



# Marine Life Protection Act Initiative



## Draft Habitat Evaluations of NCCRSG MPA Proposals North Central Coast Study Region

Presentation to the MLPA Master Plan Science Advisory Team

April 3, 2008 • Pacifica, CA

Presented by Dr. Mark Carr



# Evaluation: Habitats

## 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



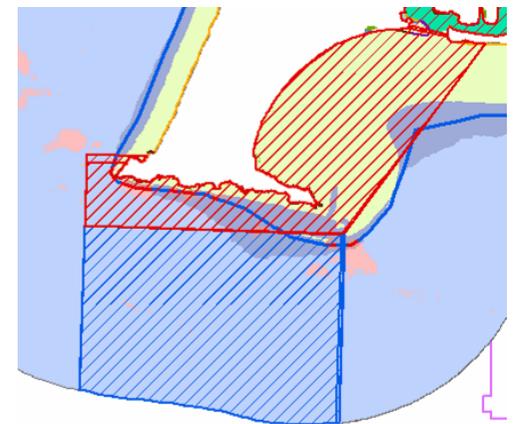
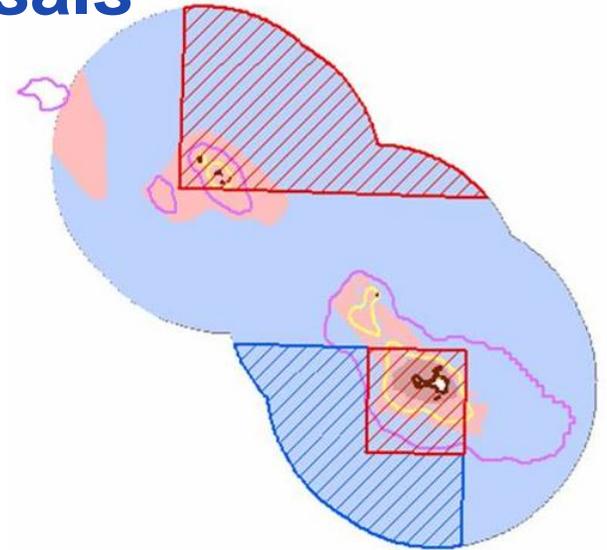
All 3 proposals have extremely similar MPA design at the Farallon Islands, Pt. Reyes, and Pt. Arena



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

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



# Results: Habitat Availability

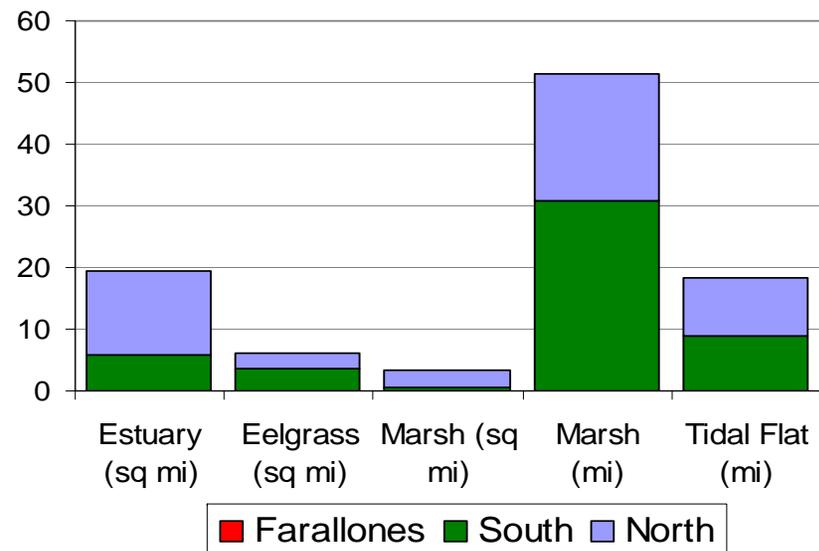
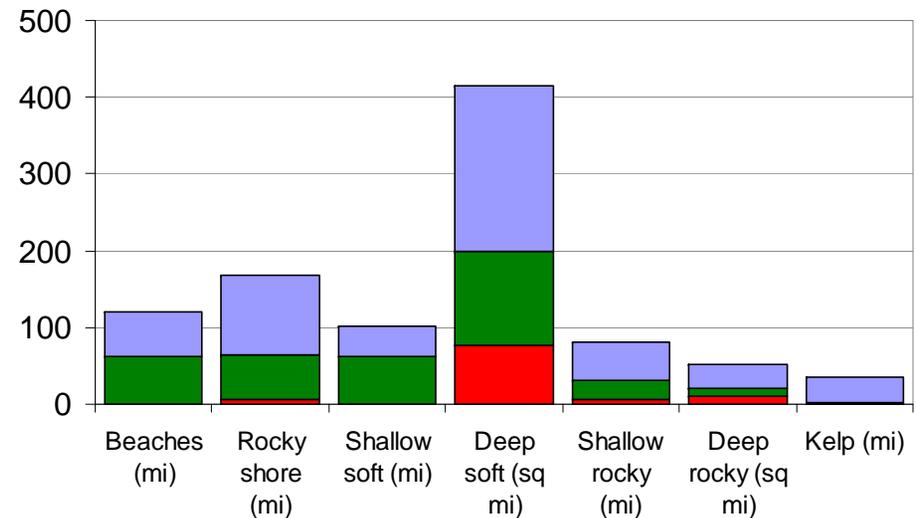
Deep soft bottom is the most abundant habitat in all subregions

