Marine Life Protection Act Initiative

Habitat Evaluation Methods for the MLPA North Coast Study Region
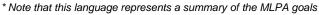
Presentation to the MLPA Master Plan Science Advisory Team
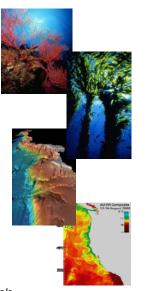**December 17, 2009 • Eureka, CA**

Presented by Dr. Mark Carr, Member and Emily Saarman, SAT Assistant
MLPA Master Plan Science Advisory Team

Marine Life Protection Act Goals*

1. To protect the natural diversity and function of **marine ecosystems**.

2. To help sustain and restore **marine life populations**.

3. To improve **recreational, educational, and study opportunities** in areas with minimal human disturbance.

4. To protect representative and unique **marine life habitats**.

5. Clear objectives, effective management, adequate enforcement, sound science.

6. To ensure that MPAs are designed and managed as **a network**.

* Note that this language represents a summary of the MLPA goals

MLPA Goals*: Habitats

1. To protect the natural diversity and function of **marine ecosystems**.
2. To help sustain and restore **marine life populations**.
3. To improve **recreational, educational, and study opportunities** in areas with minimal human disturbance.
4. To protect representative and unique **marine life habitats**.
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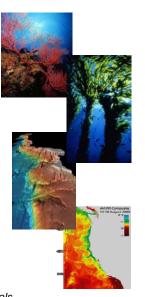6. To ensure that MPAs are designed and managed as **a network**.

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Habitat Protection Guidelines

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.

'Key' 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.

At least three to five replicate MPAs should be designed for each habitat type within a **<u>biogeographical region</u>** to provide analytical power for management comparisons and to buffer against catastrophic loss of an MPA.

Key Habitats in the North Coast

Shoreline:
- rocky shores
- sandy beaches
- surfgrass

Rocky reef:
- kelp
- rocky reef 0-30m
- rocky reef 30-100m
- rocky reef 100-200m
- rocky reef >200m
- pinnacles

Soft bottom:
- soft bottom 0-30m
- soft bottom 30-100m
- soft bottom 100-200m
- soft bottom >200m
- submarine canyons

Estuarine:
- coastal marsh
- tidal flats
- estuarine waters
- eelgrass

Pelagic habitats:
- upwelling centers
- retention zones
- river plumes
- oceanographic fronts

m = meter

Unique Habitats in the North Coast

Habitats that may be unique to the north coast:

- the "sunken" rivers of Mendocino county

- the river plumes may have unique qualities

- freshwater-influenced beaches

- others??

Habitat Representation Evaluation

- **Consider the <u>availability</u> of habitats**
  - within the entire study region
  - within each of the bioregions

- **Calculate the <u>percent</u> of each habitat protected at each level of protection (regardless of MPA size)**
  - within the entire study region
  - within each of the bioregions

- **Note where habitat protection is not distributed across both bioregions**

Habitat Replication Evaluation

- **Consider the size of MPAs or MPA clusters** – must at least meet minimum size guideline (except estuarine MPAs)

- **Consider the <u>extent</u> of habitats included in each MPA or MPA cluster** – must meet habitat size guidelines

- **Consider levels of protection for each MPA or MPA cluster** – replication is assessed at moderate high protection and above

Habitat Maps in SAT Evaluations

- The habitats included in MPAs are relevant to all SAT evaluations, except the MPA size analysis

- The types of analyses conducted depend on habitat map quality and consistency across the study region

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Note: habitats indicated in blue have special data considerations or data limitations

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Approaches to Habitat Data Limitations

Surfgrass:
- **Problem:** no current and comprehensive mapping available in a digital format
- **Approach:** evaluate rocky shores as *potential* surfgrass habitat

Kelp:
- **Problems:**
  - bull kelp does not form extensive canopy
  - kelp canopy can be dynamic from year to year
  - area may not be the most ecologically relevant measure
- **Approach:** use all available years of aerial surveys to delineate *lengths* of the coast that are known to support kelp

Approaches to Habitat Data Limitations

Nearshore substrate (0-30 meter rocky and soft bottom):

- **Problem:** high resolution substrate information does not extend into the very nearshore (< 10 meter depth)
- **Approach:** use available substrate and shoreline data with additional information sources to generate a nearshore substrate proxy line for measuring these habitats.

Eelgrass:

- **Problem:** no comprehensive mapping across the study region, multiple information sources with varying resolutions
- **Approach:** map eelgrass where possible in MarineMap, but report presence/absence to avoid inconsistencies across information sources

Approaches to Habitat Data

Other recommendations from the habitat work group:

- **coastal marsh:** use NOAA Coastal Change Assessment Project (CCAP) remote sensing data to assess areas of coastal marsh.

- **estuaries:** classify all enclosed water areas (including man-made harbors) as estuaries

- **pelagic habitats:** explore mapping and supplementary evaluation methods for evaluating inclusion of pelagic habitat types in MPAs

Study Region Boundary

Criteria considered in defining the study region boundary:
- extent and presence of mapped salt marsh or brackish vegetation
- presence of saltwater species,
- known extent of tidal influence
- jurisdictional boundaries

Information sources include:
- NOAA Environmental Sensitivity Index
- National Wetlands Inventory
- Natural Diversity Database
- NOAA Coastal Change Assessment Project
- Digital Globe 1.0 m satellite imagery
- Expert knowledge