Marine Life Protection Act Initiative

Draft Habitat Representation and Habitat Replication Evaluations of Round 2 MPA Proposals for the South Coast Study Region

Presentation to the MLPA Master Plan Science Advisory Team
June 18, 2009 • Los Angeles, CA

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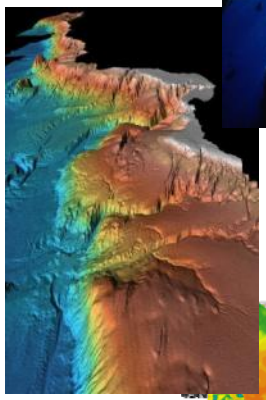
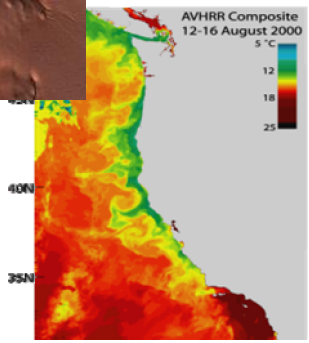
University of California, Santa Cruz

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**.





** Note that this language paraphrases the MLPA goals*

MLPA Goals*: Habitats

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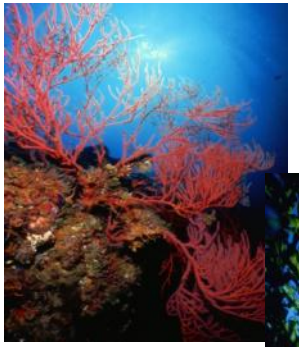

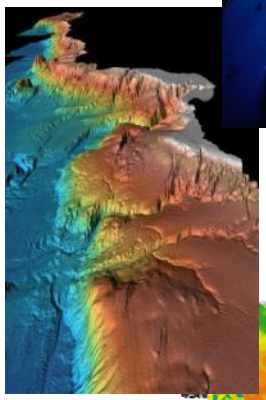

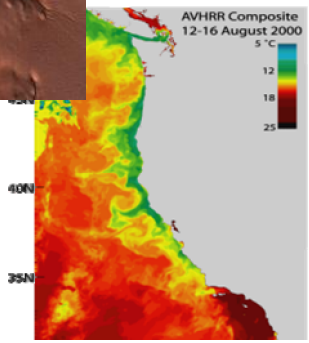

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Evaluation: Habitats

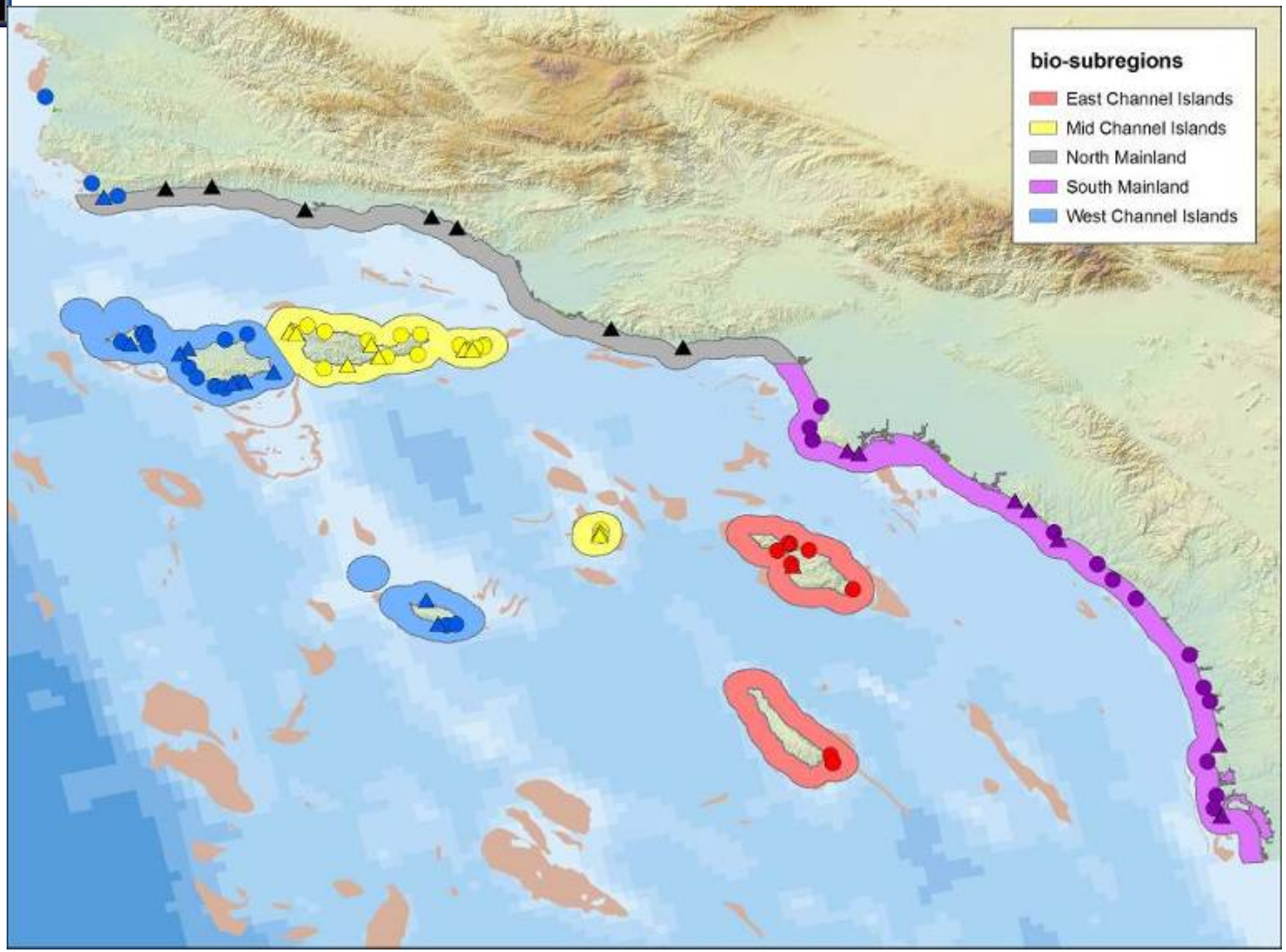
Key Questions for Each Marine Protected Area (MPA) Proposal