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



Farallones South North

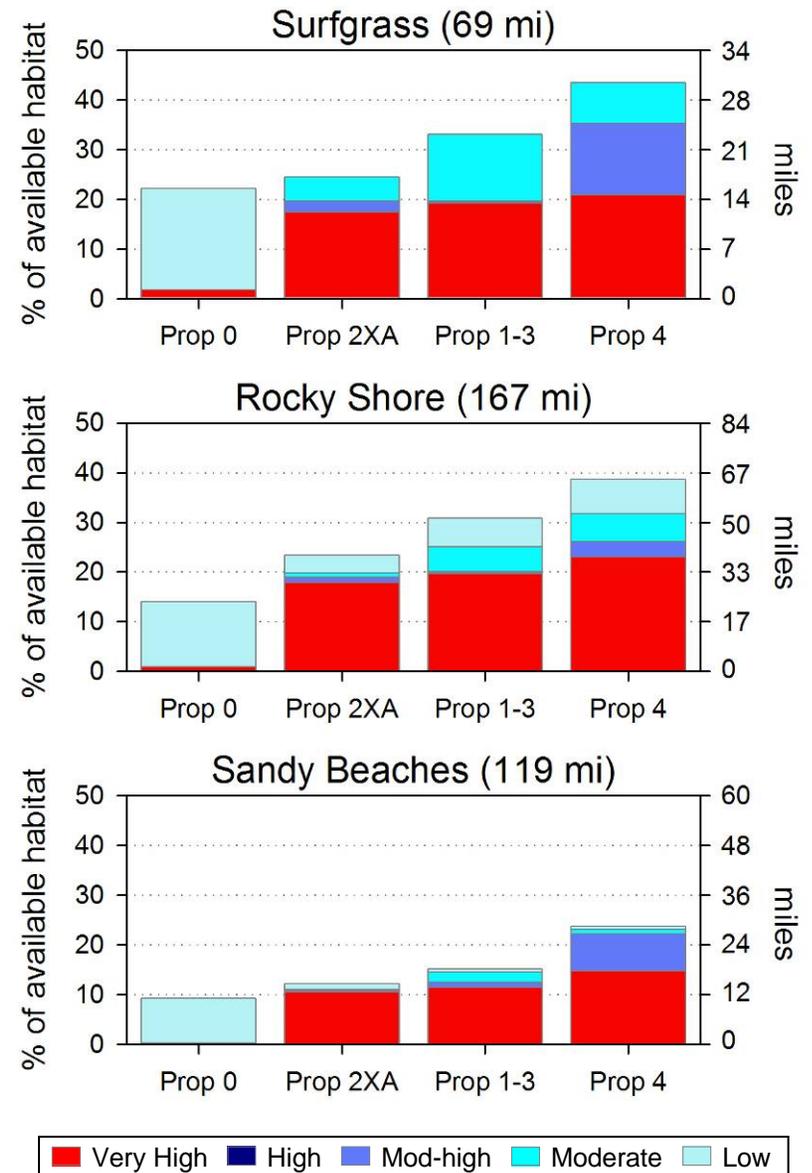


# Results: Habitat Representation

## 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

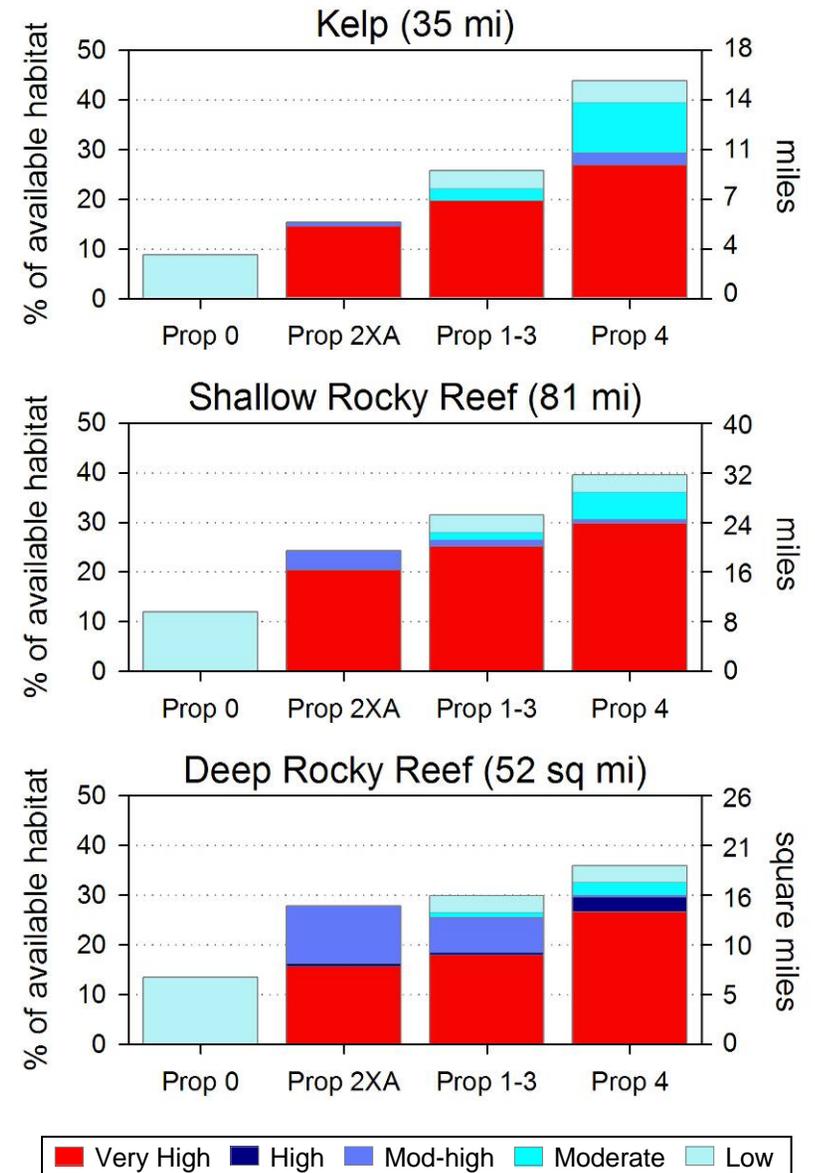
A high proportion of protected areas are in SMRs ■

