

Overview of the creation and management of California's marine protected area network

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In December 2012, with the California Department of Fish and Wildlife (CDFW) as a lead agency, the State of California completed a comprehensive network of marine protected areas (MPAs). The MPA network spans the California coastline (state waters including bays, except the San Francisco Bay, estuaries, and offshore islands) and encompasses approximately 2200 km² of state waters. The first of its kind in the United States, this landmark MPA network was developed through a robust public process based on sound scientific guidance and a strong legal mandate and was designed to be a biologically functioning network with each MPA contributing to its overall success. Prior to completing this effort, California had a series of individual, unrelated MPAs that often lacked clearly defined purposes (California Fish and Game Code Section 2851[a]). Three separate but complementary pieces of legislation provided the necessary guidance, mandate, and authority to ensure the successful creation of the statewide MPA network.

Legislative background.—In 1998, the Marine Life Management Act (MLMA; California Fish and Game Code Sections 90-99.5, 105, 7050-7090, 8585-8589.7, 8842, and 9001.7) created a broad scale programmatic framework for managing fisheries through a variety of conservation measures, including MPAs. In 1999, the Marine Life Protection Act (MLPA; California Fish and Game Code Sections 2850-2863) recognized that MPAs and sound fisheries management were complementary components of a comprehensive effort to sustain marine habitat and fisheries (California Fish and Game Code Section 2851[d]) and established a programmatic framework for the creation of a statewide MPA network. In 2000, the Marine Managed Areas Improvement Act (MMAIA; California Public Resources Code Sections 36600-36900) standardized and clarified a statewide classification system for marine managed areas (MMAs), of which MPAs are a subset. It was this classification system of MPAs that was used when implementing the MLPA. The combined effect of these three laws was, in large part, to shift marine resource management away from a single species approach to one that focuses on sustaining marine resources by considering ecosystem function and biodiversity in management measures.

MPA designation and management authority.—The MMAIA provides designation authority of MMAs, including MPAs, to the Fish and Game Commission, State Park and Recreation Commission (State Parks Commission) and State Water Resources Control Board (Water Board; Marine Managed Areas Improvement Act 36602[b]). The MMAIA also provides direct management authority of adopted MMAs, including MPAs, to CDFW and the Department of Parks and Recreation (State Parks; California Public Resources Code Section 36602[c]). However, neither the State Parks Commission nor the Water Board has authority to restrict the take of marine resources. Therefore, if either the State Parks Commission or the Water Board adopts any MMA or MPA designations, take (as defined in Fish and Game Code Section 86) regulations must be consistent with those found in Fish and Game Code (California Public Resources Code Section 36725[e], Fish and Game Code Section 2860).

The MLPA mandates the Fish and Game Commission adopt a marine life protection program intended to improve the design and management of the state's MPAs (Fish and Game Code Section 2853[b]). Components of the marine life protection program of which the MPA network is a product include the creation and adoption of a master plan developed by or under the direction of CDFW (Fish and Game Code Section 2855[a],[b]), a preferred MPA siting plan including alternatives designed to meet MLPA goals and design criteria (Fish and Game Code Section 2856[a][2][D]; Fish and Game Code Section 2857[c][1]), and the ability to regulate the commercial and recreational take of marine species within MPAs to the Fish and Game Commission (Fish and Game Code Section 2860). The CDFW is responsible for management of the network of MPAs along California's coast as adopted by the Fish and Game Commission pursuant to the MLPA.

There is currently one MPA within the network that was adopted by both the State Parks Commission and the Fish and Game Commission at separate times. Initially adopted as Cambria State Marine Conservation Area (SMCA) by the Fish and Game Commission in 2006 as part of MLPA implementation, the Cambria SMCA was subsequently adopted as Cambria State Marine Park (SMP) by the State Parks Commission in 2010. No changes to the Fish and Game Commission adopted regulations or boundaries were made by the State Parks Commission. Therefore, the area has dual designation as Cambria SMCA/SMP and is jointly managed by CDFW and State Parks.

Designing an MPA network.—The MLPA requires that California's system of MPAs be redesigned to increase coherence and effectiveness in protecting the state's marine life and habitats, marine ecosystems, and marine natural heritage, as well as to improve recreational, educational, and study opportunities provided by marine ecosystems subject to minimal human disturbance (Fish and Game Code Section 2853). Between 2000 and 2004 the CDFW undertook two separate attempts to implement the MLPA, both of which were unsuccessful. From 2004 to 2012, through a memorandum of understanding, a partnership known as the Marine Life Protection Act Initiative (MLPA Initiative) matched public and private resources to aid with the implementation of the MLPA. A regional approach to MPA planning was used to implement the MLPA and the state was divided into five regions, central coast (MPAs implemented 2007), north central coast (MPAs implemented 2010), south coast (MPAs implemented 2012), north coast (MPAs implemented 2012), and the San Francisco Bay (MPA planning process pending). Each regional process contributed a suite of MPAs designed at the local level that became part of the larger, cohesive statewide network.

Table 1.—Summary of allowed uses for different classifications within California's marine protected area network. SMR = state marine reserve, SMP = state marine park, SMCA = state marine conservation area, SMRMA = state marine recreational management area.