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

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

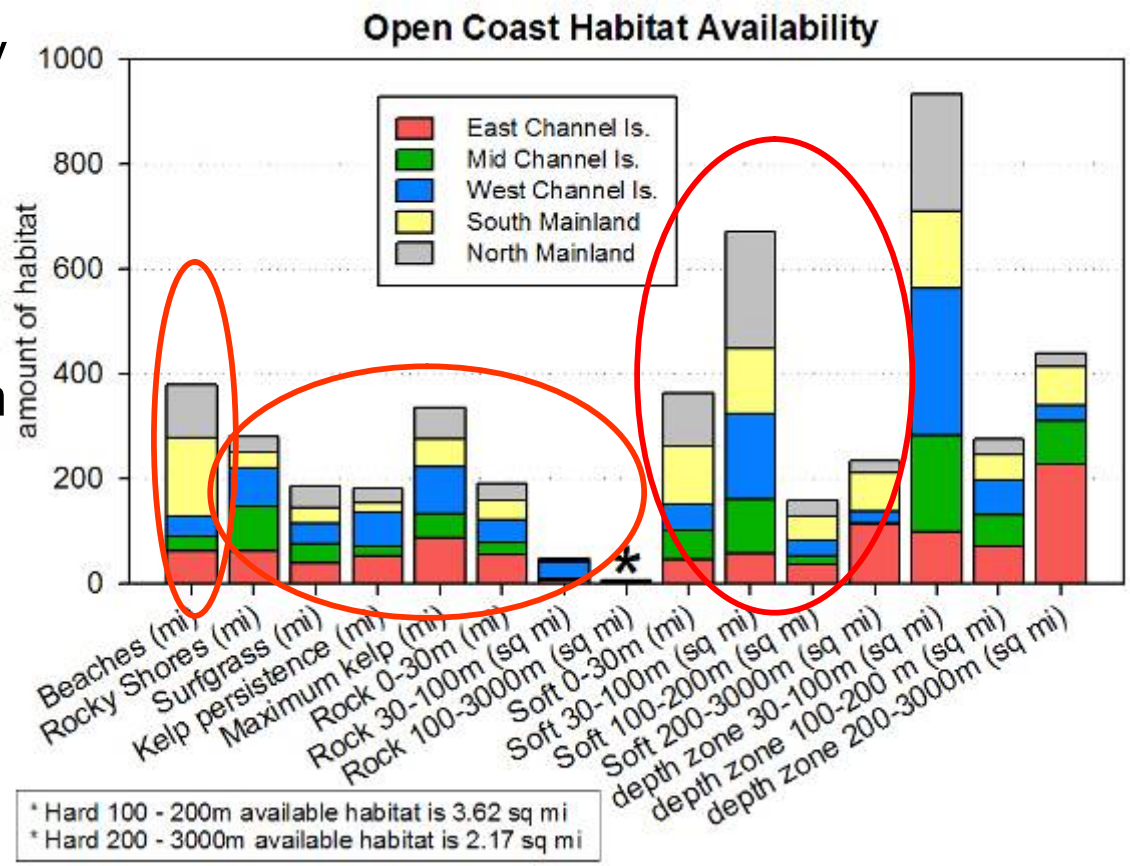
3. How well are habitats and levels of protection distributed across the study region?

South Coast Evaluation Bioregions



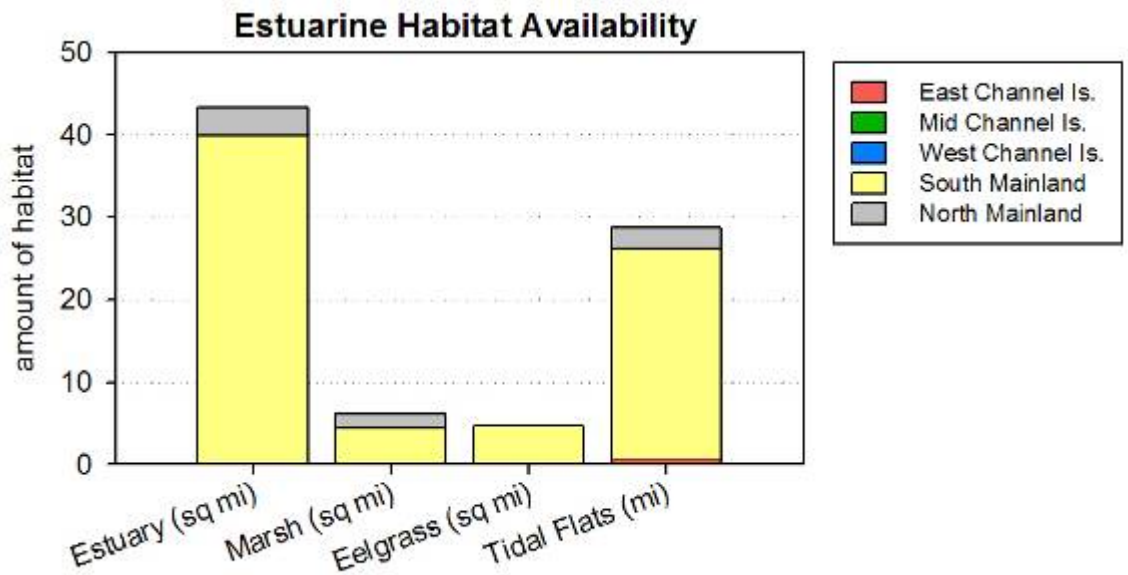
Results: Habitat Availability

- Soft-bottom habitats are very abundant across the study region, especially on the mainland
- Rocky habitats are more abundant on the islands than the mainland
- Deep rock (>100 meters) is rare
- Surfgrass is now mapped across the study region



Results: Habitat Availability

- Estuarine habitats occur almost exclusively on the mainland
- The south mainland bioregion contains the majority of estuarine habitats
- The “estuaries” layer includes harbors
- Eelgrass represented here does not include open-coast eelgrass



Results: Habitat Representation

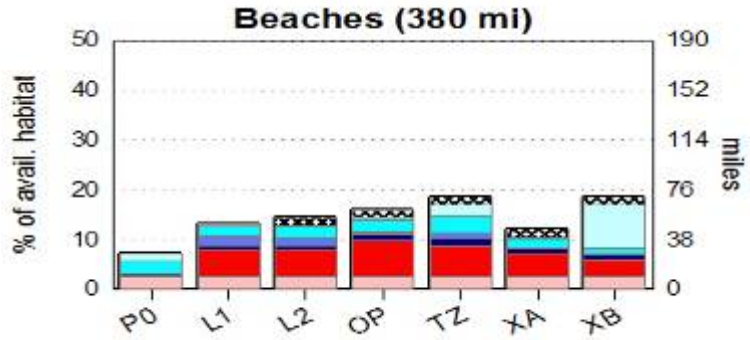
CINMS Very High | High | Moderate | Mod-low | Military Closure
Very High | Mod-high | CINMS Mod-low | Low

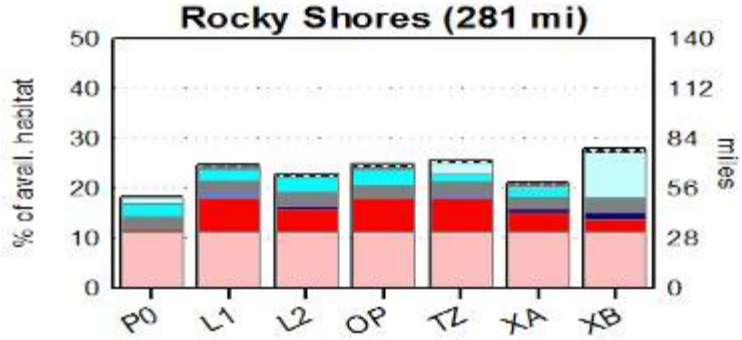
Shoreline Habitats

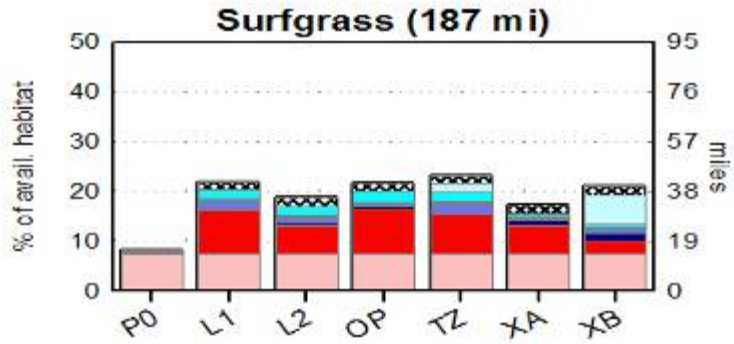
- 6-10% of beaches in SMRs (3% in CINMS SMRs). 7-11% at or above mod-high protection. Beaches disproportionately less protected than rock.
- 14-18% of rocky shores in SMRs (11% in CINMS SMRs). 15-19% at or above mod-high protection. Rocky shores less represented in the Eastern CI across all proposals.
- 10-17% of surfgrass in SMRs (8% in CINMS SMRs). 12-18% at or above mod-high protection.