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

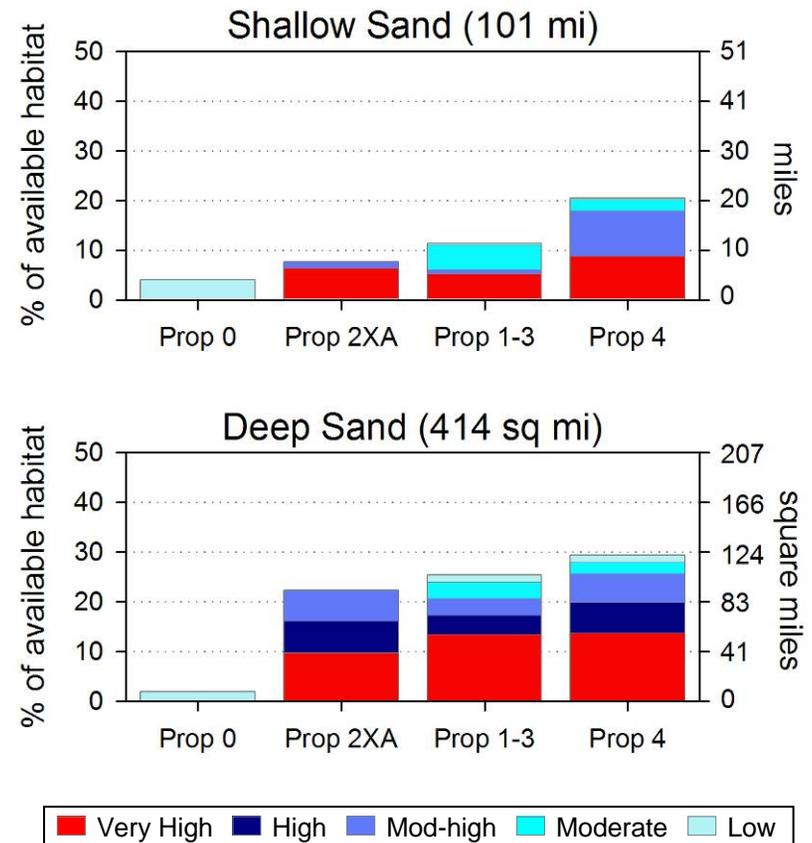
## Soft Bottom Habitats

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

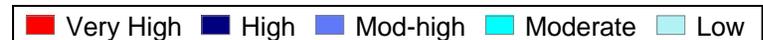
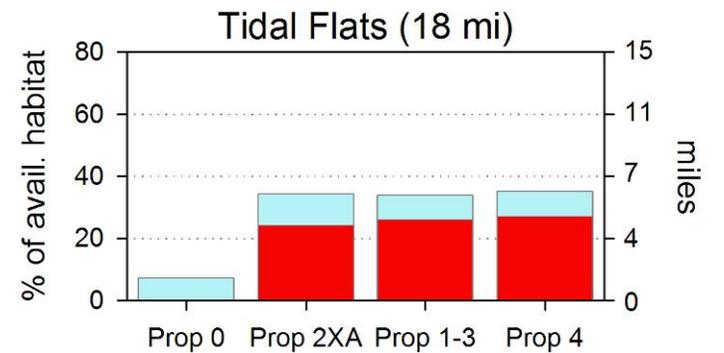
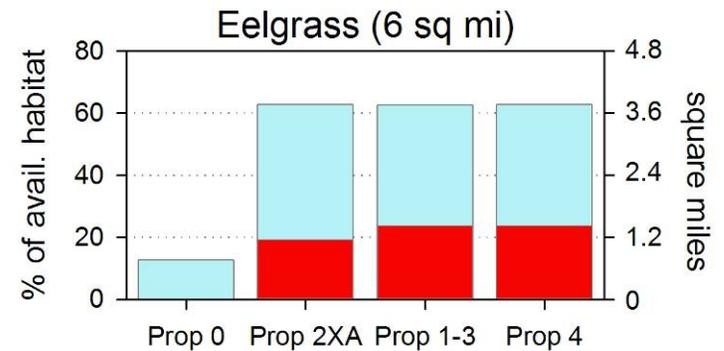
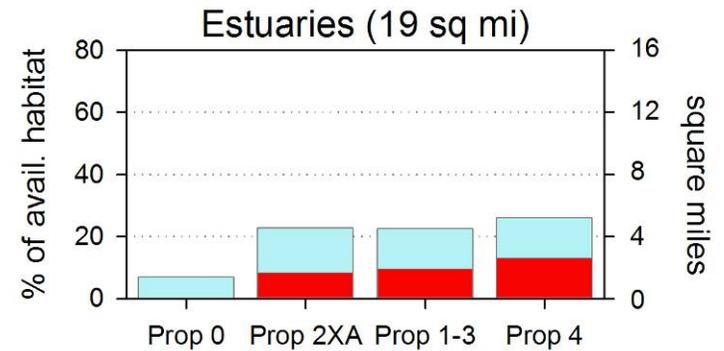
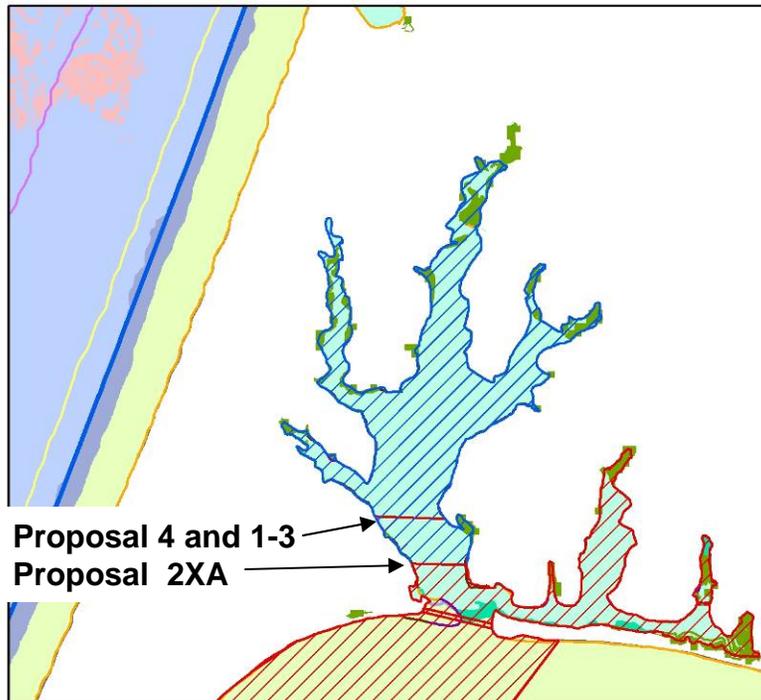


