

Marine Life Protection Act Initiative



SAT Evaluations of MPA Proposals and the Integrated Preferred Alternative for the North Central Coast Study Region

Presentation to the California Fish and Game Commission and the MLPA Blue Ribbon Task Force
June 11, 2008 • Sacramento, CA
Presented by Dr. Mark Carr, Master Plan Science Advisory Team

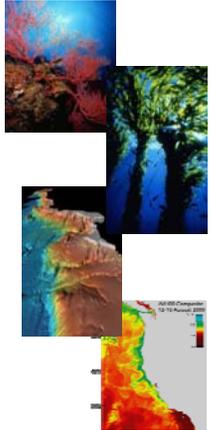
Habitats and Ecosystems

Key Marine Habitats

<u>Seafloor Habitats</u>	<u>Depth Zones</u>
<ul style="list-style-type: none">• Rocky reefs• Intertidal zones• Sandy or soft ocean bottoms• Underwater pinnacles• Submarine canyons	<ul style="list-style-type: none">• Intertidal• Intertidal to 30 m• 30 to 100 m• 100 to 200 m• 200 m and deeper
<u>Biogenic Habitats</u>	<u>Oceanographic Habitats</u>
<ul style="list-style-type: none">• Kelp forests• Seagrass beds	<ul style="list-style-type: none">• Upwelling areas• Freshwater plumes• Retention zones

MLPA 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**.



Habitats Evaluation (Goals 1 and 4)

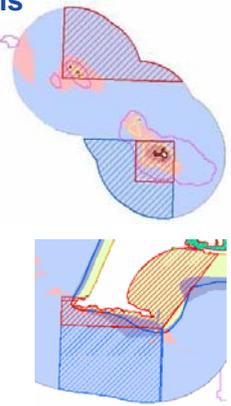
Key Questions

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

Habitat Representation

Similarities among proposals

-  Strong convergence among 4 proposals in area in very high (SMR) protection
-  All 4 proposals have extremely similar MPA design at the Farallon Islands, Point Reyes, and Point Arena
-  All 4 proposals have similar area of rocky shore, sandy beach and surfgrass in very high (SMR) protection
-  All 4 proposals have similar protection of estuarine habitats



Habitat Availability

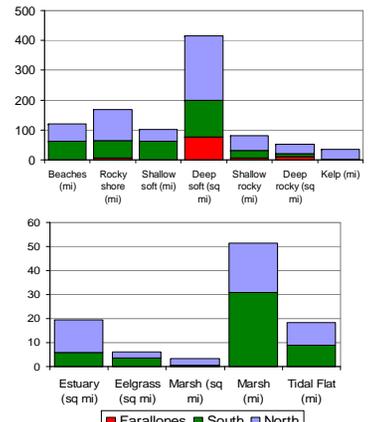
Deep soft bottom is the most abundant habitat in all subregions

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



SAT Guidelines: Levels of Protection

	Level of Protection	MPA Types	Activities associated with this protection level
	Very high	SMR	No take
	High	SMCA	In water depth > 50m: pelagic finfish (H&L) salmon by troll only, coastal pelagic finfish (pelagic seine)
	Mod-high	SMCA	Dungeness crab (traps/pots); squid (pelagic seine); In water depth <50m: pelagic finfish (H&L) salmon by troll only, coastal pelagic finfish (pelagic seine);
	Moderate	SMCA SMP	salmon (non-troll H&L); abalone (diving); halibut, white seabass, striped bass, shore-based finfish, croaker, and flatfishes (H&L); smelt (H&L and hand/dip nets); clams (hand harvest); giant kelp (hand harvest)
	Mod-low	SMCA SMP	Urchin (diving); lingcod, cabezon, greenling, rockfish, and other reef fish (H&L); surfperches (H&L)
	Low	SMCA SMP	bull kelp and mussels (any method); all trawling; giant kelp (mechanical harvest); mariculture (existing methods in NCCSR)

