SAT Habitat Evaluations of NCCRSRG Proposals
North Central Coast Study Region

Presentation to the MLPA Blue Ribbon Task Force
April 22, 2008 • San Rafael, CA
Presented by Dr. Mark Carr
MLPA goals and applicable guidelines
Habitat representation
Habitat replication
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.
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2. To help sustain and restore marine life populations.
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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.
Key Questions for Each Proposed Package

1. How well are key habitat types represented in proposed MPA packages?

2. What are the proposed levels of protection for these habitat types?

3. How well are habitats and levels of protection distributed across the study region?
<table>
<thead>
<tr>
<th>Level of Protection</th>
<th>MPA Types</th>
<th>Activities associated with this protection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high</td>
<td>SMR</td>
<td>No take</td>
</tr>
<tr>
<td>High</td>
<td>SMCA</td>
<td>In water depth &gt; 50m: <em>pelagic finfish</em> (H&amp;L) salmon by troll only, <em>coastal pelagic finfish</em> (pelagic seine)</td>
</tr>
<tr>
<td>Mod-high</td>
<td>SMCA</td>
<td>Dungeness <em>crab</em> (traps/pots); <em>squid</em> (pelagic seine); In water depth &lt;50m: <em>pelagic finfish</em> (H&amp;L) salmon by troll only, <em>coastal pelagic finfish</em> (pelagic seine);</td>
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<tr>
<td>Moderate</td>
<td>SMCA SMP</td>
<td><em>salmon</em> (non-troll H&amp;L); <em>abalone</em> (diving); <em>halibut, white seabass, striped bass, shore-based finfish, croaker, and flatfishes</em> (H&amp;L); <em>smelt</em> (H&amp;L and hand/dip nets); <em>clams</em> (hand harvest); <em>giant kelp</em> (hand harvest)</td>
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<tr>
<td>Mod-low</td>
<td>SMCA SMP</td>
<td>Urchin (diving); <em>lingcod, cabezon, greenling, rockfish, and other reef fish</em> (H&amp;L); <em>surfperches</em> (H&amp;L)</td>
</tr>
<tr>
<td>Low</td>
<td>SMCA SMP</td>
<td><em>bull kelp and mussels</em> (any method); <em>all trawling; giant kelp</em> (mechanical harvest); <em>mariculture</em> (existing methods in NCCSR)</td>
</tr>
</tbody>
</table>
Deep soft bottom is the most abundant habitat in all subregions.

More rocky shore and shallow rocky reef in the north subregion.

More shallow soft bottom in the south subregion.

Kelp is only mapped in the north subregion.

More estuarine area in the north, but more eelgrass in the south.
Results: Habitat Representation

Similarities between proposals

- Strong convergence among 3 remaining proposals in area in very high (SMR) protection

- All 3 proposals have extremely similar MPA design at the Farallon Islands, Pt. Reyes, and Pt. Arena

- All 3 proposals have similar area of rocky shore, sandy beach and surfgrass in very high (SMR) protection

- All 3 proposals have similar protection of estuarine habitats
Shoreline Habitats

All proposals have roughly 20% of surfgrass and rocky shore at very high protection. Additional areas allow some salmon and crab, shorefishing, abalone, halibut and urchin take.

Protection of sandy beach is still generally lower than protection of rocky shoreline.
A high proportion of protected areas are in very high protection SMRs.

Protection of kelp closely mirrors protection of shallow rock.

Prop 4 protects the greatest proportion of all three rocky habitats at very high protection.

Large areas of deep rock in mod-high protection due to salmon and crabbing.

Some shallow rock and kelp areas in moderate due to shorefishing and abalone and low due to urchin harvest.
Results: Habitat Representation

Soft Bottom Habitats

Lower representation of soft bottom habitats relative to rocky habitats

Area of shallow sand in very high protection similar across proposals

Area of deep sand in very high, high and moderate-high protection similar across proposals

Large areas of deep sand in high protection due to deep water salmon trolling and mod-high protection due to crabbing
Results: Habitat Representation

Estuarine Habitats

Lower proportions of estuarine habitats in very high SMRs compared to previous version because forecasted mariculture not counted toward very high protection.

Low protection due to aquaculture.
Results: Habitat Representation

Estuarine Habitats

Only Proposal 4 has an MPA in Tomales Bay

Effects coastal marsh representation

Low protection due to aquaculture
Summary

Strong convergence among 3 remaining proposals as compared to previous round

All habitats except shallow sand have at least 10% representation in all three proposals at very high, high, and mod-high protection

Consistent ranking in percent of habitat protected (4 > 1-3 > 2XA), with exception of shallow sand at very high and high protection

Range of variation in representation:

At very high protection, representation varied by 3.5% (surfgrass) to 12% (kelp) across proposals

At high protection, representation varied by 3.5% (surfgrass) to 13% (deep rock) across proposals

At mod-high protection, representation varied by 4.5% (deep rock) to 16% (surfgrass)
Methods: Habitat Replication

Guidelines for replication:

- 3-5 replicates of habitat per biogeographic region
- MPA or cluster must meet the minimum size guidelines (9 square miles)
- Habitat must meet the threshold identified to encompass 90% of biodiversity in that habitat type
- Estuarine MPAs do not have to meet size guidelines but must contain at least 0.12 mi² of estuarine habitat
- Some small estuaries (Gualala and Garcia rivers, Pescadero Creek) contain less than the minimum 0.12 mi², but protection of these habitats still has conservation value
Replication: Very High Protection

- Beaches
- Rocky shores
- Surfgrass

Soft:
- 0 - 30m
- 30 - 100m

Hard:
- 0 - 30m
- 30 - 100m

Average Kelp
CCSR MPAs
Replication: High Protection

- Beaches
- Rocky shores
- Surfgrass
- Soft 0 - 30m
- Soft 30 - 100m
- Hard 0 - 30m
- Hard 30 - 100m
- Average Kelp
- CCSR MPAs

Graph showing number of replicates for different properties (Prop 0, Prop 1-3, Prop 2XA, Prop 4) across different environments and depth ranges.
Replication: Mod-high Protection

- Beaches
- Rocky shores
- Surfgrass
- soft 0 - 30m
- soft 30 - 100m
- hard 0 - 30m
- hard 30 - 100m
- Average Kelp
- CCSR MPAs

<table>
<thead>
<tr>
<th>Beaches</th>
<th>Rocky shores</th>
<th>Surfgrass</th>
<th>soft 0 - 30m</th>
<th>soft 30 - 100m</th>
<th>hard 0 - 30m</th>
<th>hard 30 - 100m</th>
<th>Average Kelp</th>
<th>CCSR MPAs</th>
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<tbody>
<tr>
<td>Prop 0</td>
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<td>Prop 1-3</td>
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<td>Prop 2XA</td>
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<td>Prop 4</td>
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</table>
Most habitats with 2-4 new replicates

Greater replication of eelgrass than CCSR

No estuarine habitats in mod-high or high LOP
As before...

Estuaries too small to meet size criterion add conservation value

Additional replicates that meet habitat size criterion
Results: Habitat Replication

Summary

- No longer marked differences among proposals.

- Levels of replication similar to CCSR for most habitats at highest and moderate-high levels of protection.