SMR = state marine reserve

CINMS SMRs = SMRs in state waters within the Channel Islands National Marine Sanctuary







Results: Habitat Representation

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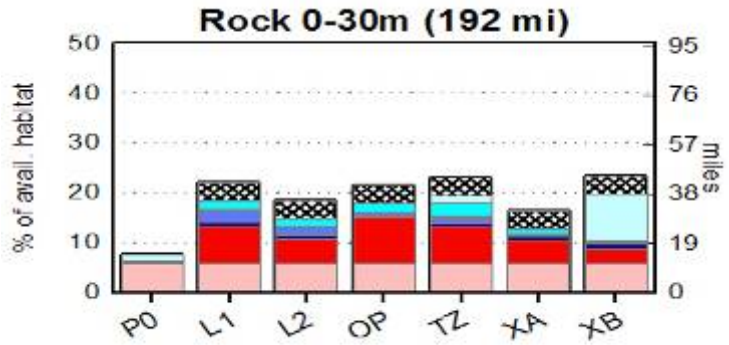
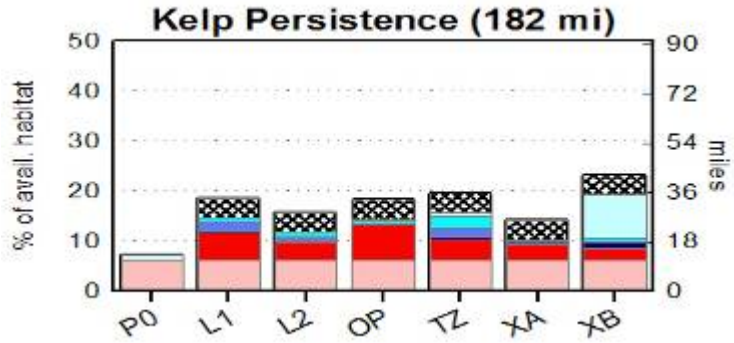
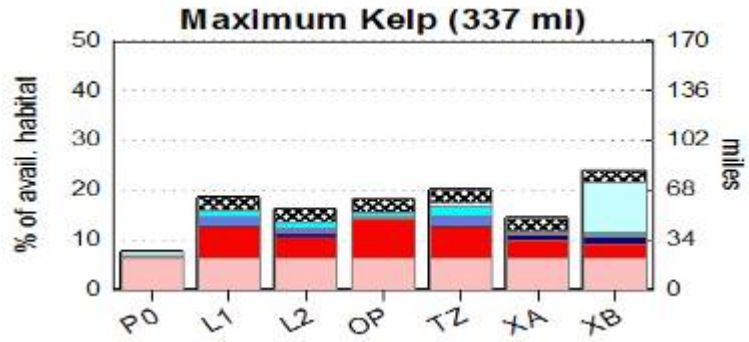
Nearshore Rock & Kelp

- 9-15% of shallow 0-30m rock in SMRs (6% in CINMS SMRs).
  10-16% at or above mod-high protection.
- 9-13% of "persistent" kelp (at least 3 of 7 years) in SMRs (6% in CINMS SMRs).
  10-14% at or above mod-high protection.
- 9-13% of "maximum" kelp (at least 1 of 7 years) in SMRs (6% in CINMS SMRs).
  11-15% at or above mod-high protection.







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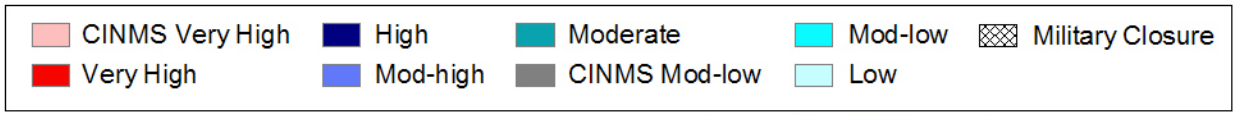
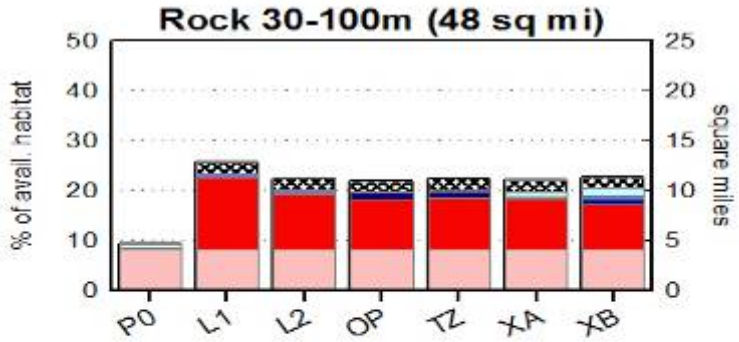
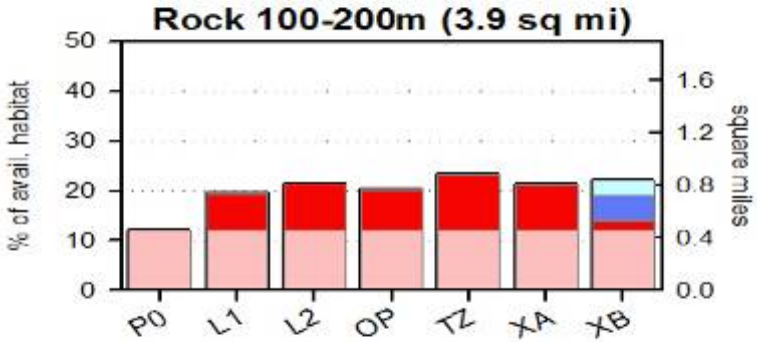
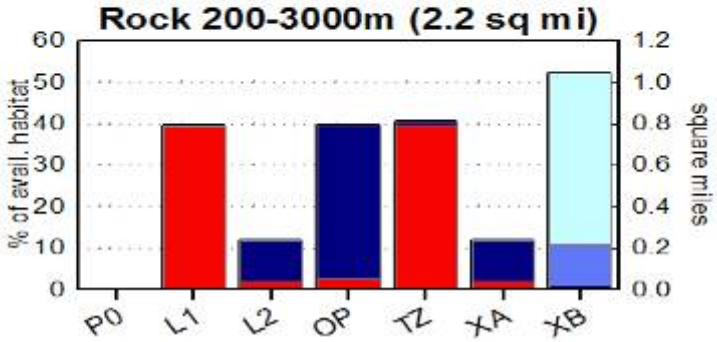


