Marine Life Protection Act Initiative

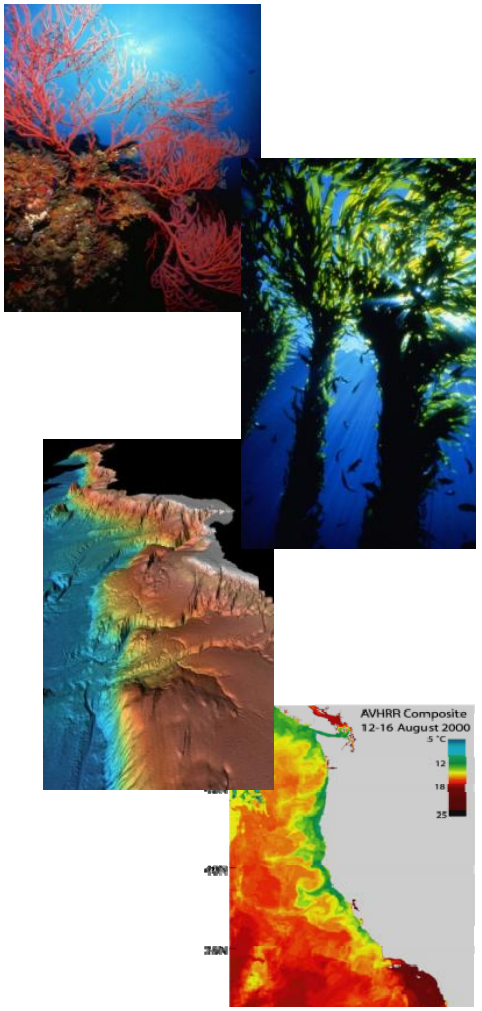
Draft Habitat Evaluations of the Round 1 Draft MPA Arrays/Proposals for the MLPA South Coast Study Region

Presentation to the MLPA South Coast Regional Stakeholder Group
April 28, 2009 • Oxnard, CA

Presented by Dr. Steven Murray, MLPA Master Plan Science Advisory Team

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 is a paraphrasing of the MLPA goals*

MLPA Goals*: Populations

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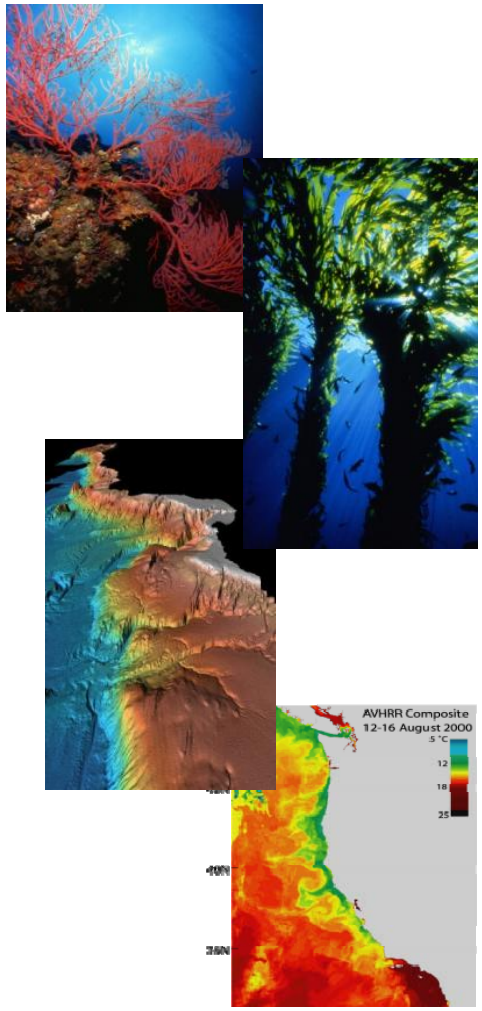


