative. (2005). *MLPA Initiative, Department of Fish and Game Announce Central Coast Regional Stakeholder Group*. Retrieved Sept 21, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=78003&inline=1

[41] MLPA Initiative. (2008). *MLPA Initiative, California Department of Fish and Game Announce South Coast Regional Stakeholder Group*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/agenda_100608a1.pdf

regions except the Central Coast, regional goals were substantially identical to those of the MLPA. For more information, see Appendices C–F.

4) **Developing alternative MPA proposals:** Development of alternative MPA proposals and consideration of potential changes to existing MPAs in the planning region was informed by information in the regional profile, guidance from the SAT as adopted by the Commission, CDFW's feasibility criteria, MPA proposals developed by external groups, evaluation of proposals by State Parks and MLPA initiative staff, contributions from the RSG. Key locations for MPAs were determined based on how well they met the MLPA goals and contributed to the overall network. Throughout the MLPA Initiative, external groups were encouraged to propose MPA arrays; in the North Coast region, proposals by external groups were developed in advance of the RSG proposal development process. This stage also included an initial evaluation of the proposals, including socioeconomic effects and a feasibility study to determine whether proposals could be implemented. During this stage, regional goals and objectives developed in earlier planning regions were assessed and revised as needed for subsequent planning regions. As proposed MPA alternatives were finalized, information on how each MPA contributes to the goals and objectives of the MLPA were developed and incorporated.

5) **Evaluating alternative MPA proposals:** The BRTF evaluated information described in step four above, then forwarded the alternative proposals and its recommendation of a preferred alternative to the Commission. CDFW provided information, analyses, and comments to the Commission on the feasibility of aspects of the MPA proposals, and the degree to which they achieve the goals of the MLPA. The SAT evaluated alternative MPA proposals considered by the BRTF and the Commission, and any proposed changes, up until the final adoption by the Commission.

6) **Submitting recommendations and Commission action:** CDFW forwarded a preferred alternative and other alternatives to the Commission for regulatory review; the Commission took action on MPA proposals, which included preparing regulatory analyses, including CEQA review, SAT review, and public testimony.

Information Required for Proposals for Alternative Networks

The Marine Managed Areas Improvement Act (MMAIA) established an interagency coordinating committee to review proposals for new or amended MMAs[42] to ensure that the minimum required information is included in the proposal, determine the state agencies that should review the proposal, and ensure consistency with other designations in the state. The committee was also mandated to ensure proper and timely routing of site proposals, review any proposed site-specific regulations for consistency with the state system as a whole, and conduct periodic reviews of the statewide system to evaluate whether it is meeting the mission and statement of objectives.

While the MMAIA identified basic information that must be included in an MPA proposal,[43] the interagency coordinating committee developed and released an application that solicited a broader range of information relevant to evaluating a proposal, as well as a suite of criteria for the different MMA designations.

During the first phase of the MLPA Initiative, staff worked with members of the SAT to identify the necessary information for the alternative MPA proposals to facilitate joint understanding of what was

[42] MPAs are a subset of MMAs, however throughout this document the more common term "MPA" is used as an umbrella to refer to all types of protected areas
[43] PRC §36600-36900

being proposed as well as the ability to evaluate and compare the alternatives. The group used the interagency coordinating committee's MMA application and list of criteria, combined with MLPA requirements, guidance in the draft master plan framework, and lessons learned from establishing MPAs in California and elsewhere, to develop a list of required information for alternative MPA proposals in the MPA planning process. This list can be found in Appendix F of the 2008 Master Plan.[44] The required information included a description of the region and proposed MPAs, a list of species likely to benefit, distribution of representative and unique habitats in the region, human uses in the region, regional goals and objectives, proposed management measures, potential socioeconomic impacts of the proposal, and an evaluation of how the proposal meets the goals of the MLPA.

MPA Design and Management Considerations

Accomplishing the goals and elements of the MLPA requires careful consideration of a number of MPA design and planning considerations, in addition to or inherently linked to consideration of scientific guidance as described in Section 4 of this document. For example, the MLPA requires that all MPAs have clearly identified goals and objectives. Once set, goals and objectives influence crucial decisions regarding allowed take, size, location, and boundaries, and other management measures, as well as and the focus of monitoring and evaluation programs. Similarly, the MLPA recognizes that MPAs may be a tool to accomplish broad purposes such as protecting and restoring marine biodiversity and ecosystems, but they are not the only tool. MPA planning in California also requires the consideration of a broad range of diverse and complicated ocean issues, entailing much broader ocean jurisdiction and management of coastal and marine resources.[45]

In order to avoid duplication and conflicts, MPA planning must consider and respect other efforts in the state to protect or manage California's ocean environment, such as tribal uses, existing MPAs, existing fisheries management, military use areas, water quality controls, and coastal development management (Fox et al. 2013b). The MLPP utilized various approaches to considering these other management considerations for MPA design and siting during the regional MPA planning processes. For example, MLPA Initiative RSGs were charged with considering existing MPAs early in the alternative MPA proposal development of each regional planning process. As a result, each existing California MPA was either retained, modified, or deleted, with the exception of the eight existing MPAs within the San Francisco Bay. This consideration was particularly important in the South Coast region where, prior to the MLPA Initiative, the state went through a process of more than two years of meetings with constituents to establish a network of MPAs in the waters surrounding the northern Channel Islands (Airamé et al. 2003).[46] As the first completed regional MPA network planning effort in California (see Appendix A, Section 2.3: *Early Marine Protected Area History in California*), the Channel Islands MPAs were retained without change and incorporated into California's statewide MPA network through the MLPA Initiative, in recognition of the complex and stakeholder-driven planning process that had already occurred.[47]

To address existing fisheries management measures, at or near the beginning of each regional planning process, CDFW produced a policy guidance document that addressed linkages between

[44] CDFW. (2008). *Draft Master Plan for Marine Protected Areas. Appendix F: Outline of Information Required for Marine Protected Area Proposals*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

[45] CNRA. (1997). *California's Ocean Resources: An Agenda for the Future.* Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/mlpa/pdfs/agenda011005_8.pdf

[46] CDFW. *MPA Planning Process Historical Information – Channel Islands.* Retrieved Sept 28, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Planning-Process#26189705-channel-islands

[47] MLPA Initiative. (2008). *Action of the California Fish and Game Commission Regarding Marine Protected Areas at the Northern Channel Islands and Santa Barbara Island in the MLPA South Coast Study Region*. Retrieved Sept 28, 2015 from http://www.dfg.ca.gov/marine/pdfs/binders_sc/b3k.pdf

fisheries management and the development of alternative MPA proposals under the MLPA (Fox et al. 2013b). For the South Coast, where military use areas are more prevalent than in other MLPA planning regions, the BRTF provided very specific advice about individual military use areas and how they were to be treated in MPA proposals. This included flexibility to propose MPAs within military use areas and encouragement to work with the military to address their interests and consider where military uses might be inconsistent with MPA goals (Fox et al. 2013b). Two federal Safety Zones (military closures enacted by the US Coast Guard and managed by the US Navy) off of San Clemente Island were recognized in MPA proposals as contributing to the ecological goals of the South Coast regional MPA network; these federal Safety Zones were designated in federal regulations concurrent with the South Coast MPA planning process.[48,49,50] An example of an important MPA planning consideration that was not included in the MLPA itself is the consideration of tribal uses of living, geological, and cultural marine resources. Tribal involvement and the consideration of tribal uses in MPA planning improved over the course of the MLPA Initiative process (Fox et al. 2013b). For example, in the first regional MPA planning process (the Central Coast planning region), input from tribal communities was not identified until planning through the RSG had been completed. In the second and third regional MPA planning processes (the North Central Coast and South Coast planning regions, respectively), two tribal representatives served as RSG members in each process. In the last regional MPA planning process completed through the MLPA Initiative (the North Coast planning region), seven tribal representatives served as RSG members. Due to their participation, recognition of tribal uses improved over the course of the MLPA Initiative process (Fox et al. 2013b); and explicit Tribal take allowances are included for some SMCAs and SMRMAs on the North Coast.[51] Despite these efforts, some other ocean issues could not necessarily be resolved through MPA planning, but had to be taken into consideration in order to successfully establish MPAs that were compatible with other ocean uses (Fox et al. 2013b).

Setting Regional Goals and Objectives

The MLPA requires that the MLPP achieve six specified goals[52] and that all MPAs in the network have specific, identified purposes (often referred to as “objectives”) that collectively achieve the overall goals.[53] Recognizing the goals and objectives requirement, and consistent with the master plan framework that recommended stakeholder participation in this activity, the MLPA Initiative engaged the RSGs in processes for identifying regional goals and objectives as well as MPA-specific objectives that were consistent with the MLPA.

Initially, during the Central Coast process, the regional goals were not the same as the MLPA goals; for future planning regions the MLPA Initiative staff strongly suggested, and the BRTF supported, the regional goals being substantially the same as the MLPA goals. It was also concluded during the planning process that proposed MPAs in each region must be designed to meet their individual objectives, the collection of MPAs and other management measures in each region, and the statewide goals of the MLPA. The adopted regional and MPA-specific goals and objectives were envisioned to play a critical role in later designing a monitoring and evaluation plan for each region.

---

[48] California Fish and Game Commission. (2010). *Amended Initial Statement of Reasons for Regulatory Action*. Retrieved Sept 21, 2015 from http://www.fgc.ca.gov/regulations/2010/#632sc

[49] Federal Register. *Safety Zone; San Clemente 3 NM Safety Zone, San Clemente Island, CA. Final Rule by the US Coast Guard, May 20, 2010*. Retrieved Sept 21, 2015 from https://www.federalregister.gov/articles/2010/05/20/2010-12063/safety-zone-san-clemente-3-nm-safety-zone-san-clemente-island-ca

[50] MPA classifications may not be inconsistent with US Military activities deemed mission critical by the US Military (PRC §36711).

[51] California Code of Regulations, Title 14, Section 632(a)(11) and (b)(1-2, 6, 8-9, 15-16, 20-21, 25, 27)

[52] FGC §2853(c)(2)

[53] FGC §2857(c)(1)

Goals and objectives of other complementary programs were consulted, such as the Nearshore Fishery Management Plan adopted under the MLMA and the Abalone Recovery and Management Plan. In addition, considerations for the design of MPA networks differed within each region; "design considerations" were developed in each region that complemented the goals and objectives.

Each exercise to develop regional goals and objectives was initiated early in the planning process and was preceded by assembling and evaluating available information on the biological, oceanographic, socioeconomic, and governance features of a region, including existing MPAs and fishery management regulations. Once set, the regional goals and objectives became important for identifying objectives for individual MPAs as well as influencing MPA design decisions during the regional planning processes. The exception was in the Central Coast where development of regional goals and objectives preceded the development of the regional profile and identification of existing MPAs.

Administrative Feasibility Guidance

A statewide MPA network should be designed in such a way that it can be feasibly managed by the appropriate organizations. Regardless of the amount of enforcement funding, personnel, or equipment available, the enforceability and public acceptance and understanding of MPAs will be enhanced if a number of criteria are considered during design and siting. While the complexities of the California coastline and locations and distributions of protected habitats and resources made using the same criteria at each location difficult, efforts were made to include as many of these considerations as possible.

In the MPA planning process, as specified in the MLPA Initiative MOUs, CDFW actively participated in MPA proposal development for each regional MPA planning process with the RSG and BRTF by providing feedback and guidance, rather than developing its own preferred alternative. The MOUs specified that CDFW may ultimately provide the Commission with information, analysis, and comments on the alternative MPA proposals, and on the recommendation for a BRTF preferred alternative to the Commission. As a managing authority for some MMAs, State Parks worked with the MLPA Initiative to build stakeholder involvement and support for priority areas. In the North Coast and South Coast planning regions, State Parks also assessed proposals for new or amended MMAs for compatibility with existing state recreation and public access opportunities (Kirlin et al. 2013, Pope 2014).

The criteria used for the feasibility analyses and comments were provided to assist the stakeholder group with incorporating guidelines into each round of their MPA proposals to enhance enforcement, implementation, and management of MPAs ultimately adopted for the each region. These analyses focused on the feasibility aspects of each proposal and evaluated the prospects of each proposal to meet the goals of the MLPA, which were presented to the RSG, the BRTF, and ultimately the Commission. As trustees for the MLPP, CDFW's evaluations of MPA proposals were meant to ensure the proposals were enforceable, created regulations that are readily understood by the public, and had good prospects for meeting the goals of the MLPA.

These criteria were considered along with the scientific guidance and other design advice found in the Master Plan, and provided by the MLPA SAT. Together, the feasibility analyses, the Master Plan, and SAT guidance provided the necessary information to craft feasible MPA proposals that enhance the likelihood of meeting the goals of the MLPA. While no individual criterion was absolute, the criteria taken together formed guiding principles used in designing MPA proposals. The BRTF generally indicated that MPA proposals that did not meet CDFW feasibility criteria should include a specific

rationale as to why they did not do so.[54] Stakeholders were asked to pay particular attention to enforceability of MPAs, including creating clear and simple boundaries and regulations to avoiding proposing MPAs that provide minimal amounts of protection, and to provide clear rationale why MPAs of this nature were included in their MPA proposals. They were also asked to recognize that the development of fisheries regulations is outside the purview of the MLPA and to follow CDFW's guidance to avoid proposing fisheries regulations within MPAs beyond identifying allowed take (of species and by what gear type). Many of the guidelines for designing MPAs emphasize *simplicity of design* to enhance both enforceability and public understanding. By designing MPAs that are simple, the likelihood of unintentional infractions is reduced.

The text below describing CDFW general feasibility criteria, other guidance, and feasibility evaluation components is given in present conditional tense to reflect the original guidance used in MPA design.

General Feasibility Criteria

In designing and evaluating MPA proposals, RSGs took into consideration several criteria that influenced the general feasibility of enforcement and understanding of MPAs. The following sections summarize the guidance for each of these feasibility criteria.

Establishing MPA Names

MPAs names should be simple, reasonably short, and reflect the geographic area designated. MPAs should not be named after individual people or groups.

MPA Designations

There are three designations of MPAs used under the MLPA. These are state marine reserves (SMR; no-take areas), state marine parks (SMP; areas that allow some recreational take), and state marine conservation areas (SMCA; areas that allow some commercial and/or recreational take). Take regulations proposed for each MPA should reflect the proposed MPA designation. For example, commercial take should not be included in SMP proposals. Another MMA designation with application is state marine recreational management areas (SMRMA). In areas where subtidal protection is desired but waterfowl hunting presently occurs, CDFW recommends that a SMRMA designation be applied with regulations that provide MPA-like protections subtidally, while specifying that waterfowl hunting is still permitted.

MPA Boundaries

MPA boundaries should be well marked (where possible), recognizable, and readily determinable. Boundaries should be clear and simple with design consideration given to the needs of the general public and to facilitate effective enforcement. Boundaries should consider multiple user types, including shore-based and motorized and non-motorized boat-based users. Clear, simple, well-designed MPA boundaries increase the likelihood that MPA regulations will be enforceable and readily understood by the public.

All boundaries should be described using straight lines of latitude and longitude; curved or undulating lines should be avoided. Boundaries should be located at either readily determined lines of latitude and longitude, or at easily recognizable permanent landmarks. MPA boundaries should also be oriented due north-south and east-west, whenever possible.

[54] MLPA Initiative. (2010). *Updated Summary of Key Guidance Provided in Previous Marine Life Protection Act Study Regions for the Development of Marine Protected Area Proposals.* Retrieved Sept 21, 2015 from http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=17238

Lines of latitude and longitude are considered readily determinable when they are located at whole minutes of latitude and longitude (e.g. 36° 24.0). Half minutes are less desirable (e.g., 36° 24.5), and 1/10th minutes are the least preferred and most difficult to enforce (e.g., 36° 24.7). The use of 1/100th of a minute resolution (e.g., 36° 24.56) should only be utilized when lining a boundary with an easily recognizable permanent landmark.

Utilizing easily recognizable permanent landmarks or shoreline features as MPA boundaries provides a common, easily referenced understanding of MPA boundaries. Easily recognizable permanent landmarks include, but are not limited to: rocks, points, headlands, islands, and navigational buoys. Easily recognizable permanent landmarks do not include trees, buildings, parking lots, outflow pipes, or other non-permanent or not readily visible structures or objects. When lining MPA boundaries up to easily recognizable landmarks, it is appropriate to use 1/100th of a minute resolution (e.g., 36° 24.56), as it allows the boundaries to be accurately drawn to the desired point.

Use of Landmarks versus Readily Determined Lines of Latitude and Longitude

Both recognizable permanent landmarks and readily determined lines of latitude and longitude should be utilized for designing MPAs. However, determining when to use one over the other can be challenging. When considering which to use, CDFW recommends that stakeholders first consider the overarching aspects of the area under consideration for MPA placement. Some aspects to consider are site accessibility (e.g., number of parking spaces and number and capacity of boat launching facilities) and the relative level of shore-based consumptive activity compared to boat-based activity.

In estuarine waters (all bays, estuaries, sloughs, channels, and lagoons located within the MLPA planning region boundary), CDFW prefers the use of easily recognizable permanent landmarks (e.g., bridges, etc.) to delineate boundaries in order to ease enforceability and public understanding of boundaries. In offshore areas and places that are heavily utilized for shore-based consumptive activities, stakeholders should consider the use of easily recognizable permanent landmarks as higher priority than using major lines of latitude and longitude. For example, if major lines of latitude and longitude will “split” a beach or rocky intertidal area with heavy consumptive use, they should not be used. In such cases, CDFW recommends that easily recognizable landmarks be utilized to ease enforcement and public understanding of the regulations. For example, the end of the beach may interface with rocky cliffs; this sand-rock interface may provide an easily understood boundary for shore-based and nearshore boat-based users. For areas that can be characterized primarily by boat-based consumptive activities, either easily recognizable permanent landmarks or readily determined lines of latitude and longitude can be utilized, depending on characteristics of the location under consideration.

Overall, CDFW recommends that stakeholders strive to design MPA boundaries that are easily determinable for both boat-based, and land-based consumptive users. In many cases, boundaries placed at easily recognizable landmarks can also be placed at readily determined lines of latitude or longitude by slightly shifting the boundary to the line while still approximating the landmark. Stakeholders should seek solutions that optimize enforceability and ease of understanding for all users.

Using depth contours or distance offshore as MPA boundaries should be avoided due to ambiguities in determining exact depths and distances and poor enforceability. The use of either of these features as MPA boundaries can increase difficulty for the general public to easily and consistently determine. For example, the use of depth contours can be difficult for the general public in areas with largely varying depths. If distance offshore is desired, it should either be designed as coordinates connected by a line that approximates the depth intended (while also meeting other criteria described in this document). Alternatively, it should extend from the shoreline to the three mile state water boundary.

Though not optimal, diagonal lines may be utilized for MPA boundaries under limited circumstances. Diagonal lines may be used if they follow the angle of the coastline and have all of the offshore components "anchored" at whole minute lines of latitude and longitude (e.g., 36° 24.0). Also, boundaries connecting to the shore, generally the northern and southern boundaries, should be oriented due east-west from the mean high tide line. Diagonal boundaries should also be placed sufficiently offshore to accommodate nearshore users that are less likely to utilize navigational equipment. An example of how diagonal lines can be utilized in MPA designs while also meeting feasibility guidelines is depicted in Figure 1. Diagonal lines should only be used when their use will simplify both user needs and enforcement of the area.

Offshore MPA corners can occur at the outside edge of an MPA. These "hanging corners" should be formed at a 90-degree angle. The preferred option is to place these corners on whole minutes of latitude and longitude (e.g., 36° 24.0); placing corners at half minutes is less desirable (e.g., 36° 24.5) and placing corners at 1/10th minutes (e.g., 36° 24.7) is the least preferred and most difficult to enforce. However, MPA corners that do line up with a visible landmark should use a 1/100th of a minute resolution (e.g., 36° 24.56'). This allows boundaries to be accurately drawn to the desired point.

Figures 1-3 depict MPAs or MPA clusters for illustrative purposes only. These illustrations were not recommendations for MPAs in any location or planning region, but were included in feasibility evaluations to illustrate visual examples of MPA design. Each figure depicts one or two examples of MPAs that meet the feasibility guidelines and one or two examples that do not meet the guidelines.

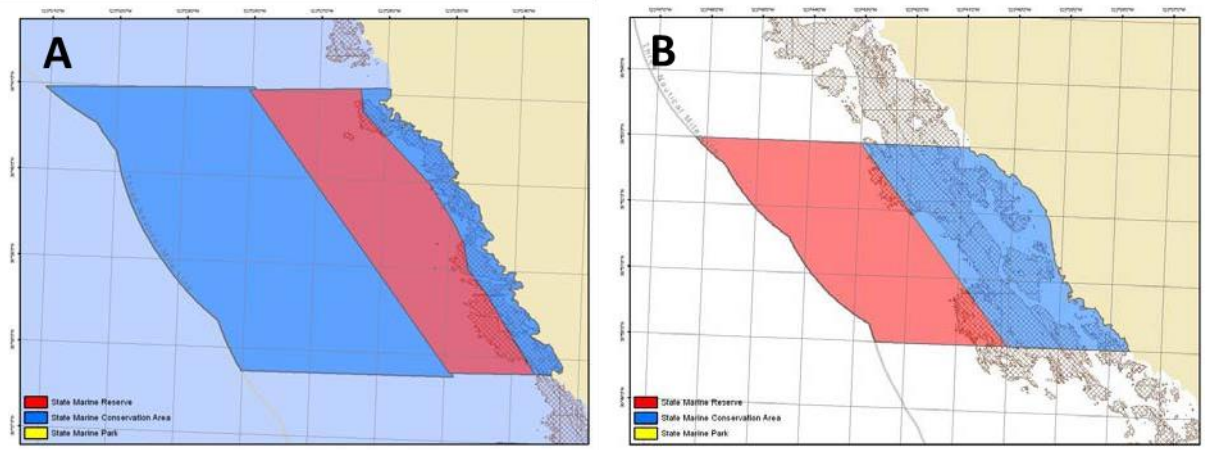


Figure 1. Two example MPA clusters that do not (Map A) and do (Map B) meet CDFW's feasibility guidelines related to diagonal lines.

In Figure 1, the MPA cluster in Map A does not meet feasibility guidelines because it incorrectly utilizes diagonal lines for boundaries (the diagonal line is not anchored at both ends at whole minutes of latitude and longitude) and utilizes the "ribbon" concept of multiple zoning by including an additional onshore MPA that utilizes distance offshore to delineate the boundary. The MPA cluster in Map B meets feasibility guidelines because it correctly anchors the diagonal boundary at both ends at whole minutes of latitude and longitude, sites the diagonal offshore boundary sufficiently offshore, and angles the boundary to mirror the angle of the coastline.

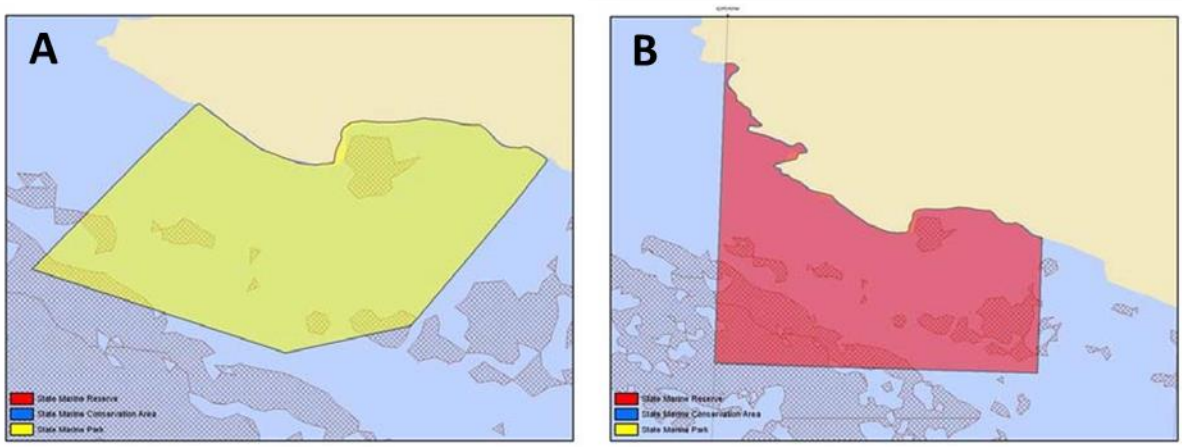


Figure 2. Example of an existing MPA in its original form (Map A) and redesigned during the MLPA process (Map B).

Map A in Figure 2 depicts an MPA that existed prior to the MLPA process and did not meet the feasibility guidelines because it utilized MPA corners that were not at 90 degrees and boundaries that were not oriented due north/south east/west. Map B illustrates the same MPA redesigned under MLPA. This MPA meets feasibility guidelines because it utilizes MPA corners that are at 90 degrees and boundaries that are oriented due north-south east-west.

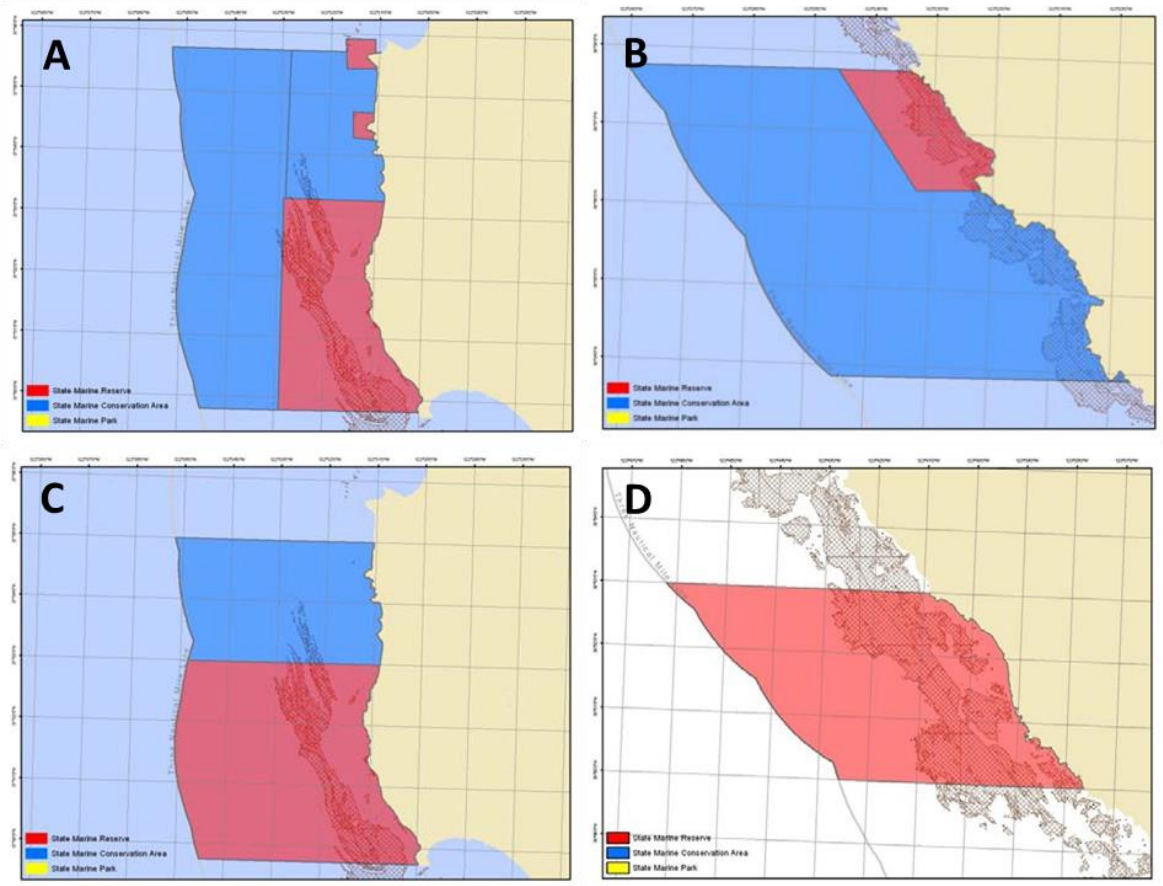


Figure 3. Examples of MPA clusters that do not (Maps A and B) and do (Maps C and D) meet CDFW's feasibility guidelines related to multiple zones.

The MPA cluster in Map A in Figure 3 did not meet feasibility guidelines because it violated the guideline for multiple zoning by utilizing five MPA designations in one area, creating an unnecessarily complex arrangement of MPA designations over a relatively small area. It also utilized "doughnut" designs with different levels of protection sited within one another. The MPA cluster in Map B does not meet feasibility guidelines because it utilizes and L-shaped design that violates the guidelines for multiple zoning and incorrectly utilizes diagonal lines for boundaries.

The MPA cluster in Map C meets feasibility guidelines because it properly utilizes multiple zoning with the use of two MPAs adjacent to one another and incorporates simple, straight boundaries that are oriented due east-west and incorporates the preferred design by stacking MPAs in an alongshore fashion. The MPA cluster in Map D also meets feasibility guidelines because it utilizes a simple design and the boundaries are readily determined and located at whole minutes of latitude.

Take Regulations

One of the most important feasibility factors for MPAs is their regulations. Ideally, regulations should be easily understood by the public (and thus reduce unintentional infractions), and be readily enforceable. Complex regulations to avoid would include, but are not limited to, those which 1) preclude some uses while allowing other uses that are very similar; 2) prohibit very specific gear types that must be checked on the water; 3) allow all but a very few types of activities; and 4) include technical or complex prohibitions. The best regulations are those that can be simply stated in one or two sentences without qualifying or clarifying language.

In addition to ensuring that regulations are clear and simple, proposed take regulations should avoid conflict with existing regulations. For example, the recreational take of pelagic finfish by pelagic seine is prohibited through other regulations in California waters. Thus, an MPA should not propose this type of take. Potential regulatory conflict such as this should be considered and avoided while crafting take regulations for MPAs. To reduce the likelihood of creating conflicting regulations, allowed take for recreational and commercial users should be listed separately. Regulations should generally be described as "no-take" with a list of any exceptions for what is allowed (e.g., "take of all marine resources is prohibited except the recreational take of market squid and the commercial take of market squid"). Proposed MPA regulations should also not create new fishery management regulations that would conflict with existing fishery regulations outside MPAs (e.g., different bag limits, size limits, or seasons).

MPA Cluster Orientation

Adjacent MPAs with different regulations or designations that share a boundary are referred to as a "cluster." To enhance the likelihood that MPAs will meet the goals of the MLPA, MPA clusters oriented in an alongshore fashion (stacked north-south) are preferred compared to an inshore/offshore (east-west) orientation. CDFW recognizes that inshore/offshore orientated clusters may be appropriate for some areas, but encourages the consideration of the MLPA requirements, scientific value, and CDFW feasibility guidance in designing MPAs.

Intertidal MPAs

Intertidal MPAs, which do not extend into the adjacent subtidal waters, are not recommended. Intertidal MPAs are difficult to define, often have confusing or difficult to locate offshore boundaries, and pose unique problems for enforcement. In addition, these areas do not follow the scientific guideline that recommends that MPAs should extend from the intertidal zone to deep waters offshore to protect the diversity of species that live at different depths and to accommodate the ontogenetic movement of individuals to and from nursery or spawning grounds to adult habitats. If intertidal protection is desired, it should be located in areas where offshore habitats are also protected.

Ensuring Simple and Enforceable MPA Designs

MPAs can be designed that meet aspects of CDFW's guidelines for MPA design, but nonetheless create designs that may decrease public understanding and enforceability of the regulation. For example, wedge shapes and other awkward designs are often due to circumstances such as the shape of the coastline or the presence of offshore rocks that extend the state water boundary beyond three nautical miles offshore of the mainland coast. CDFW recommends that proposed MPA boundaries be adjusted or concepts for areas be redesigned to ensure that MPA boundaries are readily determinable, enforceable, and easily understood by the public.

Multiple Zoning

Multiple zoning occurs when an area is split to allow for different uses in different portions of the area. For instance, a SMR could be sited adjacent to a SMP, in which some types of recreational fishing are allowed with specified restrictions, or with a SMCA, where limited recreational and commercial fishing are allowed according to specific regulations. In general, MPAs should avoid abrupt transitions from highly protected areas to areas of relatively little protection (Kelleher 1999).

By avoiding abrupt regulatory transitions, multiple zoning can provide a tool for buffering critical areas contained in SMRs. For example, if the objective of an MPA is to protect a specific habitat, an SMR can be buffered by the placement of an adjacent SMP or SMCA that allows only limited take without disturbance to habitat. Areas split into multiple zones can be an effective method for allowing compatible uses, but should be used only when appropriate to enhance enforceability and improve public understanding and acceptance.

However, care must be taken when creating multiple zoning to avoid unnecessarily complex arrangements. Problems are likely to occur when there are confusing differences in regulations over small spatial areas. This can lead to unintentional infractions and reduce public understanding. If multiple zoning in an area is deemed necessary, CDFW recommends adjacent alongshore zones.

Three particular types of multiple zoning that should be avoided are the creation of "doughnut zones," L-shaped MPAs, and "ribbons." Doughnut zones occur when different levels of protection are sited within a protected area, such as an SMCA surrounded by an SMR. This type of zoning can cause public confusion and is difficult to enforce. L-shaped MPA designs are created when MPAs share two or more boundaries and are also difficult to enforce. Ribbon designs occur when a small strip of MPA is sited next to a larger MPA to allow take that is different from the larger adjacent MPA. For example, this design was proposed in past planning regions to allow fishing in a small area (the ribbon) near the shore adjacent to an offshore SMR. As with doughnut zones and L-shaped designs, this type of zoning can cause public confusion, is difficult to enforce, and does not meet SAT guidelines.

Accessibility

Accessibility to an MPA by different user groups should be considered when siting MPA locations. MPAs should be accessible to researchers, enforcement personnel, and others with a legitimate interest in resource protection. Various benefits and disadvantages can occur when MPAs are sited in locations that are accessible and/or observable, either from the shore or the water. For example, they can increase the likelihood that potential illegal activities will be observed and reported, thereby discouraging such activities because they might be observed. Conversely, MPAs sited in areas that are very easily accessed may facilitate illegal activities to occur.

MPAs sited in areas that are difficult to access may also reduce the potential of unintentional infractions or make it difficult for intentional violators to reach the area. However, this same difficulty would hinder enforcement in a similar manner and allow intentional illegal activities to potentially go unnoticed. Siting

MPAs must balance the ease of enforcement and monitoring while also limiting the potential for infractions to occur.

Siting MPAs in areas close to harbors may raise issues of safety by requiring extractive users to travel farther to areas open to fishing. At the same time, non-consumptive users may prefer MPAs close to ports and harbors to reduce travel times and facilitate use. If enforceable alternative areas are available farther from ports and harbors, but still accessible to non-consumptive users and enforcement, they should be considered.

Other Special Management Areas

Siting MPAs within, adjacent to, or near locations under special management (e.g., upland protected areas; national, state, or local parks; water quality protection areas; etc.) may provide an added layer of enforcement, observation, and public awareness. This is especially true if there are shore-side facilities and personnel based at the site. It is important to collaboratively develop boundaries with agencies that manage these areas.

In addition to the multiple zoning scenarios and special management areas described above, another type of area-based management that should be considered when designing MPA boundaries is the presence of fisheries management areas. Fisheries management areas are seasonal or year-round area based closures designed specifically to protect stocks or a particular critical life stage of a fishery species. Such fisheries management areas are often delineated by lines connecting latitude and longitude coordinates or by depth contours, such as the Rockfish Conservation Areas, which exclude certain types of fishing within a specified depth range. Existing fisheries management zones can be used to help reduce impacts to fisheries by incorporation within new MPAs. Similarly, MPA designation can provide more lasting protection to the habitats and species within these areas by the use of more comprehensive ecosystem goals.

Other Guidance

After the site-specific rationale was drafted, the linkage was created between the MPA and the regional network through the regional goals and objectives. RSG members carefully considered MLPA goals and regional objectives with regard to the individual MPA, the MPA cluster, nearby MPAs, and the network as a whole. Objectives identified for each MPA were developed to be consistent with the design and the allowed take. For example, allowing the take of pelagic finfish in an MPA with the objective of protecting the forage base would be inconsistent. Also, proposed goals and regional objectives were developed to be consistent with scientific guidelines. The Master Plan outlines the SAT guidelines suggested to meet the goals of the MLPA; stated goals and objectives for each MPA should be consistent with these guidelines as well as CDFW MPA design guidelines.