SMR = state marine reserve SMCA = state marine conservation area SMP = state marine park

Habitat Representation

Rocky Habitats

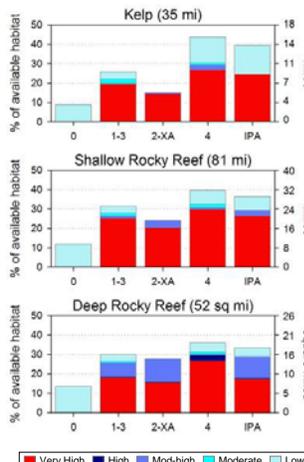
A high proportion of protected areas are in SMRs

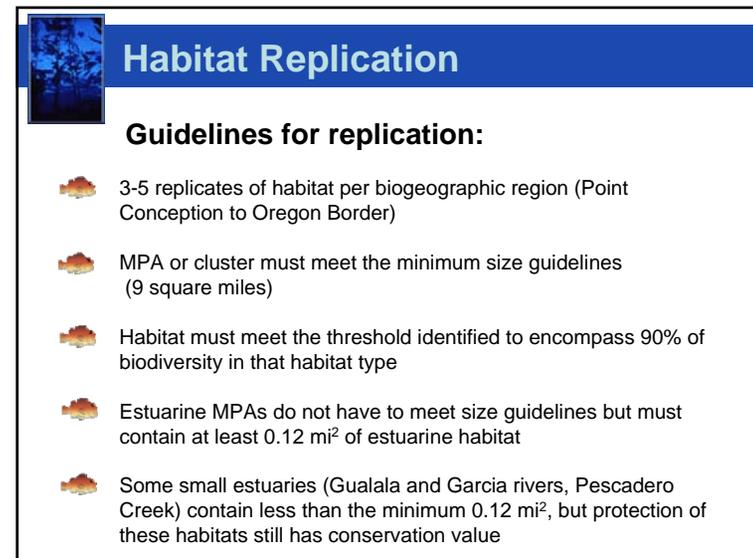
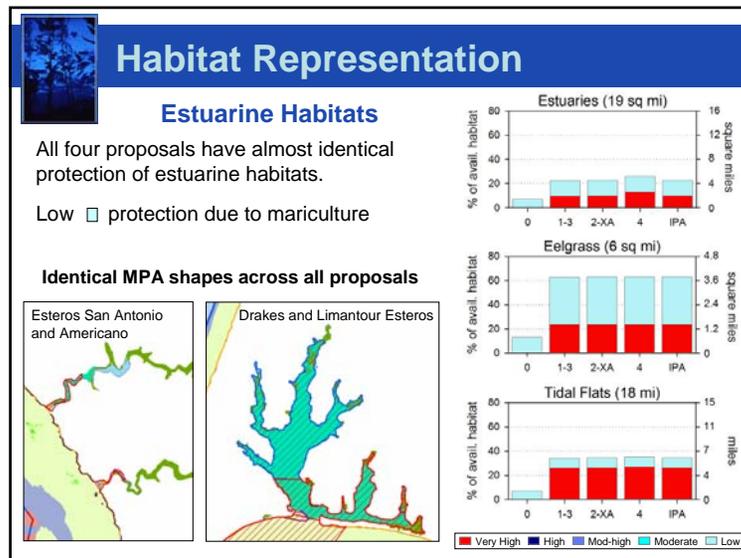
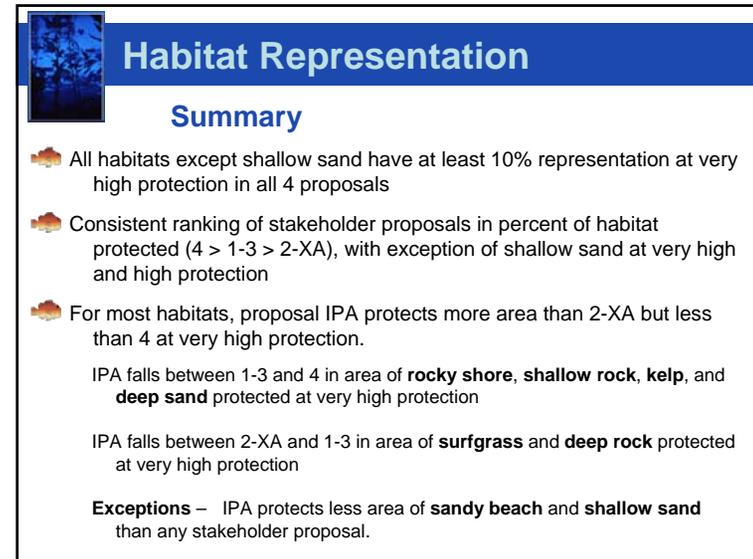
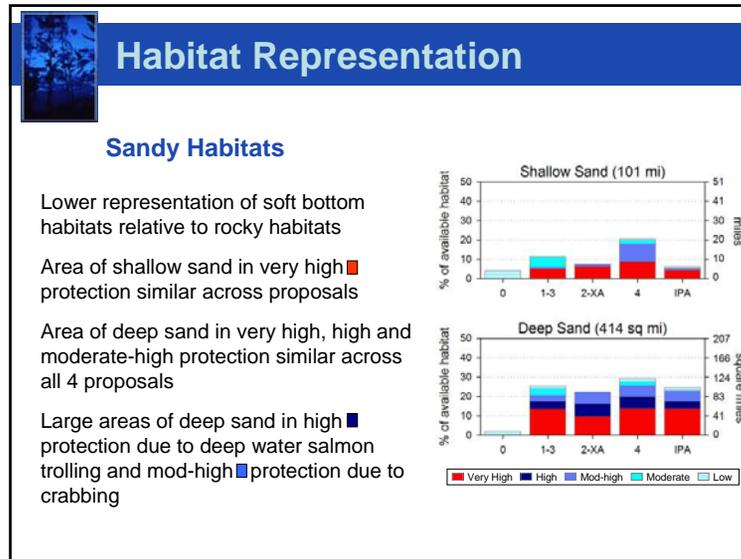
Protection of kelp closely mirrors protection of shallow rock