Deep Rocky Reef

- 17-23% of 30-100m rock in SMRs (8% in CINMS SMRs).
  19-23% at or above mod-high protection.
- 14-23% of 100-200m rock in SMRs (12% in CINMS SMRs).
  19-24% at or above mod-high protection.
- 0-39% of 200-3000m rock in SMRs (0% in CINMS SMRs).
  11-40% at or above mod-high protection.
  L1, TZ, OP with MPAs at Point Dume







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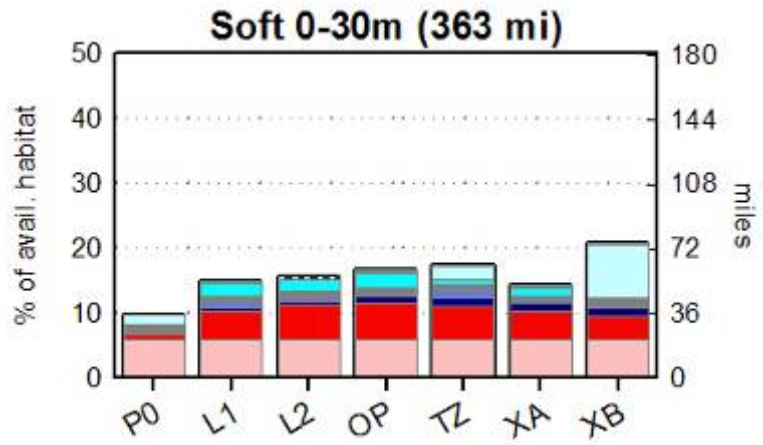
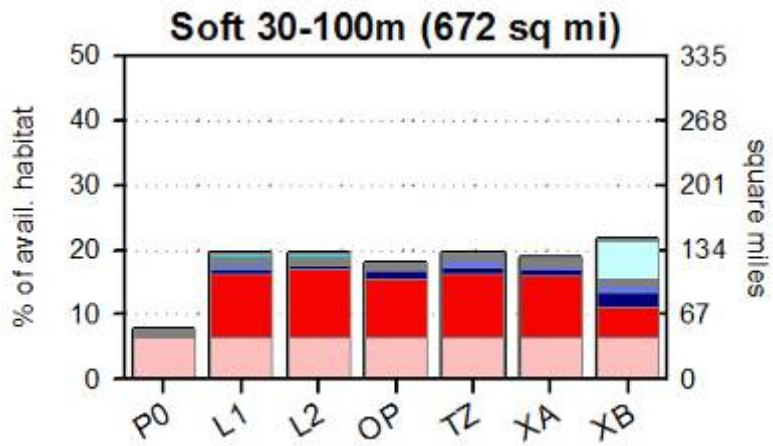
Shallow Soft-bottom Habitats

- Shallow soft-bottom habitats are very abundant across the study region – small percentages correspond to large areas
- 10-11% of 0-30m soft bottom in SMRs (6% in CINMS SMRs). 11-13% at or above mod-high protection.
- 11-17% of 30-100m soft bottom in SMRs (7% in CINMS SMRs). 15-18% at or above mod-high protection.





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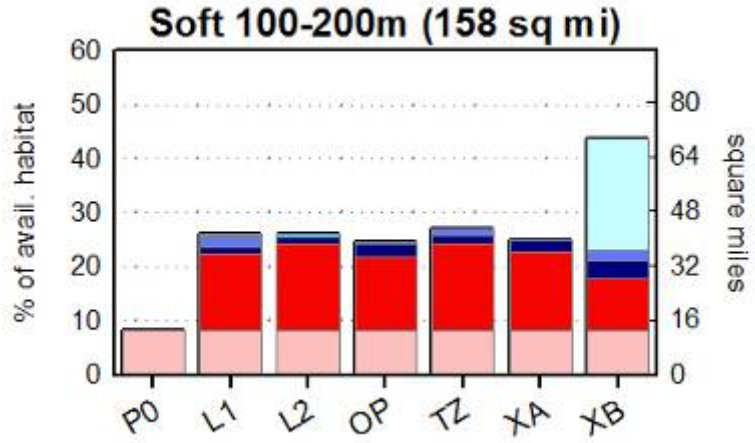
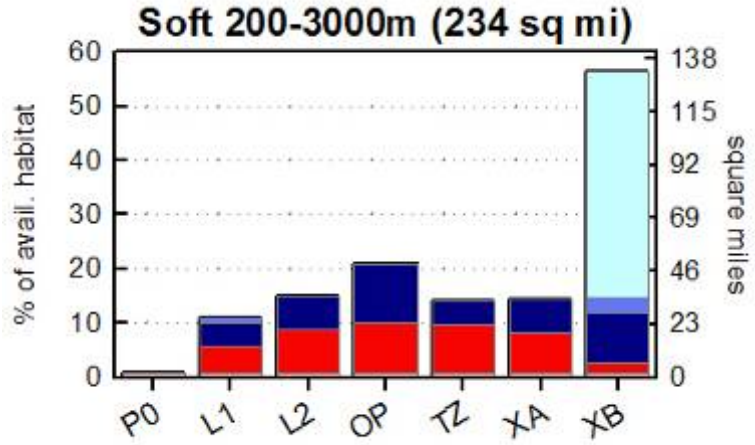
Deep Soft-bottom Habitats

- Deep soft-bottom habitats are abundant across the study region – small percentages correspond to large areas
- 18-24% of 100-200m soft bottom in SMRs (8% in CINMS SMRs). 23-27% at or above mod-high protection. On average, less represented in the ECI.
- 3-10% of 200-3000m soft bottom in SMRs (1% in CINMS SMRs). 11-21% at or above mod-high protection. On average, less represented in the ECI.
- Soft bottom deeper than 200 meter is associated with canyons on mainland; otherwise at East Channel Islands





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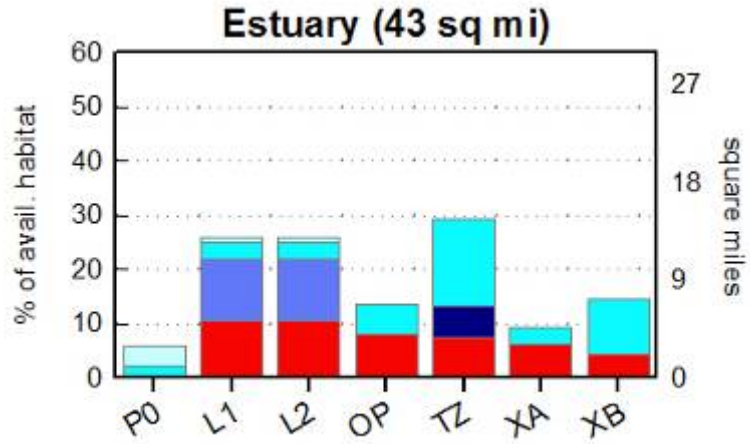
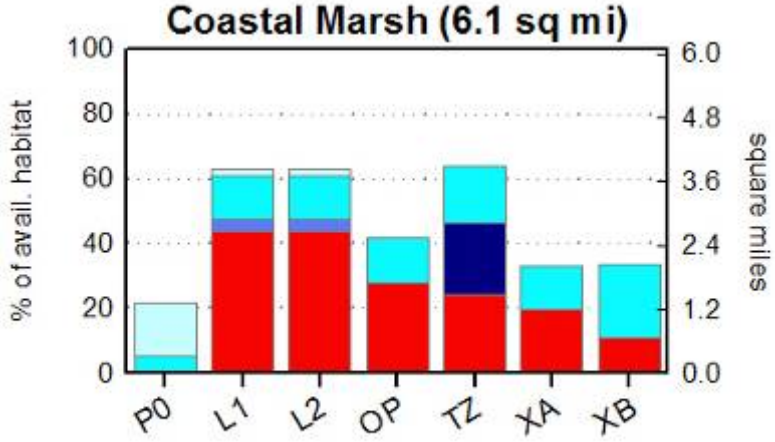
Estuarine Habitats