Special Closures

The special closure designation has been utilized in a limited number of instances for areas that have area-specific restrictions that confer some protection to marine species, but are not based on direct take of living marine resources. CDFW recommends that any no-access regulations be proposed as special closures, and that these areas may coincide with, overlay, or be separate from proposed MPAs. While distance from shore is not a preferred boundary determinant, it may be appropriate for special closures in some cases. If a distance-from-shore boundary is used, it must be great enough to be easily enforced, but small enough to be easily visualized, generally 300 or 1,000 feet. Special closures should only be proposed if other state and federal regulations are inadequate to provide protections to marine species. Proposed special closures should include information on the rationale behind the proposal, species involved, and specific information on why other existing state and federal protections (including the establishment of an MPA) are not adequate.

CDFW recommends that special closures be utilized only when addressing water-based access concerns and does not recommend special closures in areas subject to terrestrial access. Special closures should only be used to address water based concerns, such as boat disturbance, as the jurisdiction of the MLPA extends only to the mean high-tide line. Placing special closures in areas subject to terrestrial access, including many beaches, may cause unintentional infractions to occur for activities such as swimming or surfing, and may not address the intended protections if land-based effects continue. If terrestrial access restrictions are desired, CDFW recommends these be taken up with the California Coastal Commission which is the decision-making body for such coastal access issues. Further information on special closures can be found in CDFW's memo on special closures.[55]

Feasibility Evaluation Components

CDFW will evaluate MPA proposals in state waters, and will provide advice on feasibility aspects of proposed MPAs and the likelihood of proposals to meet the goals of the MLPA. The evaluation will be split into three distinct components covering, 1) design feasibility (e.g., boundaries, take allowances, and other design considerations as they relate to management, enforcement, and public understanding); 2) goals and objectives (an evaluation of how well the proposed goals, regional objectives, and site-specific rationales align with the proposed MPA design and regulations); and 3) the likelihood of proposals to meet the goals of the MLPA (an evaluation of prospects for individual MPAs and the array of MPAs in the proposals to meet the goals of the MLPA). The sections below describe aspects that were covered in CDFW's evaluations. If stakeholders deviate from CDFW advice, they are encouraged to provide a clear rationale for why they considered it necessary.

Evaluation of Boundaries and Take Regulations

Proposed boundaries and take regulations for each MPA should follow the design guidance described previously in this document. MPAs should have simple, readily determined boundaries, and clear and simple take regulations to ensure that enforceability and public understanding is enhanced. CDFW will identify, and may provide options to remedy, design elements of MPAs that do not meet these guidelines.

Evaluation of Enforceability

CDFW will also provide comments from enforcement staff on MPA design including placement, boundaries, access, and take regulations. Comments will include specific concerns regarding the enforceability of MPA proposals. Advice may include enforcement concerns regarding proposed allowed take (including inconsistencies with existing fishing regulations and the potential for unintentional infractions), boundary designs, accessibility, and other aspects that affect enforceability of an MPA.

Evaluation of Special Closures (If Any)

Since year-round prohibitions on access provide the same or greater protection for living marine resources as no-take areas, CDFW recommends that year-round access restrictions be analyzed in the same manner as for SMRs. Seasonal access restrictions are not equivalent to SMRs and should be analyzed based on their take restrictions, if different from general regulations. CDFW will provide comments regarding the elimination or modification of proposed special closures that are located in areas subject to terrestrial access or that provide inadequate protections.

Evaluation of Stated Goals and Assigned Regional Objectives

CDFW will comment regarding the stated goals and regional objectives for each proposed MPA in each round of draft MPA proposals. Each MPA should clearly state which MLPA goal(s) and regional

[55] CDFW. (2007). *Special Closures as they Apply to the Marine Life Protection Act (MLPA).* Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/binders/b1dn.pdf

objective(s) it is attempting to achieve as an individual MPA, as part of an MPA cluster, or as part of an MPA array.

CDFW will review the stated goals, regional objectives, and site-specific rationale proposed for individual MPAs or groups of MPAs relative to the MPA design, boundary location, and take regulations included in MPA proposals. If the MPA design is inconsistent with the purpose described in the site-level rationale or the intended goals and regional objectives, CDFW will recommend modifications to the proposed goals and regional objectives included with the MPA, and/or provide options to remedy the misalignment through modifications or elimination of the proposed MPA. Note that all proposed MPAs must contribute to meeting at least one of the goals of the MLPA.

Site-Specific Rationale

The site-specific rationale should reflect the purpose of the MPA and include a clearly-defined purpose as well as any justifications aimed at meeting the goals of the MLPA. CDFW will review the rationale provided for each MPA and check to see if the primary "aim" (i.e., reason, goal, purpose, rationale, or intent) of the MPA is specified. CDFW will check to see if this statement describes what the MPA is trying to achieve, what it is protecting, or if the design is focused on meeting SAT guidelines for a particular habitat. The rationale statement should be as simple and straightforward as possible and should be consistent with stated goals and objectives for that geography; CDFW will work with RSG work teams to properly align the rationale with the goals and objectives.

MPAs Intended to Meet Other Goals of the MLPA

In previous planning regions, the majority of proposed MPAs were designed to address SAT and Master Plan guidance for creating a network of MPAs. These MPAs were designed to meet guidelines such as size, spacing, and habitat replication. However, there is often a desire by the RSG to propose MPAs are not designed to meet network goals and may have lower levels of protection. While CDFW does not support MPAs below a minimum size or with lower levels of protection, the RSG may still wish to propose these types of MPAs to meet other specific goals of the MLPA, such as educational or study opportunities. In such instances, the intended purpose for the site should be achievable based on the design of the MPA. Ecological or network goals and objectives should not be ascribed to an MPA if the proposed MPA does not meet minimum guidelines for achieving those goals as provided by the SAT and the Master Plan. CDFW will recommend modification or elimination of any existing MPAs that do not directly address goals of the MLPA.

Likelihood of MPA Proposals to Meet the Goals of the MLPA

CDFW will provide advice on the prospects of the MPA proposals to achieve the goals of the MLPA (as stated in the MLPA Initiative MOU). A specific finding in the MLPA was that the existing array of MPAs lacked clearly defined purposes, was not established according to sound scientific guidelines, and fell short of its potential to protect and conserve living marine life and habitat. Therefore, CDFW evaluated MPA proposals with regard to these findings and the MLPA goals, and recommended elimination or modification to MPAs that were unnecessary to fulfill the MLPA mandate or provided inadequate ecosystem protection.

Further Advice

CDFW may also call attention to particular proposed MPAs or MPA clusters that display particularly well-suited design solutions for a given area. These "elegant solutions" may be identified for their likelihood to facilitate research and monitoring or to meet other design considerations. These solutions were identified to provide feedback and guidance to facilitate feasible MPA designs.

3.4 Using Lessons Learned to Adapt the Planning Process

Design and designation of California's MPA network took place with the help of a deliberate process to learn from existing MPA planning processes in California and beyond, and to apply those lessons as the region-specific planning processes unfolded. By performing lessons learned studies in the first three planning regions (Central Coast, North Central Coast, and South Coast), the MLPA Initiative's MPA planning process design evolved and adapted to meet the specific needs of each region while retaining the foundation of a common set of process design elements. This section provides insight and further resources detailing the lessons learned that came out of each of the first three planning regions, in the order that their regional MPA planning processes were carried out. Because the North Coast was the last region to be implemented, there were no lessons learned documents that resulted from that process, though the North Coast planning process has contributed to the body of research on MPA planning processes (Fox et al. 2013a).

Central Coast

The Central Coast planning region MPA planning process was designed as a pilot project, where process design elements that were developed based on other planning processes from California and around the world could be tested; if the planning process was successful, it would inform future planning processes. Below are summaries of five lessons learned reports that came out of the Central Coast MPA planning process. Lessons learned reports were added to the 2008 Master Plan in Appendix K.[56]

Report on Lessons Learned from the Marine Life Protection Act [57]

This lessons learned report assesses whether, 1) the MLPA Initiative processes and BRTF recommendations provided a reasonable foundation for decision-making by the Commission, 2) the key elements of the MLPA Initiative worked effectively on the Central Coast, and 3) the MLPA Initiative could be replicated. The report also provides recommendations based on participant feedback and the independent evaluation process.

Evaluation of the Central Coast Regional Stakeholder Group Process [58]

This lessons learned report focuses on the Central Coast Regional Stakeholder Group (CCRSG) process and the approach it took to developing MPA packages, specifically with regards to, 1) stakeholder selection and membership, 2) CCRSG start-up, 3) MPA package formation by the CCRSG, 4) MPA package refinement by the BRTF and CDFW, and 5) CCRSG timeline and budget. The report describes the processes that took place and uses participant feedback to evaluate the strengths and weaknesses of choices made. It also proposes potential improvements to be implemented in the planning processes of future planning regions.

MLPA Initiative Central Coast Project [59]

This facilitators' report provides an overview of the approach, results, and key lessons learned from the CCRSG between May and December 2005 as part of the MLPA Initiative. It also highlights challenges

---

[56] CDFW. (2008). *Draft Master Plan for Marine Protected Areas. Appendix K: Lessons Learned Reports from the Central Coast Regional Process*. Retrieved July 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

[57] Harty, J. M. & John, D. (2006). *Report on Lessons Learned from the Marine Life Protection Act Initiative*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/agenda_090606d.pdf

[58] Raab, J. (2006). *Evaluation of the Central Coast Regional Stakeholder Group Process*. Raab Associates, Ltd. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/agenda_090606e.pdf

[59] McCreary, S. & Poncelet, E. (2006). *Marine Life Protection Act Initiative Central Coast Project.* CONCUR, Inc. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/agenda_090606f.pdf

and strategies for addressing them, and key recommendations for modifications to the planning process.

Administrative Lessons Learned in the MLPA Initiative Memorandum [60]

This memo to the BRTF makes recommendations based on the experience of MPA planning following the design of the MLPA Initiative. It provides recommendations in four areas: 1) anticipate uncertainty, complexity, and change and suggesting the need for flexibility, transparency, and accountability in administrative designs and procedures; 2) provide resources needed to support the key organizational units created and to ensure robust public engagement; 3) clarify roles among external funders, any BRTF, and any executive director; and 4) anticipate the need for individuals to augment and complement state personnel for selected key roles and engage them as consultants.

Lessons Learned in the MLPA Initiative Memorandum [61]

This memo summarizes the lessons learned that came out of an examination by the BRTF of their activities over the two years leading to October 2006. The memo presents ten recommendations that focus on the overall design for implementation of the next planning region, and are categorized by: 1) leadership and design of future planning regions, 2) roles and responsibilities, 3) governance and funding, and 4) enhancing capacity.

North Central Coast

Report on Lessons Learned from the MLPA Initiative: North Central Coast Planning region [62]

This lessons learned document evaluates the North Central Coast MPA planning process, specifically by assessing whether: 1) the MLPA Initiative processes and BRTF recommendations provided a reasonable foundation for decision-making by the Commission; 2) the key elements of the MLPA Initiative worked effectively on the North Central Coast, and what was the impact of modifications adopted by the MLPA Initiative in light of the Central Coast process; and 3) the MLPA Initiative could be successful in future planning regions.

South Coast

South Coast Regional Stakeholder Group Online Survey and Lessons Learned [63]

This lessons learned report provides an evaluation of the South Coast Regional Stakeholder Group (SCRSG) process and a comparison with previous planning regions through a survey of participants. Aspects addressed in the evaluation include: 1) measures of overall process effectiveness; 2) satisfaction with SCRSG size, length of time, and balance; 3) effectiveness of the procedures for decision-making; 4) helpfulness of the MLPA Initiative work products, tools, and staffing; and 5) the BRTF. The report also describes lessons learned and provides recommendations to assist the MLPA Initiative to continue to make process improvements.

---

[60] Kirlin, J. J. (2006). *Memorandum to the MLPA Blue Ribbon Task Force: Administrative Lessons Learned in the MLPA Initiative.* Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/agenda_090606g.pdf

[61] Isenberg, P. (2006). Memorandum to the California Resources Agency, California Department of Fish and Game, and Resources Legacy Fund Foundation: *Lessons Learned in the MLPA Initiative*. Retrieved Sept 21, 2015 from https://www.dfg.ca.gov/marine/pdfs/lessons101706.pdf

[62] Harty, J. M. (2008). *Report on Lessons Learned from the Marine Life Protection Act Initiative: North Central Coast Study Region*. Harty Conflict Consulting & Mediation. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/agenda_110408a.pdf

[63] Harty, J. M. (2010). *Marine Life Protection Act Initiative: South Coast Regional Stakeholder Group Online Survey and Lessons Learned: Report to the Resources Legacy Fund Foundation*. Kearns & West. Retrieved Sept 21, 2015 from http://environmentalpolicy.ucdavis.edu/files/cepb/SCRSG%20Report%20FINAL.pdf

3.5 MPA Network Proposals that Were Not Selected

For each planning region, an iterative, open and transparent process took place that involved several rounds of MPA design proposals, evaluation, and redesign (see 2016 Master Plan, Figure 5). In each region, the RSG and/or external groups developed a number of alternative MPA proposals, although the majority of the proposals were developed by the RSGs. The SAT, CDFW, MLPA Initiative staff, and the BRTF reviewed and evaluated the proposals over multiple rounds of proposal development. State Parks also reviewed and evaluated proposals in the South Coast and North Coast regional MPA planning processes. Following each regional MPA planning process, the BRTF forwarded the range of alternative MPA proposals along with their recommendations to the Commission.[64] All alternative MPA proposals that were considered and reviewed by the Commission, but not ultimately selected for each planning region can be found on the CDFW website.[65]

[64] An exception was during the first regional MPA planning process, the Central Coast, where the BRTF forwarded a range of alternative MPA proposals to CDFW. CDFW then forwarded alternative MPA proposals to the Commission

[65] CDFW. (2015). *Overview of Alternative Marine Protected Area Proposals: The Marine Life Protection Act Initiative (2004-2012).* Retrieved Sept 23, 2015 from http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=107532&inline

4. Scientific Foundation for MPA Design and Planning

The MLPA calls for the use of the best readily available science, which was drawn from multiple sources during the MPA design and siting process. This section provides a summary of the use of best readily available science in the MLPA Initiative process, including from the MLPA, the 2008 Master Plan, and the SAT. It also provides summaries of some of the main data, tools, information, and methods used in the regional planning processes.

4.1 MLPA Science Guidance

The MLPA provides a legal framework for the goals and elements to be included in the MLPP. In part, the MLPA mandates the redesign of California's system of MPAs to create a statewide MPA network that achieves six broad, ecosystem-based goals. Four of these goals (Goals 1, 2, 4, and 6) directly address conservation objectives, and provide a strong framework developing more specific guidelines for MPA design on topics such as protection of specific habitats and the associated biodiversity (Goals 1 and 4) and sustainability and connectivity of marine populations (Goals 2 and 6). Therefore, more specific science design guidelines were developed to ensure adequate representation and replication of habitats within MPAs (see the 2008 Master Plan, Chapter 3.2 and 3.3). In addition to general guidance, the MLPA also called for other science-based MPA design mandates, such as requiring modification of California's existing MPAs to: ensure they are designed and managed according to clear, conservation-based goals and guidelines; redesign the system of MPAs to improve its coherence and effectiveness at protecting California's marine life, habitats, and ecosystems; use the best readily available science in preparing the master plan; and use the master plan to identify species likely to benefit from MPAs.[66] The MLPA also required the inclusion of an "improved marine life reserve component," known as the backbone of the network, to be designed according to all of the guidelines described in Box 1, in the preferred siting alternative.[67]

Following the guidance from the MLPA to consider the best readily available science, the MLPP has given and will continue to give precedence to ecosystem and habitat protection goals over socioeconomic factors in MPA design. While the MLPA does not require collection or analysis of socioeconomic information,[68] the MLPP acknowledges that socioeconomic implications play strongly into the effectiveness of MPAs; therefore, the MLPP is going beyond the requirements of the MLPA by collecting and utilizing socioeconomic information in ongoing MPA management.

[66] FGC §2850-2863
[67] Ibid.
[68] MLPA Initiative. (2006). *Socioeconomic Considerations in Developing Alternative Network Components for a Network of Marine Protected Areas Along the Central Coast*. Retrieved July 22, 2015 from http://www.dfg.ca.gov/mlpa/pdfs/agenda_013106br7.pdf

Box 1. MLPA Guidelines for MPA Preferred Alternative Selection

- Each MPA shall have identified goals and objectives. Individual MPAs may serve varied primary purposes while collectively achieving the overall goals and guidelines.
- Marine life reserves in each bioregion shall encompass a representative variety of marine habitat types and communities, across a range of depths and environmental conditions.
- Similar types of marine habitats shall be replicated, to the extent possible, in more than one marine life reserve in each biogeographical region.
- Marine life reserves shall be designed, to the extent practicable, to ensure that activities that upset the natural functions of the area are avoided.
- The MPA network and individual MPAs shall be of adequate size, number, type of protection, and location to ensure that each MPA meets its objectives and that the network as a whole meets the goals and guidelines of the MLPA.

4.2 Master Plan Science Guidance

In order to prepare the master plan and take full advantage of scientific expertise on MPAs, the MLPA directed CDFW to appoint a master plan team, including science advisors, for advice and assistance.[69] CDFW staff and master plan team scientists played a significant role in guiding and developing components of both the master plan framework adopted by the BRTF in 2005 and the draft Master Plan adopted by the Commission in 2008, resulting in: 1) more specific guidelines for how to implement the broad guidance in the MLPA, and 2) detailed guidance on a variety of scientific considerations in the design of MPAs (see the 2008 Master Plan, Chapter 3). Box 2 details the primary science design guidance developed in the 2008 Master Plan. This overall MPA network design guidance addressed statutory requirements for MPA network design (i.e., Box 1) and provided a foundation for the SAT to apply a methodology to evaluate alternative MPA proposals in each planning region (Kirlin et al. 2013). Scientific MPA design considerations detailed in the 2008 Master Plan included guidance or concepts regarding upwelling centers, freshwater plumes, larval retention areas, species likely to benefit from MPAs,[70] biogeographical regions, levels of protection, habitat representation, habitat replication, MPA size, MPA spacing, and guidance for monitoring and adaptive management. This collective guidance essentially served as the starting point for discussions on MPA planning in each region.

[69] FGC §2850-2863

[70] CDFW. (2007). *Species Likely to Benefit from the Establishment of Marine Protected Areas in California*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/mpa/species.asp

Box 2. Master Plan MPA Network Design Science Guidance

- The diversity of species and habitats to be protected, and the diversity of human uses of marine environments, prevents a single optimum network design in all environments.
- To protect the diversity of species that live in different habitats and those that move among different habitats over their lifetime, every 'key' marine habitat should be represented in the MPA network.
- To protect the diversity of species that live at different depths, and to accommodate the movement of individuals to and from shallow nursery or spawning grounds to adult habitats offshore, MPAs should extend from the intertidal zone to deep waters offshore.
- To best protect adult populations, based on adult neighborhood sizes and movement patterns, MPAs should have an alongshore extent of at least 3-6 miles of coastline, and preferably 6-12.5 miles. Larger MPAs would be needed to fully protect marine birds, mammals, and migratory fish. Combined and simplified, this guideline and the one prior yields that MPAs should have a minimum area of 9-18 square miles, or a preferred area of 18-36 square miles.
- To facilitate dispersal among MPAs for important bottom-dwelling fish and invertebrate groups, based on currently known scales of larval dispersal, MPAs should be placed within 31-62 miles of each other.
- Representative marine habitats should be replicated in multiple MPAs across large environmental and geographic gradients to protect the greater diversity of species and communities that occur across such gradients, and to protect species from local year-to-year fluctuations in larval production and recruitment.
- To provide analytical power for management comparisons, and to buffer against catastrophic loss within an MPA, at least three to five replicate MPAs should be designed for each habitat type within each biogeographical region.
- To lessen negative impact while maintaining value, placement of MPAs should take into account local resource use and stakeholder activities.
- Placement of MPAs should take into account the adjacent terrestrial environment and associated human activities.
- To facilitate adaptive management of the MPA network into the future as well as the use of MPAs as natural scientific laboratories, the network design should account for the need to evaluate and monitor biological changes within MPAs.

4.3 Science Advisory Team Guidance

The SAT provided science guidance throughout the regional planning processes, such as through science guidelines and evaluations, and considerations regarding biogeographical regions, habitats, and species likely to benefit from MPAs.

Guidance for Regional MPA Planning

For regional MPA planning, the master plan team added scientific expertise and focused on "the scientific considerations involved in drafting the programmatic portion of the master plan and designing alternative regional proposals for MPAs."[71] The master plan team was renamed the MLPA Master Plan Science Advisory Team, or SAT, to reflect the enhanced expertise and scientific focus. The SAT was asked to "refrain from making policy judgments; rather, where available science presents options or uncertainty, the SAT shall frame and refer those policy questions to [CDFW] or, if appropriate, the BRTF."[72] A SAT was appointed in each of the four coastal planning regions to apply the science

[71] MLPA Initiative. (2007). *Charter of the 2007-2008 Master Plan Science Advisory Team.* Retrieved Sept 22 from http://www.dfg.ca.gov/marine/pdfs/satcharter070608.pdf

[72] MLPA Initiative. (2007). *Charter of the 2007-2008 Master Plan Science Advisory Team*, Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/satcharter070608.pdf

guidance in the MLPA and the Master Plan to make it operational in each regional MPA planning process.

The SAT developed simple and credible MPA science design guidelines to address MLPA goals and associated evaluation methods (the guidelines, as well as detailed descriptions of each, can be found in the 2008 Master Plan, Chapter 3.3).[73] The guidelines served as the starting point for regional discussions of alternative MPAs (Saarman et al. 2013). The guidelines were not prescriptive; they were meant to be flexible to accommodate the varying needs in each of the planning regions, and some aspects such as size and spacing of MPAs were expressed in ranges. Moreover, not every MPA was expected to necessarily achieve all guidelines. However, any significant deviation from them should be consistent with both regional goals and objectives as well as the MLPA requirements.

The goals of the MLPA, primarily goals 1, 2, 4, and 6, provided the basis for all SAT evaluations, which assessed how well alternative MPA proposals met the MLPA goals. Formal SAT evaluations of alternative MPA proposals generated by the public (called external MPA proposals) and the stakeholder group took place within the context of an iterative process of design, evaluation, and refinement. Evaluations varied among regions and evolved over time due to the iterative nature of the statewide MPA design process. Table 1 summarizes the four categories of scientific guidelines for spatial configuration of MPAs, the MLPA goals addressed by each category, the scientific basis for the guideline, and the SAT's approach to evaluating MPAs against that category (Saarman et al. 2013). Importantly, throughout the MPA planning process, the BRTF consistently emphasized the support of science guidance. Box 3 describes the science guidance emphasized by the BRTF.

[73] .CDFW. (2008). *Draft Master Plan for Marine Protected Areas*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

Table 1. MPA design guidelines with scientific basis, associated evaluation tools, and the conservation objectives and MLPA goals addressed by each guideline (adapted from Saarman et al. 2013).

	MPA Design Guideline	Design Objective and MLPA Goals Addressed	Scientific Basis	Evaluation Approach
Habitat Representation	Every 'key' marine habitat should be represented in the MPA network.	To protect the diversity of species that live in different habitats and those that move among different habitats over their lifetime (MLPA goals 1 and 4).	Based on observed relationships between habitat type and marine community composition.	Assessed the proportion of each available 'key' habitat included in an MPA network proposal.
Habitat Replication	'Key' marine habitats should be replicated in multiple MPAs across large environmental and geographic gradients.	To protect the diversity of species and communities that occur across large environmental gradients (MLPA goals 1 & 4).	Based on observed transitions in marine community composition across environmental and geographic gradients.	Assessed the number of replicates of each key habitat protected in proposed MPAs, and the distribution of these replicates across environmental gradients. MPAs that were of at least minimum size and contained sufficient extent of a habitat to encompass 90% of associated biodiversity were considered to constitute a 'replicate'. Relevant environmental gradients were defined as 'bioregions' based on transitions in marine community composition.
MPA Size	MPAs should have an alongshore span of 3-6 miles (5-10 kilometers) of coastline and preferably 6-12.5 miles (10-20 kilometers), and should extend from the intertidal zone to deeper waters offshore (offshore dimension constrained by the limits of state jurisdiction). Minimum MPA size range: 9-18 square miles (23-47 square kilometers). Preferred MPA size range: 18-36 square miles (47-93 square kilometers).	To protect adult populations and protect the diversity of species that live at different depths and to accommodate the movements of individuals across depth zones (MLPA goals 2 & 6).	Based on the movements of individual organisms, especially the adult movements of fishes.	Assessed the number of proposed MPAs that met the minimum and preferred size guidelines. Estuarine MPAs were exempted from the size guidelines because MPA size was often constrained by estuarine boundaries.
Spacing	MPAs should be placed within 31-62 miles (50-100 kilometers) of each other.	To facilitate dispersal and connectedness of important bottom dwelling fish and invertebrates among MPAs (MLPA goals 2 & 6).	Based on known scales of larval dispersal.	Assessed spacing between protected habitats for each 'key' habitat. MPAs were considered to protect a habitat if they met the minimum size guideline and contained a sufficient extent of the habitat to constitute a replicate.

Box 3. Science Guidance Emphasized by the Blue Ribbon Task Force

- Utilize the best readily available science and information as directed by the MLPA.
- Place strong emphasis on MPAs that meet the science guidelines for preferred size and spacing.
- MPA proposals should include a "backbone" of MPAs with "very high" or "high" levels of protection.
- Place great weight on the results of the SAT evaluations of MPA proposals.
- Water quality was important to consider in MPA planning, and that the SAT provided excellent information regarding both opportunities for siting MPAs, such as in areas of special biological significance (ASBS), and areas to be avoided; however, water quality considerations are secondary to the ecological function goals and guidelines of the MLPA and the master plan.

Science Advisory Team Methodology

A thorough record was developed by each regionally-appointed SAT to document the guidelines for design and the methods used to evaluate alternative MPA proposals for each MPA planning region. Science methodology and evaluation methods used in the Central Coast regional MPA planning process were documented in Appendix R of the 2008 Master Plan,[74] and more formalized documents were developed for subsequent regional MPA planning processes (SAT 2008, 2009, and 2011), each tailored to meet the unique needs of each region (Saarman et al. 2013). Additional information for SAT evaluations can be found on CDFW's website.[75,76,77,78]

Biogeographical Regions

The MLPA requires that representative habitats be included, to the extent possible, in more than one SMR in each biogeographical region. The MLPA identifies the following three biogeographical regions:

- The area extending south from Point Conception
- The area between Point Conception and Point Arena
- The area extending north from Point Arena

The MLPA also authorizes a master plan team to modify these regions. A variety of options for the possible definition of California's biogeographical regions were presented to the BRTF, including:

- Three biogeographical regions defined in the MLPA
- Two biogeographic provinces recognized by many scientists with a boundary at Point Conception

[74] CDFW. (2008). *Draft Master Plan for Marine Protected Areas. Appendix R: Science Methodology for Study Regions*. Retrieved July 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

[75] MLPA Initiative. *MPA Proposals and Evaluations (North Coast Study Region)*. Retrieved Sep 25, 2015 from: http://www.dfg.ca.gov/marine/mpa/mpaproposals_nc.asp

[76] MLPA Initiative. *MPA Proposals and Evaluations (North Central Coast Study Region)*. Retrieved Sep 25, 2015 from: http://www.dfg.ca.gov/marine/mpa/mpaproposals.asp

[77] MLPA Initiative. *MPA Proposals and Evaluations (Central Coast Study Region)*. Retrieved Sep 25, 2015 from: http://www.dfg.ca.gov/marine/mpa/mpaproposals_phase1.asp

[78] MLPA Initiative. *MPA Proposals and Evaluations (South Coast Study Region)*. Retrieved Sep 25, 2015 from: http://www.dfg.ca.gov/marine/mpa/mpaproposals_sc.asp

- Four marine regions identified by the master plan team convened by CDFW in 2000, with boundaries at Point Conception, Point Año Nuevo, and Point Arena
- Biogeographical regions recognized by scientists who have identified borders based on species distributional patterns or on abundance and diversity data with boundaries at Point Conception, Monterey Bay and/or San Francisco Bay, and Cape Mendocino

Accepting the strong scientific consensus of a major biogeographical break at Point Conception, the BRTF confirmed that two biogeographical regions exist along the California coast for purposes of implementing the MLPA (see the 2008 Master Plan, Chapter 3).[79] The more refined information on other breaks will be useful in designating planning regions and in designing a statewide network of MPAs.

Consideration of Habitats in the Design of MPAs

The MLPA calls for the protection of representative types of habitat in different depth zones and environmental conditions. The SAT generally confirms that all but one of the habitats identified in the MLPA occur within state waters, including rocky reefs, intertidal zones, sandy or soft ocean bottoms, underwater pinnacles, kelp forests, submarine canyons, and seagrass beds. Seamounts do not occur within state waters. The SAT also notes that rocky reefs, intertidal zones, and kelp forests are actually broad categories that include several habitat types within them.

The SAT identified five depth zones, which reflect the species compositions found at varying depths, including intertidal, intertidal to 30 meters, 30 meters to 100 meters, 100 meters to 200 meters, and deeper than 200 meters. They also called for special delineation of estuaries as a critical California coastal habitat. Finally, the SAT recommends expanding the habitat definitions to include ocean circulation features, principally upwelling centers, freshwater plumes from rivers, and larval retention areas. For a full description of the SAT's approach to considering habitats in the design of MPAs, as well as detailed descriptions of key habitats including upwelling centers, freshwater plumes, and larval retention areas, see the 2008 Master Plan, Chapter 3.4.[80]

Species Likely to Benefit from MPAs

The MLPA requires the identification of species likely to benefit from MPAs; identifying these species may also assist in identifying habitat areas that can contribute to achieving the goals of the MLPA. CDFW prepared a list of such species, which appears in Appendix G of the 2008 Master Plan.[81] CDFW worked with the SAT to refine this list for each region (see the 2008 Master Plan, Chapter 3.5).[82,83,84,85] This included identifying species on the list that were in direct need of consideration when designing MPAs, as opposed to those that may benefit but were not in immediate need of additional protection.

---

[79] CDFW. (2008). *Draft Master Plan for Marine Protected Areas*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

[80] Ibid.

[81] CDFW. (2008). *Draft Master Plan for Marine Protected Areas. Appendix G: Master List of Species Likely to Benefit from MPAs*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

[82] SAT. (2010). *List of Species Likely to Benefit from Marine Protected Areas in the North Coast Study Region*. Retrieved Aug 10, 2015 from http://www.dfg.ca.gov/marine/pdfs/binders_nc/b2_3.pdf

[83] SAT. (2008). *List of Species Likely to Benefit from Marine Protected Areas in the MLPA North Central Coast Study Region*. Retrieved Aug 10, 2015 from http://www.dfg.ca.gov/marine/pdfs/binders/b2dc.pdf

[84] SAT. (2005). *Some Key Species Likely to Benefit from Marine Protected Areas in the Central Coast Study Region*. Retrieved Aug 10, 2015 from http://www.dfg.ca.gov/marine/pdfs/binder3b.pdf

[85] SAT. (2008). *Species Likely to Benefit from MPAs and Special-Status Species*. Retrieved Aug 10, 2015 from http://www.dfg.ca.gov/marine/pdfs/binders_sc/b2g.pdf

Socioeconomic Fisheries Data

The incorporation of socioeconomic fisheries data evolved over the course of the MPA implementation process. During the Central Coast planning process, stakeholders and policymakers requested consideration of MPA design on commercial fisheries. As the planning process continued in other planning regions, socioeconomic fisheries data were incorporated into two models to inform design decisions. One model was a comparative, static assessment of potential socioeconomic impacts to fisheries assuming no changes in management, behavior, or resources. The second model was a dynamic, bioeconomic assessment that assumed changes in population dynamics, management, and behavior (White et al. 2013).

4.4 Information, Data and Tools to Support Planning

Numerous information sources, datasets, and tools were used to inform the MPA planning process. A selection of those items are described below.

Regional Profiles

MLPA Initiative staff partnered with stakeholders early in the MPA planning process in joint fact-finding endeavors to gather information to create regional profile. The profiles characterized the ecology and socioeconomics of each planning region and identified unique attributes and specific informational needs. The process built trust between stakeholders, the public, the SAT, and MLPA Initiative staff (Saarman et al. 2013, Kirlin et al. 2013).

MarineMap

MLPA Initiative staff specializing in geospatial technology created MarineMap as a tool for stakeholders to visualize spatial data, design and analyze prospective MPAs, and share their designs with other stakeholders. MarineMap was used during the MLPA Initiative process as a web-based, spatial decision support system that made spatial analysis, an integral part of MPA design, accessible to a broad group of stakeholders instead of solely technical experts (Merrifield et al. 2013).

Doris

MLPA Initiative staff created Doris to add analytical capability to earlier versions of the tool that would become MarineMap. Users had the capability to view and navigate spatial data online, and Doris allowed users to interact with these data. Using Doris, stakeholders were able to draw geographically referenced polygons representing potential MPAs using data layers to inform their design (Merrifield et al. 2013).

Social Science Tools and Methods

Despite efforts to separate scientific discourse from social and political pressures during the MLPA Initiative (Saarman et al. 2013), social science characteristics, such as socioeconomic data on fisheries impacts, were taken into consideration in addition to ecological characteristics in the evaluation of MPA proposals. For a summary of social science tools and methods that can be used in processes such as the MLPA Initiative, see the 2008 Master Plan, Appendix E.[86]

[86] CDFW. (2008). *Draft Master Plan for Marine Protected Areas. Appendix E: Social Science Tools and Methods*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

5. Public Participation

The MLPA Initiative, which is itself a public-private partnership, was designed and carried out through a transparent and collaborative approach that emphasized stakeholder and public participation throughout the design and evaluation process. The approach emphasized the involvement of affected parties, including commercial fishermen, recreational users, scientists, and other interested groups in evaluating alternative MPA proposals.[87] Consistent with this approach, external community and stakeholder groups were encouraged to develop and propose draft MPA arrays early in the process.[88] This section describes the statewide and region-specific strategies for stakeholder and interested public participation and describes the MLPA Initiative's consideration of cross-interest support for MPA proposals.

5.1 Strategies for Stakeholder and Interested Public Participation

To guide an effective, publicly-informed MPA planning process, the MLPA Initiative developed strategy documents for stakeholder and other interested public participation. These documents, developed for both the statewide and region-specific scale, are described below.

Statewide Strategy

Recognizing that the effectiveness of the statewide network of MPAs depends to a large extent on support from the public and other stakeholders, MLPA Initiative staff, BRTF members, and stakeholders developed a guidance document for how to ensure high-quality public and stakeholder participation. The document, which is housed as Appendix D of the 2008 Master Plan,[89] describes recommended strategies for the BRTF to use to engage the interested public and other stakeholders. Some actions in the statewide strategy provide guidance for enabling regional stakeholder and interested public participation.

Region-Specific Strategies

The approach to stakeholder and interested public participation taken by each planning region evolved throughout the iterative implementation process. MLPA Initiative staff also identified community leaders within each planning region (except for the Central Coast) and worked closely with these leaders to help develop outreach strategies (Sayce et al. 2013). Each strategy is briefly summarized and referenced below, in order of implementation.

Central Coast

For the first planning region addressed, the Central Coast, the MLPA Initiative utilized the statewide strategy for stakeholder and interested public participation in Appendix D of the 2008 Master Plan, mentioned above. The Central Coast planning process differed from the other regions because at this stage, the public was involved in the development of the 2005 master plan framework and participated

[87] CDFW. (2008). *Draft Master Plan for Marine Protected Areas. Appendix D: Strategy for Stakeholder and Interested Public Participation*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

[88] Although draft MPA arrays were solicited from the public in all planning regions, the North Coast region took a modified approach to MPA proposal development. Specifically, community groups and/or individuals were invited to develop draft MPA arrays earlier in the process than in the other three planning regions; the North Coast RSG used the foundation provided by these drafts to inform the development of MPA proposals.

[89] CDFW. (2008). *Draft Master Plan for Marine Protected Areas. Appendix D: Strategy for Stakeholder and Interested Public Participation*. Retrieved Sept 21, 2015 from https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

in workshops to determine boundaries of the study area prior to the start of the MPA planning process (Sayce et al. 2013).

North Central Coast

For the North Central Coast process, the strategy used in the Central Coast was revised to include several new methods for interested public and stakeholder participation.[90]

South Coast

In the South Coast, further methods were added for engaging with the public and the MLPA Initiative also increased its focus on using technologies such as a new user webpage, an e-newsletter, and new media to share information on how and when stakeholders and the public could participate in the process.[91] The South Coast process benefitted from the efforts of a dedicated public outreach and education work team, including public engagement specialists, to implement more innovative outreach strategies. The inclusion of the outreach team resulted in more effective outreach to underrepresented groups (Sayce et al. 2013).