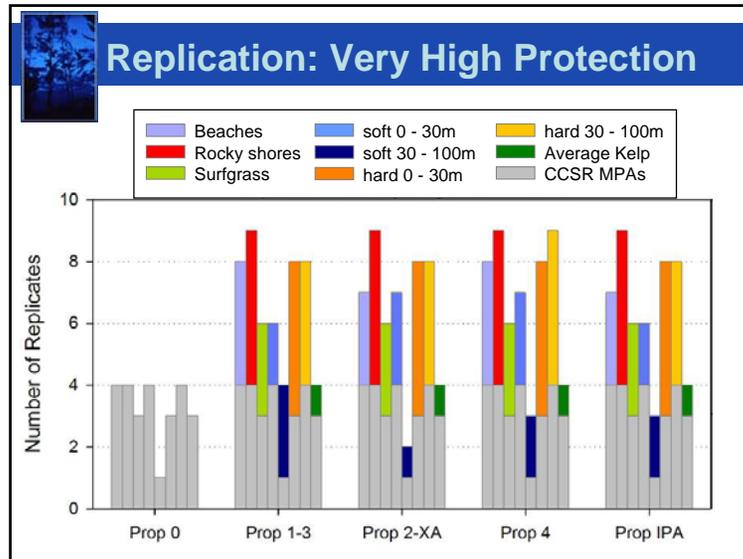
Prop 4 protects the greatest proportion of all three rocky habitats at very high protection