Classification	Summary of Allowed Take ^a
SMR	No take
SMP	Allows limited recreational take
SMCA	Allows limited recreational and/or commercial take
SMRMA	Provides subtidal protection while allowing for legal waterfowl hunting (additional allowances may vary)
Special Closure	Prohibits human entry to protect breeding seabird and marine mammal populations from human disturbance year-round

^aNon-consumptive uses and permitted scientific research are allowed in all classifications, and allowances vary by location. See the California Code of Regulations Title 14, Section 632, for details.

MPA network.—The MPA network includes state marine reserves, state marine parks, state marine conservation areas, state marine recreational management areas, and special closures (Table 1). Non-consumptive uses and permitted scientific research are allowed in MPA and MMA categories. The California Code of Regulations Title 14, Section 632 (a), defines circumstances under which permission to access special closures may be granted. Comprised of 119 MPAs, 5 MMAs, and 15 special closures, each with unique boundaries and associated regulations, the MPA network currently covers approximately 2,200 km² (≈16%) of state waters across a variety of habitat types and depths.

Scientific guidance.—Marine protected areas can be an effective tool in an ecosystem-based approach to protecting marine life and critical habitats by complementing existing fishery regulations (Fish and Game Code Section 2851[d]), which are often limited in scope and address only temporal or spatially specific restrictions. Meeting the stated program goals of the MLPA (Fish and Game Code Section 2853), requires scientifically based design considerations for MPAs. Design considerations intended to meet the goals of the MLPA were included in a master plan framework (Fish and Game Code Sections 2855 and 2856) developed by a CDFW-convened master plan team. The master plan framework was adopted in 2005 provided scientific guidance to develop the MPA network with the guidance applied at both network and individual MPA design levels. Guidance was further refined to address regional considerations during regional planning.

Network design considerations are intended to link all MPAs and involve assessing larger ecosystem functions and socioeconomic values in recommending size and spacing, location, habitat replication, and MPA classification. Individual MPA design considerations include the size and spacing, location, arrangement, classification, and specific habitat an MPA contains. As part of the planning process, MPA proposals were evaluated by the SAT to determine effectiveness in meeting scientific design guidance (individual and network) as well as their potential to meet the goals of the MLPA.

California's redesigned MPA network largely reflects the successful integration of the scientific design guidelines set forth in the MLPA, the master plan, and regional MPA planning processes. When compared to California's MPAs in 1999, prior to the MLPA when less than 3% of state waters were incorporated into any MPA classification, there is now a dramatic increase in the number of MPAs, the proportion of state waters protected, the average MPA size, the habitats represented and replicated within MPAs, and a reduction in the distance between protected habitats.

MPA management.—With the MPA network in place along the coast, CDFW is focusing on managing it relative to legislated goals and requirements of the MLMA, MLPA, and MMAIA. Core CDFW management responsibilities for the MPA network include public outreach, enforcement, issuing scientific collecting permits, monitoring, meeting adaptive management needs, and updating the master plan. Due to the large-scale nature of the MPA network and the numerous management responsibilities associated with it, CDFW has currently formed key partnerships to assist with outreach, data collection, and monitoring efforts.

In addition to working collaboratively with the many entities involved in MPA outreach statewide, CDFW Marine Region staff has developed MPA outreach materials. These materials are designed to increase public awareness and understanding of MPAs and compliance with associated regulations. Facilitating public awareness to increase regulatory compliance should allow MPAs to function in the manner they were designed. Reducing unintentional take violations should allow data collection and monitoring efforts to factor in regulated take when assessing MPA effectiveness.

California Department of Fish and Wildlife Marine Region staff is working directly with the MPA Monitoring Enterprise, a program of the Ocean Science Trust, in developing regional MPA monitoring plans, baseline data collection, and analysis. Data collection and monitoring efforts designed to measure individual MPA and overall network effectiveness relative to stated goals and objectives are an essential component to understanding long-term impacts of the MPA network. Providing these results directly to CDFW managers may help to inform long-term and adaptive management measures while also providing an extraordinary opportunity to better understand and manage marine resources from an ecosystem-based perspective. Long-term management of the MPA network may also require that marine resource managers consider how MPAs impact traditional fisheries management measures, how the two approaches can successfully be integrated, and what ecosystem benefits MPAs may provide.

In 2013, policy direction for MPAs was assumed through legislation (Fish and Game Code Section 2850.5 [Added Stat 2013 ch 356 Section 2 {SB} 96]) by the OPC. The OPC is now working with CDFW to gather input from agencies and stakeholders to best inform future policy actions with regard to MPAs. A formalized management plan, the "*California Collaborative Approach: Marine Protected Areas Partnership Plan*" currently under development between the OPC and CDFW will provide overarching policy guidance to promote a partnership model for the management of the MPA network across multiple agencies and organizations. This plan is expected to provide guidance that contributes to the overall success of MPA management.

As MPA effects on marine ecosystems, populations, and habitats are better understood over time, changes to individual MPAs or to the statewide network may become necessary. If changes are needed, it is the role of adaptive management as identified in the MLPA (Fish and Game Code Section 2852[a]) to inform those changes. Any proposed changes to an individual MPA, or the network in general, would be provided by CDFW directly to the Fish and Game Commission, the entity with the authority to enact those changes (Fish and Game Code Section 2861). However, because measurable biological responses to MPAs, especially for long-lived and slow-growing species, may require several years to appear, any adjustments to the MPA network, if needed, are expected to occur over longer time frames. The CDFW will continue to manage the MPA network in coordination with key partners to meet legislated goals and mandates under which it was created.

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