

**California MLPA Master Plan Science Advisory Team**  
**Methods Used to Evaluate MPA Proposals in the**  
**North Coast Study Region (DRAFT)**  
**Chapter 4 – Habitat Representation and Analyses (Goals 1 and 4)**  
*Draft revised December 3, 2009*

**Status of this chapter:** The SAT has not yet approved any portion of this chapter.

***Identification of Key and Unique Habitats for the MLPA North Coast Study Region***

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 chapter identifies the key and unique habitats in the North Coast Study Region, as required by the MLPA. The methods for evaluating MPA proposals with respect to representation of key and unique habitats are described in detail later in the chapter.

*Habitats Identified in the MLPA and the Master Plan for MPAs*

Subsequent to provisions in the MLPA, the master plan further refines the list of “key” habitats (listed below). 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 SAT 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 SAT also recommends the representation in MPAs of oceanographic features that represent specific pelagic habitats, such as upwelling centers, estuary waters, river plumes, fronts, and retention zones.

*Key Habitats in the MLPA North Coast Study 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. All of the key habitats except sea mounts occur in the MLPA North Coast Study Region within state waters, although some, such as pinnacles, are not well mapped.

Considering guidance from the MLPA and master plan, the SAT has identified the following "key" marine habitats in the MLPA North Coast Study Region (m = meters, \* = mapping data limitations):

- 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 zones\*
- river plumes\*
- fronts\*

Several of the key habitats indicated above with an asterisk (\*) are subject to mapping limitations that may restrict habitat evaluations. Further detail on the methods used to evaluate inclusion of these habitats in MPA proposals is provided below.

Several pelagic habitats are included in the list of key habitats for the MLPA North Coast Study Region: namely upwelling centers, retention zones, river plumes, and oceanographic fronts. These pelagic habitats, are created by water movement, and are necessarily fluid and difficult to demarcate with fixed boundaries. Furthermore, processes like upwelling and terrestrial runoff occur as events in response to winds or rainfall, so features are impermanent, although they may be recurrent. Thus, while it is important to recognize these habitats, they are difficult to map and evaluate for habitat representation and replication. The SAT habitat workgroup will work to develop maps and evaluation methods for these habitats over the coming months. Because these pelagic habitats overlay benthic habitats, their inclusion should be a secondary consideration in MPA siting.

#### *Unique Habitats in the North Coast Study Region*

[To be developed with guidance from the SAT Habitat Work Group.](#)

#### **Summary of Guidelines and Evaluation Methods: Habitat Representation**

The master plan guidelines with respect to habitat protection are as follows:

1. For an objective of protecting 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."

2. “‘Key’ marine habitats (defined above) 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.”

Guidance in the MLPA closely mirrors these guidelines in the master plan with one key difference: the MLPA specifically indicates that state marine reserves (SMRs) are an important component of habitat protection.

To assess how the key and unique habitats defined here are represented across a range of environmental conditions, the SAT has identified two distinct bioregions within the MLPA North Coast Study Region (see Chapter 2). Because the key habitats within these bioregions support different marine life communities, the SAT recommends that MPA proposals represent key habitats across both bioregions.

In evaluating habitat representation the SAT considers:

- the quality of habitat maps,
- the availability of habitats across the entire study region,
- the availability of habitats within the two bioregions defined by the SAT,
- the percentage of available habitat protected in MPAs across all six levels of protection, and
- the distribution of habitat protection across the two bioregions in the MLPA North Coast Study Region.

Several of the key and unique habitats named above have limited distribution in the study region or are poorly mapped (see below for more detailed discussion of habitat map quality). In consideration of data limitations, the SAT conducts a full evaluation of habitat representation (including area and percent of habitat protected) only for habitats that are adequately mapped. For habitats that are not comprehensively mapped, the SAT will conduct simplified evaluations of habitat representation.

### ***Consideration of Habitat Map Quality***

The quality of habitat mapping influences the way in which habitat representation can be assessed. For habitats that are comprehensively mapped, it is possible to accurately assess both the amount of habitat encompassed by a proposed MPA and the percent of available habitat protected. Unfortunately, many of the habitat maps are subject to one or more of the following limitations: 1) mapping is not of consistent quality across the entire study region, 2) mapped data does not allow assessment of the extent of habitat protected (aerial or linear extent), or 3) mapping does not accurately reflect presence or absence of habitats.

**Table 4-1 Habitat mapping quality.** This table summarizes the limitations of habitat maps and recommendations for use of habitat data in habitat evaluations. [The table will be filled in as the SAT and staff complete habitat data reviews.](#)

Habitat	Source	Potential Reviewers	Review Summary	Recommended Method of Habitat Assessment
<b>Key Habitats</b>				
rocky shore	NOAA Environmental Sensitivity Index (ESI) shoreline - 1994	K. Nielsen		
sandy beach	NOAA ESI shoreline - 1994	K. Nielsen		
<i>surfgrass</i>	<i>no current data available in digital format</i>	<i>None</i>		
coastal marsh	NOAA Coastal Change Assessment Program (CCAP) 2007	S. Rumrill, R. LeValley, D. Hankin		
tidal flats	NOAA ESI shoreline - 1994	S. Rumrill, R. LeValley, D. Hankin		
estuaries	National Wetlands Inventory (NWI)	S. Rumrill, R. LeValley, D. Hankin		
eelgrass	PSMFC, SeaGrant, local studies and reports	S. Rumrill, R. LeValley, D. Hankin		
kelp	DFG aerial surveys (from 1989, 1999, 2002-05, and 2008)			
rocky reef 0-30m	CSUMB Seafloor mapping, DFG aerial kelp surveys			

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Habitat	Source	Potential Reviewers	Review Summary	Recommended Method of Habitat Assessment
rocky reef 30-100m	CSUMB Seafloor mapping			
rocky reef 100-200m	CSUMB Seafloor mapping			
rocky reef >200m	CSUMB Seafloor mapping			
soft bottom 0-30m	CSUMB Seafloor mapping			
soft bottom 30-100m	CSUMB Seafloor mapping			
soft bottom 100-200m	CSUMB Seafloor mapping			
soft bottom >200m	CSUMB Seafloor mapping			
submarine canyons	G. Green			
<i>pinnacles</i>	<i>unmapped</i>	<i>None</i>		
<i>upwelling centers</i>	<i>currently unmapped</i>			
<i>retention areas</i>	<i>currently unmapped</i>			
<i>river plumes</i>	<i>currently unmapped</i>			
<i>oceanographic fronts</i>	<i>currently unmapped</i>			
<b>Unique Habitats</b>				