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



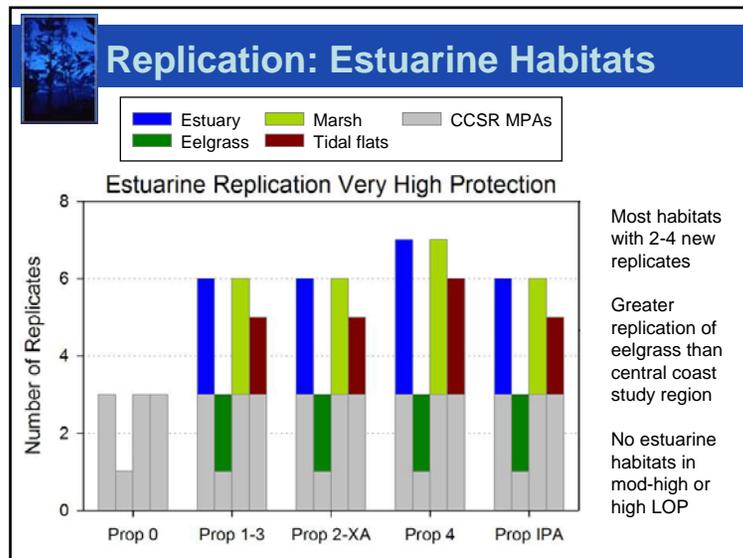




Habitat Replication

Summary

- No marked differences among proposals
- Levels of replication similar to MLPA Central Coast Study Region for most habitats at very high protection



MLPA Goals: Populations

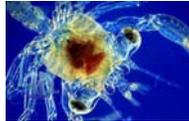
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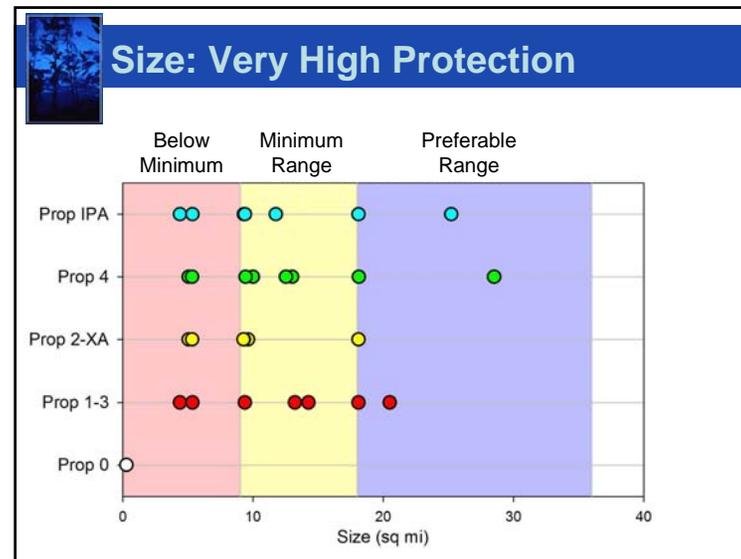
Protecting Populations (Goals 2 & 6)

Size and Spacing

-  MPAs should be large enough that adults don't move out of them and become vulnerable to fishing
-  MPAs should be close enough together that larvae can move from one to the next