North Coast

In the North Coast planning process, stakeholders and interested public were treated together instead as in separate categories in previous regional iterations of the strategy. In this process, additional public participation methods were added including the option for members of the public to become a member of the North Coast RSG, communicate directly with the RSG members, or become a member of the MLPA SIG. Furthermore, due to the limited access to computers and Internet in the North Coast, there was increased emphasis on communication methods in this strategy, which included both print and virtual documents. The North Coast strategy also explicitly includes the invitation for members of the public to develop external proposed MPA arrays as a method of public participation.[92] Like in the South Coast, the North Coast strategy also benefitted from a dedicated public outreach and education team (Sayce et al. 2013).

5.2 Cross-Interest Support

The long-term success of a statewide system of MPAs is dependent upon the active involvement and support of local communities and user groups; cross-interest support is therefore important for helping to ensure community support of an MPA network, both statewide and regionally. RSG members in each planning region were charged with creating cross-interest MPA proposals that focused on "middle-ground" options. Cross-interest support was defined as support across a broad range of consumptive and non-consumptive interests, which may include commercial and recreational fishermen, divers, conservation groups, educational and research institutions, military organizations, and federal and state government agencies, Tribes and Tribal governments, and local communities, among others. Stakeholders were advised that MPA proposals that did not reflect cross-interest support would carry less weight in the planning process and might not carry forward to the final round of MPA proposal development.[93]

---

[90] MLPA Initiative. (2007). *Strategy for Stakeholder and Interested Public Participation.* Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/mlpa/pdfs/agenda_111907u.pdf

[91] MLPA Initiative. (2008). *Strategy for Stakeholder and Interested Public Participation in the MLPA South Coast Study Region*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/mlpa/pdfs/agenda_100608a8.pdf

[92] MLPA Initiative. (2010). *Strategy for Public Participation in the MLPA North Coast Study Region.* Retrieved Sept 21, 2015 from: http://www.dfg.ca.gov/mlpa/pdfs/binders_nc/b3_53.pdf

[93] MLPA Initiative. (2010). *Updated Summary of Key Guidance Provided in Previous Marine Life Protection Act Study Regions for the Development of Marine Protected Area Proposals*. Retrieved Sept 21, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=17753

6. California's Redesigned MPA Network

The state, with CDFW as a lead agency, redesigned California's system of MPAs into a more cohesive statewide network. Completed in December 2012, California's redesigned MPA network currently represents the largest scientifically-based network in the contiguous US (Gleason et al. 2013a, b). This section provides a summary of the statewide MPA network and an overview of milestones achieved for each of the planning regions. Throughout all tables and figures in this section, all statistics are from CDFW's Marine Region Geographic Information Systems (GIS) unit.[94] Statistics in this section were updated March 2016 and are subject to change as improvements in geographic data become available.

6.1 Statewide MPA Summary

California state waters generally comprise the area from mean high tide along the approximately 1,100-mile continental coastline out to three nautical miles offshore.[5] In total, California covers approximately 5,285 square miles of coastal state waters (excluding state waters in San Francisco Bay, which represent approximately 473 square miles). All of California's redesigned MPAs are located within state waters.

Prior to the passage of the MLPA in 1999, there were 63 existing MPAs and 2 special closures that were primarily small (covering 2.7% of state waters with less than 0.25% in no-take MPAs) and established in an ad hoc manner, and as a result, these MPAs were largely considered ineffective. California's redesigned statewide MPA network now includes 124 MPAs[95] and 15 special closures (covering about 16% of state waters with approximately 9.6% of which in no-take MPAs) established in an ecologically connected manner (see Appendix A, Boxes 1-3), and resulting in a substantial increase in the number of MPAs and proportion of state waters protected within MPAs (see 2016 Master Plan, Chapter 2.2: *Influence of Science in California's MPA Network* and Chapter 2.2: *MPAs Adopted Pursuant to the MLPA*). The area covered by California's MPA network constitutes approximately 60% of all no-take MPAs within the waters of the 48 contiguous US (Saarman & Carr 2013) (see 2016 Master Plan, Chapter 2.2: *MPAs Adopted Pursuant to the MLPA*; and Appendices C-F for figures and tables detailing statistics for California's most representative habitats in individual MPAs and across each of California's four coastal regions).

6.2 Planning Region Milestones and Outcomes

In addition to the milestones and accomplishments illustrated in Figure 2 of the 2016 Master Plan, the MLPA Initiative led to a number of key achievements in each of the four planning regions. This section describes those key achievements in chronological order.

First Phase: Master Plan Framework and Central Coast Planning Region (2004–2007)

Drafting a master plan framework was the first step in developing a complete Master Plan for MPAs in California. In October 2004, the Secretary for Resources charged the BRTF with developing a work plan and timeline for preparing a draft master plan framework, and a draft master plan framework was

[94] CDFW's Marine Region Geographic Information Systems Unit: https://www.wildlife.ca.gov/Conservation/Marine/GIS
[95] 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.

adopted by the BRTF in April 2005 and forwarded to CDFW. After minor revisions, the Commission approved the draft master plan framework in August 2005 (for a detailed description of outreach and engagement strategies in the Central Coast planning region, see Sayce et al. 2013, particularly Table 1).[96]

As part of the first phase process, the BRTF also considered long-term funding and coordination of MPA-related responsibilities among state and federal agencies. In December 2005, the BRTF forwarded a consultants' report on options for funding activities of the MLPA to Secretary for Resources. In February 2006, the BRTF then submitted to the Secretary for Resources a set of recommendations for long-term funding of a system of MPAs in California. In November 2006, the BRTF forwarded a report on improved coordination and collaboration with federal agencies involved in MPA management, which included 16 specific recommendations. The BRTF also forwarded a recommendation for how the state could secure agreement and commitment among state agencies with MPA responsibilities to complete statewide implementation of the Master Plan by 2011.

Beginning in June 2005, an extensive stakeholder process was used to develop draft alternative MPA proposals for the Central Coast that were reviewed by the SAT, MLPA Initiative staff, and the public. In March 2006, the BRTF forwarded three MPA proposals, with one selected as a preferred alternative, to CDFW. In June 2006, CDFW developed and forwarded its recommendations to the Commission.

In August 2006, the Commission selected a preferred alternative and two other proposals for regulatory review under the California Administrative Procedures Act and environmental review under CEQA. In April 2007, the Commission made a final decision, adopting its preferred alternative of Central Coast MPAs; those MPAs were implemented September 2007. In addition, the California State Park and Recreation Commission was expected to take action to designate two of the Central Coast MPAs as SMPs, based on the action and recommendation of the Commission.

Specific milestones in the Central Coast MPA planning process include the following:

- August 2004: MLPA BRTF began work on MLPA Initiative pilot project.
- June 2005: Central Coast RSG began a six-month series of meetings and work sessions to develop alternative MPA proposals for the Central Coast planning region (Pigeon Point in San Mateo County to Point Conception in Santa Barbara County).
- April 2005: BRTF adopted draft master plan framework.
- August 2005: Commission adopted amended version of the master plan framework.
- December 2005: BRTF submitted to the Secretary for Resources a report on options for funding activities under the MLPA.
- December 2005: RSG delivered three alternative MPA proposals to the BRTF.
- February 2006: BRTF submitted to the Secretary for Resources a set of recommendations for long-term funding of a system of MPAs in California.
- March 2006: BRTF delivered to the Commission the three alternative MPA proposals (two slightly modified from what stakeholders proposed), with one selected as a preferred alternative.

[96] CDFW. *Meetings and Events (Central Coast Study Region)*. Retrieved Jun 2, 2015 from http://www.dfg.ca.gov/marine/mpa/meetings_phase1.asp

- August 2006: Consultants submitted lessons learned reports.
- August 2006: Commission held first public hearing and selects a preferred alternative and two other proposals for regulatory and environmental review.
- November 2006: BRTF delivered to Secretary for Resources a report with recommendations for improved coordination and collaboration with federal agencies involved in MPA management, as well as completing statewide implementation of the Master Plan by 2011.
- April 2007: Commission adopted MPA regulations.
- September 2007: Central Coast MPA regulations went into effect (one MPA has since been designated by the California State Park and Recreation Commission as a SMP).

Second Phase: North Central Coast Planning Region (2007–2010)

Beginning in March 2007, a series of public outreach events were held throughout the North Central Coast planning region to introduce the MLPA and the MLPA Initiative planning process to stakeholders and the general public.[97] These events provided a forum for discussion of key issues and an opportunity for the public to interact with MLPA Initiative staff (for a more detailed description of outreach and engagement strategies in the North Central Coast planning region, see Sayce et al. 2013, particularly Table 1).

In May 2007, the MLPA North Central Coast Regional Stakeholder Group (NCCRSG) convened for a series of formal meetings and work sessions to develop alternative MPA proposals for the MLPA North Central Coast planning region. Over the following ten months, the NCCRSG held eight formal meetings and undertook three rounds of alternative MPA proposal development. Each set of alternative MPA proposals developed in the three iterations was evaluated based on scientific and feasibility criteria by the MLPA Master Plan SAT, CDFW, and MLPA Initiative staff. The MLPA BRTF also provided policy guidance for the alternative MPA proposals. This work culminated in three final NCCRSG alternative MPA proposals (Proposal 1-3, Proposal 2-XA, and Proposal 4); these final three proposals drew from six original draft alternative MPA proposals developed by three cross-interest NCCSRG work teams, plus four proposals developed at least in part by outside groups. NCCRSG members formally presented their final three alternative MPA proposals to the BRTF in April 2008 in a joint BRTF/NCCRSG meeting.

In June 2008, the BRTF presented five alternative MPA proposals to the Commission. Three of the five alternative MPA proposals (Proposal 1-3, Proposal 2-XA, and Proposal 4) were developed through the NCCRSG. The fourth proposal, known as the Integrated Preferred Alternative (IPA), was generated by the BRTF during the joint BRTF-NCCRSG meeting in April and incorporates proposed MPAs from all three NCCRSG proposals and input from public comments. The fifth proposal (Proposal 0) was the “no action” (existing MPAs) alternative. The Commission heard presentations on the status and development of each of the MPA proposals, scientific analyses, potential socioeconomic impacts, and design feasibility. After hearing the presentations and public comments, the Commission directed CDFW staff to prepare a draft initial statement of reasons; the initial statement would include the IPA as the Commission’s preferred alternative as well as the three NCCRSG proposals as regulatory alternatives for a full breadth of options.

[97] CDFW. *Meetings and Events (North Central Coast Study Region)*. Retrieved Jun 2, 2015 from http://www.dfg.ca.gov/marine/mpa/meetings.asp

In October 2008, the Commission held its first public hearing for the proposed North Central Coast MPAs. The Commission made a final decision regarding the adoption of North Central Coast MPAs in August of 2009 and the MPAs were implemented May of 2010.

Specific milestones in the North Central Coast MPA planning process include the following:

- February 2008: Commission adopted revised Master Plan for MPAs.
- March 2007: Public workshops held throughout the planning region (Alder Creek near Point Arena in Mendocino County to Pigeon Point, including the Farallon Islands) to introduce the MLPA Initiative's MPA planning process to stakeholders and the general public.
- May 2007: RSG began a ten-month series of meetings and work sessions.
- April 2007: RSG delivered three alternative MPA proposals to the BRTF.
- June 2008: BRTF presented four alternative MPA proposals to the Commission, three developed by the RSG and the fourth an IPA that was generated by the BRTF during a joint meeting with RSG members.
- October 2008: Consultant delivered North Central Coast lessons learned report.
- October 2008: Commission held first public hearing on proposed MPAs.
- August 2009: Commission adopted MPA regulations.
- May 2010: Regulations took effect.

Third Phase: South Coast Planning Region (2008–2012)

Beginning in June 2008, a series of public outreach events were held throughout the South Coast planning region to introduce the MLPA and the MLPA Initiative planning process to stakeholders and the general public.[98] These events provided a forum for discussion of key issues and an opportunity for the public to interact with MLPA Initiative staff (for a more detailed description of outreach and engagement strategies in the South Coast planning region, see Sayce et al. 2013, particularly Table 1).

In October 2008, the SCRSG began meeting to develop alternative MPA proposals for the MLPA South Coast planning region. The SCRSG met during eight one- to two-day meetings and five work sessions between October 2008 and September 2009. Each set of alternative MPA proposals developed in the three iterations was evaluated based on scientific and feasibility criteria by the SAT, CDFW, State Parks, and MLPA Initiative staff. The BRTF also provided policy guidance for the alternative MPA proposals. This work culminated in three final alternative MPA proposals (Round 3 Revised SCRSG Proposal 1 [P1R], Round 3 Revised SCRSG Proposal 2 [P2R], and Round 3 Revised SCRSG Proposal 3 P3R]). These final three proposals drew from six internal draft proposals in Round 1 and four internal draft proposals in Round 2 developed by three cross-interest SCRSG work groups, plus three proposals in Round 1 and two proposals in Round 2 developed at least in part by external groups. P1R was developed within SCRSG workgroups by constituents representing a variety of consumptive, non-consumptive, and environmental interests. P2R was developed within SCRSG workgroups by constituents representing primarily commercial and recreational fishing interests along the south coast. P3R was developed within SCRSG workgroups by constituents primarily representing non-consumptive and environmental interests along the south coast. At a three-day meeting in October 2009, the BRTF

[98] CDFW. *Meetings and Events (South Coast Study Region)*. Retrieved Jun 2, 2015 from http://www.dfg.ca.gov/marine/mpa/meetings_sc.asp

received the three final SCRSG MPA proposals, forwarded all three to the Commission, and began developing a preferred alternative. In November 2009, the BRTF completed the development of an IPA by integrating MPAs from the three SCRSG proposals.

The Commission received the BRTF recommendations at a joint BRTF/Commission meeting in December 2009. Five alternative MPA proposals were considered by the Commission. Three of the five alternatives were developed through the SCRSG (Round 3 Revised SCRSG Proposal 1, Round 3 Revised SCRSG Proposal 2, and Round 3 Revised SCRSG Proposal 3). The fourth proposal, known as the IPA, was generated by the BRTF by incorporating proposed MPAs from all three SCRSG proposals and input from public comments. The fifth proposal (Proposal 0) was the "no change" alternative (existing MPAs). The Commission heard presentations on the status and development of each of the MPA proposals, scientific analyses, potential socioeconomic impacts, and design feasibility. After hearing the presentations and public comments, the Commission directed CDFW to prepare a draft initial statement of reasons using IPA as the Commission's preferred alternative and the SCRSG proposals as regulatory alternatives.

In April 2010, the Commission held its first public hearing for the proposed South Coast MPAs. The Commission made a final decision regarding the adoption of South Coast MPAs in December 2010 and the MPAs were implemented January of 2012.

Specific milestones in the South Coast MPA planning process include the following:

- June-July 2008: Series of roundtable discussions and workshops held throughout the planning region to introduce the MLPA Initiative's MPA planning process to stakeholders and the general public.
- October 2008: RSG began eleven-month series of meetings and work sessions.
- October 2009: RSG delivered three alternative MPA proposals to the BRTF.
- December 2009: BRTF delivered four alternative MPA proposals to the Commission, three developed by the stakeholders and one created by the BRTF that melds elements of all three stakeholder proposals.
- April 2010: Commission held first public hearing.
- September 2010: Consultant submitted lessons learned report.
- December 2010: Commission adopted MPA regulations.
- September 2011: Office of Administrative Law (OAL) disapproved the Commission's December 2010 regulatory action.[99]
- October 2011: Commission adopted revised MPA regulations
- January 2012: MPA regulations took effect.

Fourth Phase: North Coast Planning Region (2009–2012)

Beginning in July 2009, a series of public outreach events were held throughout the North Coast planning region to introduce the MLPA and the MLPA Initiative planning process to stakeholders and

[99] OAL. (2011). *Decision of Disapproval of Regulatory Action*. Retrieved Sep 1, 2015 from http://www.oal.ca.gov/res/docs/pdf/disapproval_decisions/2011/2011-0722-04S-DisappDec.pdf.

the general public.[100] These events provided a forum for discussion of key issues and an opportunity for the public to interact with MLPA Initiative staff (for a more detailed description of outreach and engagement strategies in the North Central Coast planning region, see Sayce et al. 2013, particularly Table 1).

The North Coast planning region began with a process for North Coast community groups to develop external alternative MPA proposals for Round 1 that were analyzed by the SAT, CDFW, State Parks, and MLPA Initiative staff. The Round 1 external proposals were also reviewed by the BRTF. Community groups developed eight external proposals. The eight external proposals and a no-change Proposal 0 (existing MPAs) were submitted to the North Coast Regional Stakeholder Group (NCRSG). The NCRSG met to develop alternative MPA proposals during six one- to two-day meetings and two work sessions between February and August 2010. In July 2010, for Round 2, two NCRSG work groups developed four alternative MPA proposals, and each work group developed separate recommendations for special closures. In October 2010, for Round 3, the NCRSG developed a single MPA proposal (referred to as the Revised Round 3 NCRSG MPA Proposal, or RNCP) and recommendations for special closures. Each set of MPA proposals developed in the two iterations (Rounds 2 – 3) was evaluated based on scientific and feasibility criteria by the SAT, CDFW, State Parks, and MLPA Initiative staff. The BRTF also provided policy guidance for the alternative MPA proposals. At a two-day meeting in October 2010, the BRTF received the RNCP, developed an alternative proposal (the North Coast Enhanced Compliance Alternative MPA Proposal, or ECA), and forwarded both the RNCP and ECA to the Commission. The BRTF also adopted a series of additional recommendations to accompany the two alternative MPA proposals.

The Commission received the BRTF recommendations at a joint BRTF/Commission meeting in February 2011. Three alternative MPA proposals were considered by the Commission, including the RNCP, the ECA, and the no-change Proposal 0 (existing MPAs). In April 2011, CDFW identified unresolved feasibility issues for MPAs in the RNCP and provided potential solutions to the Commission, and the Commission directed their staff to work with CDFW and MLPA Initiative staff to develop additional options to address public comments, CDFW feasibility concerns, and options to provide for tribal gathering using the RNCP. In June 2011, the Commission considered options provided by the workgroup and CDFW recommendations, and developed the Proposed Regulation with regulatory sub-options at various geographies. The Commission directed CDFW to prepare a regulatory package using the Proposed Regulation. In previous planning regions, the Proposed Regulation integrated aspects from the various alternative MPA proposals presented to the Commission by the BRTF and was referred to as the IPA, but there was no IPA identified for the North Coast MPAs. The term "Proposed Regulation" was consistent with Administrative Procedure Act terminology.

In April 2011, the Commission held its first public hearing for the proposed North Coast MPAs. In June 2011, the Commission selected its preferred alternative known as the Proposed Regulation, for regulatory review of the North Coast MPAs. The Commission made a final decision regarding the adoption of North Coast MPAs in June 2012 and the MPAs were implemented December 2012.

- June-July 2009: Series of roundtable discussions and public workshops held throughout the planning region (California/Oregon border in Del Norte County to Alder Creek near Point Arena in Mendocino County) to introduce the MLPA Initiative's MPA planning process to stakeholders and the general public.

[100] CDFW. *Meetings and Events (North Coast Study Region)*. Retrieved Jun 2, 2015 from http://www.dfg.ca.gov/marine/mpa/meetings_n.asp

- November 2009: Public invited to submit MPA proposals to launch the stakeholder planning process in early 2010.
- February 2010: RSG began six-month series of meetings and work sessions.
- October 2010: RSG delivered a single MPA proposal to the BRTF.
- February 2011: BRTF delivered the single stakeholder MPA proposal and a modified version to the Commission.
- June 2011: Commission adopted MPA regulations.
- December 2012: MPA regulations took effect.

Fifth Phase: San Francisco Bay Planning Region

The San Francisco Bay Planning region (waters within San Francisco Bay, from the Golden Gate Bridge northeast to the Carquinez Bridge) is the fifth and final planning region for consideration under the MLPA. To help the state prepare for potential MPA planning in the San Francisco Bay, the BRTF commissioned a report with a range of options for how, if at all, to approach MLPA planning in the region.

The options report provides background information on the unique setting of the San Francisco Bay region, identifies existing bay projects, and considers lessons learned from previous MLPA planning processes. The report also suggests six process design options that can be approached individually or as a series of steps, beginning at Option Zero (no process) and moving toward Option Five (comprehensive MLPA Initiative-type planning process). Some options, but not all, include developing MPA proposals; those that do not include an MPA planning component call for information collection and data analysis, which lays a foundation for potential future MPA planning. Each suggested option includes a description, rationale, an explanation of how options differ from existing San Francisco Bay planning efforts, and key considerations. Each option is based on a basic process design, which includes who might conduct the work, and staff and tools that would be helpful or necessary to support the process. The report also includes a projected budget and budget narrative for the various options, and responses to scientific questions related to the San Francisco Bay region and the potential role of MPAs.

In 2012, MLPA Initiative staff forwarded the options report to the MLPA Initiative MOU partners, which garnered a response from Secretary for Resources John Laird and CDFW Director Chuck Bonham:

"We appreciate receiving San Francisco Bay Options Report: Considering MPA Planning *prepared by the California Marine Life Protection Act Initiative. The report identifies a range of options for how to approach marine protected area planning in San Francisco Bay.*

"As noted in the report's response to science questions, protecting San Francisco Bay's ecosystem is intricately connected to the marshes of the Sacramento-San Joaquin River Delta. As such, any successful planning for and implementation of marine protected areas in San Francisco Bay must complement the historic effort to meet co-equal goals of ecosystem restoration and water supply reliability in the delta.

"We look forward to continuing to work with all local, state and federal agencies dedicated to ensuring successful marine planning and protection for San Francisco Bay subsequent to completing planning efforts in the Sacramento-San Joaquin River Delta."

In summary, specific milestones in the San Francisco Bay MPA planning process to date include the following:

- September 2011: MLPA Initiative delivered a report to the MOU signatories regarding possible MPA planning options for the planning region (waters within San Francisco Bay, from the Golden Gate Bridge northeast to the Carquinez Bridge).
- April 2012: Secretary for Resources John Laird and CDFW Director Charlton Bonham announced that MPA planning in San Francisco Bay will be influenced by the results of the Sacramento-San Joaquin Rivers Delta process and, therefore, MPA planning will occur once that process is complete.

For more information on San Francisco Bay MPAs, visit the CDFW website.[101]

[101] CDFW. *San Francisco Bay Marine Protected Areas*: http://www.wildlife.ca.gov/Conservation/Marine/MPAs/Network/San-Francisco-Bay

7. MLPA Initiative Recommendations for MPA Management

Based on experiences from the MLPA Initiative, participants developed numerous documents providing recommendations on various aspects of the process. This section summarizes the findings from several of those documents, which focus on recommendations for adaptive management, monitoring, and evaluation; improved coordination; and long-term funding to support implementation. By focusing on a selection of published recommendations that were generated between the creation of the MLPA Initiative in 2004 and the 2016 Master Plan, these comprise only a subset of recommendations that have been and could be developed for MPA management. The 2016 Master Plan draws upon the latest thinking, research, and information for the management of the MLPP, which includes recommendations drawn from the MLPA Initiative as well as from other sources.

7.1 Recommendations for Adaptive Management, Monitoring, and Evaluation

Over the course of the MLPA Initiative, there have been several efforts to chart a course for adaptive management, monitoring, and evaluation of the statewide network of MPAs. For example, in 2006 a report was developed in to provide a guide for the development of a management plan under the MLPA.[102] Recognizing that there was little precedent for developing management plans for MPA networks or components of networks (as opposed to individual MPAs), this guide presents the trade-offs associated with decisions that could be made during the process of developing regional management plans in the context of the MLPA.

Concurrently with the guide to developing management plans, consultants worked with MLPA Initiative staff to develop a framework for adaptive management, monitoring, and evaluation for the statewide MPA network.[103] This document recommends a process for adaptive management, monitoring, and evaluation, and provides guidance on how to implement these activities.

Later in 2006, MLPA Initiative staff developed a policy framework for baseline data collection, which outlines the overarching structure for baseline data collection structure and criteria, and discusses more than 10 cross-cutting themes that may be taken into consideration when defining and prioritizing new baseline data collection programs.[104] These themes include relation to ongoing and previous monitoring, sampling design, habitat and socioeconomic mapping, and policy and budget context.

[102] MLPA Initiative. (2006). *A Guide to Developing a Management Plan under the California Marine Life Protection Act*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/agenda_031406_bd5.pdf
[103] MLPA Initiative. (2006). *Final Draft Adaptive Management and Monitoring and Evaluation Framework*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/agenda_031406_bd6.pdf
[104] MLPA Initiative. (2006). *A Policy Framework for Baseline Data Collection*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/framework120106.pdf

7.2 Recommendations for Improved Coordination with State and Federal Agencies

In addition to the recommendations documents on adaptive management, monitoring, and evaluation, the MLPA Initiative documented recommendations for improved coordination among state and federal agencies with MPA responsibilities.[105] This document focuses on opportunities for federal-state coordination and collaboration in the management of California's MPAs, recommending oversight coordinating bodies and specific management activities. Accompanying this report was a draft recommended Executive Order by the Governor of the state (then Governor Schwarzenegger). Although never signed by the Governor, the draft Executive Order called for specific collaborations between entities including Ocean Protection Council, CDFW, and other agencies or departments with jurisdiction over ocean and coastal resources.[106]

7.3 Recommendations for Long-Term Implementation Funding

During the early years of the MLPA Initiative there were efforts to identify appropriate funding sources for implementing the MLPA. In 2005, consultants developed a report on options for funding the activities of the MLPA Initiative.[107] This report describes options for funding the MLPA Initiative in three categories: 1) those that are conceptually attractive, 2) those that are conceptually attractive but have significant drawbacks, and 3) those that have major drawbacks or are conceptually flawed. The authors recommend a combination of funding that relies mostly on the General Fund and General Obligation Bonds in the early years, possibly replacing some of that funding with other revenues and fees later on. The BRTF transmitted this report along with a memo to the Secretary of CNRA for his consideration and action.[108]

The BRTF followed up with another memo to CNRA in early 2006, in which they made recommendations regarding appropriate funding sources, expected activities in implementing the MLPA, possible partners in funding or performing activities required to implement the MLPA, expected duration and levels of expenditures, and structures for the receipt and allocation of funds.[109]

Due to the constantly changing nature of funding opportunities, the information in the consultants' report and memo described above have since been supplanted by more current thinking on funding sources for California's MPA network.[110] Nonetheless, they provided an important process for identifying funding sources during the early stages of the MLPA Initiative process.

---

[105] Boone, A. (2006). *Improving Coordination among State and Federal Agencies with MPA Responsibilities*. *Prepared for the California Marine Life Protection Act Initiative*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/coordination110806.pdf

[106] MLPA Initiative. (2006). *Recommended Executive Order by the Governor of the State of California*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/executiveorder112006.pdf

[107] Brown, C., & Gage, T. (2005). *Options for Funding the Activities of the Marine Life Protection Act Initiative. Prepared for The California MLPA Blue Ribbon Task Force to the California Resources Agency*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/funding1205.pdf

[108] Isenberg, P. (2005). Memorandum: Long-term funding for the Marine Life Protection Act. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/funding1205.pdf

[109] MLPA Blue Ribbon Task Force. (2006). *Long-term funding for the Marine Life Protection Act*. Retrieved Sept 21, 2015 from http://www.dfg.ca.gov/marine/pdfs/funding0206.pdf

[110] OPC. (2014).*The California Collaborative Approach: Marine Protected Areas Partnership Plan*. Retrieved Sept 22, 2015 from http://www.opc.ca.gov/webmaster/ftp/pdf/docs/mpa/APPROVED_FINAL_MPA_Partnership_Plan_12022014.pdf

8. Literature Cited

Airamé, S., Dugan, J. E., Lafferty, K. D., Leslie, H., McArdle, D. A., and Warner, R. R. (2003). Applying ecological criteria to marine reserve design: a case study from the California Channel Islands. *Ecological Applications*, *13(1)*, S170-S184.

Botsford, L. W., White, J. W. W., Carr, M. H. & Caselle, J. E. (2014). Marine protected area networks in California, USA. *Advances in Marine Biology, 69,* 205-251.

Fox, E., Poncelet, E., Connor, D., Vasques, J., Ugoretz, J., McCreary, S., Monié, D., Harty, M., & Gleason, M. (2013a). Adapting stakeholder processes to region-specific challenges in marine protected area network planning. *Ocean & Coastal Management, 74*, 24-33.

Fox, E., Hastings, S., Miller-Henson, M., Monié, D., Ugoretz, J., Frimodig, A., Shuman, C., Owens, B., Garwood, R., Connor, D., Serpa, P., & Gleason, M. (2013b). Addressing policy issues in a stakeholder-based and science-driven marine protected area network planning process. *Ocean & Coastal Management, 74*, 34-44.

Gleason, M., Kirlin, J. & Fox, E. (Eds.). (2013a). Special Issue on California's Marine Protected Area Network Planning Process. *Ocean & Coastal Management, 74,* 1-102.

Gleason, M., Fox, E., Ashcraft, S., Vasques, J., Whiteman, E., Serpa, P., Saarman, E., Caldwell, M., Frimodig, A., Miller-Henson, M., Kirlin, J., Ota, B., Pope, E., Weber, M. & Wiseman, K. (2013b). Designing a network of marine protected areas in California: Achievements, costs, lessons learned, and challenges ahead. *Ocean & Coastal Management, 74*, 90-101.

Kelleher, G. (Ed.). (1999). *Guidelines for Marine Protected Areas*. Wales, UK: IUCN. Retrieved from https://portals.iucn.org/library/efiles/documents/PAG-003.pdf

Kirlin, J., Caldwell, M., Gleason, M., Weber, M., Ugoretz, J., Fox, E., & Miller-Henson, M. (2013). California's Marine Life Protection Act Initiative: Supporting implementation of legislation establishing a statewide network of marine protected areas. *Ocean & Coastal Management, 74*, 3-13.

McArdle, D. A. (1997). California Marine Protected Areas. California Sea Grant College System, La Jolla, California. Publication No. T-039.

McArdle, D. A. (2002). California Marine Protected Areas: Past & Present. California Sea Grant College System Publication. La Jolla, California.

Merrifield, M. S., McClintock, W., Burt, C., Fox, E., Serpa, P., Steinback, C., & Gleason, M. (2013). MarineMap: A web-based platform for collaborative marine protected areaplanning. *Ocean & Coastal Management, 74*, 67-76.

McEvoy, A. F. (1986). *The Fisherman's Problem: Ecology and Law in the California Fisheries,1850-1980*. New York: Cambridge UP.

Pope, E. (2014). Overview of the creation and management of California's marine protected area network. *California Fish and Game, 100* (2), 343-347.

Roberts, C. M. and J. P. Hawkins. (2000). *Fully-protected marine reserves: a guide. WWF Endangered Seas Campaign.* Washington, DC and Environment Department, University of York, UK.

Saarman E., Gleason M., Ugoretz J., Airamé S., Carr M., Fox E., Frimodig A., Mason T., and J. Vasques. (2013). The role of science in supporting marine protected area network planning and design in California. *Ocean & Coastal Management, 74*, 45-56.

Saarman, E. T. & Carr, M. H. (2013). The California Marine Life Protection Act: A balance of top down and bottom up governance in MPA planning. *Marine Policy, 41*, 41-49.

SAT (Science Advisory Team). (2008). Methods used to evaluate marine protected area proposals in the north central coast study region. Marine Life Protection Act Initiative, May 30, 2008 revised draft.

SAT (Science Advisory Team). (2009). Methods used to evaluate marine protected area proposals in the south coast study region. Marine Life Protection Act Initiative, October 26, 2009 draft.

SAT (Science Advisory Team). (2011). Methods used to evaluate marine protected area proposals in the north coast study region. Marine Life Protection Act Initiative, January 13, 2011.

Sayce, K., Shuman, C., Connor, D., Reisewitz, A., Pope, E., Miller-Henson, M., Poncelet, E., Monié, D., and Owens, B. (2013). Beyond traditional stakeholder engagement: public participation roles in California's statewide marine protected area planning process. *Ocean & Coastal Management, 74*, 57-66.

Sheehan, L. & R. Tasto. (2001). The status of habitats and water quality in California's coastal and marine environment. *California's Living Marine Resources: A Status Report* (29-45). California Department of Fish and Game.

White, J., Scholz, A., Rassweiler, A., Steinback, C., Botsford, L., Kruse, S., Costello, C., Mitarai, S., Siegal, D., Drake, P. and Edwards, C. (2012). A Comparison of Approaches Used for Economic Analysis in Marine Protected Area Network Planning in California. *Ocean & Coastal Management, 74*, 77-89.

CALIFORNIA MARINE LIFE PROTECTION ACT

MASTER PLAN FOR MARINE PROTECTED AREAS

APPENDIX B

Communication and Consultation with California Tribes and Tribal Governments

August 24, 2016

Table of Contents

Communications and Consultation with California Tribes and Tribal Governments

Considerations based on Tribal consultation are important to the ongoing management of marine protected areas (MPAs). As the traditional users and stewards of California's marine resources, partnership with California Tribes and Tribal governments is particularly important to the California Department of Fish and Wildlife (CDFW) and the state government for MPA management. The United States (US) Government recognizes some Native American Tribes as separate and independent political communities, and these federally recognized Tribes have trust relationship with the US government and interact with it on a government-to-government basis. Non-federally recognized Tribes can also play an important role in natural resource management. The State of California does not have a formal trust relationship with federally recognized or non-federally recognized Tribes. However, the state is committed to engaging in meaningful collaborations with California Tribes and Tribal governments. Tribes can participate in many facets of MPA management, including, but not limited to, education and outreach, stewardship, research and monitoring, and compliance and enforcement.

California is demonstrating its growing commitment to consulting and communicating with Tribes. In 2011, Governor Edmund G. Brown, Jr. established Executive Order B-10-11 to "implement effective government-to-government consultation with California Tribes."[1] Guided by the executive order, the California Natural Resources Agency (CNRA) developed and adopted a formal Tribal consultation policy. The policy's purpose is to ensure effective consultation between CNRA, its Departments, and California Tribes and Tribal governments. CNRA's Tribal consultation policy is summarized below.

California Natural Resources Agency Tribal Consultation Policy

As directed by the executive order, CNRA established a Tribal consultation policy adopted pursuant to Executive Order B-10-11 in November 2012. The policy furthers CNRA's mission by enabling California Tribes and Tribal governments to provide "meaningful input into the development of regulations, rules, policies, programs, projects, plans, property decisions and activities that may affect Tribal communities."[2] The policy establishes CNRA's commitment to engaging in open, inclusive, and regular communication with California Tribes and Tribal governments and including their views in decision-making processes. The policy is outlined in the following sections:

- **Outreach:** Departments of CNRA must identify the Tribal governments to consult at the earliest possible time in the planning process and allow reasonable opportunity for Tribes and Tribal governments to respond and participate. It places responsibility on Departments for meaningful consultation and sharing of documents, notices, and information ahead of time, and to organize in-person meetings that facilitate greater Tribal participation.
- **Tribal Liaisons:** Each Department will designate a Tribal liaison or liaisons to serve as a central point of contact with California Tribes and Tribal governments. The role of the liaison is to

[1] Executive Order b-10-11 was issued on September 19, 2011. Retrieved Oct 3, 2015 from https://www.gov.ca.gov/news.php?id=17223

[2] CNRA. (2012). *California Natural Resources Agency Adoption of Final Tribal Consultation Policy*. Retrieved Oct 3, 2015 from http://tribalgovtaffairs.ca.gov/

ensure that Department outreach and communication is undertaken in a manner consistent with the Tribal consultation policy, to engage in regular communication with California Tribes and Tribal governments, and to make sure Tribal feedback informs decision-making.

- **Tribal Liaison Committee:** Designates a CNRA Tribal Liaison Committee with all CNRA Tribal Liaisons to meet regularly and for the Office of Secretary to review consultation efforts and opportunities.
- **Access to Contact Information:** CNRA will work with Native American Heritage Commission to maintain a contact list of Tribal representatives from federally-recognized and non-federally recognized California Tribes.
- **Training:** CNRA will provide training to Tribal liaisons and executive staff, managers, supervisors, and employees on implementation of the policy.

California Department of Fish and Wildlife Tribal Communication and Consultation Policy

To implement the 2011 Executive Order and CNRA's Tribal Consultation Policy, CDFW adopted its own policy in September 2014 to provide a foundation to work cooperatively, communicate effectively, and consult with Tribes:[3]

I. Background

The United States, through the Department of the Interior, Bureau of Indian Affairs (BIA), currently recognizes more than one hundred Tribes within the State of California. The State of California, through the Native American Heritage Commission (NAHC), also acknowledges, for purposes of the protection of cultural resources, numerous other Tribes and tribal communities that are not federally recognized. California's Tribes and their members have long served as stewards of the state's fish, wildlife, and plants and possess unique and valuable knowledge and practices for conserving and using these resources in a sustainable manner.

