

**California Marine Life Protection Act (MLPA)
Master Plan Science Advisory Team (SAT)
Key and Unique Habitats in the South Coast Study Region
*Revised January 20, 2009***

The Marine Life Protection Act (MLPA) provides guidance that marine protected areas (MPAs) should encompass a variety of marine habitat types and communities, across a range of depths and environmental conditions. This document identifies the key and unique habitats in the South Coast Study Region, as required by the MLPA. The methods for evaluating MPA proposals with respect to representation and replication of key and unique habitats are described in detail in the *Habitat Representation and Habitat Replication sections of "Methods used to evaluate MPA proposals for the South Coast Study Region"* [this document is currently being revised by the SAT].

Habitats identified in the MLPA and the California Master Plan for Marine Protected Areas

As noted above, the MLPA provides guidance that MPAs should encompass a variety of marine habitat types and communities, across a range of depths and environmental conditions. The MLPA also recommends that similar habitats should be replicated, to the extent possible, in more than one state marine reserve (SMR) in each of California's two biogeographic regions. The MLPA identifies the following habitats for representation and replication: rocky reefs, intertidal zones, sandy or soft ocean bottoms, underwater pinnacles, sea mounts, kelp forests, submarine canyons, and seagrass beds. The SAT notes that seamounts are not found in California state waters.

Subsequent to provisions in the MLPA, the California Marine Life Protection Act Draft Master Plan for Marine Protected Areas (Master Plan) further refines the list of 'key' habitats. The SAT recognizes estuaries as a critical California coastal habitat; consequently, estuaries were added to the list of key habitats in the Master Plan. The Master Plan further subdivides habitats identified in the MLPA by substrate type or depth identifying the following key habitats: Sand beach, rocky intertidal, estuary, shallow sand, deep sand, shallow rock, deep rock, kelp, shallow canyon, and deep canyon. Because changes in species composition occur across depth zones, even over the same substratum, the Master Plan

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Science Team has subsequently refined the habitat definitions to include five depth zones (intertidal, intertidal to 30 meters (m), 30 m to 100 m, 100 m to 200 m, and deeper than 200 m). Key habitat types provide benefits by harboring a particular set of species or life stages, having special physical characteristics, or being used in ways that differ from other habitats. The Master Plan Science Team also recommends the representation of ocean circulation features (principally upwelling centers, freshwater plumes from rivers, and larval retention areas) in MPAs.

Key habitats in the South Coast Region

The set of habitats described in the MLPA and Master Plan can be expanded or reduced by the SAT to reflect representative habitats for each study region. In addition to the habitat types delineated in the MLPA, the SAT notes that key habitat types such as rocky reefs, intertidal zones, and kelp forests are actually broad categories that include several types of habitat and that special consideration in design planning should be given to habitats that are uniquely productive (e.g., upwelling centers or kelp forests) or aggregative (e.g., fronts) or those that sustain distinct use patterns. For example, the SAT has identified Point Conception as probably the most significant upwelling area in the South Coast Study Region due to the confluence of the California Current and Southern California Countercurrent. All of the key habitats except sea mounts occur in the South Coast Study Region within state waters, however some are not well mapped (e.g. pinnacles).

Considering guidance from the MLPA and Master Plan, the SAT has identified the following "key" marine habitats in the South Coast Study Region:

- rocky shore
- sandy beach
- surfgrass
- coastal marsh
- tidal flats
- estuarine waters
- eelgrass
- kelp
- rocky reef 0-30m
- rocky reef 30-100m
- rocky reef 100-200m
- rocky reef >200m
- soft bottom 0-30m
- soft bottom 30-100m
- soft bottom 100-200m
- soft bottom >200m
- submarine canyons
- pinnacles
- upwelling centers
- retention areas

Although, underwater pinnacle and estuary habitats are considered to be key habitats, the SAT recommends that Farnsworth Bank and San Diego Bay be recognized. Farnsworth Bank is a unique underwater pinnacle in 15 to 91 m (50 to 300 ft) of water off the seaward coast of Santa Catalina Island that supports rare dense growths of the purple Hydrocoral (*Stylaster californica* previously known as *Allopora californica*). Farnsworth Bank is currently a State Marine Conservation Area explicitly to prohibit take of purple coral. San Diego Bay is a large and ecologically important unique bay/estuary complex in the South Coast Study Region. Most of these key habitats are mapped in the *draft regional profile of the south coast study region*, which can be found at the following weblink: <http://www.dfg.ca.gov/mlpa/index.asp>.