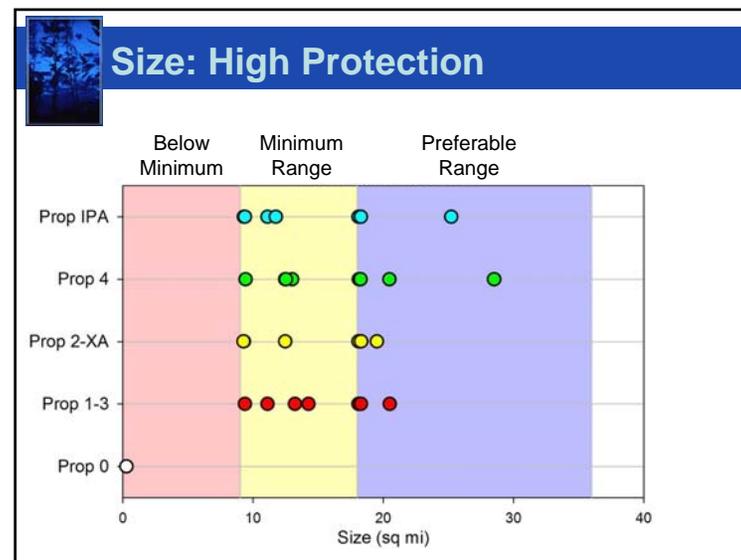






Size Analysis Methods

-  Measure individual MPA lengths and area
-  Combine contiguous MPAs into MPA clusters
-  Consider level of protection
-  Tabulate MPA lengths and areas relative to minimum & preferred guidelines





Protecting Populations

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MPA Size Conclusions

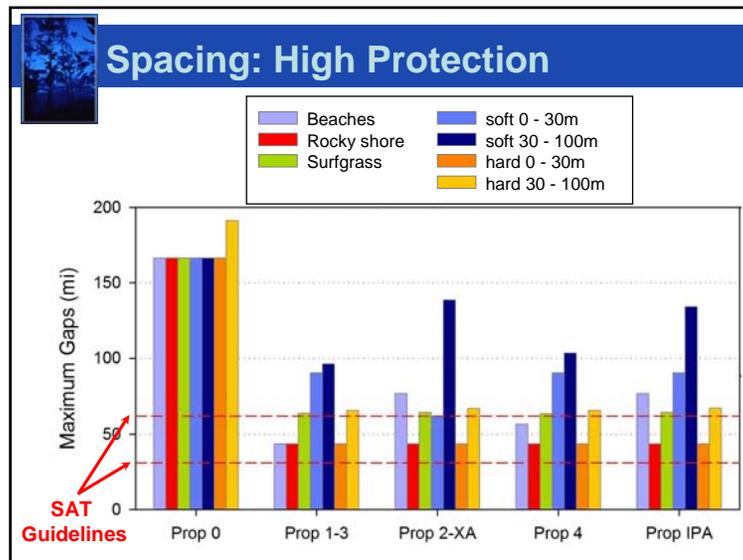
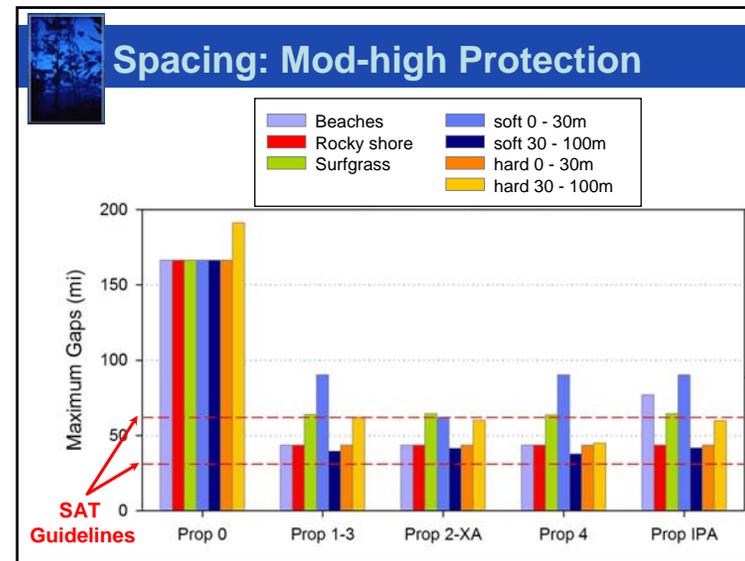
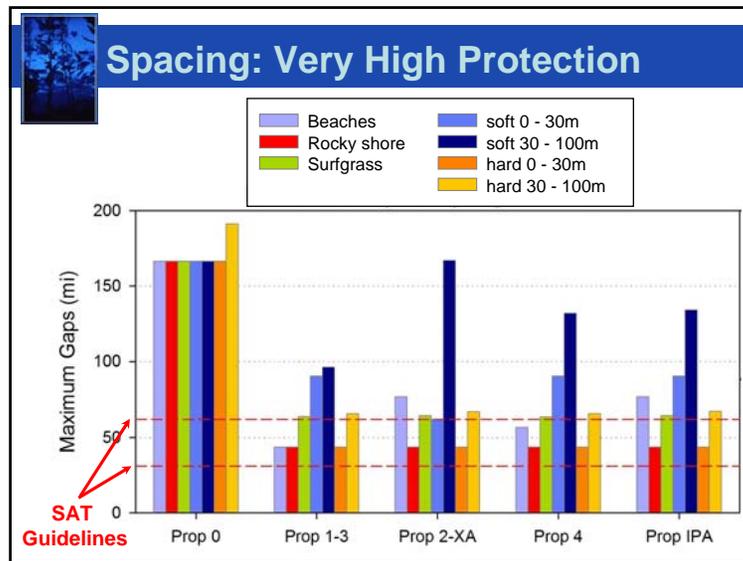
- Most MPAs meet minimum size guidelines
- All MPAs meet minimum size for High/Mod-High protection in all proposals