On September 19, 2011, Governor Brown issued Executive Order B-10-11, stating "that it is the policy of this Administration that every state agency and department subject to my executive control shall encourage communication and consultation with California Indian Tribes." To further Executive Order B-10-11, on November 20, 2012 the California Natural Resources Agency (CNRA) adopted its Tribal Consultation Policy to govern and ensure effective communication and government-to-government consultation between Tribes and CNRA and its constituent departments.

The California Department of Fish and Wildlife (Department) maintains native fish, wildlife, and plant species for their intrinsic and ecological value and their benefits to people. This includes habitat protection and maintenance of a sufficient quantity and quality to ensure the survival of all species and natural communities. The Department is also responsible for the diversified use of fish, wildlife, and plants, including recreational, commercial, scientific, and educational uses.

This Tribal Communication and Consultation Policy (Policy) provides the foundation for the Department to work cooperatively, communicate effectively, and consult with Tribes. This Policy also serves as the Department's primary means of implementing Executive Order B-10-11 and the CNRA Tribal

[3] CDFW. (2014). *Department of Fish and Wildlife Tribal Communication and Consultation Policy*.

Consultation Policy. Both through implementation of this Policy and through additional means, including entering into memoranda of agreement with individual Tribes, the Department seeks to establish a positive, cooperative relationship with Tribes. While the primary purpose of this Policy is to establish effective tools for communicating with Tribes and a formal process for engaging in government-to-government consultations with Tribes, the Department seeks and encourages collaborative relationships with Tribes, including for the co-management of resources, where appropriate.

II. Definitions

For purposes of this Policy, the following definitions will apply:

1. Consultation means the process of engaging in government-to-government dialogue with Tribes in a timely manner and in good faith to provide Tribes with necessary information and to seek out, discuss, and give full and meaningful consideration to the views of Tribes in an effort to reach a mutually agreed upon resolution of any concerns expressed by the Tribes or the Department.[4] The Department acknowledges and respects that Tribes are unique and separate governments within the United States with inherent tribal sovereignty, including the rights to independence, self-governance, self-determination, and economic self-sufficiency. These principles form the basis for government-to-government consultations.

2. Cultural Resources means prehistoric and ethnohistoric archaeological sites, historic archaeological sites, historic buildings, and elements or areas of the natural landscape which have traditional cultural significance.

3. Proposed Activity means an activity by the Department that may have a significant impact on Tribal Interests. For purposes of this Policy, the Department will separately consider:
    a. Statewide Proposed Activities, including: (i) adoption of regulations of statewide application by the California Fish and Game Commission (Commission); (ii) adoption of regulations of statewide application by the Department; and (iii) establishment and implementation of significant statewide policies; and
    b. Regional Proposed Activities, including: (i) acquisition and disposition of interests in real property; (ii) real property management decisions; (iii) approval of projects sponsored by the Department; (iv) approval of projects permitted by the Department where the Department is the lead agency under the California Environmental Quality Act; (v) submission of comment letters regarding tribal projects; (vi) adoption of regulations of regional application; and (vii) enforcement details.

4. Tribe means any federally recognized Native American tribe and any non-federally recognized Native American Tribe acknowledged by the NAHC for purposes of the protection of cultural resources.

5. Tribal Interests includes: (a) Cultural Resources; (b) fish, wildlife, and plant resources; (c) water; and (d) Tribal Lands and other lands, landscapes, and viewsheds within a Tribe's ancestral territory.

[4] The Department acknowledges that federally recognized tribes have a unique political status and jurisdiction and exercise governmental powers over activities and members within their territory. For that reason, for purposes of this Policy the Department will consult with non-federally recognized tribes and tribal communities acknowledged by the NAHC in generally the same manner as it does federally recognized tribes only with regard to Cultural Resources issues.

6. Tribal Lands means reservations, rancherias, lands held in trust by the United States for the benefit of a Tribe, and any other lands meeting the definition of "Indian Country" in Title 17, Section 1151 of the United States Code.

7. Tribal Sovereignty means the unique political status of federally-recognized Indian tribes. Federally-recognized Indian tribes exercise certain jurisdiction and governmental powers over activities and tribal members within their territories. Some of these powers are inherent, some have been delegated by the United States, and all are subject to limitations by the United States. Existing limitations are defined through acts of Congress, treaties, and federal court decisions.

III. Guiding Principles

The Department seeks to establish and maintain a respectful and effective means of communicating and consulting with Tribes and will seek in good faith to:

1. Communicate and consult with Tribes about fish, wildlife, and plant issues and seek tribal input regarding the identification of potential issues, possible means of addressing those issues, and appropriate actions, if any, to be taken by the Department;
2. Assess the potential impact of Proposed Activities on Tribal Interests and ensure to the maximum extent feasible that tribal concerns are considered before such activities are undertaken and that such impacts are avoided or minimized whenever practicable;
3. Provide timely and useful information relating to Proposed Activities that may affect Tribal Interests;
4. Communicate with and engage with Tribes at the earliest possible stage in the decision-making process;
5. Communicate with Tribes in a manner that is considerate and respectful;
6. Provide Tribes with meaningful opportunities to respond and participate in decision-making processes that affect Tribal Interests;
7. Acknowledge and respect California Native American cultural resources regardless of whether those resources are located on or off Tribal Lands;
8. Acknowledge and respect both the confidential nature of information concerning cultural practices, traditions, beliefs, tribal histories, and Tribal Lands and that state law protects the confidentiality of certain tribal cultural information (Gov. Code, § 6254(r)). The Department will take all lawful and necessary steps to ensure confidential information provided by a Tribe is not disclosed without the prior written permission of the Tribe.
9. Encourage collaborative and cooperative relationships with Tribes in matters affecting fish, wildlife, and plants;
10. Assist the efforts of Tribes to develop sustainable programs, policies, and practices with regard to fish, wildlife, and plants;
11. Acknowledge and seek ways to accommodate the limited financial and staffing resources of Tribes and the Department to ensure effective communication and consultation; and
12. Identify and recommend means to remove procedural impediments to working directly and effectively with Tribes.

IV. Tribal Liaison

1. The Director of the Department will appoint a tribal liaison (Tribal Liaison) for the Department. The Tribal Liaison will report to the Director of the Department and will:
    a. Advise the Director on policy matters relating to tribal affairs.
    b. Coordinate the training of Department staff with regard to tribal affairs.

c. Coordinate the work of Regional Tribal Liaisons.
d. Coordinate the Department's tribal communication and consultation efforts.
e. Maintain the Tribal Contact List.
f. Respond to inquiries from Tribes.
g. Participate in consultations with Tribes.
h. Conduct consultations with Tribes when the Tribal Liaison has or has been delegated decision-making authority over the issues to be discussed.

2. The Department's goal is for each of its seven regions to have a regional tribal liaison (Regional Tribal Liaison) to assist the Tribal Liaison and to serve as the primary point of contact for Tribes in that region. The Regional Tribal Liaisons will be appointed by the Regional Managers, subject to available positions and funding. In the absence of currently available positions and funding, for the 2014-2015 fiscal year the Department will operate a pilot program in which the Regional Managers for the Department's Northern Region and Marine Region will appoint acting Regional Tribal Liaisons.

V. Training of Department Staff

The Tribal Liaison shall oversee the training of applicable Department staff with respect to:

1. Principles of tribal sovereignty, lands, and jurisdiction.
2. Laws and regulations relating to the protection of Cultural Resources.
3. Implementation of and compliance with this Policy.

VI. Tribal Communication

1. Purpose: The Department seeks to establish effective mechanisms for: (a) providing information to Tribes regarding Proposed Activities that may affect Tribal Interests; (b) seeking information and input from Tribes; (c) soliciting the collaboration, cooperation, or participation of Tribes; and (d) offering or seeking consultation with affected Tribes.

2. The communication procedures set forth in this section are intended to serve as the Department's default method for communicating information about Proposed Activities to Tribes. Any Tribe may submit to the Department a written request to institute an alternative process, including the designation of either an alternative contact person for the Tribe (i.e., someone other than the Chairperson) or additional contact persons. The Department will make a good faith effort to work with Tribes requesting such alternative processes; provided, however, that Department staffing resources may make it difficult or impractical to fully implement all such requests.

3. Tribal Contact List: In conjunction with the NAHC and the Governor's Office of the Tribal Advisor, the Department's Tribal Liaison will maintain and update a Tribal Contact List to be comprised of BIA's list of federally recognized tribes in California and the NAHC's California Tribal Consultation List.

4. Contacting Tribes with regard to Statewide Proposed Activities: Prior to initiating a Statewide Proposed Activity, Department staff in the region or program implementing the Proposed Activity will contact all federally recognized Tribes identified on the Tribal Contact List. If the Statewide Proposed Activity may affect Cultural Resources, the Department will also contact all non-federally recognized Tribes.

5. Contacting Tribes with regard to Regional Proposed Activities: Prior to initiating a Regional Proposed Activity, Department staff in the region or program implementing the Proposed Activity will:
    a. With regard to Regional Proposed Activities with potential impacts to Cultural Resources, notify the NAHC of the Proposed Activity and request a list of tribal governments, organizations, and individuals affiliated with the area in which the Proposed Activity is to occur and the results of an NAHC Sacred Lands Files check. Notice to the NAHC will include a brief description of the Proposed Activity and a map or description of the area, if available; or
    b. With regard to Regional Proposed Activities that will not impact Cultural Resources, the Department will contact all Tribes: (a) located in the county in which the Proposed Activity will occur; and (b) that have notified the Department's Tribal Liaison in writing of their interest in the Proposed Activity regardless of the Tribe's physical location.

6. Written Notice to Tribes: Once a list of affected Tribes has been compiled, Department staff in the region or program implementing the Proposed Activity will send written notice to the Tribes. The written notice will:
    a. Be sent to the Tribal Chairperson listed on the contact list provided by NAHC or the Department's Tribal Contact List and to any other Tribal officials or employees identified by the Tribe pursuant to Section VI(2) of this Policy.
    b. Be sent in a timely manner to ensure an opportunity to provide input at the earliest possible stage in the decision-making process;
    c. Be drafted and sent separately from any general public notice;
    d. Include a brief description of the Proposed Activity; a map or description of the location of the Proposed Activity; a brief description of anticipated impacts of the Proposed Activity; and, if available and applicable, archaeological site records;
    e. Offer to consult with the Tribe regarding the Proposed Activity and its anticipated impacts on Tribal Interests; and
    f. Provide Department contact information for obtaining further information and for initiating consultation.

7. Additional Notice for Regional Proposed Activities: After sending written notice of a Regional Proposed Activity, Department staff shall make reasonable efforts to contact the Tribal Chairperson or appropriate Tribal staff by telephone or email to ensure the Tribe has adequate notice.

8. Changes to Proposed Activities: If, after providing notice to Tribes, there are substantial changes to a Proposed Activity or other changed circumstances that could affect Tribal Interests in a manner not contemplated when the original notice was sent, Department staff in the region or program implementing the Proposed Activity shall issue a supplemental notice to affected Tribes.

VII. Tribal Consultation

1. Initiation of Consultation: Consultations may be initiated by either a Tribe or the Department.
    a. All requests by a Tribe for consultation must be submitted in writing to the Tribal Liaison at tribal.liaison@wildlife.ca.gov or at the following address: Tribal Liaison, California Department of Fish and Wildlife, Office of General Counsel, 1416 Ninth Street, Sacramento, CA 95814. Upon receipt of a request for consultation, the Department shall provide the Tribe with a written acceptance of the request.

b. All requests by the Department for consultation will be made in writing to the chairperson of the Tribe and will not be deemed accepted until the Department receives written acceptance of the request from the Tribe.

2. Preparing for a Consultation: For a consultation to be effective, prior to holding the consultation Department staff in the region or program implementing the Proposed Activity should take reasonable steps to work with the Tribe's representatives to: (a) understand the Tribe's current and historical relationship to the resources that may be affected by the Proposed action; (b) understand the Tribe's government structure and decision-making process; (c) identify key issues and concerns; (d) identify the participants in the consultation; (e) determine an appropriate location and time for the consultation; and (f) understand the Tribe's concerns with culturally sensitive information.

3. Time, Place, and Manner of Consultations: Whenever feasible, the Department will seek to schedule consultations within thirty days after receipt of a written request for consultation from the Tribe. The Department will pursue in-person consultations whenever possible given the timing, funding, and travel constraints of the Tribes and the Department. Whenever possible, the Department will seek to arrange in-person consultations at the Tribe's offices or at another appropriate location on Tribal Lands. The Department will work with Tribes, on a case-by-case basis, to determine the appropriate form and manner of consultation. Prior to any consultation, the Department shall inform the Tribe in writing of the names and positions of those who will represent the Department during the consultation.

4. Department Representation at Consultations: The Department's consultation process is designed to facilitate direct communication between tribal decision makers and the departmental decision makers for the Proposed Activity. Although the Director of the Department retains ultimate authority with respect to all departmental decisions, significant decision-making authority for Regional Proposed Activities is delegated to the Regional Managers, who are best positioned to lead consultations on these activities.
    a. Consultations Concerning Statewide Proposed Activities: The Department will be represented at consultations concerning Statewide Proposed Activities by the Director or a Deputy Director. For consultations concerning the adoption of regulations by the Fish and Game Commission, the Department will coordinate with the Executive Director of the Commission to facilitate joint consultation. The Tribal Liaison will seek to participate in all consultations concerning Statewide Proposed Activities.
    b. Consultations Concerning Regional Proposed Activities: The Department will generally be represented at consultations concerning Regional Proposed Activities by the Regional Manager for the region in which the activity will occur. For consultations concerning the acquisition of interests in real property, the consultation will also include the Executive Director of the Wildlife Conservation Board. For consultations concerning enforcement activities, the Department will be represented by the Assistant Chief for the applicable enforcement district. The Regional Tribal Liaisons will seek to participate in all consultations concerning Regional Proposed Activities in their respective regions.
    c. Designees: The Director, Deputy Directors, Regional Managers, Executive Director, and Assistant Chiefs may delegate authority to conduct a particular consultation to a designee at an appropriate level of authority. If the Tribe believes a delegation of authority pursuant to this section is inappropriate, the Tribe may submit to the Tribal Liaison a written request to meet with a more senior official with the Department.
    d. Request by a Tribe for a Meeting with the Director: Nothing in this Policy is intended to preclude a Tribe from requesting a meeting with the Director with regard to any Statewide Proposed Activity or Regional Proposed Activity. If a Tribe seeks to meet with

the Director regarding a Regional Proposed Activity or a Statewide Proposed Activity for which someone other than the Director is initially designated to conduct, the Tribe may submit to the Tribal Liaison a written request to meet with the Director.

5. Informal Staff-to-Staff Meetings: At times, both Tribes and the Department may seek to pursue informal discussions and negotiations concerning a Proposed Activity. The Department encourages informal meetings, and nothing in this policy shall be construed to prohibit or otherwise inhibit the Department and a Tribe from pursuing such meetings. For informal meetings the Department will seek to assign staff with appropriate expertise and of a comparable level of authority to that of the Tribe's representative. Informal staff-to-staff meetings do not constitute government-to-government consultation.

6. Joint Consultation: To conserve limited tribal, federal, state, and local government resources, the Department will participate in joint consultations with: (a) other federal, state, or local government agencies when all parties agree and there are sufficient issues in common to warrant a joint consultation; or (b) more than one Tribe when all parties agree and there are sufficient issues in common to warrant a joint consultation.

7. Adoption of Regulations[5]. Fish and Game Code section 200 authorizes the Fish and Game Commission to adopt regulations concerning the taking or possession of birds, mammals, fish, amphibians, and reptiles. Fish and Game Code section 702 authorizes the Department to adopt regulations to administer and enforce the Fish and Game Code except where expressly prohibited or delegated to the Commission. The Department will seek to coordinate with Commission staff regarding communication and consultation concerning regulations to be adopted by the Commission. The adoption of regulations by the Commission and the Department is governed by the California Administrative Procedure Act (APA), which sets forth mandatory requirements and timelines for adopting regulations through the regular rulemaking process. The adoption of regulations is also subject to the California Environmental Quality Act (CEQA), with its own requirements and timelines. The Department will seek to accommodate all requests for consultation concerning proposed regulations; provided, however, that the Department does not have the authority to alter APA or CEQA requirements concerning the timing and structure of the regulatory process.

8. Real Property Transactions. When acquiring interests in real property, the Department acts through the Wildlife Conservation Board. The Board also awards grants for the acquisition of property interests and for restoration projects. The Board's consideration of acquisitions of property interests on behalf of the Department, grants for acquisition of property interests by others, and grants for restoration projects all involve processes subject to procedures, timelines, and approvals by the California Department of General Services (DGS). The Board's processes are also subject to CEQA, with its own requirements and timelines. The Board and the Department will seek to accommodate all requests for consultation; provided, however, that neither agency has the authority to alter DGS or CEQA requirements concerning the timing and structure of the process for acquiring interests in real property.

[5] The California Fish and Game Commission is an independent state entity. The Department assists the Commission with its adoption of regulations. The Commission is currently developing its tribal consultation policy. The Department will work closely with the Commission throughout this process to ensure, to the maximum extent practicable, that the two policies are compatible and streamline the communication and consultation process for the Commission, the Department, and Tribes. The Department anticipates that it may be necessary to amend Section VII(7) of this Policy once the Commission finalizes its policy. If the Department amends its Policy for purposes of coordinating it with the Commission's policy, the Department will seek to provide notice and opportunities for consultation on the amendments in conjunction with the Commission's consultation on its policy.

9. Annual Regional Meetings with Tribes. Each Regional Manager shall conduct annually a meeting with all interested Tribes located in that region to discuss any and all matters within the Department's jurisdiction that are of interest to Tribes in that region. The Department will provide written notice of the meeting and solicit agenda items from the Tribes.

10. Reporting.
    a. Department staff shall provide a brief written report to the Tribal Liaison with regard to any consultation with a Tribe. The report shall include: (i) the names of the Tribes and federal, state, or local agencies that participated in the consultation; (ii) the date and location of the consultation; and (iii) a brief description of the issues discussed and any resolution or agreement reached.
    b. Department staff shall not include in any report prepared pursuant to this section confidential or culturally sensitive information received from a Tribe.

VIII. Grievance Process

1. If a Tribe believes Department staff members are not following this Policy or that this Policy is not providing effective access and information, the Tribe may submit a written grievance to the Tribal Liaison at tribal.liaison@wildlife.ca.gov or at the following address: Tribal Liaison, California Department of Fish and Wildlife, 1416 Ninth Street, Sacramento, CA 95814.

2. The Tribal Liaison shall review any grievances submitted pursuant to this section and work with Department staff and the Tribe to ensure the issue is resolved to the parties' mutual satisfaction. If the Tribal Liaison is unable to resolve the issue, the Tribal Liaison shall refer the matter to the Director or a designee at an appropriate level of authority.

California Fish and Game Commission Tribal Consultation Policy

On June 10, 2015, the California Fish and Game Commission adopted its Tribal Consultation Policy:[6]

The Policy

On September 19, 2011, Governor Edmund G. Brown, Jr., issued Executive Order B-10-11, which provides, among other things, that it is the policy of the administration that every state agency and department subject to executive control implement effective government-to-government consultation with California Indian Tribes.

Purpose of the Policy

The mission of the California Fish and Game Commission (FGC) is, on the behalf of California citizens, to ensure the long term sustainability of California's fish and wildlife resources by setting policies, establishing appropriate rules and regulations, guiding scientific evaluation and assessments, and building partnerships to implement this mission. California Native American Tribes, whether federally recognized or not, have distinct cultural, spiritual, environmental, economic and public health interests and unique traditional knowledge about the natural resources of California.

The purpose of this policy is to create a means by which tribes and FGC can effectively work together to realize sustainably-managed natural resources of mutual interest.

Policy Implementation

1. Communication. Both FGC and the tribes are faced with innumerable demands on their limited time and resources. In the interest of efficiency, FGC will annually host a tribal planning meeting to coordinate the upcoming regulatory and policy activities before FGC. The meeting will provide a venue for education about process, identifying regulatory and policy needs, and developing collaborative interests; this will include inviting sister agencies to participate.
2. Collaboration. In areas or subjects of mutual interest, FGC will pursue partnerships with tribes to collaborate on solutions tailored to each tribe's unique needs and capacity. The structure of these collaborative efforts can range from informal information sharing, to Memorandum Of Understanding with more specific agreements regarding working relationships and desired outcomes, to co-management agreements with specific responsibilities and authorities.
3. Record-keeping. FGC will maintain a record of all comments provided by tribes and will include them in administrative records where appropriate.
4. Training. FGC will provide training to interested tribes on its processes for regulation and policy development.

[6] California Fish and Game Commission. (2015). *California Fish and Game Commission Tribal Consultation Policy*. Retrieved Aug 24, 2015 from http://www.fgc.ca.gov/policy/p4misc.aspx#tribal

CALIFORNIA MARINE LIFE PROTECTION ACT

MASTER PLAN FOR MARINE PROTECTED AREAS

APPENDIX C

North Coast: MPA Background and Priorities

August 24, 2016

Table of Contents

List of Figures

List of Tables

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.

---

[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 Coast regional planning process to design and site MPAs occurred from 2009 to 2012, and was the last of four planning regions completed through the MLPA Initiative. Encompassing 1,027 square miles (2,660 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. The North Coast region spans a straight-line distance of approximately 210 statute miles (338 kilometers) of the California coastline (with about 517 statute miles [832 kilometers] of actual shoreline) from the California/Oregon border to Alder Creek near Point Arena in Mendocino County. The region also includes state waters surrounding prominent offshore rocks, such as Reading Rock and North West Seal Rock (location of St. George Reef lighthouse).[6] The region includes a broad array of habitats that range in depth. The maximum depth within this region is 1,667 feet (508 meters). A detailed description of the North Coast region is found in the MLPA Initiative Regional Profile of the North 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 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 of the region include:

- Some of the least developed coastal areas in the state
- Humboldt Bay which is the second largest estuary in California and home to approximately 37% of the known eelgrass in the state
- Castle Rock, an offshore rock supporting the largest population of common murres in California
- Most of the region is relatively shallow (less than 330 feet [100 meters]); however, there are several submarine canyons, such as Mendocino, Mattole, Delgada and Spanish canyons
- Kelp forests dominated by bull kelp, most commonly found off rocky headlands in the southern portion of the region

[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 Reading Rock and North West Seal Rock).

[7] MLPA Initiative. (2010). *Regional Profile of the North Coast Study Region (California-Oregon Border to Alder Creek).* Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/pdfs/rpnc0410/profile.pdf

[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.

3. Considerations for Designing North Coast MPAs

During the MLPA Initiative, the members of the MLPA North Coast Regional Stakeholder Group (NCRSG) committed and participated in activities that included developing "alternative proposals for marine protected areas within the North Coast planning region that meet the requirements [and goals] of the MLPA."[12] 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 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 NCRSG 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, North Central Coast, and South Coast planning regions. Regional goals and objectives were utilized by the NCRSG when identifying the intent for a particular MPA site. Included below are the regional goals and objectives of the North Coast planning region.

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

1. Protect and maintain species diversity and abundance consistent with natural fluctuations, including areas of high native species diversity and representative habitats.
2. Protect areas with diverse habitat types in close proximity to each other.

[12] MLPA Initiative. (2010). *Charter of the North Coast Regional Stakeholder Group*. Retrieved Sept 21 from: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentVersionID=73447

[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).

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. Promote 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 and the habitats and ecosystem functions upon which they rely.[14]
2. Sustain or increase reproduction by species likely to benefit from MPAs and promote retention of large, mature individuals.
3. Sustain or increase reproduction by species likely to benefit from MPAs through protection of breeding, foraging, rearing or nursery areas or other areas where species congregate.
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. Sustain or enhance cultural, recreational, and educational experiences and uses (for example, by increasing size or abundance of species, maintaining high scenic value, lowering congestion, or improving catch rates, and protection of submerged cultural sites).
2. Provide opportunities for scientifically valid studies, including studies on MPA effectiveness and other research benefiting from areas with minimal or restricted human disturbance.
3. Provide opportunities for collaborative scientific monitoring and research projects that evaluate MPAs while promoting adaptive management and links with fisheries management, seabird and mammals information needs, classroom science curricula, cooperative fisheries research and volunteer efforts, and identify participants.

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

1. Include within MPAs key and unique habitats identified by the MLPA Master Plan Science Advisory Team (SAT) for the North Coast planning region.
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.

[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, California Nearshore FMP, Federal Groundfish FMP. *Rare*, e*ndangered,* 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.

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

1. Provide opportunities for interested parties to help develop objectives and ensure that each MPA is linked to one or more regional objectives.
2. To the extent possible, effectively use scientific guidelines in the *California MLPA Master Plan for Marine Protected Areas*.
3. Ensure public understanding of, compliance with, and stakeholder support for MPA boundaries and regulations.
4. Include simple, clear, and focused site-specific objectives/rationales for each MPA and ensure that site-specific rationales for each MPA reflect one or more goals and regional objectives.
5. 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.

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

1. Ensure ecological connectivity within and between regional components of the statewide network.
2. Provide for protection and connectivity of habitat for those species that utilize different habitats over their lifetime.

3.2 Design Considerations

MPA design considerations are contemplated in the 2008 Master Plan[15] for increasing the quality and effectiveness of MPA network design. Design considerations should be considered as the location, designation (reserve, park or conservation area), size, and other characteristics of potential MPAs are developed. Design considerations may apply to individual MPAs or the network as a whole and help inform the process for developing MPAs.

The NCRSG had the opportunity to describe, in more detail, justifications for MPA design and siting during its work sessions and under the "other design considerations" field in MarineMap (see Appendix A, Section 4.4). Two additional design consideration categories for NCRSG members to further describe, in their own words, key information about their proposed MPAs were utilized. Written as "site-specific rationale" and "other design considerations" these categories provided specific rationale for the development of a proposed MPA and described the primary purpose or intent of an MPA; and became a key place for providing additional detail regarding the primary purpose or intent of the design and placement of an MPA, including unique features or qualities of the ecosystem or habitats. Site-specific rationale was used in conjunction with identified goal(s), regional objective(s), and stakeholder priorities and objectives to understand the core thinking behind MPA design. "Other design considerations" for proposed MPAs, referenced socioeconomic, feasibility, or other specific considerations that were taken into account for MPA design.

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

Primary design considerations include the following:

- Consider the needs and interests of all users in evaluating the siting of MPAs.
- To the extent possible, site MPAs in such a way as to prevent fishing effort shifts which could result in serial depletion.
- When crafting MPA proposals, utilize to the extent appropriate MPA design considerations described in the Nearshore Fishery Management Plan (NFMP)[16] and the draft Abalone Recovery and Management Plan.[17]
- In developing MPA proposals, consider how existing state and federal programs address the goals and objectives of the MLPA and the North Coast region as well as how these proposals may coordinate with other programs.
- To the extent possible, site MPAs to facilitate use of volunteers to assist in monitoring and management.
- 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 that are either remote or near public access.
- Consider the potential impacts of climate change, community alteration, and distributional shifts in marine species when designing MPAs.

[16]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.

[17] 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.

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.[18] 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 Coast regional MPA planning process from 2009 to 2012, 12 memorandums specific to the North Coast were issued, including several regarding the integration of MPA planning and traditional, non-commercial tribal uses of marine resources. A complete historical record of all North Coast MPA design and implementation considerations can be found on CDFW's website.[19]

Stakeholder Priorities and Objectives

In addition to the network goals of the MLPA, and regionally identified goals and objectives, the NCRSG identified a set of stakeholder priorities and objectives. This category was a new addition to MPA planning and occurred only within the North Coast region. Stakeholder priorities and objectives are local priorities that were considered in conjunction with the goals and regional objectives; these priorities and objectives reflect the interest of the NCRSG to create MPAs that best met the needs of their communities, while meeting the goals of the MLPA. Stakeholder priorities and objectives were developed to guide the NCRSG during the development of MPAs and assisted agencies and organizations with managing and monitoring once MPAs were implemented on the North Coast.

Stakeholder priorities and objectives may be used to gauge the effectiveness of the planning process in meeting the needs and desires of stakeholders. For example, the first stakeholder priority and objective identified below is intended to ensure that MPAs are designed in a way that can meet the goals of the MLPA, while also minimizing socioeconomic impacts to local communities and user groups. For the North Coast planning process, a category that reflects these local stakeholder objectives was included to supplement the goals and regional objectives. Stakeholder priorities and objectives may not supersede meeting the MLPA goals and regional objectives, but may work congruently with them to ensure regional concerns are addressed while meeting the MLPA goals. The North Coast stakeholder priorities included the following:

1. Minimize negative socioeconomic impacts and optimize positive socioeconomic effects for all users, to the extent possible, while maintaining consistency with the MLPA and its goals and guidelines. (Formerly Goal 5, Objective 1, North Central Coast Study Region [NCCSR])
2. Preserve opportunities for traditional and customary collection of natural resources by Tribes and Tribal communities when contemplating siting of MPAs and allowed uses. (New for North Coast Study Region [NCSR])
3. Consider the health and vitality of coastal communities, ports, and harbors, when designing MPAs. (New for NCSR)
4. 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. (Formerly part of Design Considerations, NCCSR)

[18] 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

[19] Master contents of transmittal binders to the Commission for the MLPA North Coast Study Region (Binder 3, Policy Context): http://www.dfg.ca.gov/marine/mpa/binders_nc.asp

5. Preserve the diversity of recreational, educational, commercial, and cultural uses, to the extent possible. (Formerly part of Design Considerations, NCCSR)

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 Coast planning region included the following:

- Provide opportunities for interested parties to help develop a long-term monitoring plan that includes standardized biological and socioeconomic monitoring protocols, and a strategy for MPA evaluation.
- 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.
- Provide opportunities to coordinate with MLPA regional stakeholder groups in other regions to ensure that the statewide MPA network meets the goals of the act.
- Improve public outreach related to MPAs through the use of docents, improved signage, and educational brochures for North Coast MPAs.
- When appropriate, phase the implementation of North Coast MPAs to ensure their effective management, monitoring, and enforcement.
- 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)[20] 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, management, and science across all partner and stakeholder groups are essential to the success of the implementation of the statewide network of MPAs.[21]

[20] 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/

[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/

4. Summary of Regional MPAs

A network of 20 MPAs and seven special closures covering approximately 137 square miles (355 square kilometers) of state waters or about 13% of the North Coast region, went into effect on December 19, 2012. The North Coast MPA network was the last 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 Coast 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 Coast planning region include State Marine Reserves (SMRs), State Marine Conservation Areas (SMCAs), a State Marine Recreational Management Area (SMRMA), and special closures. Throughout all tables and figures in this section, all statistics are from CDFW's Marine Region Geographic Information Systems (GIS) unit.[22] 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 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 Coast regional resources with additional information.[23]

[22] CDFW's Marine Region Geographic Information Systems Unit: https://www.wildlife.ca.gov/Conservation/Marine/GIS
[23] 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

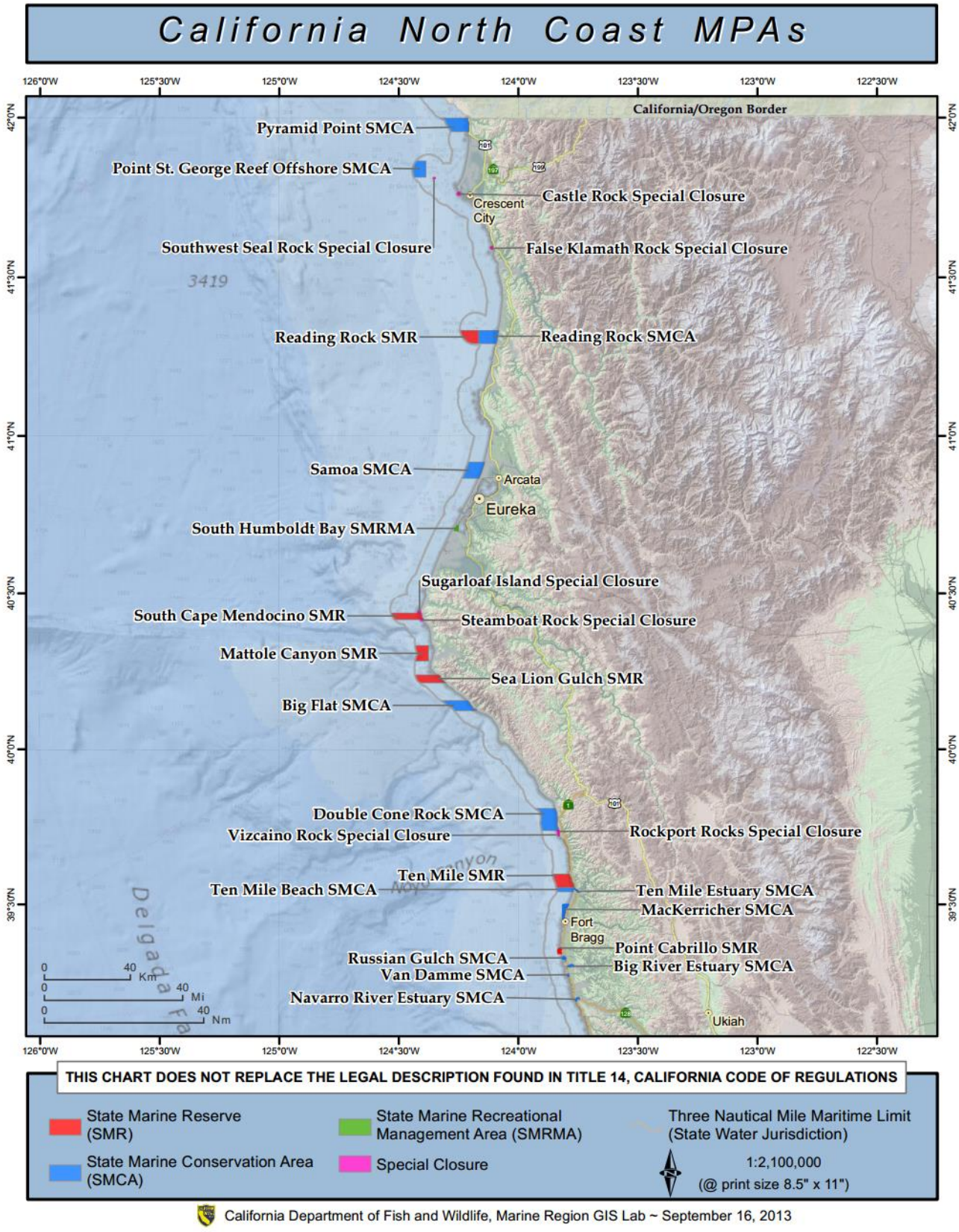


Figure 1. Adopted MPAs in the North Coast region.