# Results: Habitat Representation

## 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





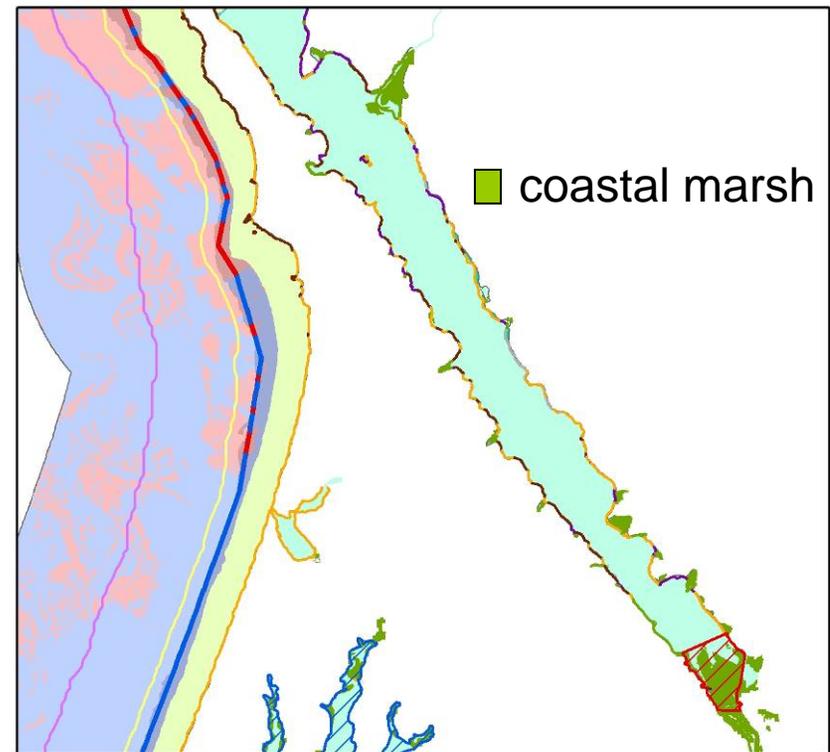
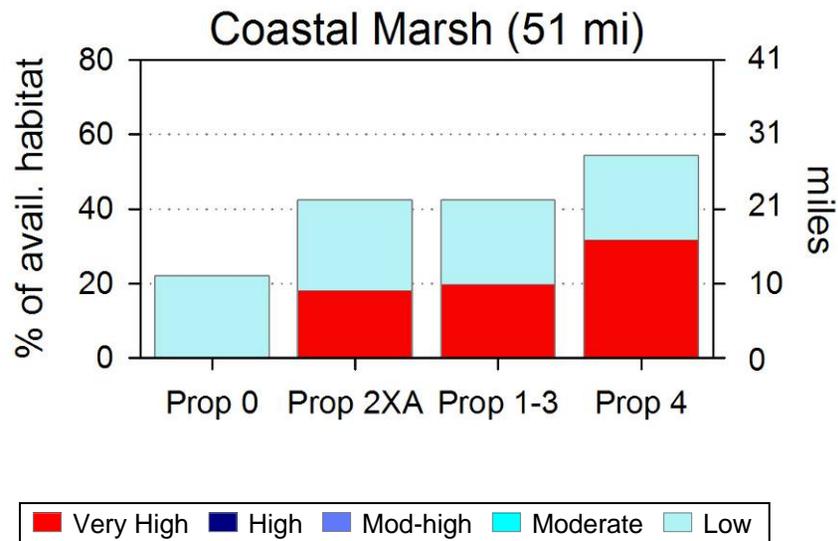
# Results: Habitat Representation