Avg. MPA Size	Very High Protection	High Protection	Mod-High Protection
Prop 1-3	12.2	14.0	17.7
Prop 2-XA	9.4	13.8	18.8
Prop 4	12.7	16.6	18.8*
Prop IPA	11.9	14.7	19.2

* Proposal 4 has two more MPA clusters than other proposals

Spacing Analysis Methods

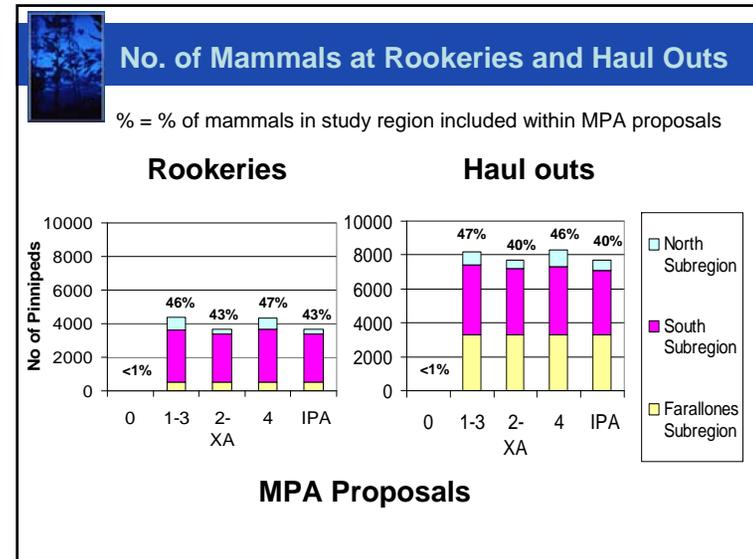
- MPAs or clusters must meet the minimum size guidelines (9 square miles) to count for spacing
- Identify the habitats included within each MPA cluster
- Measure gaps between adjacent MPA clusters that contain a given habitat



- ### MPA Spacing Conclusions
- All proposals have gaps that exceed guidelines at Very High and High levels of protection (1-3, 2-XA, and 4 each have two gaps, IPA has three)
 - Large gaps are all in sandy habitats
 - Proposal 2-XA meets guidelines at Mod-high protection
 - Proposals 1-3 and 4 have a single gap (shallow sand) that exceeds guidelines at Mod-high protection
 - Proposal IPA has two gaps (shallow sand and sandy beach) that exceed guidelines at Mod-high protection

Protection of Birds and Mammals (Goal 2)