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

Protected Area Designation	Count	Area (square miles)	Area (percent)
SMR	6	51.28	4.99
SMCA	13	85.32	8.30
SMRMA	1	0.81	0.08
Special Closures	7	0.2	0.02
Total[24]	**20**	**137.4**	**13.37**

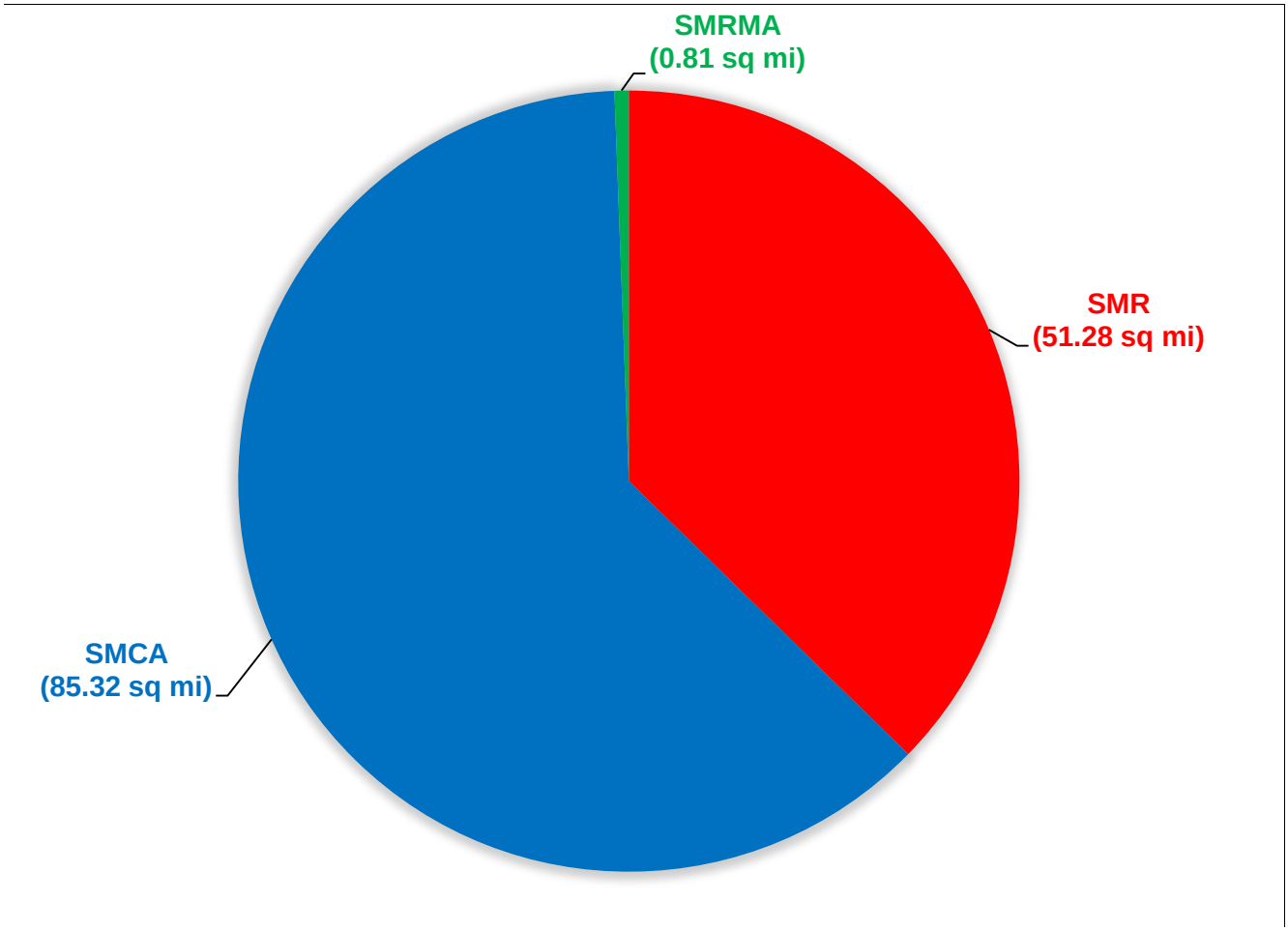


Figure 2. Area (square miles) in North Coast region state waters of each MPA designation.

[24] Totals do not include special closures

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

MPA Name	Area (square miles)	Along-shore Span (miles)[25]	Depth Range (feet)
Pyramid Point SMCA	13.99	2.9	0-124
Point St. George Reef Offshore SMCA	9.52	3.4	176-399
Reading Rock SMCA	11.96	2.8	0-166
Reading Rock SMR	9.6	2.8	145-253
Samoa SMCA	13.06	3.6	0-158
South Humboldt Bay SMRMA	0.81	1.2	N/A
South Cape Mendocino SMR	9.08	1.5	0-277
Mattole Canyon SMR	9.79	3.4	82-1646
Sea Lion Gulch SMR	10.42	2.3	0-375
Big Flat SMCA	11.59	2.8	0-1110
Double Cone Rock SMCA	18.49	4.9	0-391
Ten Mile SMR	11.95	3.2	0-343
Ten Mile Beach SMCA	3.54	0.9	0-288
Ten Mile Estuary SMCA	0.18	0.1	N/A
MacKerricher SMCA	2.48	4.1	0-119
Point Cabrillo SMR	0.44	1.3	0-40
Russian Gulch SMCA	0.22	0.9	0-15
Big River Estuary SMCA	0.13	0.1	N/A
Van Damme SMCA	0.06	0.7	0-17
Navarro River Estuary SMCA	0.09	0.2	N/A

[25] 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 Coast region MPAs.

	Habitats in the North Coast Region MPAs (Percentage)			
Habitat Type	**SMR**	**SMCA**	**SMRMA**	**Total (All MPAs)**
Intertidal				
Sandy or gravel beaches	2.8	9.8	0	12.5
Rocky intertidal and cliff	7.9	8.4	0	16.3
Coastal marsh	0	4.3	1.6	6.0
Tidal flats	0	0.6	1.4	2.0
Surfgrass beds (0-30m)	0	0	0	0
Eelgrass beds (0-30m)	0	4.0	2.6	6.6
Estuary (total area)	0	0.6	1.9	2.5
Soft bottom				
0-30 meters	1.5	9.4	0	10.9
30-100 meters	6.8	8.2	0	15.0
100-200 meters	5.3	11.0	0	16.3
>200 meters	21.1	7.7	0	28.8
Hard bottom				
0-30 meters	2.9	7.2	0	10.1
30-100 meters	20.6	1.6	0	22.2
100-200m	36.2	1.3	0	37.5
>200 meters	28.1	13.6	0	41.7
Kelp forest				
Average kelp (‘89, ‘99, ‘02, ’03-08’)	2.6	6.0	0	8.5
Submarine canyon				
0-30 meters	0	0	0	0
30-100 meters	33.7	18.4	0	52.2
100-200 meters	15.4	18.1	0	33.5
>200 meters	21.8	2.1	0	23.9

Table 4. Habitat representation for individual North Coast region MPAs.[26]

Habitat Type		Pyramid Point SMCA	Point St. George Reef Offshore SMCA	Southwest Seal Rock Special Closure	Castle Rock Special Closure	False Klamath Rock Special Closure	Reading Rock SMCA	Reading Rock SMR	Samoa SMCA	South Humboldt Bay SMRMA	Sugarloaf Island Special Closure	South Cape Mendocino SMR	Steamboat Rock Special Closure	Mattole Canyon SMR
Sandy or gravel Beaches	mi	2.97	0	0	0	0	2.96	0	3.69	0	0	1.59	0	0
Rocky intertidal and cliff	mi	0	0	0	0.72	0	0.22	0	0	0	0.27	0.65	0	0
Tidal flats	mi	0	0	0	0	0	0	0	0	1.46	0	0	0	0
Coastal marsh	mi	0	0	0	0	0	0	0	0	1.46	0	0	0	0
Surfgrass	mi	0	0	0	0	0	0	0	0	0	0	0	0	0
Eelgrass	mi^2	0	0	0	0	0	0	0	0	0.23	0	0	0	0
Estuary	mi^2	0	0	0	0	0	0	0	0	0.79	0	0	0	0
Hard 0 - 30m	mi^2	0.70	0	0.01	0.01	0.01	0.07	0	0	0	0	0.16	0	0.01
Hard 30 - 100m	mi^2	0	0.38	0	0	0	0	0.16	0	0	0	2.99	0	0.41
Hard 100 - 200m	mi^2	0	0	0	0	0	0	0	0	0	0	0	0	0.13
Hard 200 - 3000m	mi^2	0	0	0	0	0	0	0	0	0	0	0	0	0.02
Soft 0 - 30m	mi^2	10.07	0	0.01	0.02	0	6.31	0	5.14	0	0	1.31	0	0.04
Soft 30 - 100m	mi^2	1.43	7.34	0	0	0	3.77	9.43	6.14	0	0	3.82	0	5.75
Soft 100 - 200m	mi^2	0	1.80	0	0	0	0	0	0	0	0	0	0	1.79
Soft 200 - 3000m	mi^2	0	0	0	0	0	0	0	0	0	0	0	0	1.62
Average Kelp	mi^2	0	0	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	0	0
Submarine Canyon 30 - 100m	mi^2	0	0	0	0	0	0	0	0	0	0	0	0	0.12
Submarine Canyon 100 - 200m	mi^2	0	0	0	0	0	0	0	0	0	0	0	0	0.44
Submarine Canyon 200 - 3000m	mi^2	0	0	0	0	0	0	0	0	0	0	0	0	0.96

[26] 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		Sea Lion Gulch SMR	Big Flat SMCA	Double Cone Rock SMCA	Rockport Rocks Special Closure	Vizcaino Rock Special Closure	Ten Mile SMR	Ten Mile Beach SMCA	Ten Mile Estuary SMCA	MacKer-richer SMCA	Point Cabrillo SMR	Russian Gulch SMCA	Big River Estuary SMCA	Van Damme SMCA	Navarro River Estuary SMCA
Sandy or gravel Beaches	mi	2.42	3.21	4.67	0	0	2.63	1.00	0.45	4.40	0.20	0.11	0.11	0.54	0.05
Rocky intertidal and cliff	mi	2.32	1.35	3.30	0.28	0.28	6.77	0.05	0.25	3.91	2.82	2.59	0.70	0.24	0.72
Tidal flats	mi	0	0	0	0	0	0	0	0	0	0	0	0.23	0	0.36
Coastal marsh	mi	0	0	0	0	0	0	0	2.01	0.01	0	0	1.21	0	0.64
Surfgrass	mi	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eelgrass	mi^2	0	0	0	0	0	0	0	0.13	0	0	0	0.14	0	0.09
Estuary	mi^2	0	0	0	0	0	0	0	0.08	0	0	0	0.12	0	0.06
Hard 0 - 30m	mi^2	0.12	0.06	0.72	0	0	0.47	0	0	0.68	0.16	0.10	0	0	0
Hard 30 - 100m	mi^2	2.86	0.01	0.09	0	0	0.50	0	0	0.05	0	0	0	0	0
Hard 100 - 200m	mi^2	0.12	0.01	0	0	0	0	0	0	0	0	0	0	0	0
Hard 200 - 3000m	mi^2	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0
Soft 0 - 30m	mi^2	1.50	2.07	3.28	0	0	1.66	0.71	0	0.85	0.10	0.03	0	0	0
Soft 30 - 100m	mi^2	3.86	5.09	11.20	0	0	8.13	2.45	0	0.06	0	0	0	0	0
Soft 100 - 200m	mi^2	1.09	2.98	2.11	0	0	0.46	0	0	0	0	0	0	0	0
Soft 200 - 3000m	mi^2	0	0.59	0	0	0	0	0	0	0	0	0	0	0	0
Average Kelp	mi^2	0	0	0.01	0	0	0.02	0	0	0.03	0.01	0.02	0	0.01	0
Submarine Canyon 0 - 30m	mi^2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submarine Canyon 30 - 100m	mi^2	0	0.06	0	0	0	0	0	0	0	0	0	0	0	0
Submarine Canyon 100 - 200m	mi^2	0	0.51	0	0	0	0	0	0	0	0	0	0	0	0
Submarine Canyon 200 - 3000m	mi^2	0	0.09	0	0	0	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).

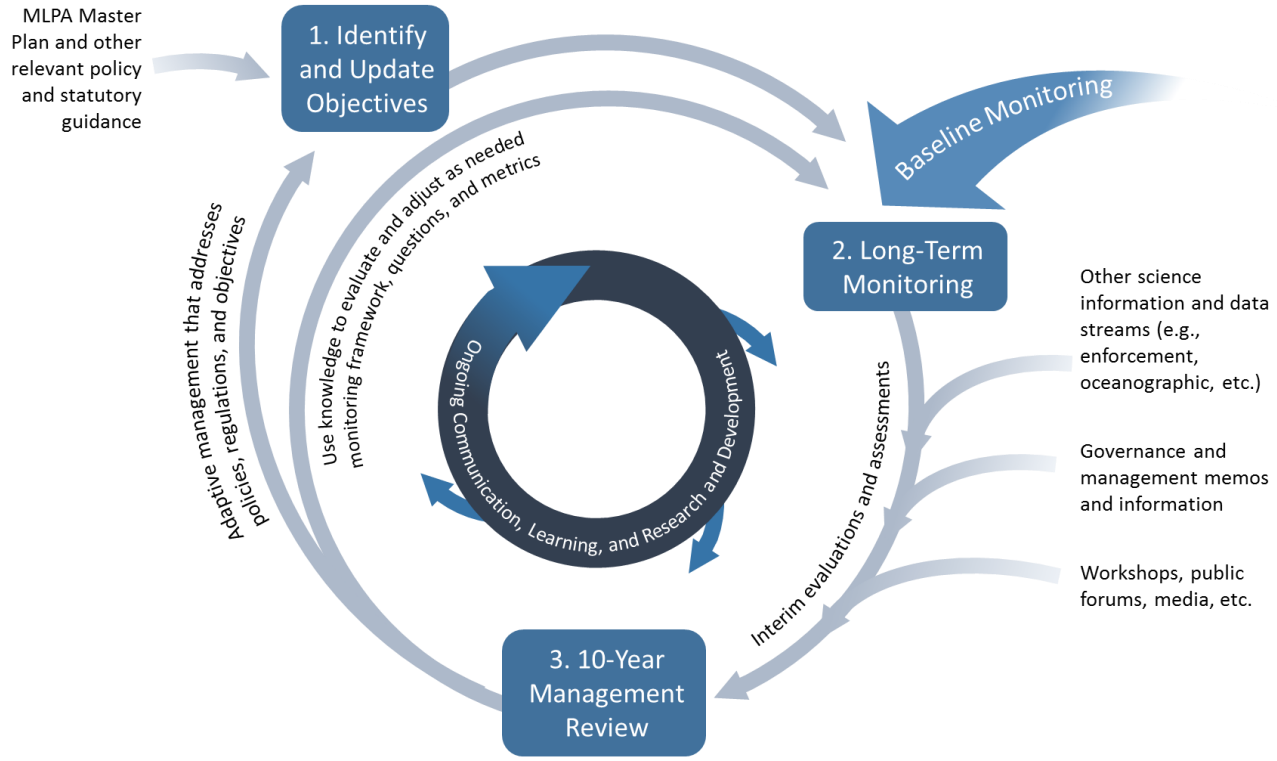


Figure 3. MLPP adaptive management process.

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 (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.

OST and CDFW anticipate developing a North Coast MPA monitoring plan to apply the statewide MPA monitoring framework by 2017,[27] based on the best available science, to reflect management and community priorities, and ensure consistency with the North Central Coast, Central Coast, and South Coast MPA monitoring plans previously adopted by the Commission.[28,29,30] As a starting place, draft

[27] Ocean Protection Council. (2015). *Marine Protected Area (MPA) Statewide Leadership Team Work Plan FY 15/16 – 17/18*. Retrieved Sept 21, 2015 from http://www.opc.ca.gov/2015/08/8122/

[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. (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

monitoring metrics for baseline characterization and assessment of initial ecological and socioeconomic changes were identified in collaboration with the North Coast community in March 2013.[31]

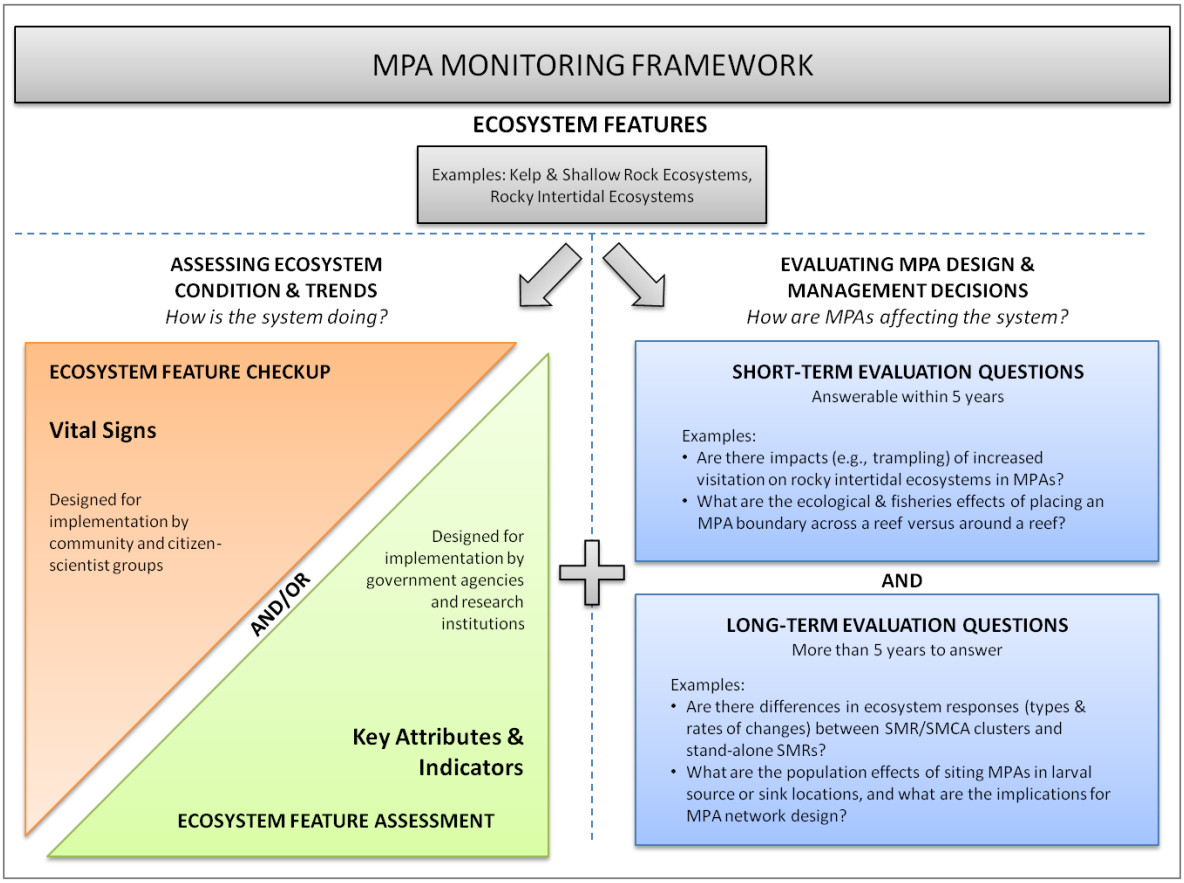


Figure 4. Statewide MPA monitoring framework, displaying the two primary monitoring elements: 1) assessing ecosystem condition and trends, and 2) evaluating MPA design and management decisions.[32]

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 Coast MPA Baseline Program, a collaboration between OST, CDFW, Ocean Protection Council (OPC), and California Sea Grant (CASG), launched in in March 2014 to assess the baseline ecological and socioeconomic conditions of the North Coast regional MPA network. The North Coast MPA Baseline Program includes 11 projects selected for funding to monitor habitats including kelp

[30] 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

[31] OST, CDFW, OPC, and CASG. (2013). *Request for Proposals: North Coast MPA Baseline Program, Appendix 1*. https://caseagrant.ucsd.edu/sites/default/files/FINALNorthCoastBaselineProgramRFP-1.pdf

[32] 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

forests, subtidal rock and soft bottom habitats at various depths, rocky shores, and beaches as well as commercially and recreationally important species and seabirds. Projects are also documenting human uses, socioeconomic dimensions of MPAs, and examining patterns of ocean currents across the region. The North Coast is also the first regional baseline monitoring program in California to incorporate traditional ecological knowledge, which will be shared as part of understanding the historical and current ocean conditions in the region. The North Coast region is the last of four regional MPA baseline programs, and is currently ongoing in the North Coast. A State of the Region report similar to that produced for the Central Coast region[33] and North Central Coast region[34] which includes a summary of the North Coast MPA Baseline Program and other related monitoring activities during the first five years of MPA implementation in the region, is expected in 2018.[35] The State of the Region report can inform potential management recommendations from the first five years of MPA implementation in the region.[36]

Long-Term Monitoring

After the baseline monitoring period concludes for the North 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 network scale. For more information on North Coast MPA monitoring, please visit the North Coast page of the OceanSpaces website.[37]

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).

[33] OST and CDFW. (2013). *State of the California Central Coast: Results from Baseline Monitoring of Marine Protected Areas 2007-2012*. California, USA. Retrieved Apr 1, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=133101&inline

[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. Retrieved Dec 21, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=133100&inline

[35] OPC. (2015). *Marine Protected Area (MPA) Statewide Leadership Team Work Plan FY 15/16 – 17/18*. Retrieved Sept 21, 2015 from http://www.opc.ca.gov/2015/08/8122/

[36] Ibid.

[37] OceanSpaces. *North Coast*. Retrieved Apr 1, 2015 from http://oceanspaces.org/monitoring/regions/north-coast/planning

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 Coast region.

Table 5. Enforcement considerations.

MPA Name	Primary Enforcement Method	Special Considerations[38]
Pyramid Point SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	• Smith River Rancheria Exempt
Point St. George Reef Offshore SMCA	• Small Skiff Patrol • Ocean/Vessel Patrol	• Elk Valley Rancheria Exempt • Smith River Rancheria Exempt
Southwest Seal Rock Special Closure	• Small Skiff Patrol • Ocean/Vessel Patrol	None
Castle Rock Special Closure	• Small Skiff Patrol • Ocean/Vessel Patrol	None
False Klamath Rock Special Closure	• Small Skiff Patrol • Ocean/Vessel Patrol	None
Reading Rock SMCA	• Small Skiff Patrol • Ocean/Vessel Patrol	• Yurok Tribe Exempt
Reading Rock SMR	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
Samoa SMCA	• Shoreline Patrol • Small skiff Patrol • Ocean/vessel Patrol	• Wiyot Tribe Exempt
South Humboldt Bay SMRMA	• Shoreline Patrol • Small Skiff Patrol • Kayak Patrol	• Wiyot Tribe Exempt
Sugarloaf Island Special Closure	• Small Skiff Patrol • Ocean/Vessel Patrol	None
South Cape Mendocino SMR	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
Steamboat Rock Special Closure	• Small Skiff Patrol • Ocean/Vessel Patrol	None
Mattole Canyon SMR	• Small Skiff Patrol • Ocean/Vessel Patrol	None
Sea Lion Gulch SMR	• Small Skiff Patrol • Ocean/Vessel Patrol	None

[38] California Code of Regulations, Title 14, Section 632(a)(11) and (b)(1-2, 6, 8-9, 15-16, 20-21, 25, 27)

MPA Name	Primary Enforcement Method	Special Considerations[38]
Big Flat SMCA	• Small Skiff Patrol • Ocean/Vessel Patrol	• 18 Specific Tribes Exempt
Double Cone Rock SMCA	• Small Skiff Patrol • Ocean/Vessel Patrol	• 17 Specific Tribes Exempt
Rockport Rocks Special Closure	• Small Skiff Patrol • Ocean/Vessel Patrol	None
Vizcaino Rock Special Closure	• Small Skiff Patrol • Ocean/Vessel Patrol	None
Ten Mile SMR	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
Ten Mile Beach SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	• 17 Specific Tribes Exempt
Ten Mile Estuary SMCA	• Shoreline Patrol • Kayak Patrol	• 17 Specific Tribes Exempt
MacKerricher SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
Point Cabrillo SMR	• Small Skiff Patrol • Ocean/Vessel Patrol	None
Russian Gulch SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	• High Dive Activity
Big River Estuary SMCA	• Shoreline Patrol • Kayak Patrol	• 17 Specific Tribes Exempt
Van Damme SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol • Kayak Patrol	• High Dive Activity
Navarro River SMCA	• Shoreline Patrol • Kayak Patrol	• 17 Specific Tribes Exempt

6.1 Personnel and Equipment

CDFW has eight enforcement staff located within the North Coast region, covering the area between the Oregon Border and Point Arena. The two lieutenants and six wardens have a primary emphasis on at-sea and shore-based marine patrols within this area, and there are additional inland wardens that address non-marine issues along the same area of the North 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.

Pyramid Point to Big Flat MPAs		Double Cone Rock to Navarro Estuary MPAs		Totals
Land-Based	**Patrol Boat**	**Land-Based**	**Patrol Boat**	
1 Lieutenant	0 Lieutenants	1 Lieutenant	0 Lieutenants	2 Lieutenants
4 Wardens	0 Wardens	2 Wardens	0 Wardens	6 Wardens
1 Patrol Skiff*	N/A	1 Patrol Skiff**	N/A	2 Patrol Skiffs
N/A	0 Patrol Boats	N/A	0 Patrol Boats	0 Patrol Boats
Individual MPAs		**Individual MPAs**		
Pyramid Point SMCA Point St. George Reef Offshore SMCA Southwest Seal Rock Special Closure Castle Rock Special Closure False Klamath Rock Special Closure Reading Rock SMCA Reading Rock SMR Samoa SMCA South Humboldt Bay SMRMA Sugarloaf Island Special Closure South Cape Mendocino SMR Steamboat Rock Special Closure Mattole Canyon SMR Sea Lion Gulch SMR Big Flat SMCA		Double Cone Rock SMCA Rockport Rocks Special Closure Vizcaino Rock Special Closure Ten Mile SMR Ten Mile Beach SMCA Ten Mile Estuary SMCA MacKerricher SMCA Point Cabrillo SMR Russian Gulch SMCA Big River Estuary SMCA Van Damme SMCA Navarro River SMCA		

*Eureka skiff “Lingcod” 28’ RHI
**Fort Bragg skiff “Chinook” 32’ Almar

6.2 Training

Wardens working within the North 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 no large patrol boats stationed along the north region coastline, although two patrol skiffs are available to be deployed at all of the major ports in the North Coast. Patrol by large patrol boats may be conducted with patrol boats coming from outside of the area. However, this diverts resources from other study areas. 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 Coast Regional Management Framework.

1. Regional Profile for the MLPA North Coast Planning Region[39]
2. North Coast Regional Goals and Objectives[40]
3. Overview of North Coast MPA Planning Process[41]
4. North Coast Process Diagram[42]
5. MLPA Master Plan SAT List of Species Likely to Benefit from MPAs in the NCSR[43]
6. Marine Life Protection Act, North Coast Study Region, Final Environmental Impact Report and Draft Environmental Impact Report[44]
7. North Coast Regulatory and Environmental Review Process Documents[45, 46]

[39] MLPA Initiative. (2010). *Regional Profile of the North Coast Study Region (California-Oregon Border to Alder Creek)*. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/pdfs/rpnc0410/profile.pdf

[40] MLPA Initiative. (2010). *Goals, Regional Objectives, Stakeholder Priorities, and Design and Implementation Considerations for the MLPA North Coast Study Region*. Retrieved Apr 1, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentVersionID=33653

[41] MLPA Initiative (2011). *North Coast Project*. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/pdfs/nc_overview.pdf

[42] MLPA Initiative (2010). *North Coast Region Process Outline*. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/pdfs/guide_diagram.pdf

[43] MLPA Master Plan Science Advisory Team. (2010). *List of Species Likely to Benefit from MPAs in the NCSR*. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/pdfs/binders_nc/b2_3.pdf

[44] MLPA Initiative. (2012). *Final Environmental Impact Report, California Marine Life Protection Act Initiative, North Coast Marine Protected Areas Project - Entire Report*. Retrieved Jul 28, 2015 from http://www.dfg.ca.gov/marine/mpa/impact_nc.asp

[45] CDFW (2012). *Regulatory and Environmental Review Process Documents*. Retrieved Aug 10, 2015 from http://www.dfg.ca.gov/marine/mpa/regulatorydocs_n.asp

[46] California Fish and Game Commission (2012). *Marine Protected Areas, North Coast*. Retrieved Aug 10, 2015 from http://www.fgc.ca.gov/regulations/2012/index.aspx#632nc

8. Literature Cited

Allaby, M. (1998). *Concise Oxford dictionary of ecology*. Oxford: Oxford UP.

Fox, E., Poncelet, E., Connor, D., Vasques, J., Ugoretz, J., McCreary, S., Monié, D., Harty, M., & Gleason, M. (2013a). Adapting stakeholder processes to region-specific challenges in marine protected area network planning. *Ocean & Coastal Management, 74*, 24-33.

Fox, E., Hastings, S., Miller-Henson, M., Monié, D., Ugoretz, J., Frimodig, A., Shuman, C., Owens, B., Garwood, R., Connor, D., Serpa, P., & Gleason, M. (2013b). Addressing policy issues in a stakeholder-based and science-driven marine protected area network planning process. *Ocean & Coastal Management, 74*, 34-44.

Gleason, M., Fox, E., Ashcraft, S., Vasques, J., Whiteman, E., Serpa, P., Saarman, E., Caldwell, M., Frimodig, A., Miller-Henson, M., Kirlin, J., Ota, B., Pope, E., Weber, M. & Wiseman, K. (2013). Designing a network of marine protected areas in California: Achievements, costs, lessons learned, and challenges ahead. *Ocean & Coastal Management, 74*, 90-101.

Kelleher, G., & Kenchington, R. A. (1992). *Guidelines for Establishing Marine Protected Areas*. Gland, Switzerland: IUCN in Collaboration with Great Barrier Reef Marine Park Authority.

Pomeroy, R. S., Parks, J. E. & Watson, L. M. (2004). *How Is Your MPA Doing? A Guidebook of Natural and Social Indicators for Evaluating Marine Protected Area Management Effectiveness*. Gland, Switzerland: IUCN.

Saarman, E., Gleason, M., Ugoretz, J., Airamé, S., Carr, M., Fox, E., Frimodig, A., Mason, T., & Vasques, J. (2013). The role of science in supporting marine protected area network planning and design in California. *Ocean & Coastal Management, 74*, 45-56.

CALIFORNIA MARINE LIFE PROTECTION ACT

MASTER PLAN FOR MARINE PROTECTED AREAS

APPENDIX D

North Central Coast: MPA Background and Priorities

August 24, 2016

Table of Contents

List of Figures

List of Tables

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.

---

[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.

---

[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

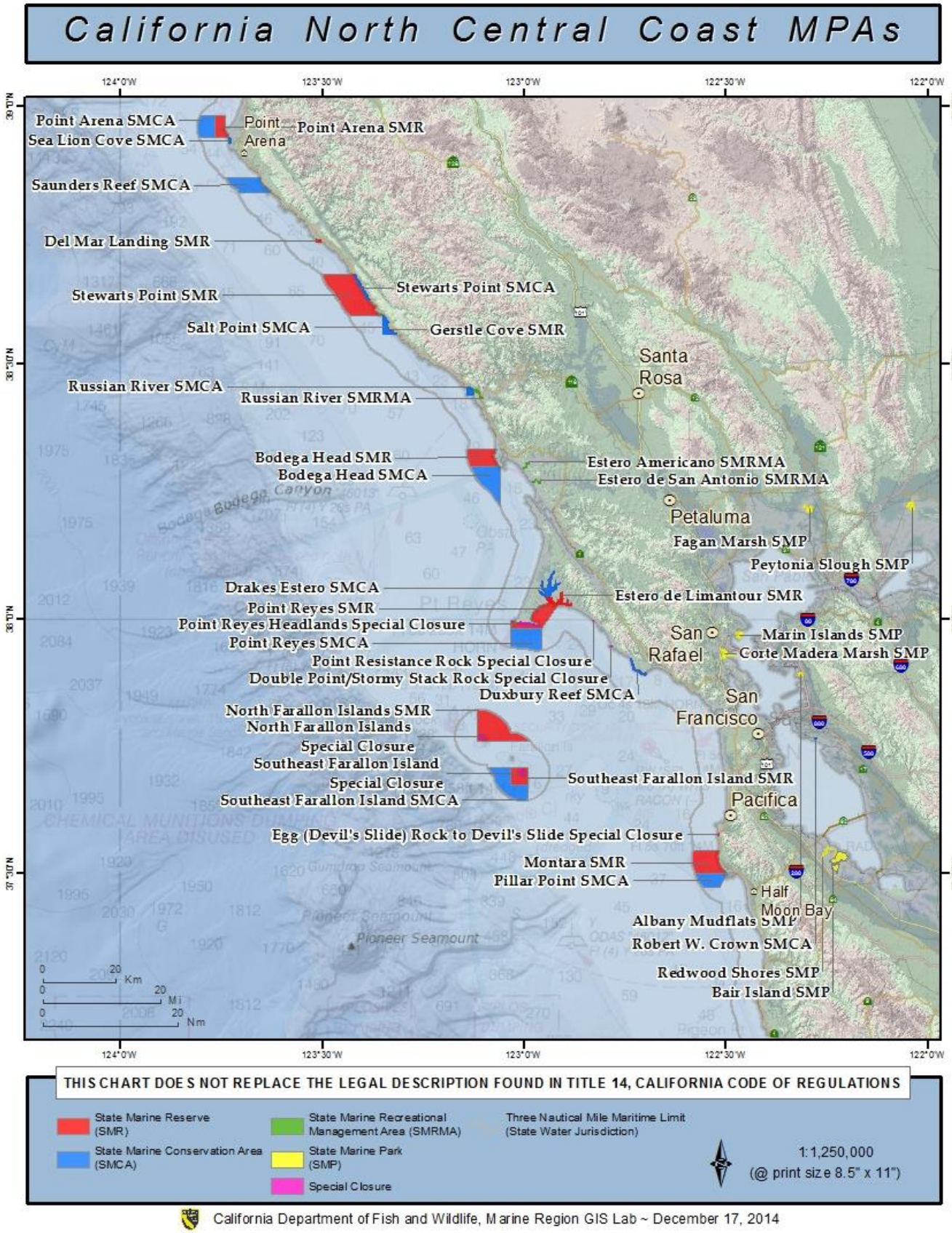


Figure 1. Adopted MPAs in the North Central Coast region.

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**

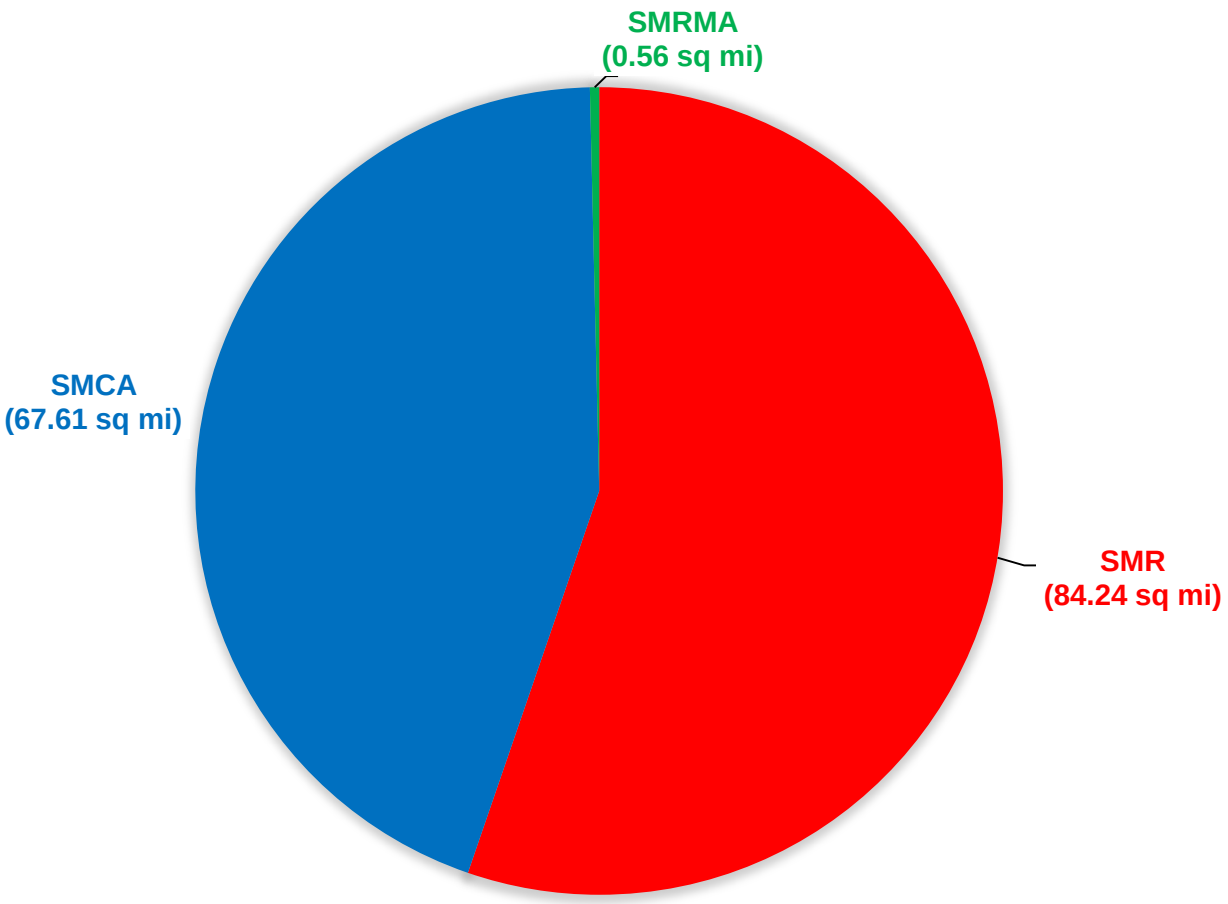


Figure 2. Area (square miles) in North Central Coast state waters of each MPA designation.

[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).

