



California Marine Life Protection Act
MASTER PLAN FOR MARINE PROTECTED AREAS

APPENDIX A

Marine Protected Area Planning through the Marine Life Protection Act Initiative

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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 waters⁶ 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 website¹⁷ 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 team²² that would build upon the legislatively-mandated master plan team²² 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 network²⁸. 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/nccprofile.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 21 2015 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 MMAs⁴² 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 goals⁵² 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.

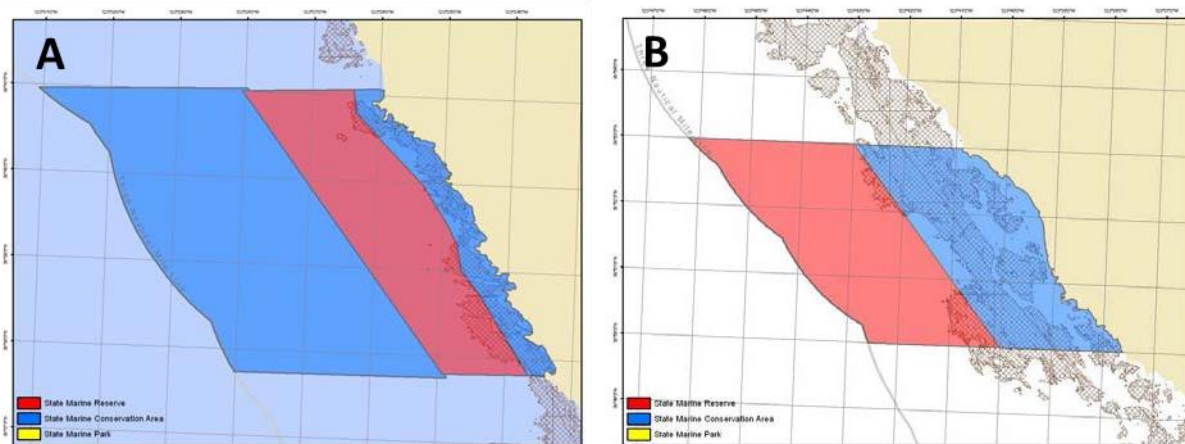


Figure 1. Two example MPA clusters that do not (Map A) and do (Map B) meet CDFW's feasibility guidelines related to diagonal lines.

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.

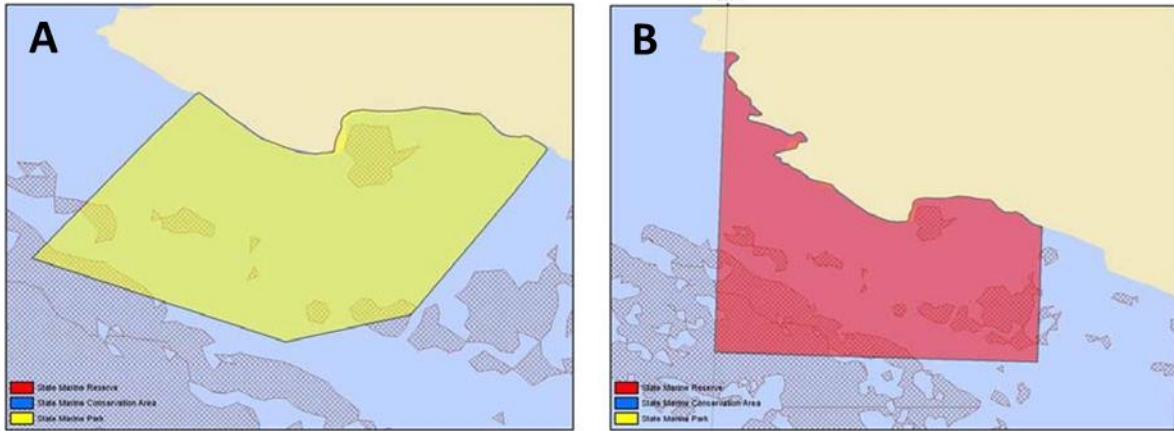


Figure 2. Example of an existing MPA in its original form (Map A) and redesigned during the MLPA process (Map B).