## 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



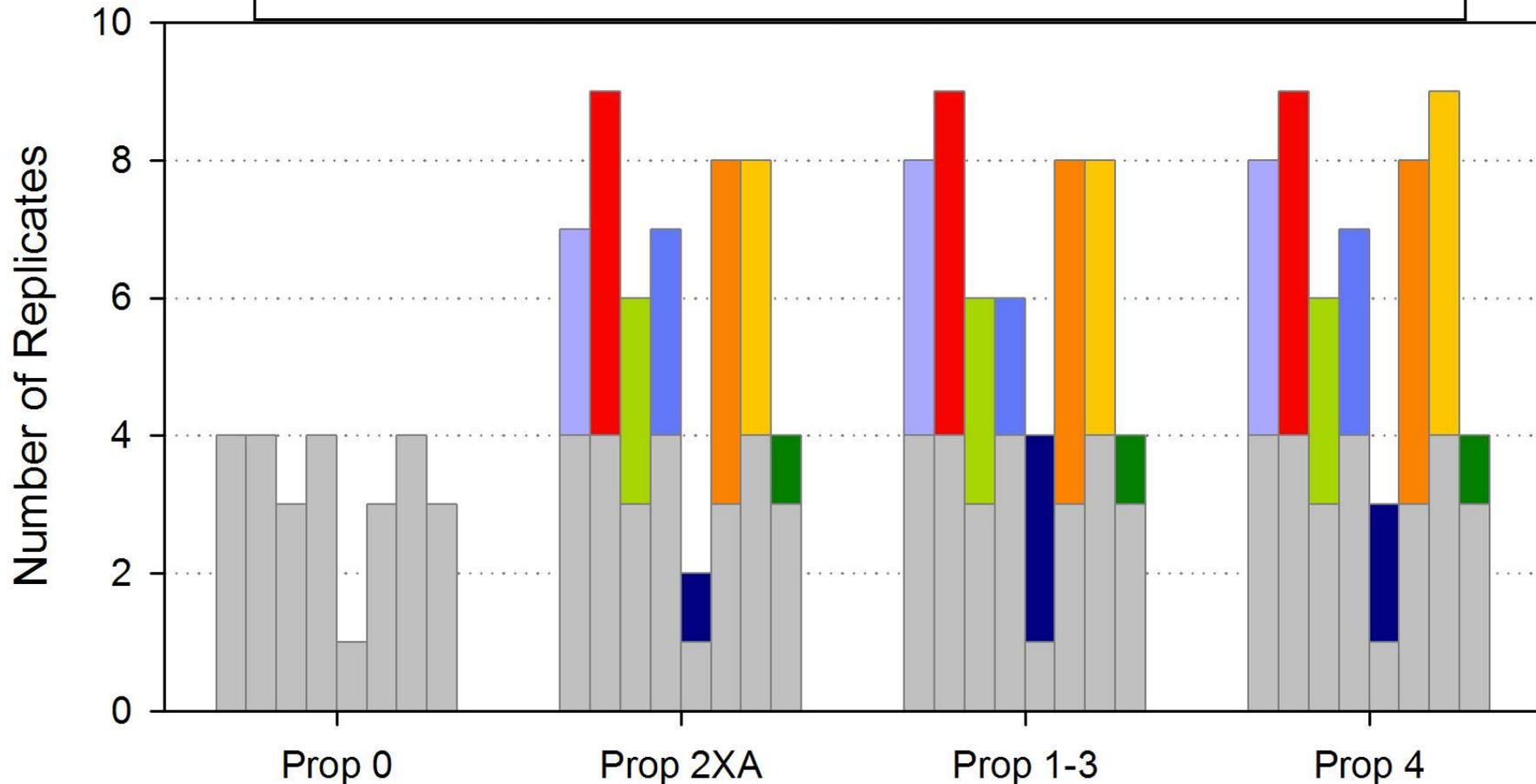
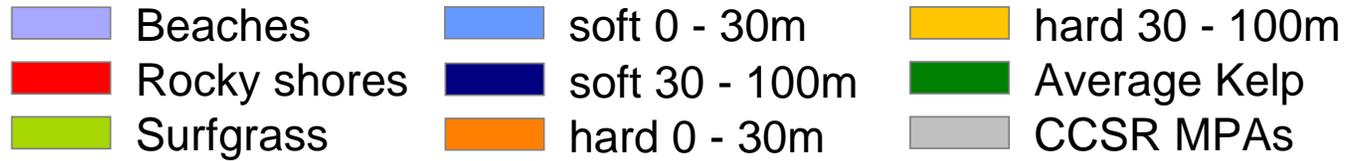
Estuarine MPAs do not have to meet size guidelines but must  
contain at least 0.12 mi<sup>2</sup> of estuarine habitat



Some small estuaries (Gualala and Garcia rivers, Pescadero  
Creek) contain less than the minimum 0.12 mi<sup>2</sup>, but protection of  
these habitats still has conservation value