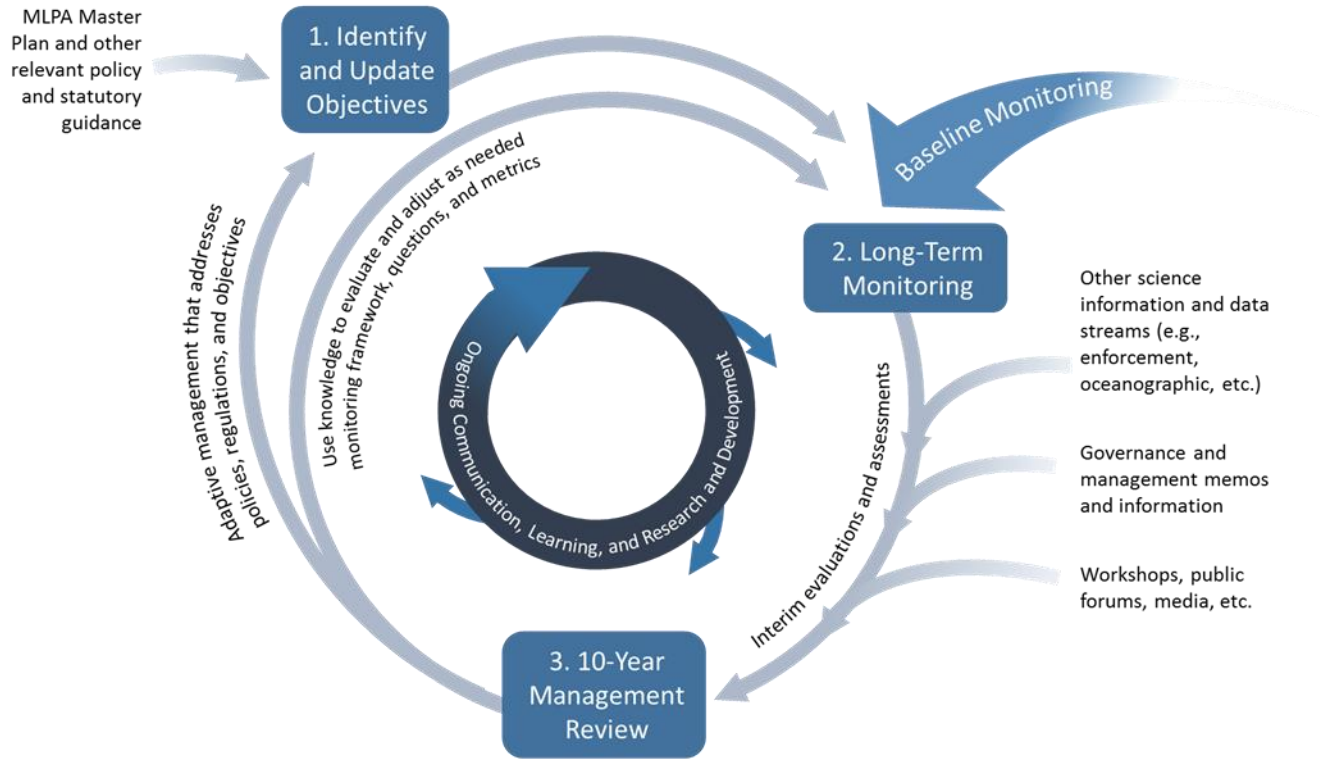


Figure 3. MLPP adaptive management process.

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.

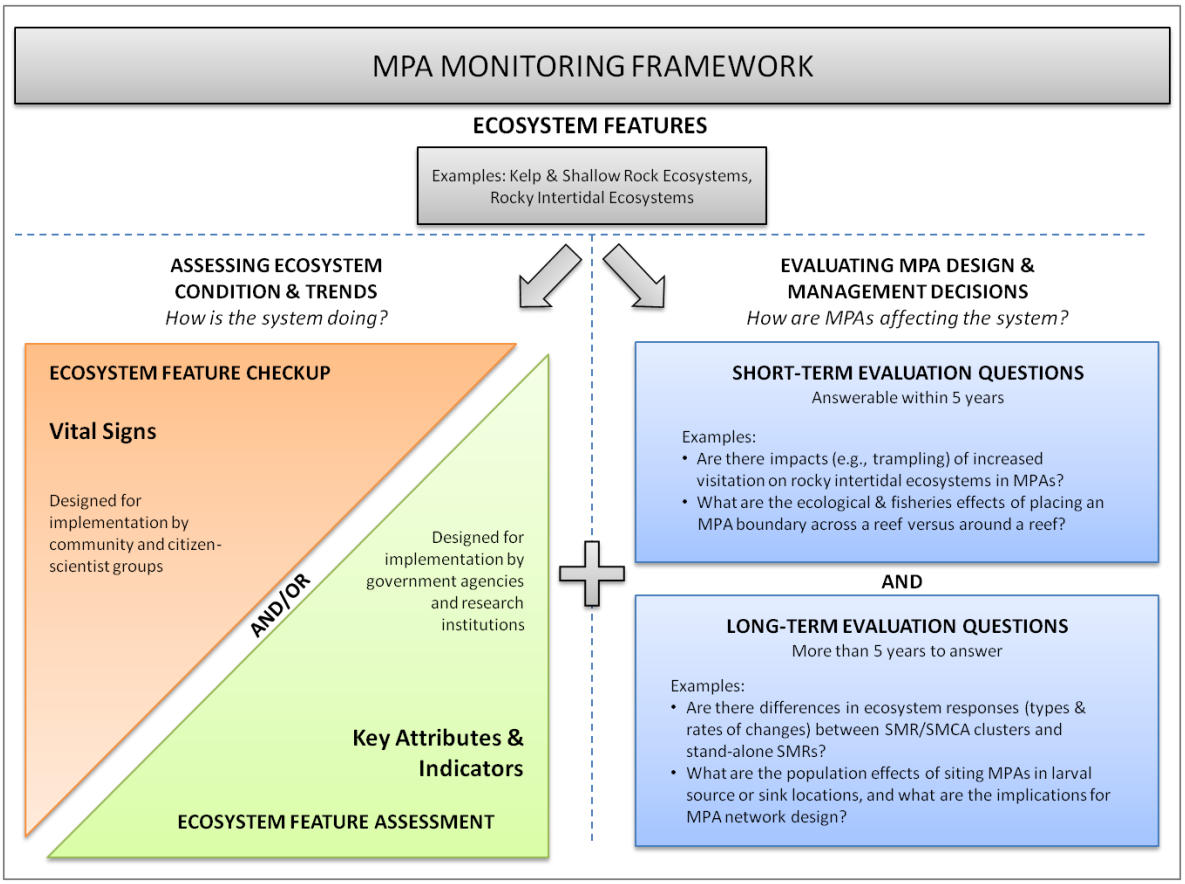


Figure 4. Statewide MPA monitoring framework, displaying the two primary monitoring elements: 1) assessing ecosystem condition and trends, and 2) evaluating MPA design and management decisions.[31]

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 • Ocean/Vessel Patrol • Small Skiff Patrol	• Boat Hoist off Pier
Point Arena SMCA	• Ocean/Vessel Patrol • Small Skiff Patrol	None
Sea Lion Cove SMCA	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	None
Saunders Reef SMCA	• Shoreline Patrol • Ocean/Vessel Patrol	None
Del Mar Landing SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
Stewarts Point SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
Stewarts Point SMCA	• Shoreline Patrol • Ocean/Vessel Patrol	None
Salt Point SMCA	• Shoreline Patrol • Ocean/Vessel Patrol	None
Gerstle Cove SMR	• Shoreline Patrol • Kayak Patrol	None
Russian River SMRMA	• Shoreline Patrol • Kayak Patrol	None
Russian River SMCA	• Shoreline Patrol • Ocean/Vessel Patrol	None
Bodega Head SMR	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	None
Bodega Head SMCA	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	None
Estero Americano SMRMA	• Shoreline Patrol • Kayak Patrol	None
Estero de San Antonio SMRMA	• Shoreline Patrol • Kayak Patrol	None
Point Reyes SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None

MPA Name	Primary Enforcement Method	Special Considerations
Point Reyes SMCA	• Shoreline Patrol • Ocean/Vessel Patrol	None
Point Reyes Headlands Special Closure	• Shoreline Patrol • Ocean/Vessel Patrol	None
Estero de Limantour SMR	• Shoreline Patrol • Kayak Patrol	None
Drakes Estero SMCA	• Shoreline Patrol • Kayak Patrol	None
Point Resistance Rock Special Closure	• Shoreline Patrol • Ocean/Vessel Patrol	None
Double Point/Stormy Stack Rock Special Closure	• Shoreline Patrol • Ocean/Vessel Patrol	None
Duxbury Reef SMCA	• Shoreline Patrol • 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 • Ocean/Vessel Patrol • Small Skiff Patrol	None
Montara SMR	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	None
Pillar Point SMCA	• Shoreline Patrol • Ocean/Vessel Patrol • 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 Point Arena SMCA Sea Lion Cove SMCA Saunders Reef SMCA Del Mar Landing SMR Stewarts Point SMR Stewarts Point SMCA Salt Point SMCA Gerstle Cove SMR Russian River SMRMA Russian River SMCA 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 Duxbury Reef SMCA North Farallon Islands SMR North Farallon Island Special Closure Southeast Farallon Island SMR Southeast Farallon Island SMCA Southeast Farallon Islands Special Closure Egg (Devil's Slide) Rock to Devil's Slide Special Closure Montara SMR 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

[40] MLPA Master Plan Science Advisory Team. (2008). *List of Species Likely to Benefit from MPAs in the NCSR*. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/mlpa/pdfs/binders/b2dc.pdf

[41] MLPA Initiative. (2009). *Final Environmental Impact Report, and Draft Environmental Impact Report, California Marine Life Protection Act Initiative, North Central Coast Marine Protected Areas Project*. Retrieved Jul 29, 2015 from http://www.dfg.ca.gov/marine/mpa/impact_ncc.asp

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

[43] California Fish and Game Commission. (2008). *Marine Protected Areas, North Central Coast Study Region*. Retrieved Aug 7, 2015 from http://www.fgc.ca.gov/regulations/2009/#632ncc

8. Literature Cited

Allaby, M. (1998). *Concise Oxford dictionary of ecology*. Oxford: Oxford UP.

Fox, E., Poncelet, E., Connor, D., Vasques, J., Ugoretz, J., McCreary, S., Monié, D., Harty, M., & Gleason, M. (2013a). Adapting stakeholder processes to region-specific challenges in marine protected area network planning. *Ocean & Coastal Management, 74,* 24-33.

Fox, E., Hastings, S., Miller-Henson, M., Monié, D., Ugoretz, J., Frimodig, A., Shuman, C., Owens, B., Garwood, R., Connor, D., Serpa, P., & Gleason, M. (2013b). Addressing policy issues in a stakeholder-based and science-driven marine protected area network planning process. *Ocean & Coastal Management, 74*, 34-44.

Gleason, M., Fox, E., Ashcraft, S., Vasques, J., Whiteman, E., Serpa, P., Saarman, E., Caldwell, M., Frimodig, A., Miller-Henson, M., Kirlin, J., Ota, B., Pope, E., Weber, M. & Wiseman, K. (2013). Designing a network of marine protected areas in California: Achievements, costs, lessons learned, and challenges ahead. *Ocean & Coastal Management, 74*, 90-101.

Kelleher, G., & Kenchington, R. A. (1992). *Guidelines for Establishing Marine Protected Areas*. Gland, Switzerland: IUCN in Collaboration with Great Barrier Reef Marine Park Authority.

Pomeroy, R. S., Parks, J. E. & Watson, L. M. (2004). *How Is Your MPA Doing? A Guidebook of Natural and Social Indicators for Evaluating Marine Protected Area Management Effectiveness*. Gland, Switzerland: IUCN.

Saarman, E., Gleason, M., Ugoretz, J., Airamé, S., Carr, M., Fox, E., Frimodig, A., Mason, T., & Vasques, J. (2013). The role of science in supporting marine protected area network planning and design in California. *Ocean & Coastal Management, 74*, 45-56.

CALIFORNIA MARINE LIFE PROTECTION ACT

MASTER PLAN FOR MARINE PROTECTED AREAS

APPENDIX E

Central Coast: MPA Background and Priorities

August 24, 2016

Table of Contents

List of Figures

List of Tables

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.

---

[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 Central Coast regional planning process to design and site MPAs occurred from 2004 to 2007, and was the first of four planning regions completed through the MLPA Initiative. Encompassing 1,146 square miles (2,968 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. An exception to the three nautical mile distance from shore exists within Monterey Bay, where the three nautical mile distance offshore is measured from a straight line between Point Pinos (Monterey County) and Point Santa Cruz (Santa Cruz County) instead of the actual shoreline.[6] The Central Coast region spans a straight-line distance of approximately 241 statute miles (388 kilometers) of the California coastline (with about 521 statute miles [838 kilometers] of actual coastline) from Pigeon Point in San Mateo County to Point Conception in Santa Barbara County. The region includes a broad array of habitats that range in depth. The maximum depth within this region is 4,793 feet (1,461 meters). A detailed description of the Central Coast region is found in the California MLPA Initiative Regional Profile of the 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 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:

- Abundance of large submarine canyons within state waters near off the coast of Monterey and Carmel Bays and Big Sur
- Underwater pinnacles are found throughout the region and are abundant in certain locations
- Estuaries are rare in the region (i.e., Elkhorn Slough and Morro Bay)
- Kelp forests in the region include both giant kelp and bull kelp; giant kelp dominates south of Davenport (Santa Cruz County), while bull kelp is more dominant in the far northern part of the region
- Renowned as a diving, kayaking, fishing, and whale-watching destination; marine recreational activities help support coastal tourism and coastal communities
- High concentration of marine laboratories and research institutions

[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 Reading Rock).
[7] MLPA Initiative. (2005). *Regional Profile of the Central Coast Study Region (Pigeon Point to Point Conception, CA)*. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/pdfs/rpccsr_091905.pdf
[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.

3. Design Considerations for Central Coast MPAs

During the MLPA Initiative, the members of the Central Coast Regional Stakeholder Group (CCRSG) committed and participated in activities that included identifying and valuing alternative proposals for MPAs.[12] The CCRSG agreed that regional goals, objectives, and design and implementation considerations are all crucial to develop an effective system of MPAs that stakeholder 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 the regional goals and objectives, which are built from the MLPA goals, and design and implementation considerations to help fulfill those goals within the Central Coast planning region.

3.1 Regional Goals and Objectives

Regional goals are statements of what the regional MPAs are ultimately trying to achieve (Pomeroy et al., 2004), and were largely taken directly from the MLPA itself. To support the regional goals, regional objectives are more specific statements that describe what MPAs may accomplish to attain a related goal (Pomeroy et al., 2004). The MPA design process included developing goals and regional objectives that were consistent with the six MLPA goals, then identifying the intent for a particular site and identifying objectives and site-specific rationales for individual MPAs. Once set, regional goals and objectives influence crucial decisions regarding MPA size, location and boundaries, and management measures, and inform monitoring, evaluation, and the adaptive management process. Regional objectives should reflect the MLPA goals and be reasonably measurable and achievable. Included below are the regional goals and objectives of the Central Coast planning region.

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

1. Protect areas of high species diversity and maintain species diversity and abundance, consistent with natural fluctuations, of populations in representative habitats.

[12] MLPA Initiative. (2005). *Charter of the Central Coast Regional Stakeholder Group*. Retrieved Sept 21, 2015 from: http://www.dfg.ca.gov/marine/pdfs/ccrsg_charter.pdf

[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).

2. Protect marine life communities associated with areas of 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, depleted, or overfished species, where identified, and the habitats and ecosystem functions upon which they rely.[14]
2. Protect larval sources and enhance reproductive capacity of species most likely to benefit from MPAs through retention of large, mature individuals.
3. Protect selected species and the habitats on which they depend while allowing the 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 and research and education institutions and include areas of traditional non-consumptive recreational use and are accessible for recreational, educational, and study opportunities.
2. 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.
3. Develop collaborative scientific monitoring and research projects evaluating MPAs that link with classroom science curricula, volunteer dive programs, and fishermen of all ages, and identify participants.
4. Protect or enhance recreational experience by ensuring natural size and age structure of marine populations.

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

1. Include within MPAs the following habitat types: estuaries, heads of submarine canyons, and pinnacles.

[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, California Nearshore FMP, Federal Groundfish FMP. *Rare*, e*ndangered,* 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.
.

2. Protect species associated with, and replicate to the extent possible, representatives of all marine habitats identified in the MLPA or the Master Plan framework across a range of depths.

Goal 5. To ensure that 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, 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 Master Plan framework.

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

1. Develop a process for regional review and evaluation of implementation effectiveness that includes stakeholder involvement 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

In addition to goals and objectives, design considerations are additional factors that may help fulfill provisions of the MLPA related to facilitating enforcement, encouraging public involvement, and incorporating socioeconomic considerations. Design considerations are cross-cutting (they apply to all MPAs) and not necessarily measurable. They were applied as the location, designation (reserve, park or conservation area), size, and other characteristics of potential MPAs were being developed. MPA alternatives developed by the CCRSG included analysis of how the proposals addressed regional goals and objectives as well as design guidelines. The CCRSG identified several issues that should be considered in the design and evaluation of MPAs. Like the Considerations in the Design of MPAs section in the master plan framework, these considerations may apply to all MPAs and MPA proposals regardless of the specific goals and objectives of that MPA. The design considerations below will be incorporated with the provisional goals and objectives and provided to the Master Plan SAT, the Blue Ribbon Task Force (BRTF), and the Commission. Design considerations with long-term monitoring components will be used in developing monitoring plans and informing 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)[15] and the draft Abalone Recovery and Management Plan.[16]
- In developing MPA proposals, consider how existing state and federal programs address the goals and objectives of the MLPA and the 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.
- To the extent possible, design MPA boundaries that facilitate ease of public recognition and ease of enforcement.

3.3 Unique Design Considerations

As the first study region completed, the members of the CCRSG were the first to develop goals and objectives. Regional goals were developed relative to the MLPA network goals, and intended to be specific, measurable, achievable, realistic, timely ("SMART"), and include an indicator or a way to gauge whether the goals and objectives of the MPAs are being achieved. Indicators were selected after the goals and objectives were identified with the intent to assist programmatic evaluation.

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

[15] Design considerations from 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.

[16] Design considerations from draft Abalone and 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.

design and/or policy considerations (Fox et al. 2013a, b). For example, during the Central Coast regional MPA planning process from 2004 to 2007, seven memorandums specific to the Central Coast were issued, including a four part memorandum from CDFW regarding the relationship between MPA planning and existing fisheries management measures. A complete historical record of all Central Coast MPA design and implementation considerations can be found on CDFW's website.[17]

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 include the following:

- Improve public outreach related to MPAs through the use of docents, improved signage, and production of an educational brochure for Central Coast MPAs.
- When appropriate, phase the implementation of Central Coast MPAs to ensure their effective management, monitoring, and enforcement.
- Ensure adequate funding for monitoring, management, and enforcement is available for implementing new MPAs. (In addition to approving this language, the BRTF also adopted three statements related to funding)
- 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.

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)[18] 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.[19]

[17] MLPA Blue Ribbon Task Force transmittal of Central Coast project recommendations to the California Department of Fish and Game (April 28, 2006) (Binder II, Legal and Policy Context Documents): http://www.dfg.ca.gov/marine/mpa/transmittaldocs.asp

[18] 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/

[19] Ibid.

4. Summary of Regional MPAs

A network of 29 MPAs covering approximately 207 square miles (536 square kilometers) of state waters, or about 18% of the Central Coast region, went into effect in September 2007. The Central Coast MPA network was the first 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 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 Central Coast planning region include State Marine Reserves (SMRs), State Marine Conservation Areas (SMCAs), State Marine Conservation Areas/State Marine Parks (SMCAs/SMPs), and a State Marine Recreational Management Area (SMRMA). Throughout all tables and figures in this section, all statistics are from CDFW's Marine Region Geographic Information Systems (GIS) unit.[20] Statistics in this section were updated March 2016 and are subject to change as improvements in geographic data become available. Detailed profiles of each 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 Central Coast regional resources with additional information.[21]

[20] CDFW's Marine Region Geographic Information Systems Unit: https://www.wildlife.ca.gov/Conservation/Marine/GIS
[21] 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

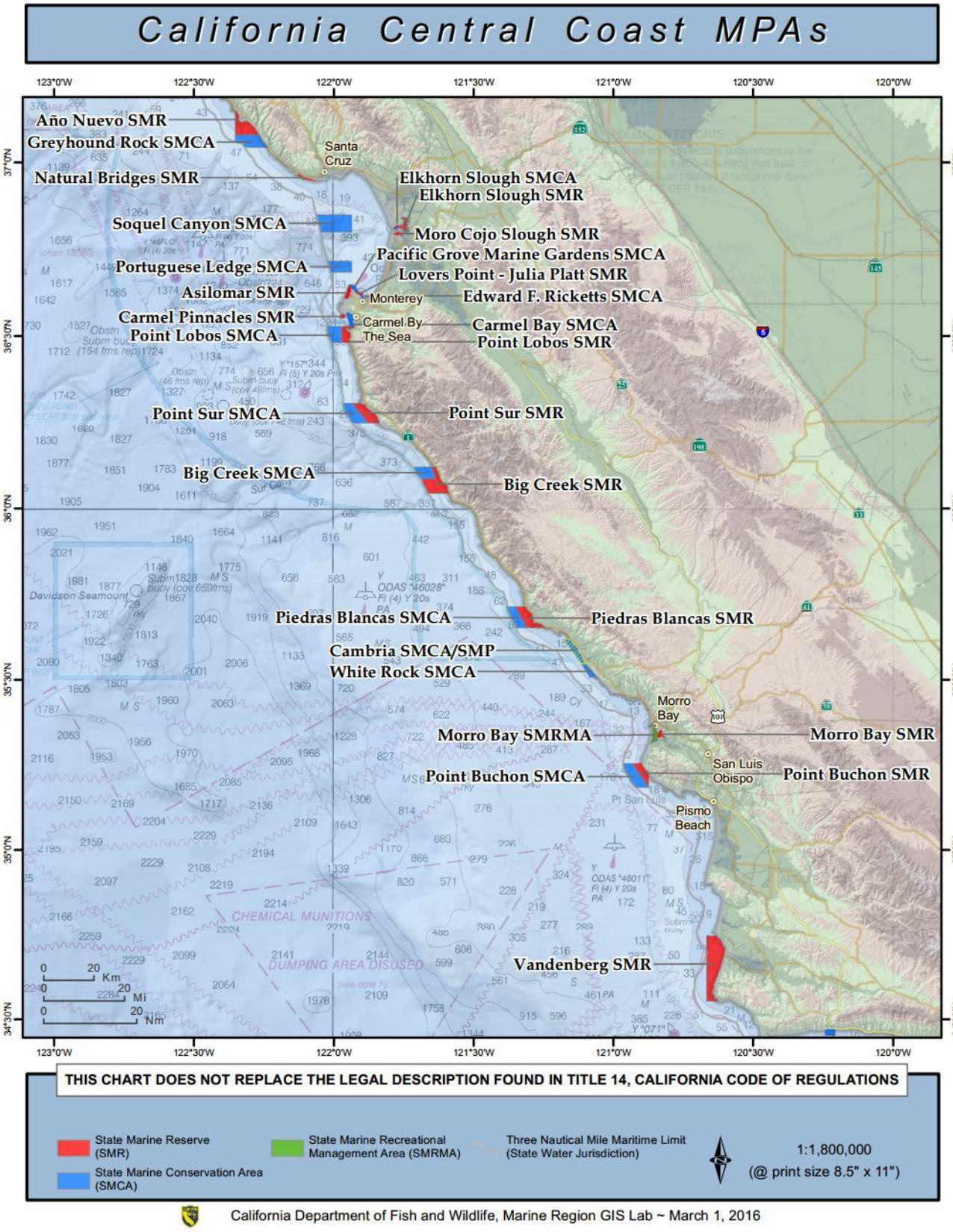


Figure 1. Adopted MPAs in the Central Coast region.

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

Protected Area Designation	Count	Area (square miles)	Area (percent)
SMR	14	97.37	8.51
SMCA	13	100.10	8.75
SMCA/SMP[22]	1	6.26	0.55
SMRMA	1	3.07	0.27
Total	**29**	**206.79**	**18.07**

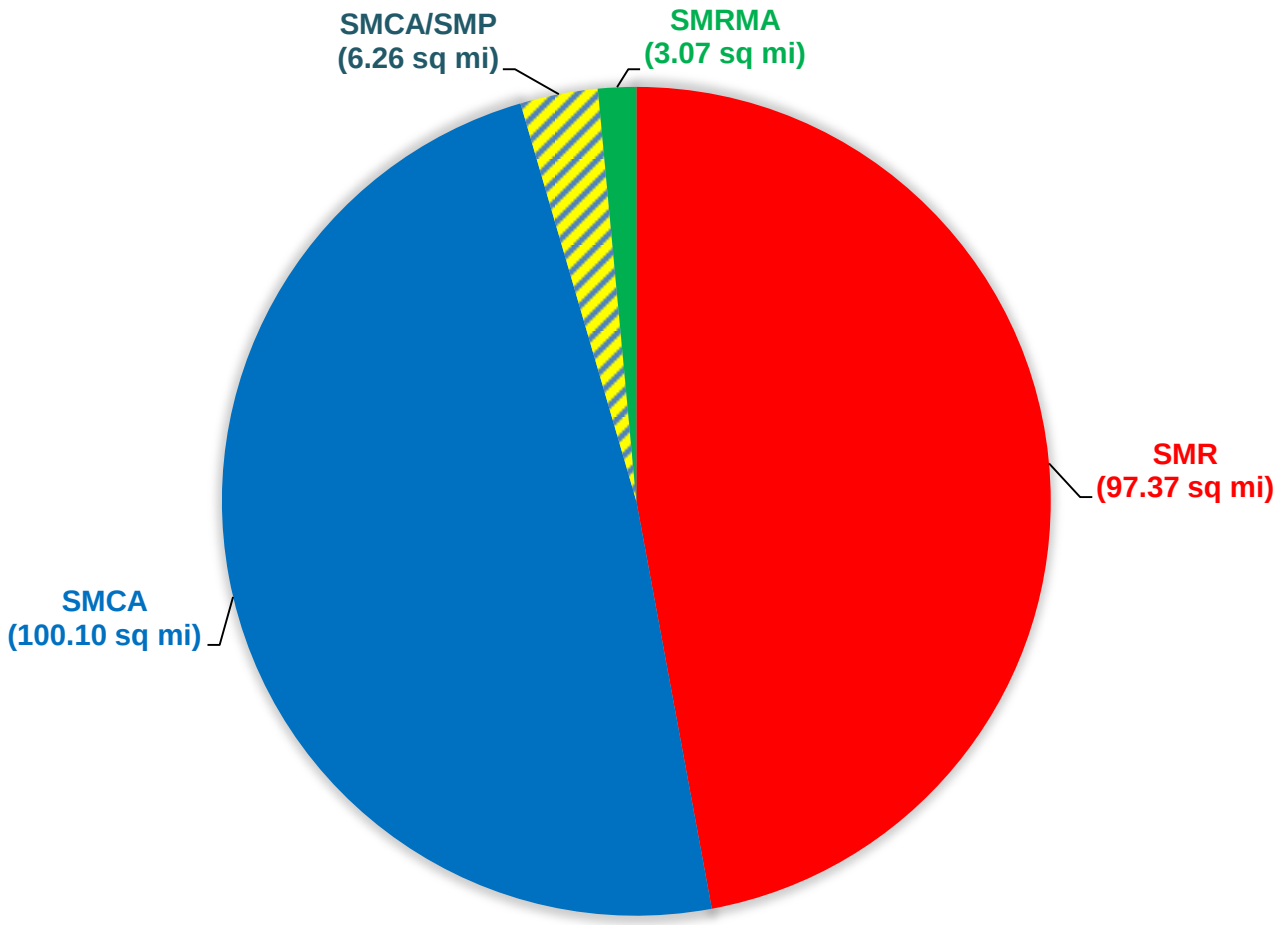


Figure 2. Area (square miles) in Central Coast region state waters of each MPA designation.

[22] SMCA/SMP - The Commission designated Cambria SMCA, which was subsequently also adopted as Cambria SMP by the State Park and Recreation Commission (August 2010) with the same boundaries and no change to regulations. Therefore, this marine protected area has dual designations, as reflected in the table

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

MPA Name	Area (square miles)	Along-Shore Span (miles)[23]	Depth Range (feet)
Año Nuevo SMR	11.15	7.9	0-175
Greyhound Rock SMCA	12.00	3.0	0-220
Natural Bridges SMR	0.25	3.9	0-10
Elkhorn Slough SMR	2.72	0.7	0-10
Elkhorn Slough SMCA	0.22	0.1	0-10
Moro Cojo SMR	0.20	0.1	0-10
Soquel Canyon SMCA	22.97	3.4	274-2113
Portuguese Ledge SMCA	10.64	2.3	302-4793
Edward F. Ricketts SMCA	0.23	0.7	0-74
Lover's Point Julia-Platt SMR	0.30	0.9	0-88
Pacific Grove Marine Gardens SMCA	0.98	1.3	0-151
Asilomar SMR	1.51	2.3	0-172
Carmel Pinnacles SMR	0.53	0.6	69-223
Carmel Bay SMCA	2.20	2.7	0-471
Point Lobos SMR	5.50	4.5	0-408
Point Lobos SMCA	8.47	3.2	268-1823
Point Sur SMR	9.79	5.5	0-183
Point Sur SMCA	10.62	5.1	139-624
Big Creek SMCA	7.85	2.5	107-1964
Big Creek SMR	14.51	6.1	0-2393
Piedras Blancas SMR	10.44	6.5	0-157
Piedras Blancas SMCA	8.84	4.8	94-337
Cambria SMCA/SMP	6.26	5.9	0-105
White Rock SMCA	2.91	3.5	0-128
Morro Bay SMRMA	3.07	5.7	0-18
Morro Bay SMR	0.88	0.8	0-10
Point Buchon SMR	6.68	2.5	0-208
Point Buchon SMCA	12.19	5.9	191-391
Vandenberg SMR	32.91	14.5	0-127

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

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

	Habitats in Central Coast Region MPAs (Percentage)			
Habitat Type	**SMR**	**SMCA[24]**	**SMRMA**	**Total (all MPAs)**
Intertidal				
Sandy or gravel beaches	20.7	6.5	0.6	27.9
Rocky intertidal and cliff	26.3	8.2	0.1	34.6
Coastal marsh	39.0	4.3	15.5	58.8
Tidal flats	32.4	3.4	23.3	59.1
Surfgrass beds (0-30m)	28.0	12.2	0	40.3
Eelgrass beds (0-30m)	2.5	0.6	92.3	100
Estuary (total area)	38.2	2.0	43.4	83.6
Soft bottom				
0-30 meters	13.3	2.8	0	16.1
30-100 meters	5.2	9.0	0	14.2
100-200 meters	2.2	21.0	0	23.1
>200 meters	5.9	15.0	0	20.9
Hard bottom				
0-30 meters	22.4	8.3	0	30.7
30-100 meters	15.2	11.3	0	26.5
100-200m	2.2	44.5	0	46.7
>200 meters	2.2	1.7	0	3.9
Kelp forest				
Average kelp (‘89, ‘99, ‘02, ’03-‘08)	22.8	13.0	0	35.8
Submarine canyon				
0-30 meters	11.7	24.7	0	36.4
30-100 meters	5.8	4.9	0	10.7
100-200 meters	4.4	13.2	0	17.60
>200 meters	7.5	14.6	0	22.2

[24] Cambria SMCA was designated by the Commission as an SMCA, and was subsequently also adopted as Cambria SMP by the State Park and Recreation Commission (August 2010) with the same boundaries and no change to regulations. The dual designation is represented in this table as an SMCA

Table 4. Habitat representation for individual Central Coast region MPAs.[25]

Habitat Type		Año Nuevo SMR	Greyhound Rock SMCA	Natural Bridges SMR	Elkhorn Slough SMR	Elkhorn Slough SMCA	Moro Cojo Slough SMR	Soquel Canyon SMCA	Portuguese Ledge SMCA	Edward F. Ricketts SMCA	Lovers Point - Julia Platt SMR
Sandy or gravel Beaches	mi	10.46	2.79	3.10	0	0.11	0	0	0	0.34	0.45
Rocky intertidal and cliff	mi	6.86	3.39	3.79	0	0	0	0	0	0.87	1.39
Tidal flats	mi	0	0	0	10.34	0.78	0	0	0	0	0
Coastal marsh	mi	0.17	0	0.68	10.34	1.15	0	0	0	0	0
Surfgrass	mi	5.28	3.38	3.53	0	0	0	0	0	0.82	1.14
Eelgrass	mi^2	0	0	0	0.03	0.01	0	0	0	0	0
Estuary	mi^2	0	0	0	1.65	0.11	0.10	0	0	0	0
Hard 0 - 30m	mi^2	2.59	1.12	0.22	0	0	0	0	0	0.03	0.05
Hard 30 - 100m	mi^2	0.79	0.03	0	0	0	0	0.22	0.18	0	0
Hard 100 - 200m	mi^2	0	0	0	0	0	0	0.11	0.35	0	0
Hard 200 - 3000m	mi^2	0	0	0	0	0	0	0.00	0.00	0	0
Soft 0 - 30m	mi^2	3.56	1.14	0	0	0	0	0	0	0.14	0.13
Soft 30 - 100m	mi^2	1.63	8.61	0	0	0	0	14.54	1.51	0	0
Soft 100 - 200m	mi^2	0	0	0	0	0	0	2.72	5.28	0	0
Soft 200 - 3000m	mi^2	0	0	0	0	0	0	5.25	3.29	0	0
Average Kelp	mi^2	0.01	0.01	0	0	0	0	0	0	0.04	0.06
Submarine Canyon 0 - 30m	mi^2	0	0	0	0	0	0	0	0	0	0
Submarine Canyon 30 - 100m	mi^2	0	0	0	0	0	0	0.02	0	0	0
Submarine Canyon 100 - 200m	mi^2	0	0	0	0	0	0	0.60	0	0	0
Submarine Canyon 200 - 3000m	mi^2	0	0	0	0	0	0	2.25	1.50	0	0

[25] 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		Pacific Grove Marine Gardens SMCA	Asilomar SMR	Carmel Pinnacles SMR	Carmel Bay SMCA	Point Lobos SMR	Point Lobos SMCA	Point Sur SMR	Point Sur SMCA	Big Creek SMR	Big Creek SMCA
Sandy or gravel Beaches	mi	1.56	2.51	0	3.09	2.10	0	5.46	0	2.79	0
Rocky intertidal and cliff	mi	2.41	2.61	0	2.66	13.70	0	4.11	0	4.71	0
Tidal flats	mi	0	0	0	0	0	0	0.22	0	0	0
Coastal marsh	mi	0	0	0	0	0	0	0.14	0	0	0
Surfgrass	mi	1.50	1.50	0	2.10	6.50	0	4.97	0	6.43	0
Eelgrass	mi^2	0	0	0	0	0	0	0	0	0	0
Estuary	mi^2	0	0	0	0.02	0	0	0.01	0	0	0
Hard 0 - 30m	mi^2	0.30	0.58	0.10	0.40	0.65	0	2.12	0	0.27	0
Hard 30 - 100m	mi^2	0.10	0.06	0.29	0.12	1.38	0.21	0.95	1.09	0.06	0.01
Hard 100 - 200m	mi^2	0	0	0	0.02	0.02	0.26	0	0.00	0.01	0.01
Hard 200 - 3000m	mi^2	0	0	0	0	0	0.00	0	0	0.01	0.00
Soft 0 - 30m	mi^2	0.22	0.34	0.02	0.67	0.21	0	2.49	0	1.65	0
Soft 30 - 100m	mi^2	0.10	0.02	0.11	0.36	2.05	0.08	2.91	8.65	3.17	1.01
Soft 100 - 200m	mi^2	0	0	0	0.05	0.33	3.45	0	0.19	0.93	0.68
Soft 200 - 3000m	mi^2	0	0	0	0.02	0	4.46	0	0.01	7.52	6.13
Average Kelp	mi^2	0.13	0.08	0.01	0.32	0.36	0	0.91	0	0.40	0
Submarine Canyon 0 - 30m	mi^2	0	0	0	0.14	0.07	0	0	0	0	0
Submarine Canyon 30 - 100m	mi^2	0	0	0	0.02	0.01	0.02	0	0.04	0.25	0.12
Submarine Canyon 100 - 200m	mi^2	0	0	0	0	0	0.15	0	0.02	0.29	0.10
Submarine Canyon 200 - 3000m	mi^2	0	0	0	0	0	0.15	0	0	3.16	2.22

Habitat Type		Piedras Blancas SMR	Piedras Blancas SMCA	Cambria SMCA/SMP	White Rock SMCA	Morro Bay SMRMA	Morro Bay SMR	Point Buchon SMR	Point Buchon SMCA	Vandenberg SMR
Sandy or gravel Beaches	mi	5.48	0	5.31	1.55	1.46	0	1.46	0	13.33
Rocky intertidal and cliff	mi	6.09	0	4.11	4.02	0.18	0	2.71	0	10.21
Tidal flats	mi	0.43	0	0.57	0	9.19	1.53	0	0	0.28
Coastal marsh	mi	0.20	0	0.61	0	6.25	4.24	0	0	0
Surfgrass	mi	6.37	0	3.90	3.87	0	0	0	0	0
Eelgrass	mi^2	0	0	0	0	0.99	0	0	0	0
Estuary	mi^2	0.01	0	0.01	0	3.02	0.83	0	0	0.04
Hard 0 - 30m	mi^2	2.44	0.06	1.48	0.91	0	0	0.84	0	1.55
Hard 30 - 100m	mi^2	0.54	2.35	0	0.10	0	0	0.47	0.32	0.08
Hard 100 - 200m	mi^2	0	0	0	0	0	0	0	0.04	0
Hard 200 - 3000m	mi^2	0	0	0	0	0	0	0	0	0
Soft 0 - 30m	mi^2	3.63	0.01	3.40	0.68	0	0	0.25	0	17.35
Soft 30 - 100m	mi^2	2.25	6.28	0.15	0.40	0	0	4.56	8.11	10.11
Soft 100 - 200m	mi^2	0	0	0	0	0	0	0	3.02	0
Soft 200 - 3000m	mi^2	0	0	0	0	0	0	0	0	0
Average Kelp	mi^2	0.45	0	0.54	0.43	0	0	0.29	0	0.02
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).