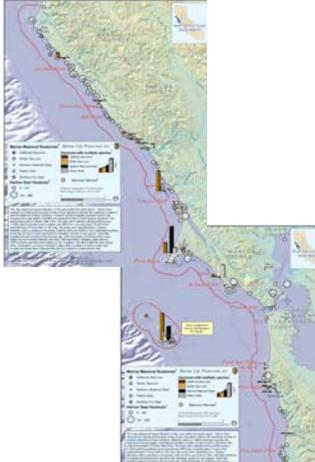
-  Basis for Evaluation:
 - Special closures reduce disturbance
 - MPAs may reduce disturbance and protect forage base
-  Identify breeding and roosting/haul out sites inside MPAs and special closures (# of species and individuals)
-  Analyze the proportion of foraging areas protected by MPAs (within a distance of breeding sites or where non-breeding birds concentrate to forage)
-  Consider species of special interest (endangered brown pelicans)



Marine Mammal Haul Outs and Rookeries

Five species of pinnipeds in Study region

- 42 colonies
- 76 haul out sites
- 9,300 breeding mammals
- 17,900 resting/ molting




Marine Mammals in Special Closures

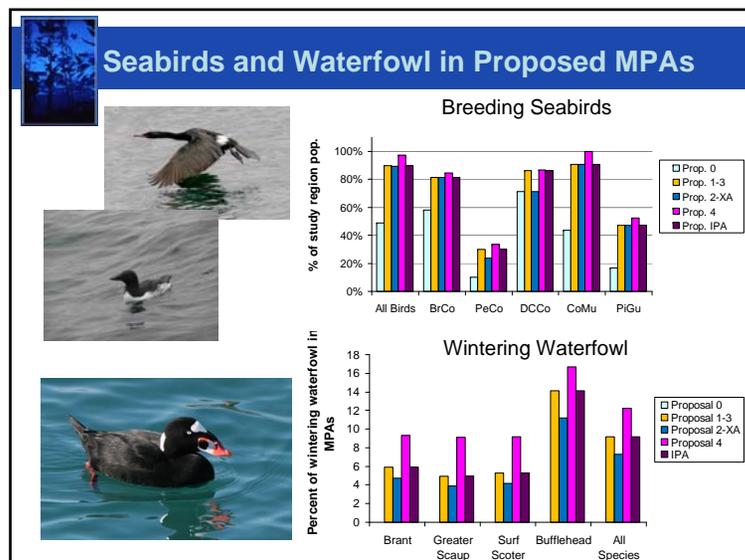
Special Closure Location	Prop 0	Prop 1-3	Prop 2-XA	Prop 4	Prop IPA
No special closures north of Point Reyes					
Point Reyes		1000 ft 4 species		1000 ft 4 species	1000 ft 4 species
Pescadero		300 ft 1 species			
North Farallon Islands		300 & 1000 ft 2 species	300 ft 2 species	300 & 1000 ft 2 species	300 & 1000 ft 2 species
South Farallon Islands	300 ft 5 species	300 ft 5 species	300 ft 5 species	300 ft 5 species	300 ft 5 species



Proposed Special Closures

Proposal	0	1-3	2-XA	4	IPA
Arched Rock				300 feet	
Gull Rock				300 feet	
Point Reyes		1,000 feet		1,000 feet	1,000 feet
Point Resistance		500 feet	300 feet		300 feet
Stormy Stack		300 feet	300 feet	300 feet	300 feet
Devil's Slide Rock		1,000 feet	300 feet	1,000 feet	300-1000 feet
Pescadero *		300 feet			
North Farallon Islands	300 feet	1,000 feet 300 feet	300 feet	1,000 feet 300 feet	1,000 feet 300 feet
South Farallon Islands	300 feet	300 feet	300 feet	300 feet	300 feet

* Little benefit to seabirds



- ### Bird and Mammal Conclusions
- All proposals protect bird and mammal rookeries at the Farallons
 - Protection of birds and mammals across all proposals: Farallons > south subregion > north subregion
 - All proposals protect the largest seabird colonies with special closures but few roosts
 - Across all proposals, about half of marine mammal hotspots fall inside MPAs, but special closures only target mammals at Point Reyes and Farallons
 - Proposal IPA falls within the range of stakeholder proposals