Key Questions for Each MPA Proposal

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

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?
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

Science Guidelines: Levels of Protection

<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>pelagic finfish (H&amp;L in water &gt;50m depth) salmon by troll only; coastal pelagic finfish (pelagic seine in water &gt;50m depth)</td>
</tr>
<tr>
<td>Mod-high</td>
<td>SMCA</td>
<td>pelagic finfish (H&amp;L in water &lt;50m depth) salmon by troll only; coastal pelagic finfish (pelagic seine in water &lt;50m depth); Dungeness crab (traps/pots); squid (pelagic seine)</td>
</tr>
<tr>
<td>Moderate</td>
<td>SMCA SMP</td>
<td>salmon (non-troll H&amp;L); abalone (diving); halibut, white seabass, striped bass, shore-based finfish, croaker, and flatfishes (H&amp;L); smelt (H&amp;L and hand/dip nets); clams (hand harvest); giant kelp (hand harvest)</td>
</tr>
<tr>
<td>Mod-low</td>
<td>SMCA SMP</td>
<td>Urchin (diving); lingcod, cabezon, greenling, rockfish, and other reef fish (H&amp;L); surfperches (H&amp;L)</td>
</tr>
<tr>
<td>Low</td>
<td>SMCA SMP</td>
<td>bull kelp and mussels (any method); all trawling; giant kelp (mechanical harvest); mariculture (any method)</td>
</tr>
</tbody>
</table>
Results: Habitat Availability

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

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.
Results: Habitat Representation

Rock Habitats

A high proportion of protected areas are in 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
Results: Habitat Representation

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: Moderate-high Protection

Beaches
Rocky shores
Surfgrass

Soft 0 - 30m
Soft 30 - 100m
Hard 0 - 30m
Hard 30 - 100m
Average Kelp
CCSR MPAs

Number of Replicates

Replication: Estuarine Habitats

Estuary
Marsh
Tidal flats
Eelgrass
CCSR MPAs

Estuarine Replication Very High Protection

Most habitats with 2-4 new replicates
Greater replication of eelgrass than CCSR
No estuarine habitats in mod-high or high LOP
Replication: Estuarine Habitats

Results: Habitat Replication

Summary

- No longer marked differences among proposals
- Levels of replication similar to central coast study region for most habitats at highest and moderate-high levels of protection