Kelp Forests and Seagrass Beds in the South Coast

Kelp forests and seagrass beds are biogenic key habitats in the study region that require additional comment. Kelp forest communities are known to be among the most productive and biologically rich habitats in the region. The dominant kelp species and their associated communities differ across bioregions, with substratum type, and depth. For example, the **elk kelp** (*Pelagophycus porra*) grows over a narrow depth range (30 to 90 m) on coarse sediment-laden habitats (e.g., the leeward side of Santa Catalina Island) as well as rocky substrata (e.g. Point Loma) and has a limited geographical distribution (Abbott and Hollenberg 1976). **Giant kelp** (*Macrocystis pyrifera*), the major species of most southern California kelp forests, is more widely distributed in the state and the study region where it grows over a broader depth range (6 to 80 m) and occurs on substrata ranging from hard to soft rock to coarse sand (Abbott and Hollenberg 1976). **Seagrasses** are flowering plants that form important habitat in shallow waters for a variety of marine organisms. The most common type of seagrass along the open coast is **surfgrass** (*Phyllospadix* spp.), which forms beds that fringe rocky coastline areas at the zero tide level down to several meters below the zero tide level. Surfgrass serves as an important habitat for a variety of life stages of fish and invertebrates, including the California spiny lobster (Engle 1979), as well as algae (Stewart and Myers 1980). The most common type of seagrass in estuaries and sheltered coastal bays is **eelgrass** (*Zostera marina*). A second variety of eelgrass (*Zostera pacifica*) occurs along the open coast in southern

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California. The long leaves and dense, matted root system of eelgrass beds helps prevent erosion and maintains stability in nearshore areas by slowing down water flow that consequently enhances sediment accumulation and faunal recruitment. Eelgrass beds also provide refuge, foraging, breeding, or nursery areas for invertebrates, fish, and birds (Hoffman 1986).