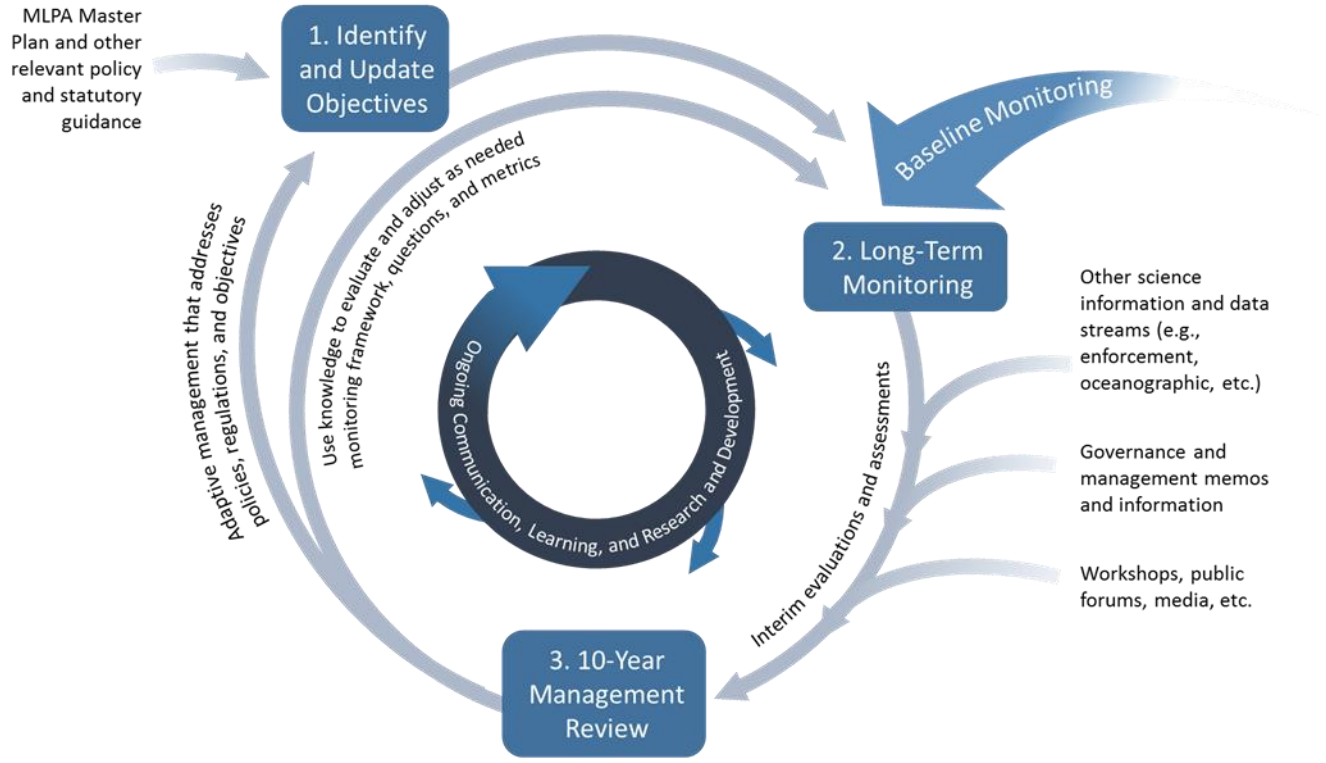


Figure 3. MLPP adaptive management process.

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.

The initial monitoring plan for Central Coast MPAs was developed by CDFW in 2007, and adopted by the Commission in 2008 for inclusion in the draft Master Plan.[26] In 2014, OST, and CDFW updated the original monitoring plan to apply the statewide MPA monitoring framework, reflect baseline program results, and ensure consistency with the North Central Coast and South Coast regional MPA monitoring plans previously adopted by the Commission.[27,28] OST and CDFW included broad input from

[26] CDFW. (2008). *Draft Master Plan for Marine Protected Areas, Appendix O, p. 51-86*. Retrieved Mar 5, 2015 from: https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

[27] 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

stakeholders, scientists, tribal governments, and fishermen, among others to develop this plan. The updated Central Coast MPA Monitoring Plan was adopted by the Commission in October 2014.[29]

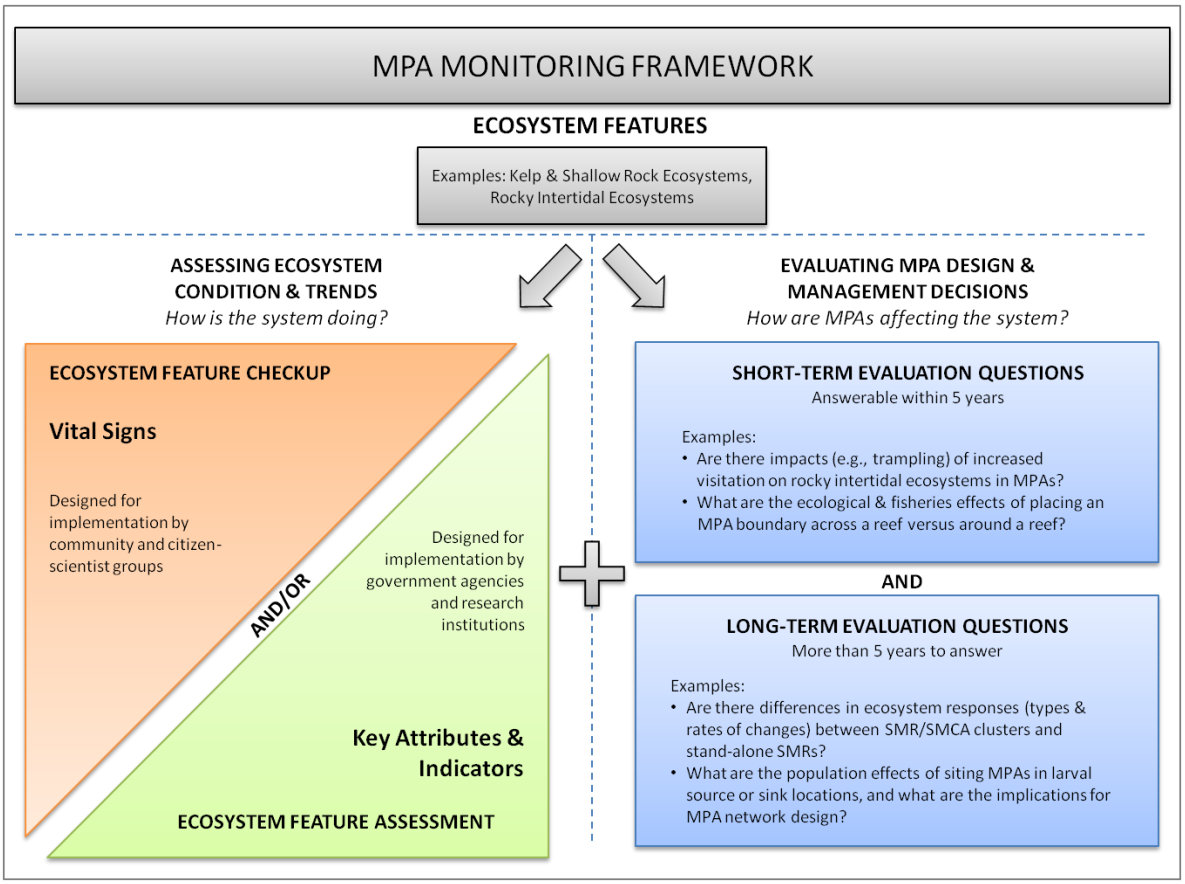


Figure 4. Statewide MPA monitoring framework, displaying the two primary monitoring elements: 1) assessing ecosystem condition and trends, and 2) evaluating MPA design and management decisions.[30]

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 Central Coast MPA Baseline Program, a collaboration between the Ocean Protection Council (OPC), CDFW, California State Coastal Conservancy, and California Sea Grant, began in 2007 to assess the baseline ecological and socioeconomic conditions of the Central Coast regional MPA network. The baseline program supported five projects to conduct collaborative fisheries sampling;

[28] 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
[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. (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

survey kelp forests, nearshore fish populations, rocky intertidal habitats, and deep water habitats; and collect socioeconomic data. Data collection and analyses for the Central Coast MPA Baseline Program were completed in 2012, and all baseline monitoring data can be accessed on the OceanSpaces website.[31]

The Central Coast region was the first of the four regional MPA baseline programs. In February 2013, OST and CDFW collaborated with OPC, the baseline program principal investigators and other local researchers to develop a State of the California Central Coast (State of the Region) report including a summary of the Central Coast MPA Baseline Program.[32] In early 2013, a symposium was held to provide an opportunity for resource managers, decision makers, scientists, and stakeholders to present results from the Central Coast MPA Baseline Program, discuss perspectives on MLPA implementation, learn about the results from baseline MPA monitoring, and share results from their own research. A symposium proceedings document was also developed to summarize outcomes from the meeting.[33] The State of the Region report, symposium, and symposium proceedings provided guidance for CDFW's management review of the first five years of MPA implementation in the region, which was presented to the Commission in late 2013.[34]

The Central Coast MPA Baseline Program provided the state with a characterization of the habitats, biological communities, and socioeconomics of the Central Coast region and initial changes since the new and revised MPAs were implemented in 2007. The information gathered sets an important baseline for evaluating future changes in the Central Coast MPA network and region. The monitoring results and habitat data from the California Seafloor Mapping Program indicate that the Central Coast MPA network contains a variety of representative marine habitats and ecosystems with geographically distinct communities, including species of economic value, which contribute to achieving the ecological goals of the MLPA. Recreational and commercial fishermen reported the loss of some traditional fishing grounds and the need to travel longer distances due to MPAs. However, socioeconomic evaluations revealed that fishing continues to be an integral part of the Central Coast local ocean economy, along with recreational dive trips, whale watching tours, and research charters. These outcomes are a testament to the collaborative Central Coast MPA planning process, knowledgeable and dedicated public participants, strong scientific and policy guidance, and resulting Commission regulatory process.[35]

Long-Term Monitoring

With the completion of the Central Coast MPA Baseline Program, 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 Central Coast MPA monitoring, please visit the Central Coast page of the OceanSpaces website.[36]

---

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

[32] OST and CDFW. (2013). *State of the California Central Coast: Results from Baseline Monitoring of Marine Protected Areas 2007-2012*. California, USA. Retrieved Apr 1, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=133101&inline

[33] MPA Monitoring Enterprise, CDFW, OPC, and OST. (2013). *State of the California Central Coast: Reflecting on the First 5 Years of Marine Protected Area Monitoring, Management, and Partnership*. *Symposium Proceedings*. Retrieved Sept 21 from: http://oceanspaces.org/sites/default/files/regions/files/cc_symposium_proceedings_final_0.pdf

[34] CDFW. (2013). *Memorandum to the California Fish and Game Commission: Monitoring Results and Management Review for Central Coast Marine Protected Areas*. Retrieved Apr 1, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=80499&inline=1

[35] Ibid.

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

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).

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 Central Coast region.

Table 5. Enforcement considerations.

MPA Name	Primary Enforcement Method	Special Considerations
Año Nuevo SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
Greyhound Rock SMCA	• Shoreline Patrol • Ocean/Vessel Patrol	None
Natural Bridges SMR	• Shoreline Patrol	None
Elkhorn Slough SMR	• Shoreline Patrol • Small Skiff Patrol • Kayak Patrol	• Patrols Subject to Tidal Influence
Elkhorn Slough SMCA	• Shoreline Patrol • Small Skiff Patrol • Kayak Patrol	• Patrols Subject to Tidal Influence
Moro Cojo Slough SMR	• Shoreline Patrol • Kayak Patrol	None
Soquel Canyon SMCA	• Ocean/Vessel Patrol	None
Portuguese Ledge SMCA	• Ocean/Vessel Patrol	None
Edward F. Ricketts SMCA	• Shoreline Patrol • Small Skiff Patrol	None
Lovers Point-Julia Platt SMR	• Shoreline Patrol • Small Skiff Patrol	None
Pacific Grove Marine Gardens SMCA	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	None
Asilomar SMR	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	None
Carmel Pinnacles SMR	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	• High Dive Activity
Carmel Bay SMCA	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	None

MPA Name	Primary Enforcement Method	Special Considerations
Point Lobos SMR	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	None
Point Lobos SMCA	• Ocean/Vessel Patrol	None
Point Sur SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
Point Sur SMCA	• Ocean/Vessel Patrol	None
Big Creek SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
Big Creek SMCA	• Ocean/Vessel Patrol	None
Piedras Blancas SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
Piedras Blancas SMCA	• Ocean/Vessel Patrol	None
Cambria SMCA/SMP	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	None
White Rock SMCA	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	None
Morro Bay SMR	• Shoreline Patrol • Small Skiff Patrol	None
Morro Bay SMRMA	None	None
Point Buchon SMR	• Shoreline Patrol • Ocean/Vessel Patrol • Small Skiff Patrol	None
Point Buchon SMCA	• Ocean/Vessel Patrol • Small Skiff Patrol	None
Vandenberg SMR	• Ocean/Vessel Patrol	• Need to access Vandenberg Air Force Base for shoreline access.

6.1 Personnel and Equipment

CDFW has 26 enforcement staff located within the Central Coast region, covering the area between Pigeon Point and Point Conception. The five lieutenants and 21 wardens have a primary emphasis of 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 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.

Pigeon Point to Big Sur		Big Sur to Point Conception		Totals
Land-Based	**Patrol Boat**	**Land-Based**	**Patrol Boat**	
2 Lieutenants	1 Lieutenant	1 Lieutenant	1 Lieutenant	5 Lieutenants
9 Wardens	4 Wardens	4 Wardens	4 Wardens	21 Wardens
3 Patrol Skiffs	N/A	1 Patrol Skiffs	N/A	4 Patrol Skiffs
N/A	1 Patrol Boat	N/A	1 Patrol Boat	2 Patrol Boats
Individual MPAs		**Individual MPAs**		
Año Nuevo SMR Greyhound Rock SMCA Natural Bridges SMR Elkhorn Slough SMR Elkhorn Slough SMCA Moro Cojo Slough SMR Soquel Canyon SMCA Portuguese Ledge SMCA Edward F. Ricketts SMCA Lovers Point-Julia Platt SMR Pacific Grove Marine Gardens SMCA Asilomar SMR Carmel Pinnacles SMR Carmel Bay SMCA Point Lobos SMR Point Lobos SMCA Point Sur SMR Point Sur SMCA		Big Creek SMR Big Creek SMCA Piedras Blancas SMR Piedras Blancas SMCA Cambria SMCA/SMP White Rock SMCA Morro Bay SMR Morro Bay SMRMA Point Buchon SMR Point Buchon SMCA Vandenberg SMR		

6.2 Training

Wardens working within the 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 two large patrol boats in the 54 to 65 foot class stationed at major ports along the Central Coast region coastline. Each large patrol boat 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 Central Coast Regional MPA Background and Priorities document.

1. Regional Profile of the Central Coast Study Region[37]
2. Central Coast Project Adopted Regional Goals and Objectives Package[38]
3. Central Coast Lessons Learned Project[39]
4. Central Coast Project: MPA Packages[40]
5. Species Likely to Benefit from the Establishment of MPAs in California[41]
6. Marine Life Protection Act, Central Coast Study Region, Final Environmental Impact Report[42]
7. Marine Life Protected Act. Central Coast Study Region, Draft Environmental Impact Report[43]
8. Central Coast Regulatory and Environmental Review Process Documents[44,45]

[37] MLPA Initiative. (2005). *Regional Profile of the Central Coast Study Region (Pigeon Point to Point Conception, California)*. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/pdfs/rpccsr_091905.pdf
[38] MLPA Initiative. (2005) *Central Coast Project Adopted Regional Goals and Objectives*. Retrieved Jul 29, 2015 from https://www.dfg.ca.gov/marine/pdfs/rgop092805.pdf
[39] MLPA Initiative. (2006). *Central Coast Lessons Learned Project*. Retrieved Jul 29, 2015 from http://www.dfg.ca.gov/marine/mpa/lessonslearned_phase1.asp
[40] MLPA Initiative. (2006). *Central Coast Project: MPA Packages*. http://www.dfg.ca.gov/marine/mpa/centralcoast_mpa.asp
[41] CDFW. (2007). *Species Likely to Benefit from the Establishment of Marine Protected Areas in California*. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/mpa/species.asp
[42] MLPA Initiative. (2007). *Environmental Impact Report, MLPA Initiative Central Coast Marine Protected Areas Project*. Retrieved Jul 29, 2015 from http://www.dfg.ca.gov/marine/pdfs/feir0307.pdf
[43] MLPA Initiative. (2007*). Environmental Impact Report, MLPA Initiative Central Coast Marine Protected Areas Project*. Retrieved Jul 29, 2015 from http://www.dfg.ca.gov/marine/mpa/impact.asp
[44] CDFW. (2007). *Regulatory and Environmental Review Process Documents*. Retrieved Aug 10, 2015 from http://www.dfg.ca.gov/marine/mpa/regulatorydocs.asp
[45] California Fish and Game Commission (2007). *Marine Protected Areas*. Retrieved Aug 10, 2015 from http://www.fgc.ca.gov/regulations/2007/#165_632

8. Literature Cited

Allaby, M. (1998). *Concise Oxford dictionary of ecology*. Oxford: Oxford UP.

Fox, E., Poncelet, E., Connor, D., Vasques, J., Ugoretz, J., McCreary, S., Monié, D., Harty, M., & Gleason, M. (2013a). Adapting stakeholder processes to region-specific challenges in marine protected area network planning. *Ocean & Coastal Management, 74,* 24-33.

Fox, E., Hastings, S., Miller-Henson, M., Monié, D., Ugoretz, J., Frimodig, A., Shuman, C., Owens, B., Garwood, R., Connor, D., Serpa, P., & Gleason, M. (2013b). Addressing policy issues in a stakeholder-based and science-driven marine protected area network planning process. *Ocean & Coastal Management, 74*, 34-44.

Gleason, M., Fox, E., Ashcraft, S., Vasques, J., Whiteman, E., Serpa, P., Saarman, E., Caldwell, M., Frimodig, A., Miller-Henson, M., Kirlin, J., Ota, B., Pope, E., Weber, M. & Wiseman, K. (2013). Designing a network of marine protected areas in California: Achievements, costs, lessons learned, and challenges ahead. *Ocean & Coastal Management, 74*, 90-101.

Kelleher, G., & Kenchington, R. A. (1992). *Guidelines for Establishing Marine Protected Areas*. Gland, Switzerland: IUCN in Collaboration with Great Barrier Reef Marine Park Authority.

Pomeroy, R. S., Parks, J. E. & Watson, L. M. (2004). *How Is Your MPA Doing? A Guidebook of Natural and Social Indicators for Evaluating Marine Protected Area Management Effectiveness*. Gland, Switzerland: IUCN.

Saarman, E., Gleason, M., Ugoretz, J., Airamé, S., Carr, M., Fox, E., Frimodig, A., Mason, T., & Vasques, J. (2013). The role of science in supporting marine protected area network planning and design in California. *Ocean & Coastal Management, 74*, 45-56.

CALIFORNIA MARINE LIFE PROTECTION ACT

MASTER PLAN FOR MARINE PROTECTED AREAS

APPENDIX F

South Coast: MPA Background and Priorities

August 24, 2016

Table of Contents

List of Figures

List of Tables

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.

---

[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 South Coast regional planning process to design and site MPAs occurred from 2008 to 2012, and was the third of four planning regions completed through the MLPA Initiative. Encompassing 2,351 square miles (6,789 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 South Coast region spans a straight-line distance of approximately 234 statute miles (377 kilometers) of the California mainland coastline (with about 1,046 miles [1,683 kilometers] of actual shoreline) from Point Conception in Santa Barbara County to the California/Mexico border. The region also includes state waters surrounding the Channel Islands and other prominent offshore islands. The region includes a broad array of habitats that range in depth. The maximum depth within this region is 3,938 feet (1,200 meters) off the northeast corner of San Clemente Island. A detailed description of the South Coast region is found in the MLPA Initiative Regional Profile of the South Coast 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 South 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 of the region include:

- The intersection between two major biogeographic regions at Point Conception (cold, temperate Oregonian province from the north and the warm, temperate San Diegan province from the south), in the northern portion of the region
- A complex system of oceanographic currents, including a large gyre known as the Southern California Eddy, which circulates in a counter-clockwise direction
- More than 30% of the region shoreline is composed of sandy beaches
- Kelp forests dominated by giant kelp, found off rocky headlands including Point Conception, Point Dume, Palos Verdes, La Jolla, in waters surrounding the Channel Islands, and other locations
- The Channel Islands, which are made up of eight major islands as well as smaller rocks and islets; the northwestern islands are associated with cooler, nutrient-rich waters and the southeastern islands are associated with warmer waters

[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 Channel Islands).
[7] CDFW. (2009). *Regional Profile of the South Coast Study Region: Point Conception to* the California-Mexico Border. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/mpa/regionalprofile_sc.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.

- Several large urban centers, including Los Angeles and San Diego, located adjacent to the region, whose populations utilize coastal resources for recreational activities and commercial industries, while presenting unique challenges for water quality

3. Considerations for Designing South Coast MPAs

The members of the MLPA South Coast Regional Stakeholder Group (SCRSG) committed and participated in activities that included developing "alternative proposals for marine protected areas within the South Coast planning region that meet the requirements [and goals] of the MLPA".[12] The SCRSG agreed that regional goals, objectives, and design and implementation considerations were all crucial to develop of an effective system of MPAs that stakeholders support and that meets the MLPA goals. 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 for more information). This section provides specific overviews of the various design considerations used in the South 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 SCRSG 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, and North Central Coast planning regions. Regional goals and objectives were utilized by the SCRSG when identifying the intent for a particular MPA site. Included below are the regional goals and objectives of the South Coast planning region.

[12] MLPA Initiative. (2008). *Draft Charter of the MLPA South Coast Regional Stakeholder Group*. Retrieved Sept 21 from: http://www.dfg.ca.gov/marine/pdfs/charter_scrsg.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 and maintain species diversity and abundance consistent with natural fluctuations, including areas of high native species diversity and representative habitats.
2. Protect 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 biodiversity, natural trophic structure, and food webs in representative habitats.
5. Promote recovery of natural communities from disturbances, both natural and human induced, including water quality.

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, and the habitats and ecosystem functions upon which they rely.[14]
2. Sustain or increase reproduction by species likely to benefit from MPAs, with emphasis on those species identified as more likely to benefit from MPAs, and promote retention of large, mature individuals.[15]
3. Sustain or increase reproduction by species likely to benefit from MPAs with emphasis on those species identified as more likely to benefit from MPAs through protection of breeding, spawning, foraging, rearing or nursery areas or other areas where species congregate.
4. Protect selected species and the habitats on which they depend while allowing some commercial and/or recreational harvest of migratory, highly mobile, or other species; and other activities.

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. Sustain or enhance cultural, recreational, and educational experiences and uses (for example, by improving catch rates, maintaining high scenic value, lowering congestion, increasing size or abundance of species, and protecting submerged sites).

---

[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 Department 2004 and 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, California Nearshore FMP, Federal Groundfish FMP. Rare, e*ndangered,* 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. Provide opportunities for scientifically valid studies, including studies on MPA effectiveness and other research that benefits from areas with minimal or restricted human disturbance.
3. Provide opportunities for collaborative scientific monitoring and research projects that evaluate MPAs that promote adaptive management and link with fisheries management, seabird and mammals information needs, classroom science curricula, cooperative fisheries research and volunteer efforts, and identifies participants.

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

1. Include within MPAs key and unique habitats identified by the SAT for this region.
2. Include and replicate, to the extent possible [practicable], representatives of all marine habitats identified in the MLPA or the *California Marine Life Protection Act Master Plan for Marine Protected Areas* across a range of depths.

Goal 5. To ensure that South Coast 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 including coastal dependent entities, communities, and interests, to the extent possible, and if consistent with the MLPA and its goals and guidelines.
2. Provide opportunities for interested parties to help develop objectives, a long-term monitoring plan that includes standardized biological and socioeconomic monitoring protocols, a long-term education and outreach plan, and a strategy for MPA evaluation.
3. Effectively use scientific guidelines in the *California Marine Life Protection Act Master Plan for Marine Protected Areas*.
4. Ensure public understanding of, compliance with, and stakeholder support for MPA boundaries and regulations.
5. Include simple, clear, and focused site-specific objectives/rationales for each MPA and ensure that site-level rationales for each MPA are linked to one or more regional objectives.

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

1. Provide opportunities to promote a process that informs adaptive management and 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. Provide opportunities 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. Ensure ecological connectivity within and between regional components of the statewide network.
4. Provide for protection and connectivity of habitat for those species that utilize different habitats over their lifetime.

3.2 Design Considerations

The SCRSG 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 considerations may apply to all MPAs and MPA proposals regardless of the specific regional goals and objectives of that MPA and may contribute to the site-level rationales for individual MPA design and siting. The SCRSG had the opportunity to describe, in more detail, justifications for MPA design and siting during its work sessions and under the "site-specific rationale" and "other design considerations" field in MarineMap (see Appendix A, Section 4.4). The design considerations below were intended to be incorporated with the goals and objectives and provided to the MLPA Blue Ribbon Task Force (BRTF) for adoption and then to the California Fish and Game Commission (Commission) as part of the suite of recommendations for the planning region. 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.
- When designing or modifying MPAs, consider leveraging relevant portions of existing management activities and area-based restrictions, including state and federal fishery management areas and regulations (such as rockfish conservation areas and trawl fishery closures, or other restricted access zones).
- Site MPAs to prevent fishing effort shifts that would result in serial depletion.
- When crafting MPA proposals, include considerations for designs found in state fishery management plans (FMPs) such as the Nearshore Fishery Management Plan (NFMP)[17] and the Abalone Recovery and Management Plan.[18]

[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

[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 the 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.

- In developing MPA proposals, consider how existing state, local, and federal programs address the goals and objectives of the MLPA and the South Coast planning region as well as how these proposals may coordinate with other programs.
- Site MPAs adjacent to terrestrial federal, state, county, or city parks, marine laboratories, or other "eyes on the water" to facilitate management, enforcement, monitoring, education, and outreach.
- Site MPAs to facilitate use of volunteers to assist in monitoring and management.
- Site MPAs to take advantage of existing long-term monitoring studies.
- 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, ocean acidification, community alteration, and distributional shifts in marine species when designing MPAs.
- Preserve the diversity of recreational, educational, commercial, and cultural uses.
- 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.
- 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.

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 South Coast regional MPA planning process from 2008 to 2012, 16 memorandums specific to the South Coast were issued, including clarifying how existing MPAs at the northern Channel Islands and existing military closures were to be evaluated in the design and evaluation of MPA proposals, and informal guidance to MLPA Initiative staff from the California Office of the Attorney General regarding MPAs and the Marine Managed Areas Improvement Act. A complete historical record of all South Coast MPA design and implementation considerations can be found on CDFW's website.[20]

[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] MLPA Blue Ribbon Task Force transmits South Coast recommendations to the California Fish and Game Commission (Binder 3, Policy Context): http://www.dfg.ca.gov/marine/mpa/recommendations_sc.asp#binder3

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. The MLPA SCRSG recommended that the following implementation and management activities, as appropriate, also be included in the regional MPA management plans required under the Master Plan for designated MPAs:

- Improve public outreach related to MPAs through the use of docents, improved signage, and production of an educational brochure for South Coast MPAs.
- When appropriate, phase the implementation of South Coast MPAs to ensure their effective management, monitoring, and enforcement.
- Ensure adequate funding for monitoring, management, outreach, and enforcement is available for implementing new MPAs.
- Develop coordinated regional management and enforcement plans in coordination with state, local, and federal entities, 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 50 MPAs (including 13 previously established in 2003 at the northern Channel Islands that were retained without change) and two special closures covering approximately 355 square miles (919 square kilometers) of state waters, or about 15% of the South Coast region, went into effect in January 2012. The South Coast MPA network was the third 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 South 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 South Coast planning region include State Marine Reserves (SMRs), no-take State Marine Conservation Areas (SMCAs), SMCAs, 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 South 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 South 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

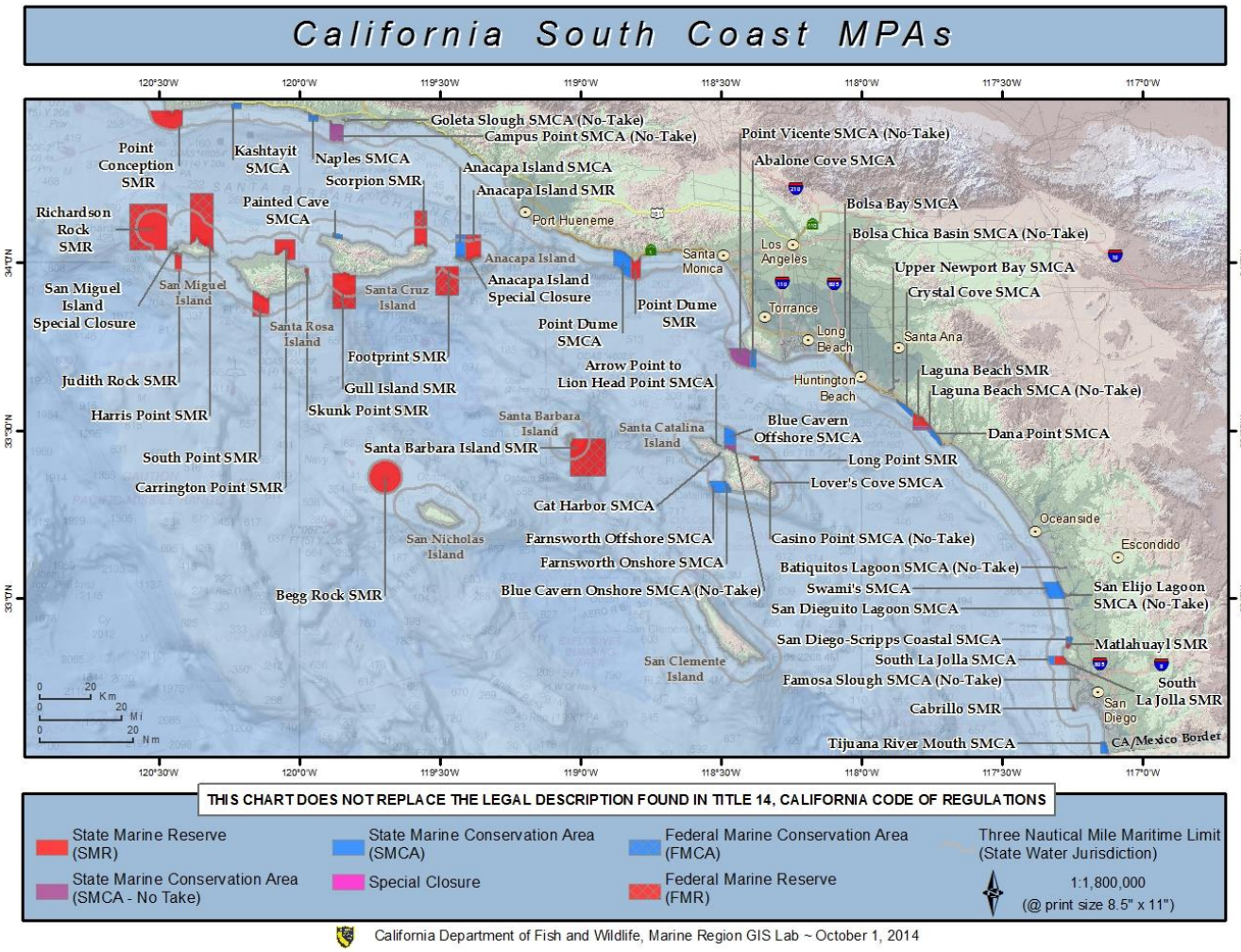


Figure 1. Adopted MPAs in the South Coast region.

Table 1. Summary statistics for protected areas within state waters in the South Coast region.

Protected Area Designation	Count	Area (square miles)	Area (percent)
SMR	19	241.84	10.29
SMCA (no-take)	10	33.22	1.41
SMCA	21	80.41	3.42
Special Closures	2	1.89	0.08
Total[25]	**50**	**355.46**	**15.12**

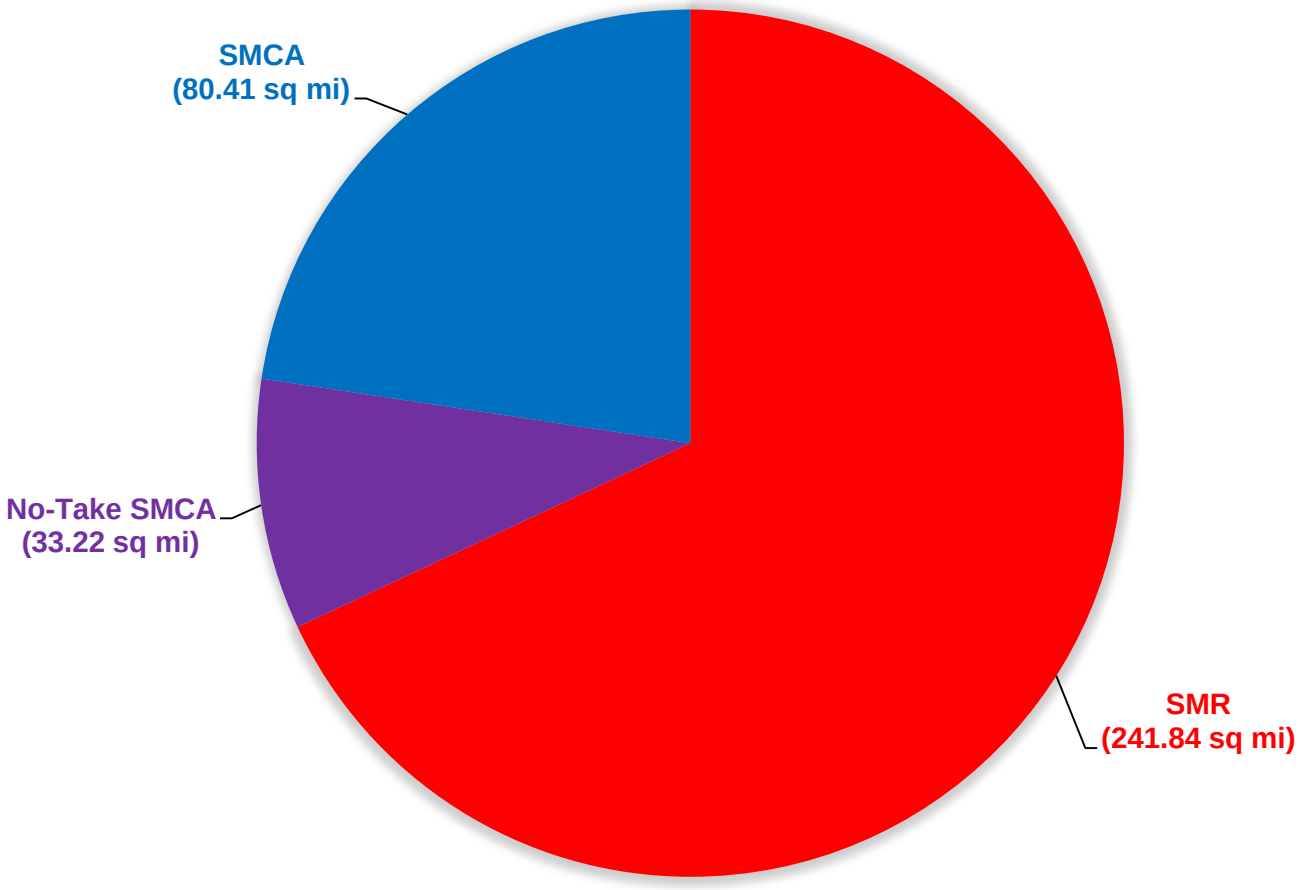


Figure 2. Area (square miles) in South Coast region state waters of each MPA designation.