- Estuarine habitats almost exclusively on the mainland and concentrated in the south mainland.
- Estuary = any enclosed water body, including breakwaters
- 4-10% of estuary in SMRs. 4-22% at or above mod-high protection (mod-high= catch and release)
- 11-44% of coastal marsh in SMRs. 11-48% at or above mod-high protection. (high= scientific collecting)





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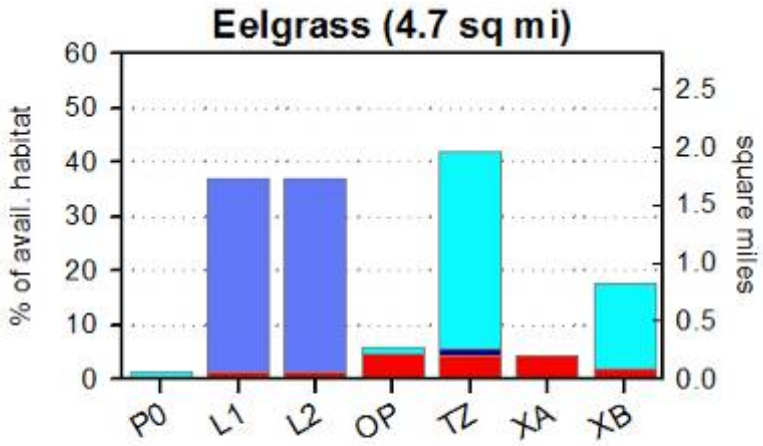
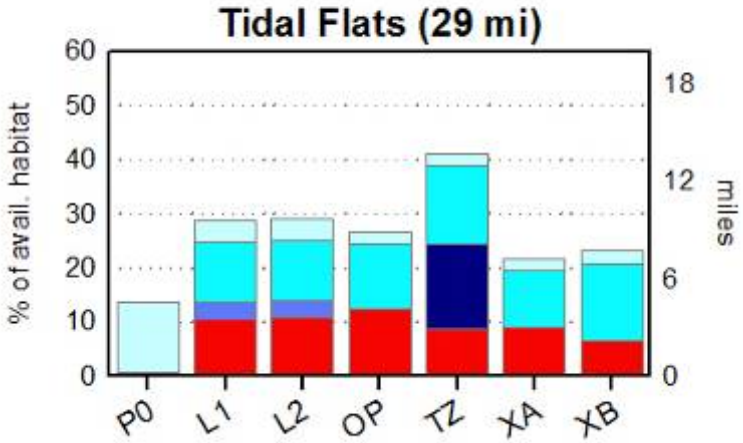
Estuarine Habitats

- Patchy distribution of eelgrass among estuaries leads to high variability across proposals
- 1-5% of eelgrass in SMRs.
  2-37% at or above mod-high protection
  (mod-high= catch and release)
- Tidal flats are not well mapped
- 7-13% of tidal flats in SMRs
  7-25% at or above mod-high protection
  (high= scientific collecting)





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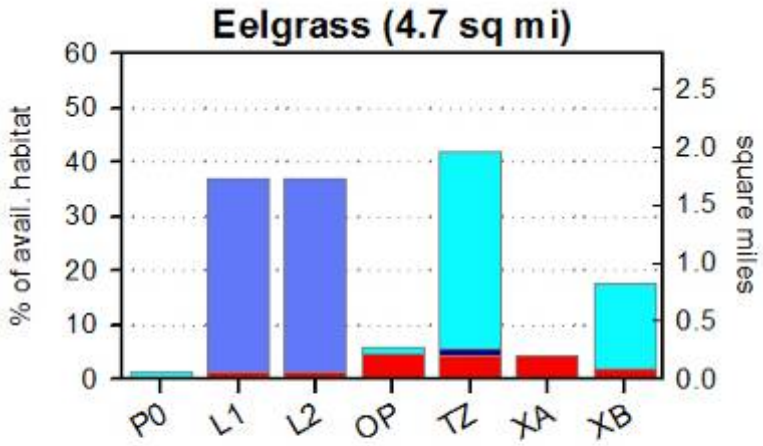
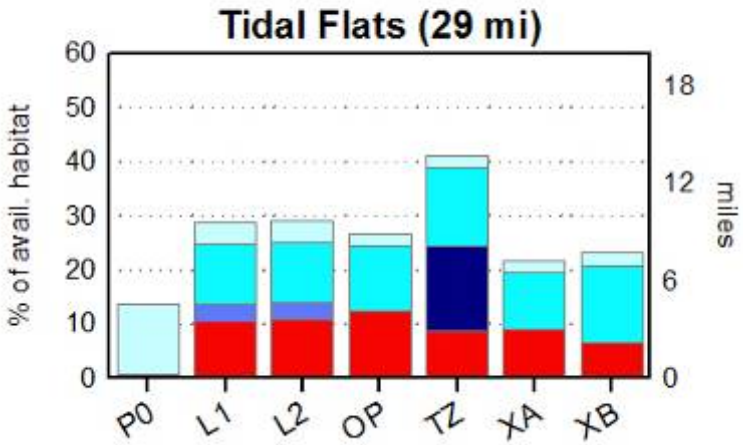




Results: Habitat Representation

Rare and Unique Habitats

Table summarizes the number of MPAs at or above mod-high protection that are known to contain rare and unique habitats

Proposal	Open coast eelgrass	Elk kelp	Oil seeps	Sulfide vents	Canyons
CINMS	4	0	1	0	1
Proposal 0	2	1	0	0	1
Lapis 1	5(1)	2(1)	2	0	3
Lapis 2	5(1)	1(1)	2	0	1
Opal	6(1)	2(1)	2	0	2
Topaz	5(1)	2(1)	2	0	3
External A	5(1)	1(1)	2	0	1
External B	3(1)	1(1)	0	0	2

() indicates military closures

Only one sulfide vent location is currently mapped in the south coast study region (at Palos Verdes)

Results: Habitat Representation

Summary

- Some convergence of proposals in round 2
- Ranking of proposals for protection across all habitats:

  Very High: OP > TZ > L1 & L2 > XA > XB

  Mod-high: TZ > L1 > L2 > OP > XA > XB
- Proposals tended to have lower habitat representation in the Eastern Channel Islands bioregion when military closures are not considered