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.

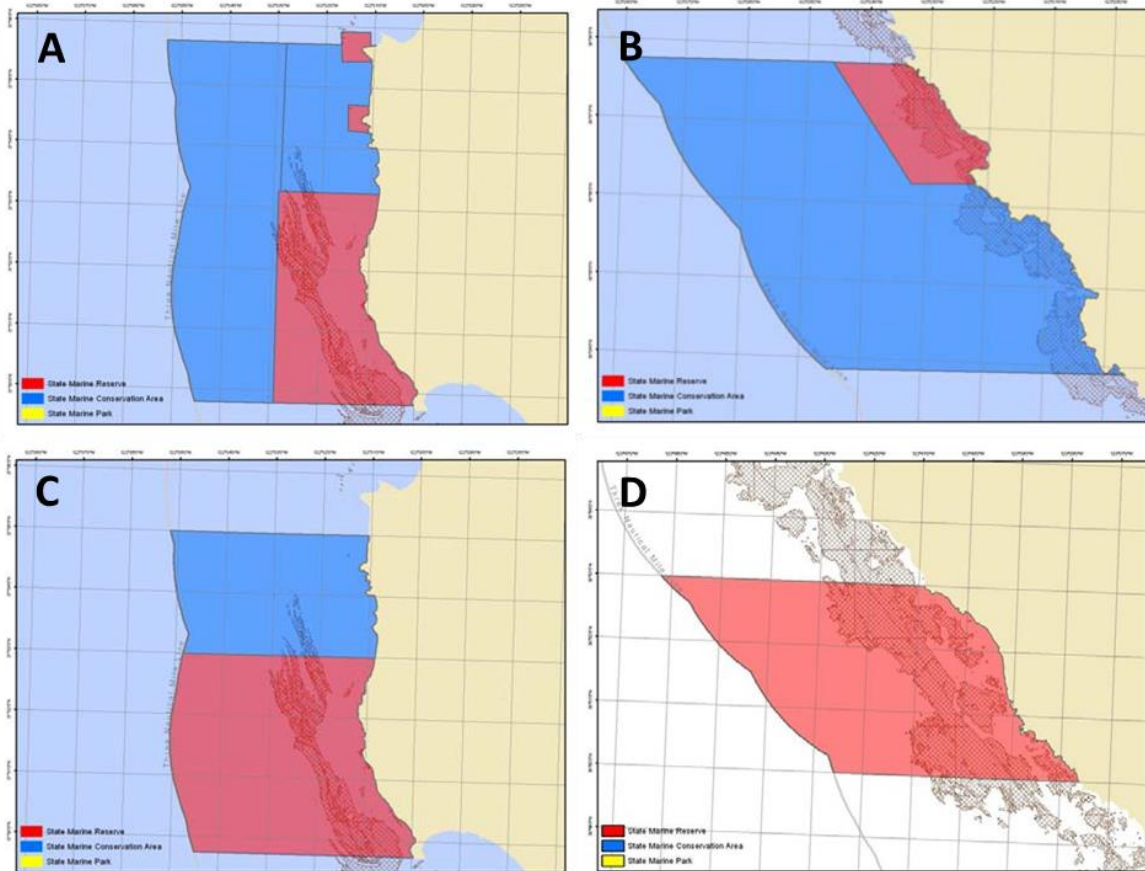


Figure 3. Examples of MPA clusters that do not (Maps A and B) and do (Maps C and D) meet CDFW's feasibility guidelines related to multiple zones.

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 an 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 that 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/b2q.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 MPAs⁹⁵ 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 (NCCRSRG) 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 NCCRSRG 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 NCCRSRG 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 NCCRSRG work teams, plus four proposals developed at least in part by outside groups. NCCRSRG members formally presented their final three alternative MPA proposals to the BRTF in April 2008 in a joint BRTF/NCCRSRG 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 NCCRSRG. The fourth proposal, known as the Integrated Preferred Alternative (IPA), was generated by the BRTF during the joint BRTF-NCCRSRG meeting in April and incorporates proposed MPAs from all three NCCRSRG 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 NCCRSRG 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.