[25] Totals include northern Channel Islands MPAs (effective since 2003), and do not include special closures

Table 2. Descriptive statistics for individual South Coast region MPAs.

MPA Name	Area (square miles)	Along-shore span (miles)[26]	Depth Range (feet)
Point Conception SMR	22.52	3.7	0-489
Kashtayit SMCA	2.02	1.9	0-160
Naples SMCA	2.60	1.9	0-162
Campus Point SMCA (no-take)	10.56	3.1	0-748
Goleta Slough SMCA (no-take)	0.16	N/A	0-10
Point Dume SMCA	15.92	4.0	0-2023
Point Dume SMR	7.53	2.9	0-1987
Point Vicente SMCA (no-take)	15.04	1.4	0-2640
Abalone Cove SMCA	4.79	1.5	0-2237
Bolsa Bay SMCA	0.07	N/A	N/A
Bolsa Chica Basin SMCA (no-take)	0.70	N/A	N/A
Upper Newport Bay SMCA	1.24	N/A	N/A
Crystal Cove SMCA	3.53	4.3	0-245
Laguna Beach SMR	6.72	4.4	0-1231
Laguna Beach SMCA (no-take)	3.09	1.2	0-1408
Dana Point SMCA	3.47	4.0	0-152
Batiquitos Lagoon SMCA (no-take)	0.51	N/A	N/A
Swami's SMCA	12.71	3.5	0-982
San Dieguito Lagoon SMCA	0.11	N/A	N/A
San Elijo Lagoon SMCA (no-take)	0.5	N/A	N/A
San Diego-Scripps Coastal SMCA	1.46	1.1	0-366
Matlahuayl SMR	1.04	1.7	0-331
South La Jolla SMR	5.04	2.3	0-180
South La Jolla SMCA	2.46	1.8	147-275
Famosa Slough SMCA	0.03	N/A	N/A
Cabrillo SMR	0.39	1.0	0-30
Tijuana River Mouth SMCA	3.02	2.2	0-55
Richardson Rock SMR	40.75	6.6	95-558
Harris Point SMR	25.40	7.0	0-557
Judith Rock SMR	4.56	1.4	0-487

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

MPA Name	Area (square miles)	Along-shore span (miles)[26]	Depth Range (feet)
Carrington Point SMR	12.78	4.8	0-211
Skunk Point SMR	1.47	2.5	0-83
South Point SMR	13.08	3.8	0-1071
Painted Cave SMCA	1.78	2.2	0-291
Gull Island SMR	19.93	3.2	0-2205
Scorpion SMR	9.64	3.4	0-769
Anacapa Island SMCA	7.30	2.2	0-490
Anacapa Island SMR	11.55	3.1	0-709
Footprint SMR	7.05	4.7	171-1656
Begg Rock SMR	37.96	6.9	219-374
Santa Barbara Island SMR	12.77	0.8	0-1655
Arrow Point to Lion Head Point SMCA	0.65	2.9	0-259
Blue Cavern Onshore SMCA	2.61	2.2	0-892
Blue Cavern Offshore SMCA	7.70	2.3	267-2616
Long Point SMR	1.67	2.3	0-749
Casino Point SMCA (no-take)	0.01	0.1	73
Lover's Cove SMCA	0.06	0.4	0-188
Farnsworth Onshore SMCA	2.59	2.2	0-291
Farnsworth Offshore SMCA	6.67	2.5	135-1909
Cat Harbor SMCA	0.26	0.4	0-186

Table 3. Percentage of total known habitat representation in South Coast region MPAs.

	Habitats in the South Coast Region MPAs (Percentage)			
Habitat Type	**SMR**	**SMCA**	**SMCA (No-Take)**	**Total (all MPAs)**
Intertidal				
Sandy or gravel beaches	5.7	6.4	1.4	13.2
Rocky intertidal and cliff	14.2	6.6	1.2	21.9
Coastal marsh	0	13.4	12.8	16.2
Tidal flats	0	19.5	1.6	21.1
Surfgrass beds (0-30m)	1.8	7.80	2.0	20.6
Eelgrass beds (0-30m)	1.2	0.1	3.9	5.2
Estuary (total area)	0	3.2	4.0	7.2
Soft bottom				
0-30 meters	4.5	3.4	0.5	8.4
30-100 meters	13.1	4.2	1.5	18.7
100-200 meters	18.9	4.6	2.4	25.9
>200 meters	2.5	7.9	6.0	16.4
Hard bottom				
0-30 meters	8.6	3.2	1.0	12.8
30-100 meters	18.6	2.5	0.1	21.2
100-200m	17.7	1.6	0	19.3
>200 meters	39.1	1.1	1.5	41.7
Kelp forest				
Average kelp (‘89, ‘99, ‘02, ’03-‘08)	6.4	2.3	1.3	10.0
Submarine canyon				
0-30 meters	32.5	18.0	0.3	50.8
30-100 meters	7.8	1.8	0	9.6
100-200 meters	45.7	0	0	45.7
>200 meters	21.2	0.9	0	22.1

Table 4. Habitat representation for individual South Coast region MPAs.[27]

Habitat Type		Point Conception SMR	Kashtayit SMCA	Naples SMCA	Campus Point SMCA (No-Take)	Goleta Slough SMCA (No-Take)	Point Dume SMCA	Point Dume SMR	Point Vicente SMCA (No-Take)	Abalone Cove SMCA	Bolsa Bay SMCA	Bolsa Chica Basin SMCA (No-Take)
Sandy or gravel Beaches	mi	2.73	1.38	1.55	3.02	0.14	4.09	2.77	1.35	1.43	0	0
Rocky intertidal and cliff	mi	3.13	1.43	1.38	1.37	0	0.44	1.54	0.21	0.86	0	0
Tidal flats	mi	0	0	0	0	0.56	0	0	0	0	0.99	0
Coastal marsh	mi	0	0	0	0	1.89	0	0	0	0	0.10	2.41
Surfgrass	mi	2.90	0.97	1.88	1.11	0	0.70	1.75	1.03	1.27	0	0
Eelgrass	mi^2	0	0	0	0.00	0	0	0	0	0	0	0.06
Estuary	mi^2	0	0.01	0	0.01	0.15	0	0	0	0	0.07	0.65
Hard 0 - 30m	mi^2	0.50	0.09	0.56	0.77	0	0.29	0.47	0.25	0.14	0	0
Hard 30 - 100m	mi^2	0.32	0	0	0.04	0	0	0	0	0.02	0	0
Hard 100 - 200m	mi^2	0.10	0	0	0	0	0	0.05	0	0	0	0
Hard 200 - 3000m	mi^2	0	0	0	0	0	0	0.84	0.03	0	0	0
Soft 0 - 30m	mi^2	2.16	1.35	1.54	0.89	0	2.02	0.59	0.40	0.51	0	0
Soft 30 - 100m	mi^2	15.79	0.16	0.38	7.08	0	5.95	1.07	1.07	1.17	0	0
Soft 100 - 200m	mi^2	3.26	0	0	1.42	0	1.38	0.63	1.04	0.56	0	0
Soft 200 - 3000m	mi^2	0	0	0	0.05	0	5.80	3.66	12.23	2.35	0	0
Average Kelp	mi^2	0.14	0	0.15	0.21	0	0.05	0.05	0.03	0.02	0	0
Submarine Canyon 0 - 30m	mi^2	0	0	0	0	0	0	0.01	0	0	0	0
Submarine Canyon 30 - 100m	mi^2	0	0	0	0	0	0	0.27	0	0	0	0
Submarine Canyon 100 - 200m	mi^2	0	0	0	0	0	0	0.24	0	0	0	0
Submarine Canyon 200 - 3000m	mi^2	0	0	0	0	0	0.19	1.39	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		Upper Newport Bay SMCA	Crystal Cove SMCA	Laguna Beach SMR	Laguna Beach SMCA (No-Take)	Dana Point SMCA	Batiquitos Lagoon SMCA (No-Take)	Swami's SMCA	San Elijo Lagoon SMCA (No-Take)	San Dieguito Lagoon SMCA	San Diego-Scripps Coastal SMCA	Matlahuayl SMR
Sandy or gravel Beaches	mi	0	3.95	3.48	0.67	3.60	0	3.77	0	0	1.51	1.23
Rocky intertidal and cliff	mi	0	2.00	2.48	0.38	2.06	0	1.20	0	0	0.19	0.92
Tidal flats	mi	5.27	0	0	0	0	0	0	0	0	0	0
Coastal marsh	mi	7.88	0	0	0	0	0	0.17	3.46	0	0	0
Surfgrass	mi	0	2.81	2.18	0.00	2.16	0	1.97	0	0	0	0.40
Eelgrass	mi^2	0	0	0	0	0	0.27	0	0	0	0	0
Estuary	mi^2	1.20	0	0	0	0	0.47	0	0.43	0.11	0	0
Hard 0 - 30m	mi^2	0	0.14	0.24	0.02	0.49	0	0.75	0	0	0.02	0.15
Hard 30 - 100m	mi^2	0	0.05	0	0	0	0	0.02	0	0	0.06	0.01
Hard 100 - 200m	mi^2	0	0	0	0	0	0	0.04	0	0	0.01	0
Hard 200 - 3000m	mi^2	0	0	0	0	0	0	0.01	0	0	0	0
Soft 0 - 30m	mi^2	0	1.06	1.29	0.41	1.68	0	2.46	0	0	0.77	0.55
Soft 30 - 100m	mi^2	0	1.63	2.82	0.84	0.79	0	3.85	0	0	0.57	0.32
Soft 100 - 200m	mi^2	0	0	1.12	0.62	0	0	3.19	0	0	0.03	0.03
Soft 200 - 3000m	mi^2	0	0	0.67	1.07	0	0	2.33	0	0	0	0
Average Kelp	mi^2	0	0	0.01	0	0.08	0	0.11	0	0	0	0.01
Submarine Canyon 0 - 30m	mi^2	0	0	0	0	0	0	0	0	0	0.13	0.22
Submarine Canyon 30 - 100m	mi^2	0	0	0	0	0	0	0	0	0	0.06	0.01
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		South La Jolla SMR	South La Jolla SMCA	Famosa Slough SMCA (No-Take)	Cabrillo SMR	Tijuana River Mouth SMCA	Richardson Rock SMR	San Miguel Island Special Closure	Harris Point SMR	Judith Rock SMR	Carrington Point SMR	Skunk Point SMR
Sandy or gravel Beaches	mi	2.33	0	0	0.90	2.37	0	0.98	1.88	0.22	0.78	1.77
Rocky intertidal and cliff	mi	1.45	0	0	0.97	0	0	4.84	6.77	1.47	4.91	0.71
Tidal flats	mi	0	0	0	0	0.02	0	0	0	0	0	0
Coastal marsh	mi	0	0	0	0	0.02	0	0	0	0	0	0
Surfgrass	mi	1.59	0	0	1.41	0	0	0	0.54	0	2.90	0.07
Eelgrass	mi^2	0	0	0	0	0	0	0	0	0	0	0.09
Estuary	mi^2	0	0	0.03	0	0.01	0	0	0	0	0	0
Hard 0 - 30m	mi^2	3.29	0	0	0.30	0.59	0	0.71	0.85	0.48	1.35	0.08
Hard 30 - 100m	mi^2	0.50	0.48	0	0	0	0.20	0	2.40	0.07	0.27	0
Hard 100 - 200m	mi^2	0	0	0	0	0	0.04	0	0.25	0	0	0
Hard 200 - 3000m	mi^2	0	0	0	0	0	0	0	0	0	0	0
Soft 0 - 30m	mi^2	0.40	0	0	0.03	2.09	0	0.01	1.80	0.21	7.15	0.71
Soft 30 - 100m	mi^2	0.50	1.97	0	0	0	0.52	0	15.93	1.56	3.82	0
Soft 100 - 200m	mi^2	0	0	0	0	0	0.09	0	2.54	0	0	0
Soft 200 - 3000m	mi^2	0	0	0	0	0	0	0	0	0	0	0
Average Kelp	mi^2	0.24	0	0	0.01	0.01	0	0.19	0.09	0.15	0.12	0.03
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		South Point SMR	Painted Cave SMCA	Gull Island SMR	Scorpion SMR	Anacapa Island Special Closure	Anacapa Island SMR	Anacapa Island SMCA	Footprint SMR	Begg Rock SMR	Santa Barbara Island SMR	Arrow Point to Lion Head Point SMCA
Sandy or gravel Beaches	mi	1.39	0	1.96	0.65	3.36	0.89	0.14	0	0	0.15	1.23
Rocky intertidal and cliff	mi	2.87	2.23	1.67	3.44	15.85	5.69	2.99	0	0	0.82	2.25
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	0	0
Surfgrass	mi	1.18	0	0.93	0	5.52	2.73	1.02	0	0	0.71	0.99
Eelgrass	mi^2	0	0	0	0.01	0	0	0	0	0	0	0
Estuary	mi^2	0	0	0	0	0	0	0	0	0	0	0
Hard 0 - 30m	mi^2	0.55	0.04	0.78	0.17	0.51	0.27	0.11	0	0	0.11	0.17
Hard 30 - 100m	mi^2	0.26	0	0.12	0.33	0	0.10	0.03	0.11	4.10	0.10	0
Hard 100 - 200m	mi^2	0.01	0	0.13	0.01	0	0	0	0.02	0.07	0.02	0
Hard 200 - 3000m	mi^2	0	0	0	0	0	0	0	0	0	0	0
Soft 0 - 30m	mi^2	1.22	0.05	1.90	0.37	0.39	0.87	0.23	0	0	0.47	0.26
Soft 30 - 100m	mi^2	3.51	0.12	3.77	4.88	0.05	7.25	6.21	1.16	22.22	1.69	0.14
Soft 100 - 200m	mi^2	5.34	0	3.20	0.18	0	0.78	0.18	0.27	11.58	0.42	0
Soft 200 - 3000m	mi^2	0.05	0	1.43	0	0	0	0	0	0	0.02	0
Average Kelp	mi^2	0.27	0	0.13	0.01	0.04	0.01	0	0	0	0.01	0.01
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	2.69	0	0	0	0	0	0	0	0
Submarine Canyon 200 - 3000m	mi^2	0	0	3.05	0	0	0	0	0	0	0	0

Habitat Type		Blue Cavern Onshore SMCA (No-Take)	Blue Cavern Offshore SMCA	Long Point SMR	Casino Point SMCA (No-Take)	Lover's Cove SMCA	Farnsworth Onshore SMCA	Farnsworth Offshore SMCA	Cat Harbor SMCA
Sandy or gravel Beaches	mi	1.00	0	0.97	0	0.21	1.78	0	1.07
Rocky intertidal and cliff	mi	1.33	0	0.95	0.00	0.06	1.00	0	0.42
Tidal flats	mi	0	0	0	0	0	0	0	0.55
Coastal marsh	mi	0	0	0	0	0	0	0	0
Surfgrass	mi	1.44	0	0.18	0	0	0.28	0	0
Eelgrass	mi^2	0	0	0	0	0	0	0	0
Estuary	mi^2	0	0	0	0	0	0	0	0
Hard 0 - 30m	mi^2	0.08	0	0.06	0.00	0.01	0.14	0	0.02
Hard 30 - 100m	mi^2	0.01	0	0.01	0	0	0.01	0.50	0
Hard 100 - 200m	mi^2	0	0	0	0	0	0	0.01	0
Hard 200 - 3000m	mi^2	0	0	0	0	0	0	0.02	0
Soft 0 - 30m	mi^2	0.30	0	0.17	0	0.01	0.57	0	0.05
Soft 30 - 100m	mi^2	0.79	0.08	0.72	0	0.03	1.83	3.25	0.04
Soft 100 - 200m	mi^2	0.79	0.29	0.55	0	0	0	1.67	0
Soft 200 - 3000m	mi^2	0.64	6.84	0.12	0	0	0	1.22	0
Average Kelp	mi^2	0.02	0	0.01	0	0	0.03	0	0
Submarine Canyon 0 - 30m	mi^2	0	0	0	0	0	0	0	0
Submarine Canyon 30 - 100m	mi^2	0	0	0	0	0	0	0	0
Submarine Canyon 100 - 200m	mi^2	0	0	0	0	0	0	0	0
Submarine Canyon 200 - 3000m	mi^2	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).

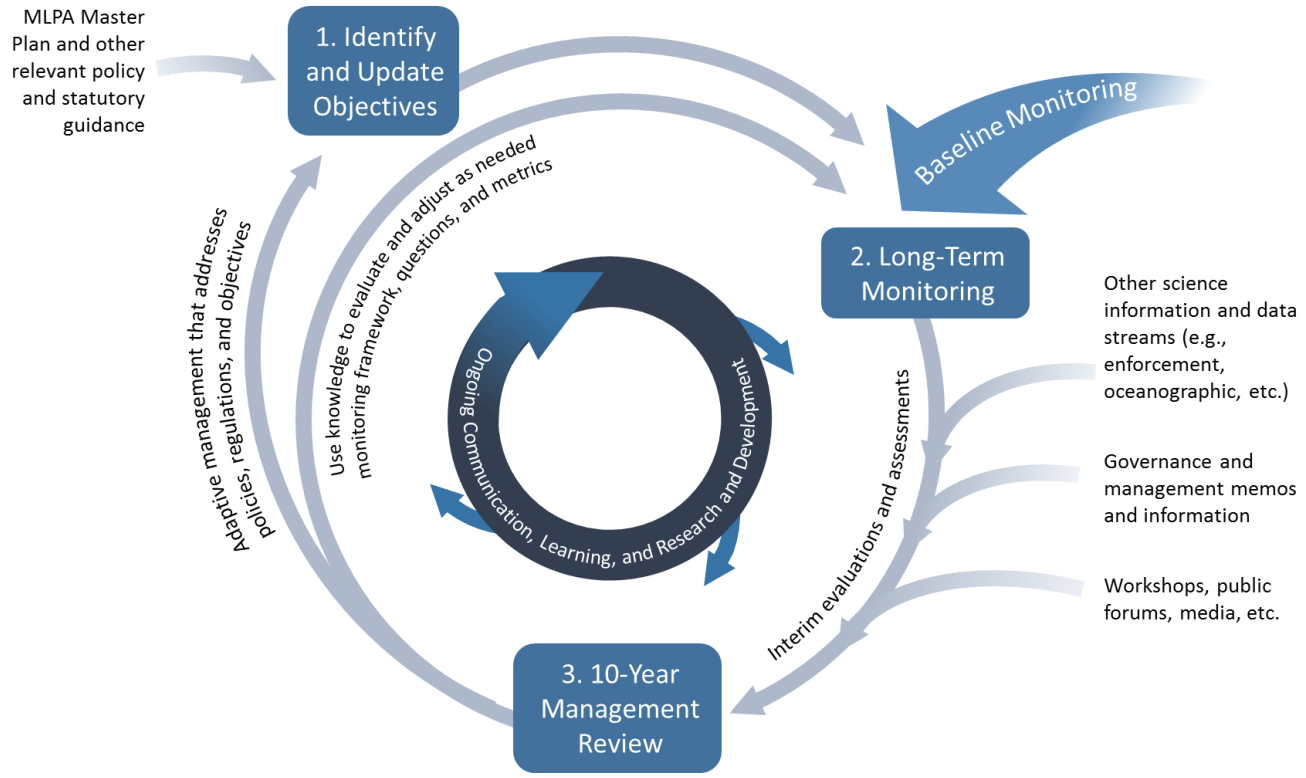


Figure 3. MLPP adaptive management process.

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, again in partnership with CDFW, completed the South Coast MPA Monitoring Plan in 2011. The monitoring plan was adopted by the Commission in 2011.[28] As with the North Central and Central Coast MPA monitoring plans,[29,30] the

[28] 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

[29] 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

[30] 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

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

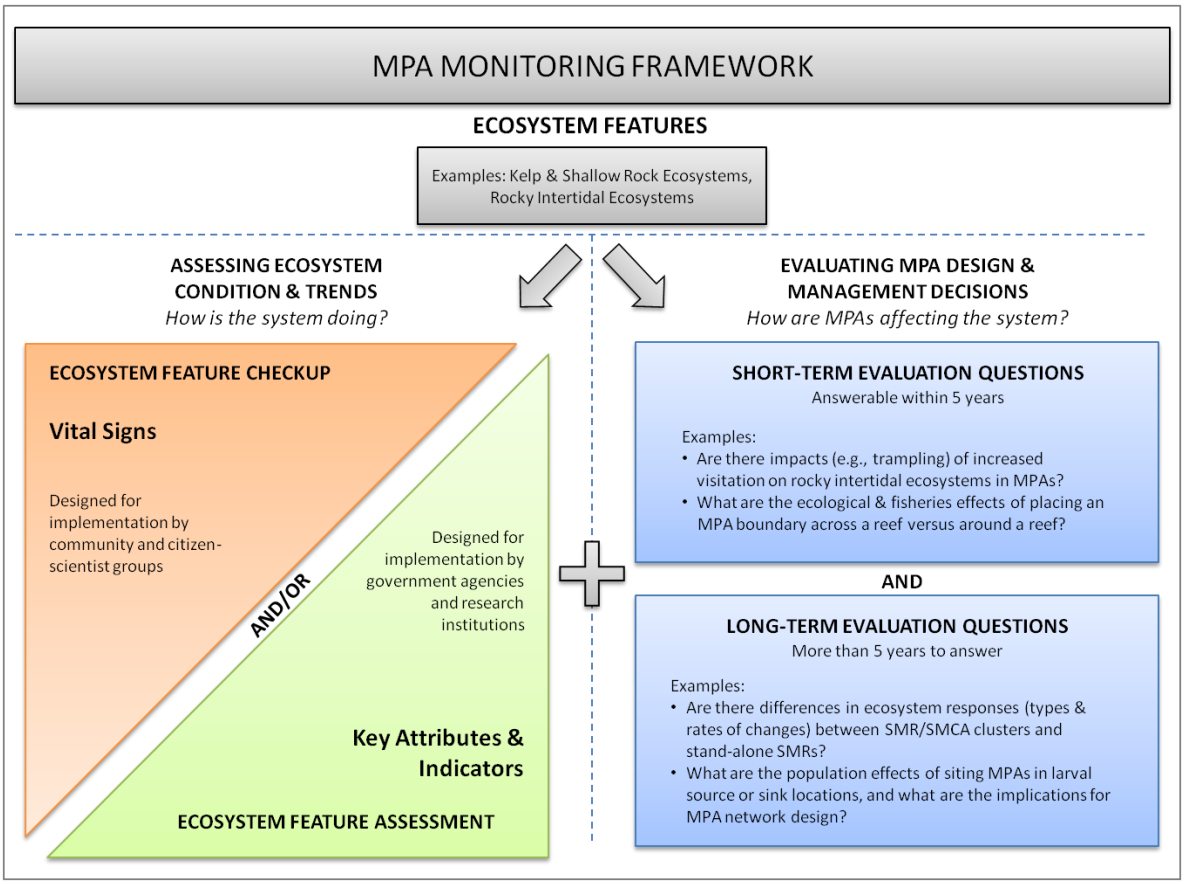


Figure 4. Statewide MPA monitoring framework, displaying the two primary monitoring elements: 1) assessing ecosystem condition and trends, and 2) evaluating MPA design and management decisions.[31]

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 South Coast MPA Baseline Program, a collaboration between OST, CDFW, Ocean Protection Council (OPC), and California Sea Grant, launched in 2011 to assess baseline ecological and socioeconomic conditions of the South Coast regional MPA network. The baseline program includes 10 projects to monitor a broad suite of habitats including rocky shores, sandy beaches, shallow subtidal, subtidal rocky reefs, and deep water habitats. Additional projects include assessing seabird and lobster populations, patterns of human uses, and an integrative project to facilitate collaboration and data comparability among the other baseline program projects. All baseline monitoring data can be

[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

accessed on the OceanSpaces website.[32] The South Coast region is the third of four regional MPA baseline programs. A State of the Region report similar to that produced for the Central Coast region[33] and North Central Coast region[34] which includes a summary of the South Coast MPA Baseline Program and other related monitoring activities during the first five years of MPA implementation in the region, is expected in 2017.[35] The State of the Region report can inform potential management recommendations from the first five years of MPA implementation in the region.[36]

Long-Term Monitoring

After the baseline monitoring period concludes for the South 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 South Coast MPA monitoring, please visit the South Coast page of the OceanSpaces website.[37]

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).

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 South Coast region.

[32] OceanSpaces. Retrieved Apr 1, 2015 from http://oceanspaces.org/
[33] OST and CDFW. (2013). *State of the California Central Coast: Results from Baseline Monitoring of Marine Protected Areas 2007-2012*. California, USA. Retrieved Apr 1, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=133101&inline
[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. Retrieved Dec 21, 2015 from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=133100&inline
[35] OPC. (2015). *Marine Protected Area (MPA) Statewide Leadership Team Work Plan FY 15/16 – 17/18*. http://www.opc.ca.gov/2015/08/8122/
[36] Ibid.
[37] OceanSpaces. *South Coast*. Retrieved Apr 1, 2015 from http://oceanspaces.org/monitoring/regions/south-coast/long-term

Table 5. Enforcement considerations.

MPA Name	Primary Enforcement Method	Special Considerations
Point Conception SMR	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	• Limited Access and Limited Military Closures
Kashtayit SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
Naples SMCA	• Shoreline Patrol • Small Skiff patrol • Ocean/Vessel Patrol	• Limited Access
Campus Point SMCA (no-take)	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
Goleta Slough SMCA (no-take)	• Shoreline Patrol • Kayak Patrol	None
Point Dume SMCA	• Shoreline Patrol • Ocean/Vessel Patrol	None
Point Dume SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
Point Vicente SMCA (no-take)	• Shoreline Patrol • Small Skiff Patrol	None
Abalone Cove SMCA	• Shoreline Patrol • Small Skiff Patrol	None
Bolsa Bay SMCA	• Shoreline Patrol • Kayak Patrol	None
Bolsa Chica Basin SMCA (no-take)	• Shoreline Patrol • Kayak Patrol	None
Upper Newport Bay SMCA	• Shoreline Patrol • Small Skiff patrol • Kayak Patrol	None
Crystal Cove SMCA	• Shoreline Patrol • Small Skiff Patrol • Kayak Patrol	None
Laguna Beach SMR	• Shoreline Patrol • Small Skiff Patrol • Kayak Patrol	None
Laguna Beach SMCA (no-take)	• Shoreline Patrol • Small Skiff Patrol • Kayak Patrol	None
Dana Point SMCA	• Shoreline Patrol • Small Skiff Patrol • Kayak Patrol	None
Batiquitos Lagoon SMCA (no-take)	• Shoreline Patrol • Small Skiff Patrol • Kayak Patrol	None
Swami's SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None

MPA Name	Primary Enforcement Method	Special Considerations
San Elijo Lagoon SMCA (no-take)	• Shoreline Patrol • Small Skiff Patrol • Kayak Patrol	None
San Dieguito Lagoon SMCA	• Shoreline Patrol • Kayak Patrol	None
San Diego-Scripps Coastal SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
Matlahuayl SMR	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
South La Jolla SMR	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
South La Jolla SMCA	• Small Skiff Patrol • Ocean/Vessel Patrol	None
Famosa Slough SMCA (no-take)	• Shoreline Patrol • Kayak Patrol	None
Cabrillo SMR	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
Tijuana River Mouth SMCA	• Shoreline Patrol • Small Skiff Patrol	None
Richardson Rock SMR	• Ocean/Vessel Patrol	None
San Miguel Island Special Closure	• Ocean/Vessel Patrol	• Seasonal Closures
Harris Point SMR	• Ocean/Vessel Patrol	None
Judith Rock SMR	• Ocean/Vessel Patrol	None
Carrington Point SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
Skunk Point SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
South Point SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
Painted Cave SMR	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
Gull Island SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
Scorpion SMR	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol • Kayak Patrol	None
Anacapa Island Special Closure	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	• Seasonal Closures

MPA Name	Primary Enforcement Method	Special Considerations
Anacapa Island SMR	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol • Kayak Patrol	None
Anacapa Island SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol • Kayak Patrol	None
Footprint SMR	• Small Skiff Patrol • Ocean/Vessel • Patrol	None
Begg Rock SMR	• Ocean/Vessel • Patrol	• Subject to military closures
Santa Barbara Island SMR	• Shoreline Patrol • Ocean/Vessel Patrol	None
Arrow Point to Lion Head SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol • Kayak Patrol	None
Blue Cavern Onshore SMCA (no-take)	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol • Kayak Patrol	None
Blue Cavern Offshore SMCA	• Small Skiff Patrol • Ocean/Vessel Patrol	None
Long Point SMR	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol • Kayak Patrol	None
Casino Point SMCA (no-take)	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol • Kayak Patrol	None
Lover's Cove SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol • Kayak Patrol	None
Farnsworth Onshore SMCA	• Shoreline Patrol • Small Skiff Patrol • Ocean/Vessel Patrol	None
Farnsworth Offshore SMCA	• Small Skiff Patrol • Ocean/Vessel Patrol	None
Cat Harbor SMCA	• Shoreline Patrol • Small Skiff Patrol • Kayak Patrol	None

6.1 Personnel and Equipment

CDFW has 34 enforcement staff located within the South Coast region, covering the area between Point Conception and the Mexican border. The seven lieutenants and 27 wardens have a primary emphasis of 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 South 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.

Table 6. Personnel and equipment.

Point Conception to Footprint MPAs		**Point Dume to Tijuana River Mouth MPAs**		**Totals**
Land-Based	**Patrol Boat**	**Land-Based**	**Patrol Boat**	
2 Lieutenants	1 Lieutenant	2 Lieutenants	2 Lieutenants	7 Lieutenants
6 Wardens	4 Wardens	10 Wardens	7 Wardens	27 Wardens
3 Patrol Skiffs	N/A	7 Patrol Skiffs	N/A	10 Patrol Skiffs
N/A	1 Patrol Boat	N/A	2 Patrol Boats	3 Patrol Boats
Individual MPAs		**Individual MPAs**		
Point Conception SMR Kashtayit SMCA Naples SMCA Campus Point SMCA (no-take) Goleta Slough SMCA (no-take) Richardson Rock SMR San Miguel Island Special Closure Harris Point SMR Judith Rock SMR Carrington Point SMR Skunk Point SMR South Point SMR Painted Cave SMR Gull Island SMR Scorpion SMR Anacapa Island Special Closure Anacapa Island SMR Anacapa Island SMCA Footprint SMR		Point Dume SMCA Point Dume SMR Point Vicente SMCA (no-take) Abalone Cove SMCA Bolsa Bay SMCA Bolsa Chica Basin SMCA (no-take) Upper Newport Bay SMCA Crystal Cove SMCA Laguna Beach SMR Laguna Beach SMCA (no-take) Dana Point SMCA Batiquitos Lagoon SMCA (no-take) Begg Rock SMR Santa Barbara Island SMR Arrow Point to Lion Head SMCA Blue Cavern Onshore SMCA (no-take) Blue Cavern Offshore SMCA Long Point SMR Casino Point SMCA (no-take) Lover's Cove SMCA Farnsworth Onshore SMCA Farnsworth Offshore SMCA Cat Harbor SMCA Swami's SMCA San Elijo Lagoon SMCA (no-take) San Dieguito Lagoon SMCA San Diego-Scripps Coastal SMCA Matlahuayl SMCA South La Jolla SMR South La Jolla SMCA Famosa Slough SMCA (no-take) Cabrillo SMR Tijuana River Mouth SMCA	

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.

6.2 Training

Wardens working within the South 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 three large patrol boats in the 54 to 65 foot class stationed at major ports along the southern region coastline. Each large patrol boat 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 South Coast Regional MPA Background and Priorities document.

1. Regional Profile of the South Coast Study Region[38]
2. South Coast Project Adopted Regional Goals and Objectives and Design and Implementation Considerations for the MLPA South Coast Study Region[39]
3. BRTF Recommendations for the South Coast Study Region[40]
4. Marine Life Protection Act, South Coast Study Region, Final Environmental Impact Report[41]
5. Marine Life Protection Act, South Coast Study Region, Draft Environmental Impact Report[42]
6. Complete South Coast Regulatory and Environmental Review Process Documents[43,44]

[38] MLPA Initiative. (2009). *Regional Profile of the South Coast Study Region (Point Conception to the California-Mexico Border)*. Retrieved Apr 1, 2015 from http://www.dfg.ca.gov/marine/mpa/regionalprofile_sc.asp

[39] MLPA Initiative. (2009). *South Coast Project Adopted Regional Goals and Objectives and Design and Implementation Considerations for the MLPA South Coast Study Region*. Retrieved Jul 29, 2015 from http://www.dfg.ca.gov/marine/pdfs/binders_sc/b1n.pdf

[40] MLPA Initiative. (2009). *BRTF Recommendations for the South Coast Study Region*. http://www.dfg.ca.gov/marine/mpa/southcoastipa.asp

[41] MLPA Initiative. (2010). *South Coast Marine Protected Areas Project Final Environmental Impact Review*. Retrieved Jul 29, 2015 from http://www.dfg.ca.gov/marine/pdfs/finalimpact_sc/feir.pdf

[42] MLPA Initiative. (2010). *South Coast Marine Protected Areas Project Draft Environmental Impact Review*. Retrieved Jul 29, 2015 from http://www.dfg.ca.gov/marine/mpa/impact_sc.asp

[43] CDFW (2010). *Regulatory and Environmental Review Process Documents*. Retrieved Aug 10, 2015 from: http://www.dfg.ca.gov/marine/mpa/regulatorydocs_sc.asp

[44] California Fish and Game Commission (2010). *Marine Protected Areas (South Coast)*. Retrieved Aug 10, 2015 from http://www.fgc.ca.gov/regulations/2010/#632sc

8. Literature Cited

Allaby, M. (1998). *Concise Oxford dictionary of ecology*. Oxford: Oxford UP.

Fox, E., Poncelet, E., Connor, D., Vasques, J., Ugoretz, J., McCreary, S., Monié, D., Harty, M., & Gleason, M. (2013a). Adapting stakeholder processes to region-specific challenges in marine protected area network planning. *Ocean & Coastal Management, 74,* 24-33.

Fox, E., Hastings, S., Miller-Henson, M., Monié, D., Ugoretz, J., Frimodig, A., Shuman, C., Owens, B., Garwood, R., Connor, D., Serpa, P., & Gleason, M. (2013b). Addressing policy issues in a stakeholder-based and science-driven marine protected area network planning process. *Ocean & Coastal Management, 74*, 34-44.

Gleason, M., Fox, E., Ashcraft, S., Vasques, J., Whiteman, E., Serpa, P., Saarman, E., Caldwell, M., Frimodig, A., Miller-Henson, M., Kirlin, J., Ota, B., Pope, E., Weber, M. & Wiseman, K. (2013). Designing a network of marine protected areas in California: Achievements, costs, lessons learned, and challenges ahead. *Ocean & Coastal Management, 74*, 90-101.

Kelleher, G., & Kenchington, R. A. (1992). *Guidelines for Establishing Marine Protected Areas*. Gland, Switzerland: IUCN in Collaboration with Great Barrier Reef Marine Park Authority.

Pomeroy, R. S., Parks, J. E. & Watson, L. M. (2004). *How Is Your MPA Doing? A Guidebook of Natural and Social Indicators for Evaluating Marine Protected Area Management Effectiveness*. Gland, Switzerland: IUCN.

Saarman, E., Gleason, M., Ugoretz, J., Airamé, S., Carr, M., Fox, E., Frimodig, A., Mason, T., & Vasques, J. (2013). The role of science in supporting marine protected area network planning and design in California. *Ocean & Coastal Management, 74*, 45-56.