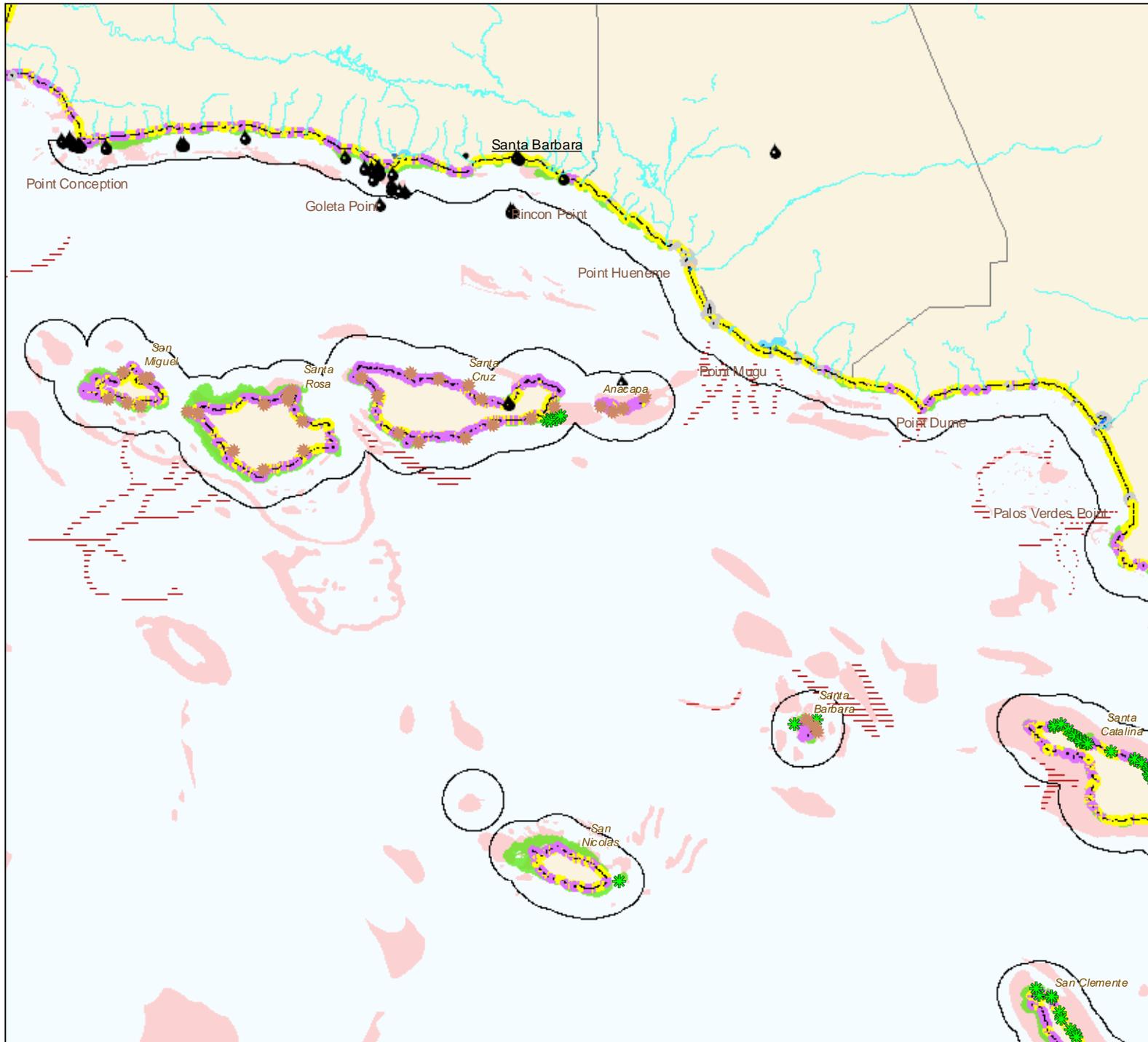
Unique Habitats in the South Coast Study Region

Goal 4 of the MLPA aims to protect marine natural heritage, including protection of representative and **unique** marine life habitats in California waters for their intrinsic value. In addition to the key habitats and habitat features discussed previously, two unique or rare habitat types occur in the South Coast Study Region and should be considered for inclusion in MPAs. These are ***oil seeps*** and ***shallow hydrothermal vents***. The SAT will not include these two unique habitats in habitat replication evaluations, but consideration should be given for their inclusion in MPAs. Therefore, only the presence of unique habitats in MPAs will be noted in MPA proposal evaluations. Benthic communities and environmental conditions around oil seeps and shallow hydrothermal vents differ from surrounding areas. Adjacent to California, offshore natural oil seeps are unique to southern California, but not rare in the South Coast Study Region. The largest concentration of oil seeps occurs in the Santa Barbara Channel area (Wilkinson 1971). Shallow hydrogen sulfide vents appear to be restricted to White Point on the Palos Verdes Peninsula. These vents occur from the intertidal to shallow subtidal depths (0-10m) and support H₂S-oxidizing bacterial mats and have different localized water chemistry and temperature (Dailey 1993). Recent research has found that the hydrothermal vent macroinvertebrate community at White Point is a subset of the surrounding fauna and is limited to species able to withstand stressful environments (Melwani and Kim 2008). The microbial biomass produced through sulfur oxidation around the vents is morphologically similar to deep hydrothermal vents and is an energy source based on chemosynthesis rather than photosynthesis (Dailey 1993). Currently, little to no research has been conducted on the effects of extractive or non-extractive human activities on shallow hydrothermal vents or oil seep communities.