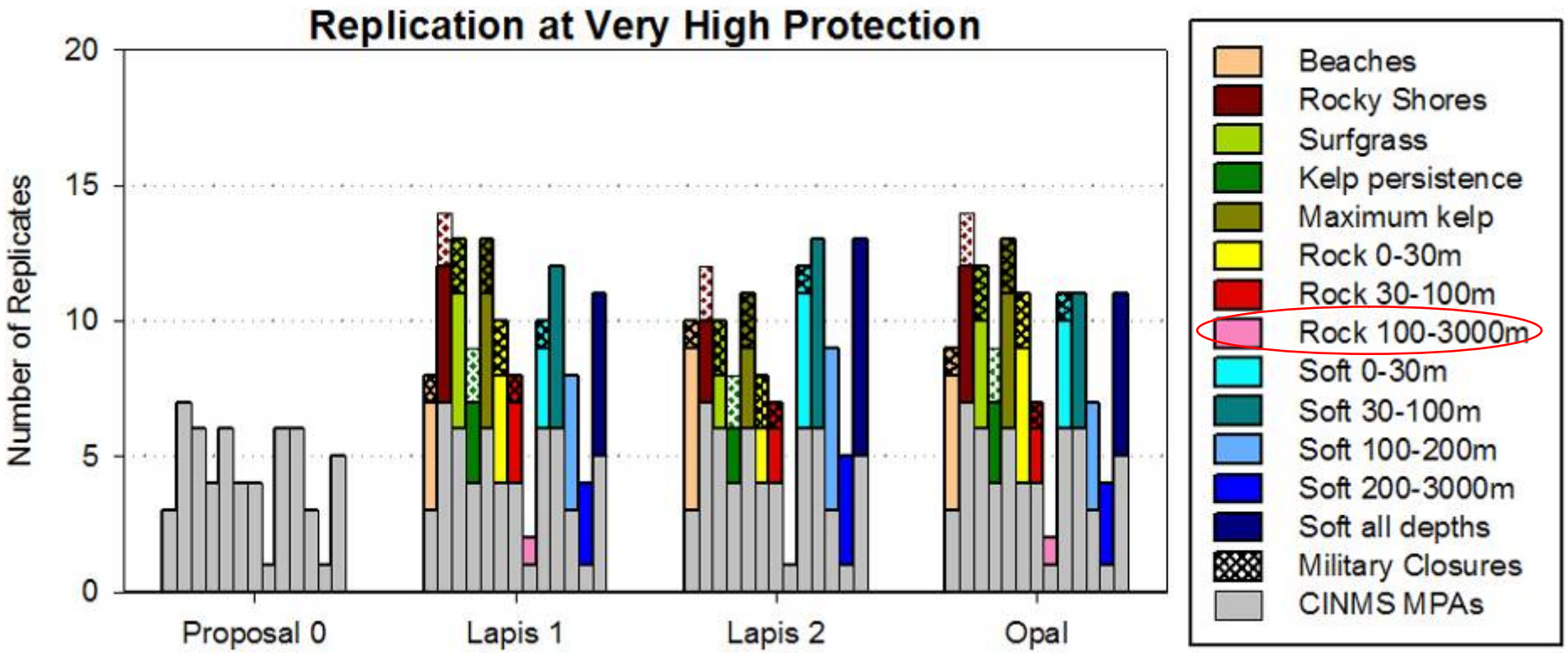
Methods: Habitat Replication

Guidelines for Replication

- 3-5 replicates of habitat per biogeographic region (i.e., the study 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 square miles of estuarine habitat

Replication: Very High Protection

First 3 of 6 proposals

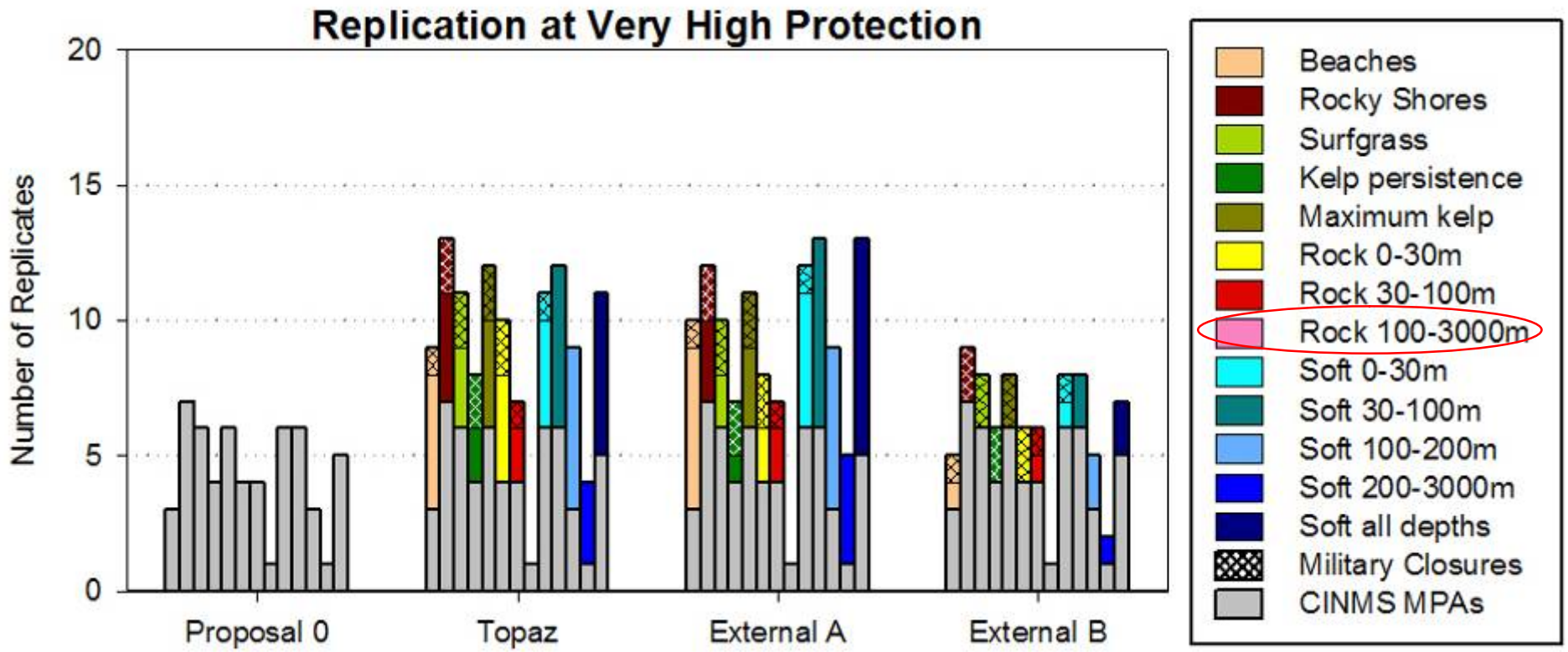


CINMS MPAs = state MPAs within CINMS; does NOT include federal MPAs

- Deep rock (100-3000 meters) is very sparse and hard to achieve minimum area
- Otherwise, most habitats meet replication guidelines