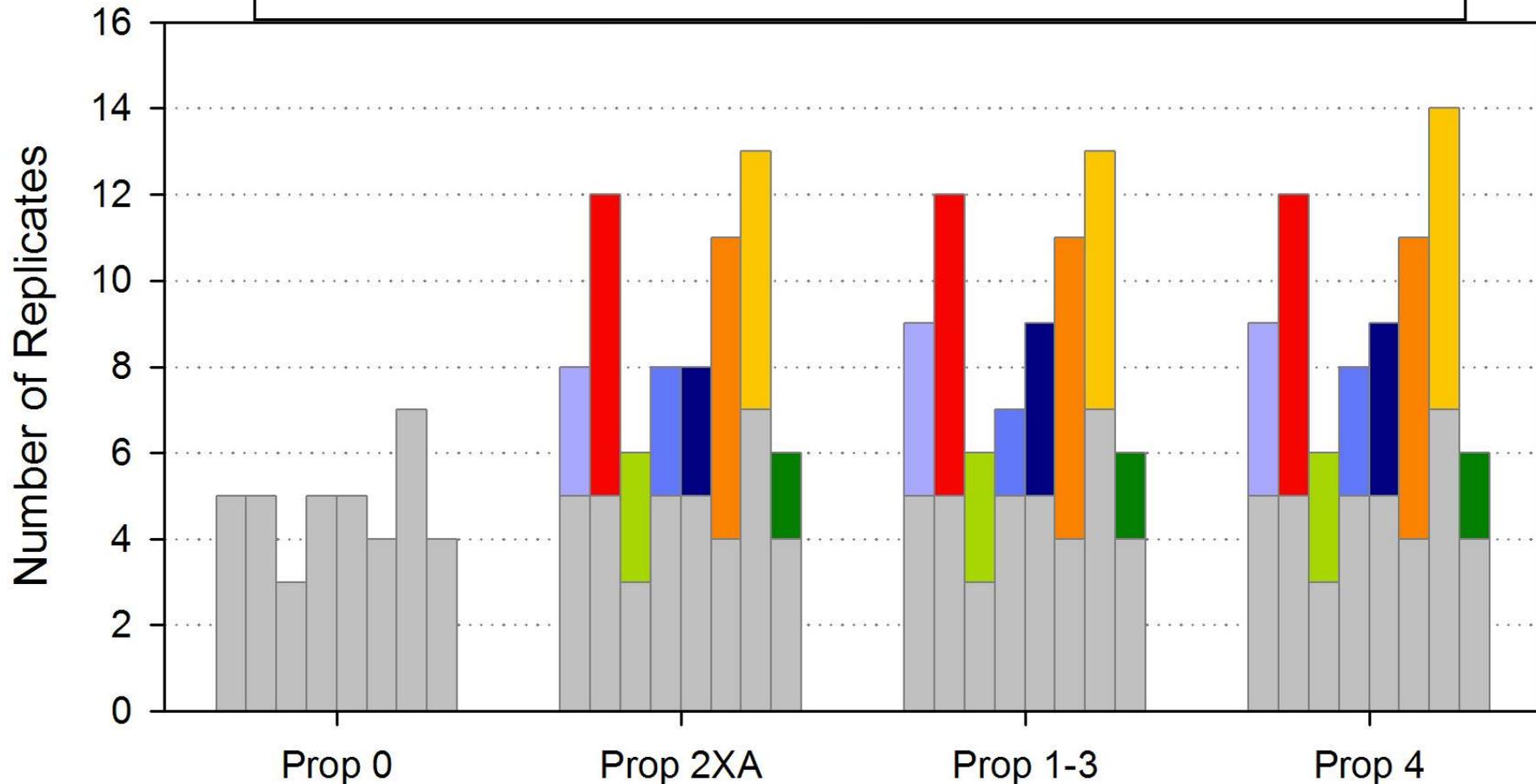
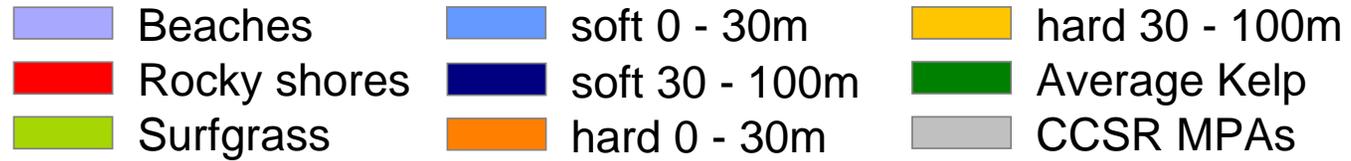