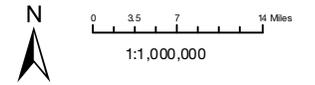
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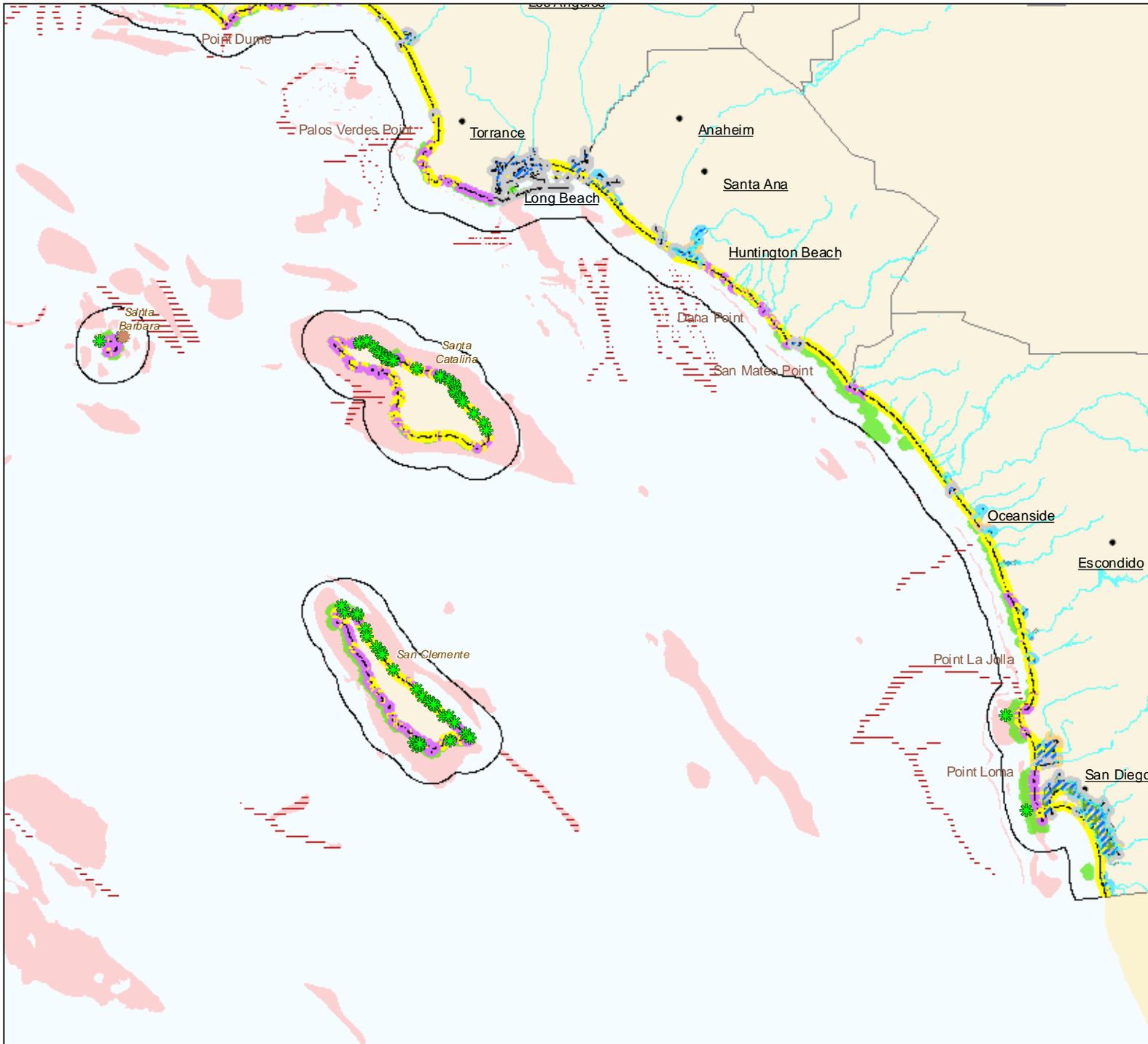


- Legend
- South Coast Study Region Boundary
 - Elk Kelp
 - Eelgrass
 - Surf Grass
 - Submarine Canyons
 - Estuaries
 - Beaches
 - Coastal Marsh
 - Hardened Shores
 - Rocky Shores
 - Tidal Flats
 - Persistent Kelp
 - Hard Seafloor Substrate
 - Oil seeps
 - Coastal Rivers

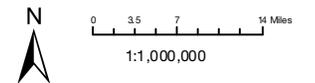


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