Replication: Very High Protection

Next 3 of 6 proposals



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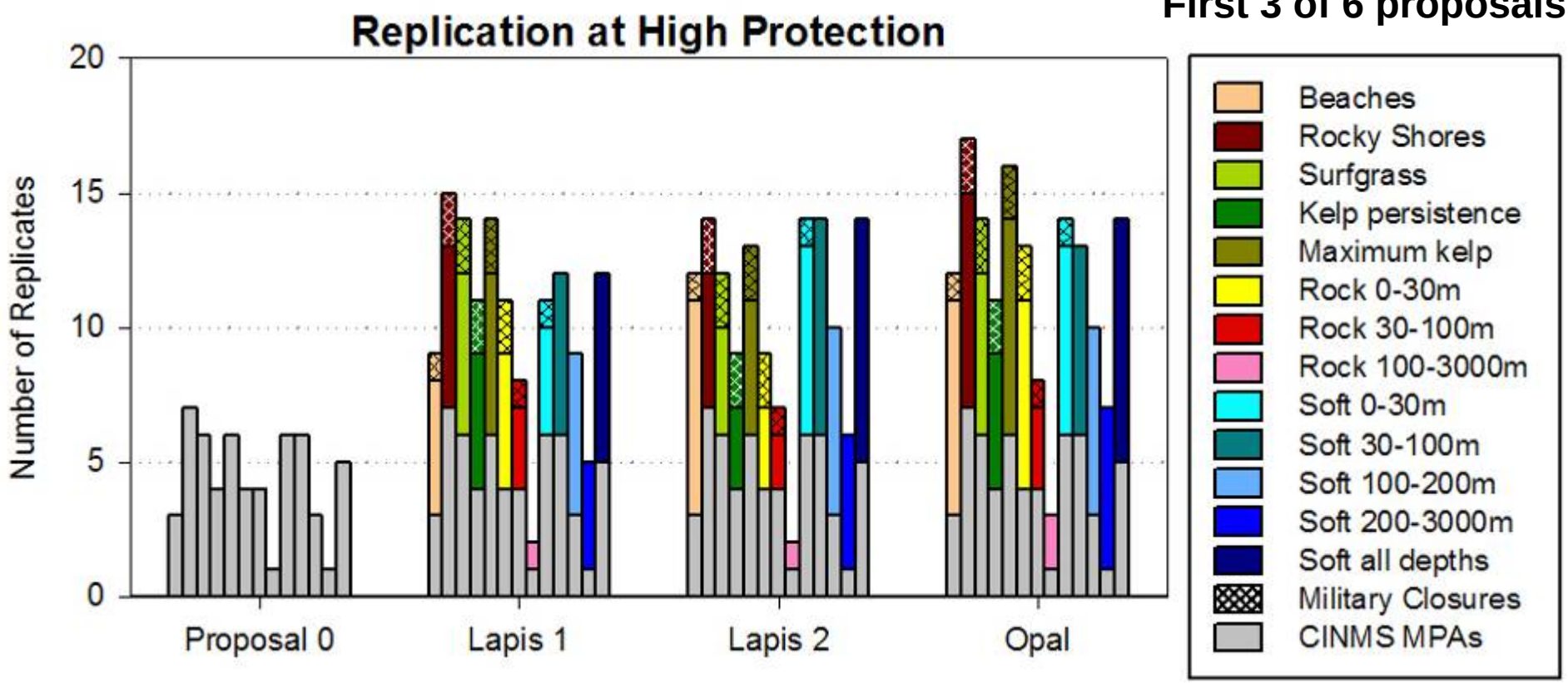
- Deep rock (100-3000 meters) is very sparse and hard to achieve minimum area – none of these proposals achieve replicates of deep rock (100-3000m)
- External B does not replicate several habitats outside of the military closures

Replication: High Protection

First 3 of 6 proposals



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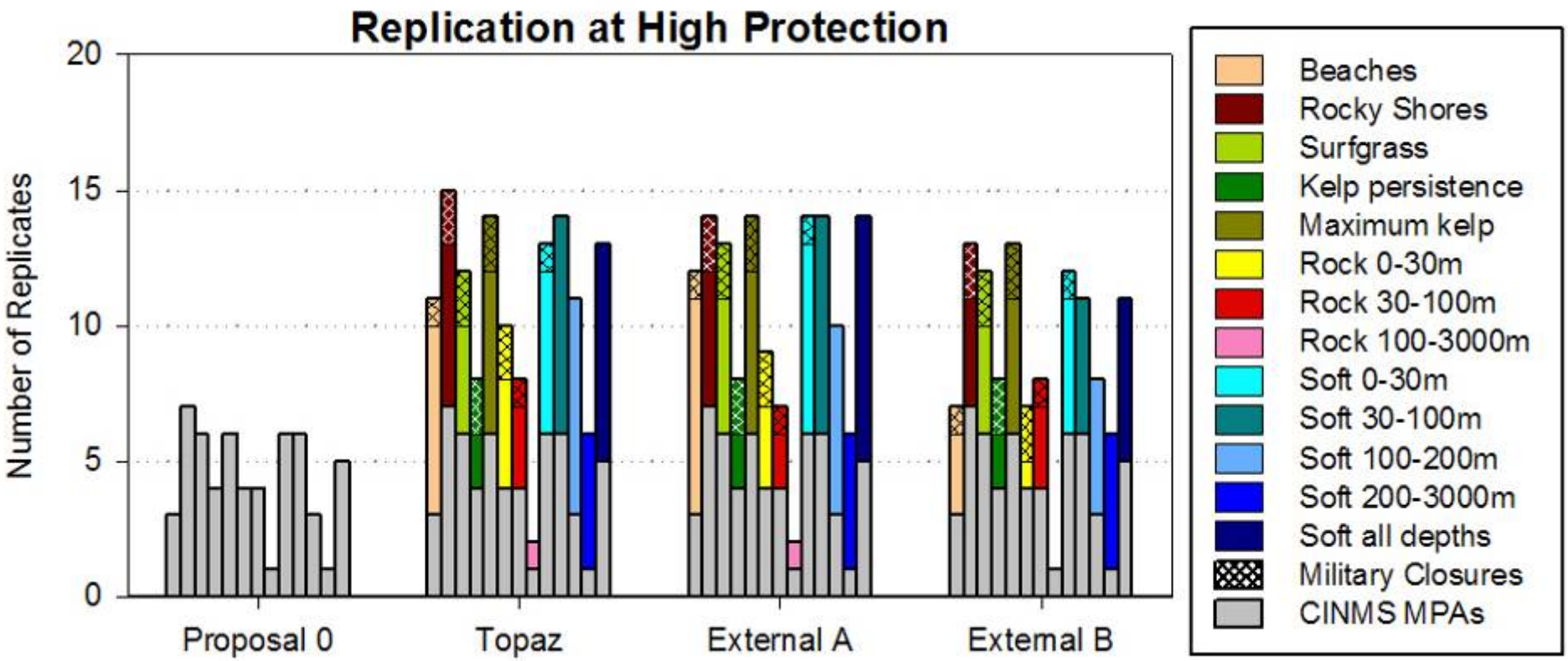
- Replication increases at high level of protection in many cases
- Replication at high and mod-high protection are virtually identical