# Replication: Very High Protection



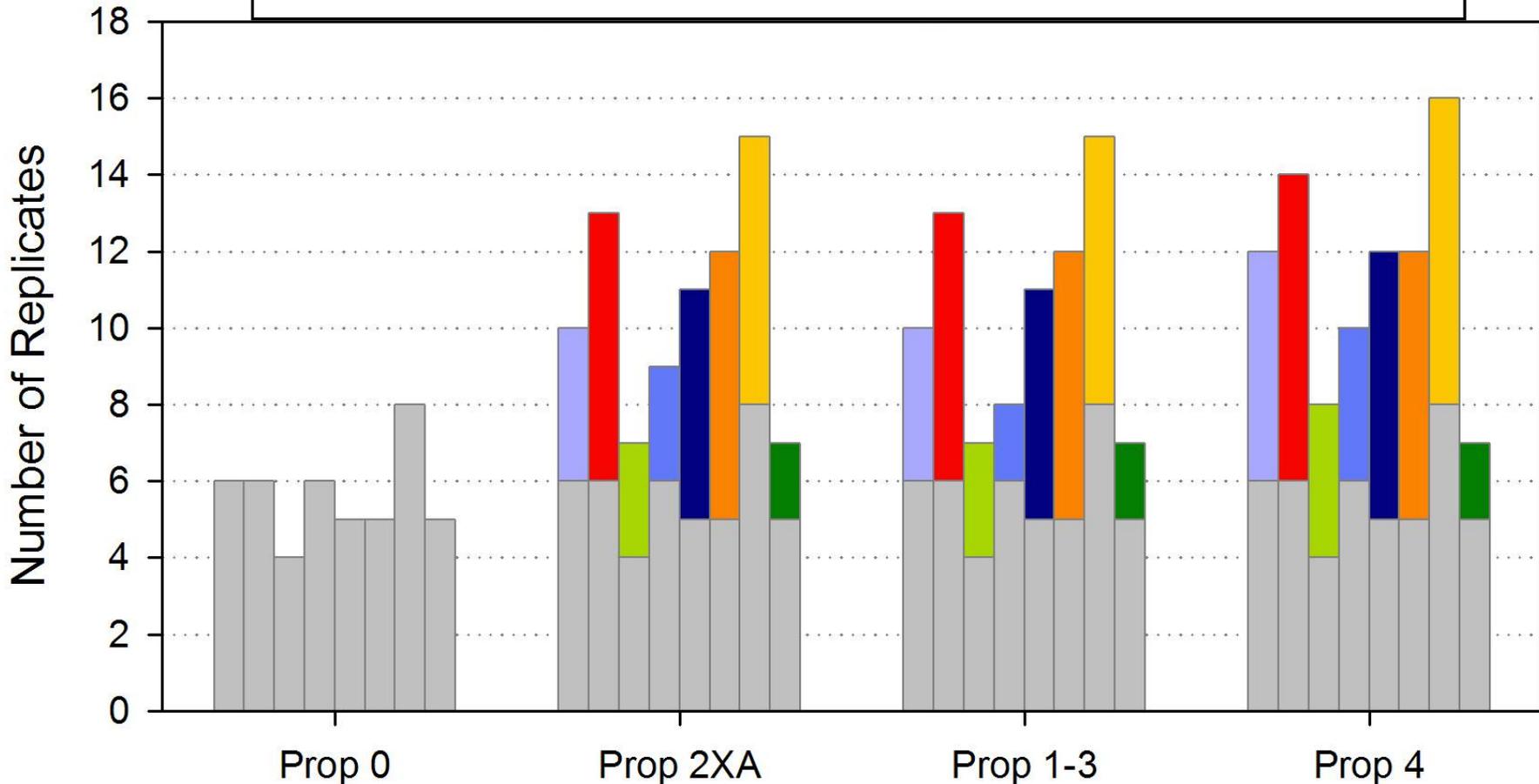
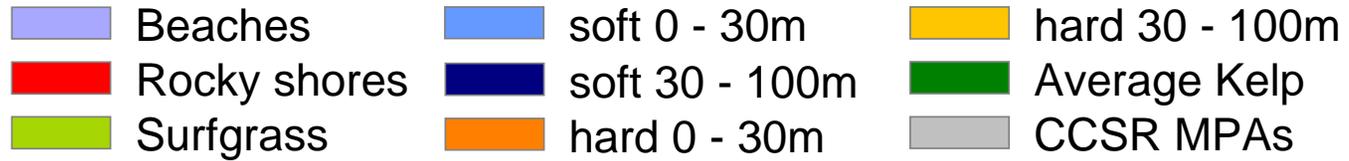