Replication: High Protection

Next 3 of 6 proposals



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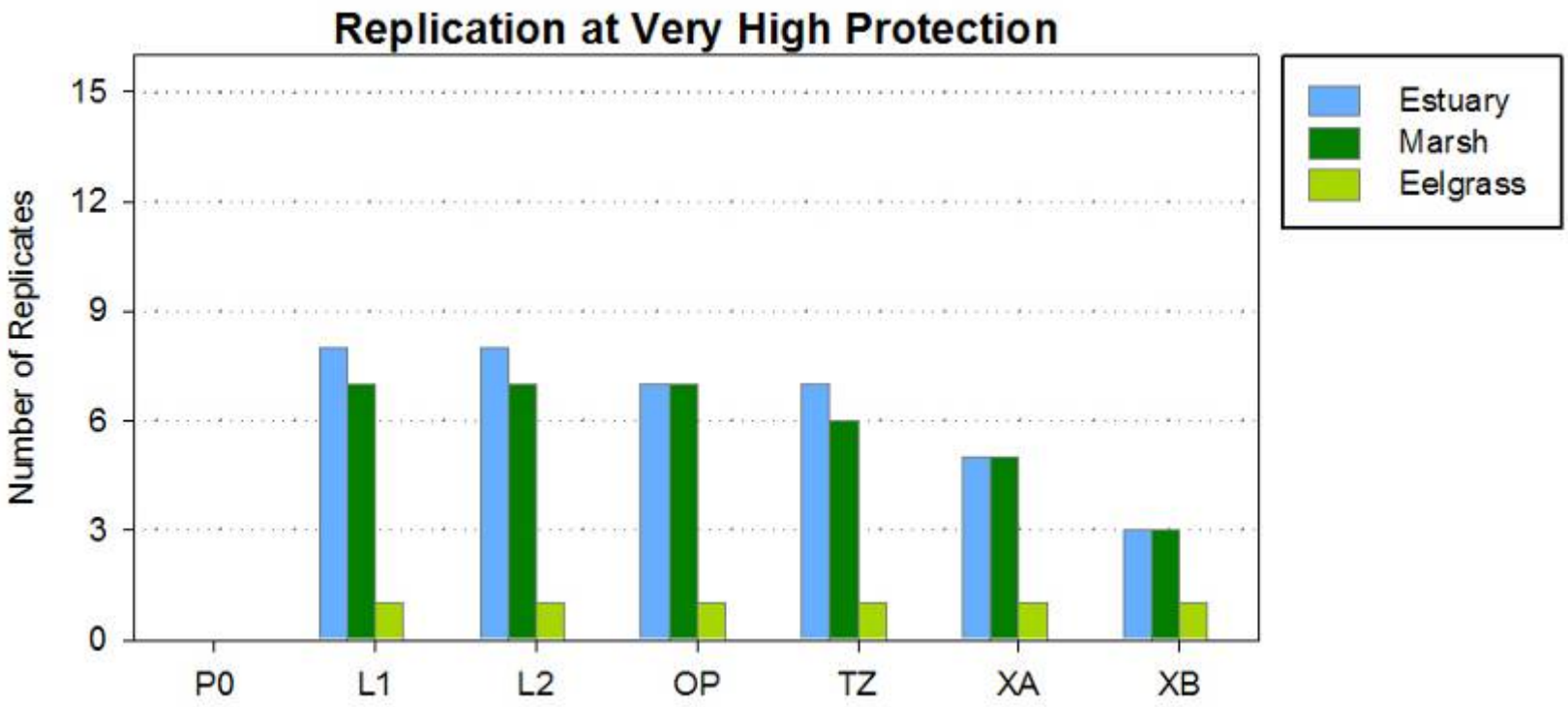
- Replication increases at high level of protection in many cases
- Additional 1-2 replicates at mod-high protection (not shown)

Replication: Estuarine Habitats



- All draft proposals meet replication guidelines (3-5) for estuary and coastal marsh habitat at very high protection
- Only a handful of estuaries contain eelgrass (no proposal achieves more than 1 replicate at or above mod-high protection)
- At High protection replication increases by 5 for Topaz
- At Mod-High protection replication increases by 1 for Lapis 1 & 2

Habitat Replication by Bioregion

Rocky Habitats

Number of bioregions with at least 1 habitat replicate

	Rocky Shores (5)			Surfgrass (5)			Kelp persist. (5)			Maximum kelp (5)			Rock 0-30m (5)			Rock 30-100m (5)			Rock 100-3000m (3)		
	VH	H	MH	VH	H	MH	VH	H	MH	VH	H	MH	VH	H	MH	VH	H	MH	VH	H	MH
Proposal 0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1
Lapis 1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	2	2	2
Lapis 2	5	5	5	4	5	5	4	4	4	5	5	5	4	5	5	4	4	4	1	2	2
Opal	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	2	3	3
Topaz	5	5	5	5	5	5	4	4	5	5	5	5	5	5	5	4	4	5	1	2	2
External A	5	5	5	4	5	5	4	4	5	5	5	5	4	5	5	4	4	5	1	2	2
External B	3	5	5	3	4	5	3	4	5	3	5	5	3	4	5	3	3	4	1	1	1

- Lapis 1 and Opal replicate nearshore rocky habitats across all bioregions
- Most proposals miss replicates of >30m rock and persistent kelp in one bioregion
- External B misses very high replicates across all bioregions for all habitats

Habitat Replication by Bioregion

Soft-bottom Habitats

Number of bioregions with at least 1 habitat replicate

	Beaches (5)			Soft 0-30m (5)			Soft 30-100m (5)			Soft 100-200m (5)			Soft 200-3000m (4)			Soft all depths (5)		
	VH	H	MH	VH	H	MH	VH	H	MH	VH	H	MH	VH	H	MH	VH	H	MH
Proposal 0	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2
Lapis 1	5	5	5	5	5	5	4	4	4	4	4	4	3	4	4	4	5	5
Lapis 2	5	5	5	5	5	5	4	4	4	4	4	4	3	4	4	4	5	5
Opal	5	5	5	5	5	5	4	5	5	4	5	5	2	4	4	4	5	5
Topaz	5	5	5	5	5	5	4	5	5	4	5	5	2	4	4	4	5	5
External A	5	5	5	5	5	5	4	4	4	4	4	4	3	4	4	4	5	5
External B	4	5	5	4	5	5	3	5	5	3	5	5	2	4	4	3	5	5

- All proposals except External B have replication of nearshore soft habitats in all bioregions at very high
- Replicates of offshore soft bottom habitats are missed in one or more bioregion at very high protection

Habitat Replication by Bioregion

Estuarine Habitats

Number of bioregions with at least 1 habitat replicate

	Estuary (2)			Marsh (2)			Eelgrass (1)			Tidal Flats (0)		
	VH	H	MH	VH	H	MH	VH	H	MH	VH	H	MH
Proposal 0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	0	0
Lapis 1	2	2	2	2	2	2	1	1	1	0	0	0
Lapis 2	2	2	2	2	2	2	1	1	1	0	0	0
Opal	2	2	2	2	2	2	1	1	1	0	0	0
Topaz	2	2	2	2	2	2	1	1	1	0	0	0
External A	2	2	2	2	2	2	1	1	1	0	0	0
External B	2	2	2	2	2	2	1	1	1	0	0	0

- Replication is achieved in all bioregions that have estuarine habitat across all proposals

Results: Habitat Replication

Summary

- All proposals meet replication guidelines for all but the sparse habitats (rock > 100m, and eelgrass)
- Convergence on replication across proposals at very high protection with exception of XB
- Military closures at San Clemente contribute to replication of nearshore rocky habitats
- Persistent kelp, deeper rock, and deeper soft bottom are not replicated across all bioregions at very high by most proposals