# Replication: High Protection





# Replication: Moderate-high Protection

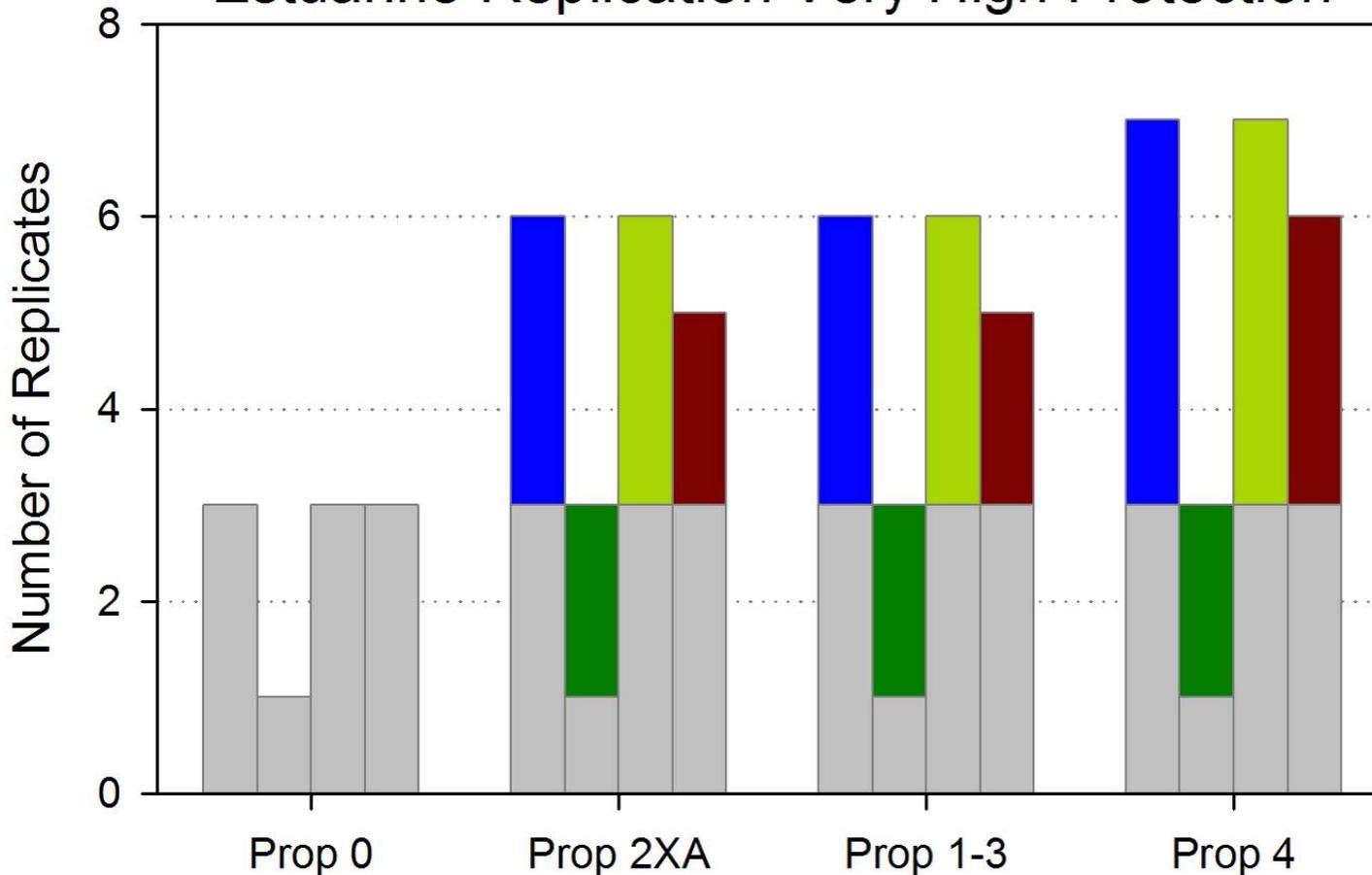




# Replication: Estuarine Habitats



## Estuarine Replication Very High Protection



Most habitats with 2-4 new replicates

Greater replication of eelgrass than CCSR

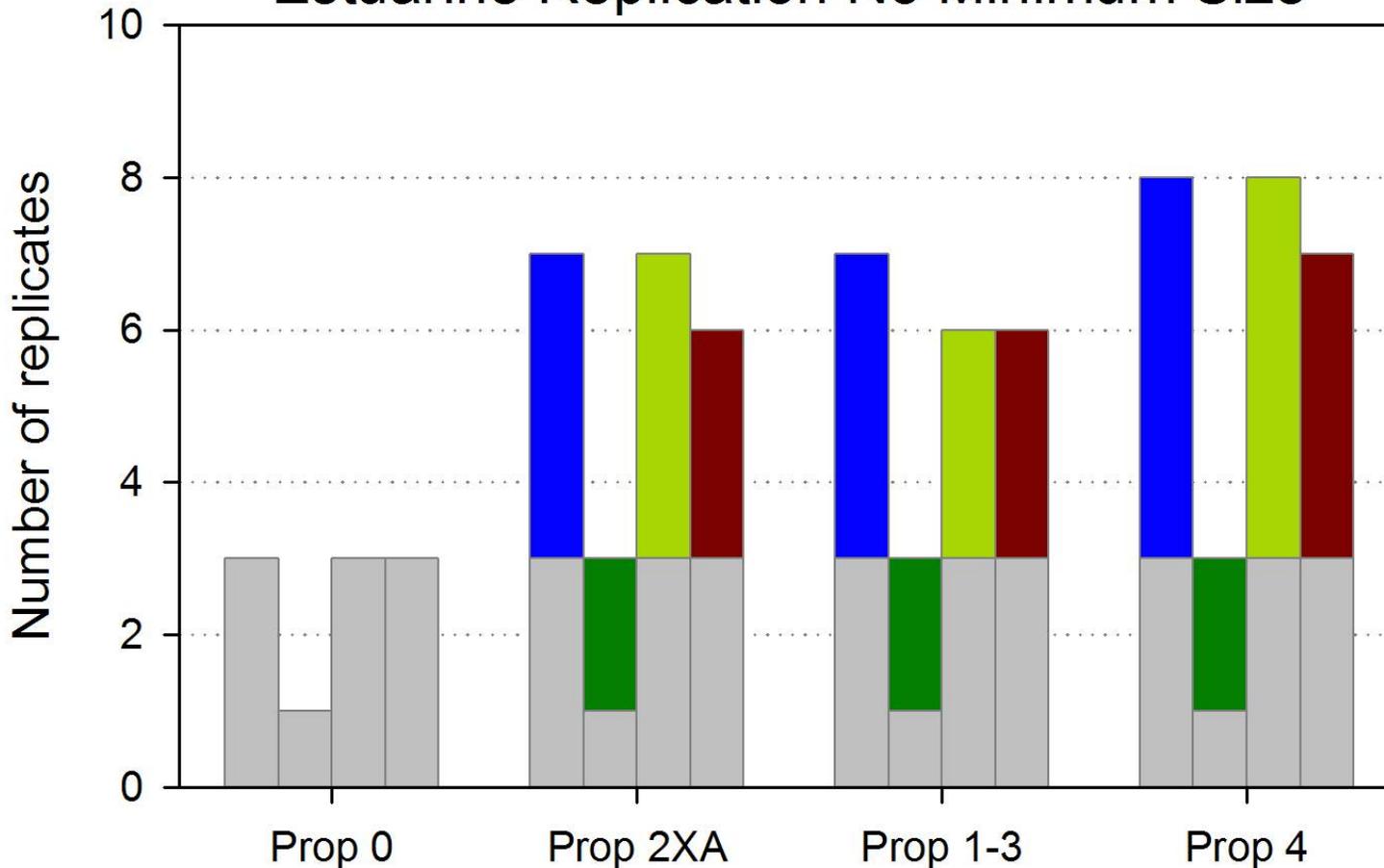
No estuarine habitats in mod-high or high LOP



# Replication: Estuarine Habitats



Estuarine Replication No Minimum Size



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 central coast study region for most habitats at highest and moderate-high levels of protection



# SAT Preliminary Evaluations



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