** Note that this language is a paraphrasing of the MLPA goals*

Evaluation: Habitats

Key Questions for Each Draft Array/Proposal

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

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

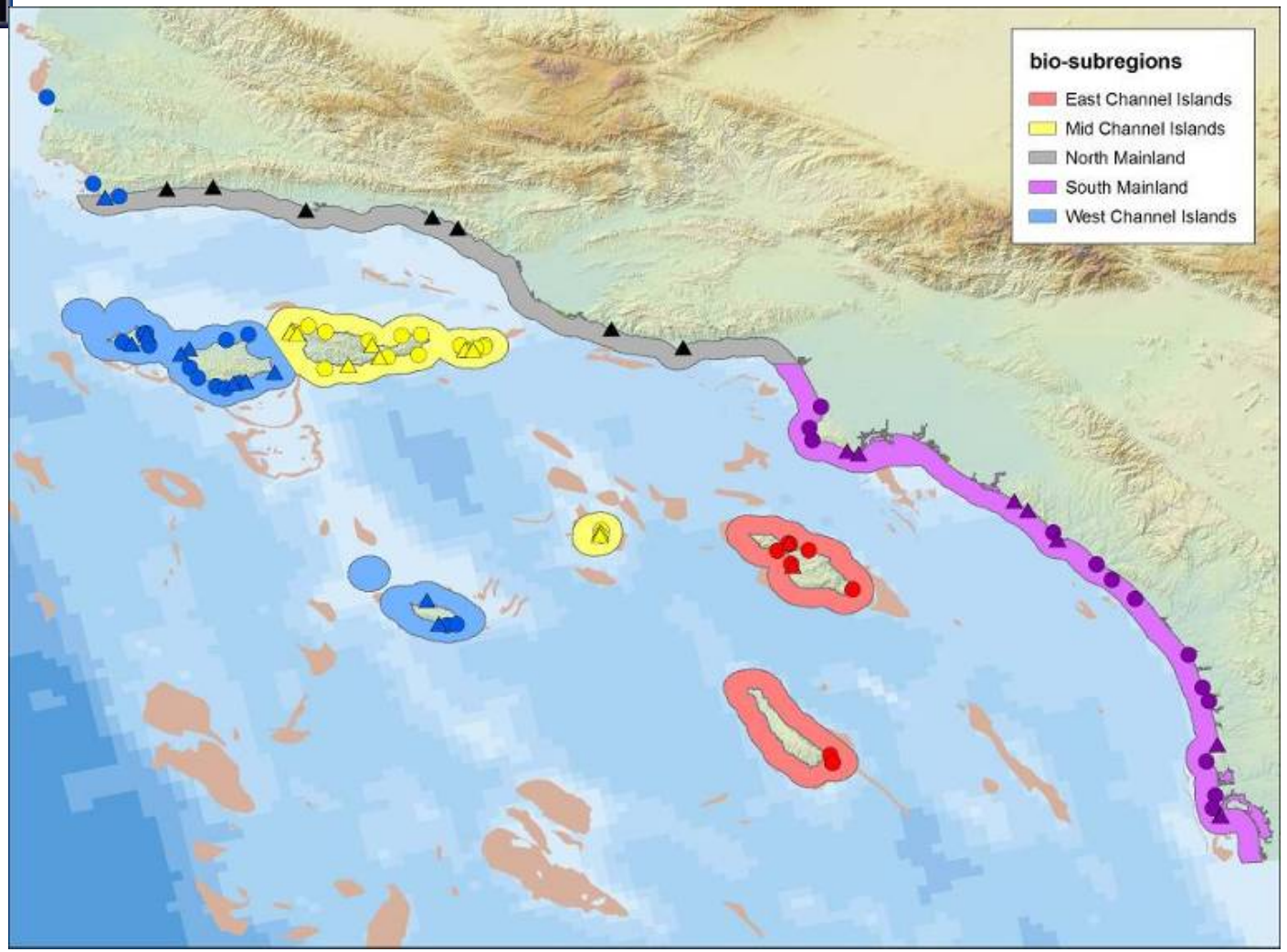
3. How well are habitats and levels of protection distributed across the study region?

Updates to Habitat Data

Proposals evaluated with the following updated habitat layers

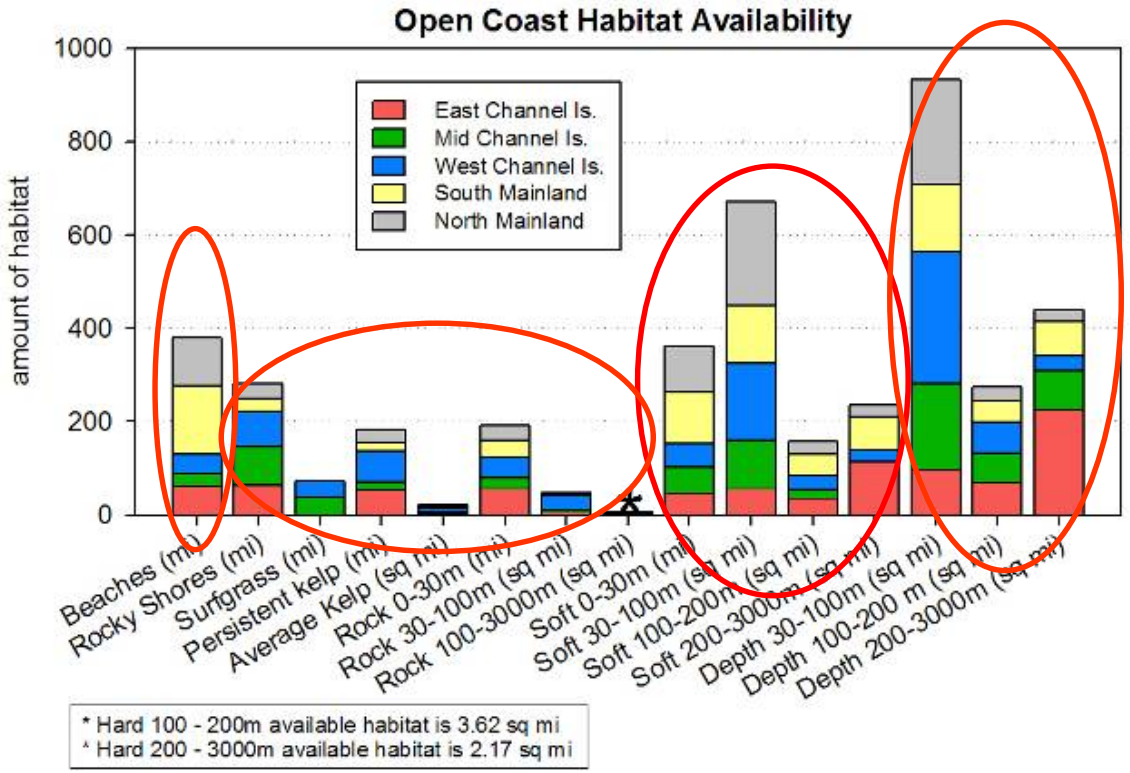
- Nearshore (0-30m) substrate line refined to integrate multiple sources of information including maximum extent of kelp
- Linear measure of kelp represents persistent kelp
- Average kelp area included in evaluation
- Coarse-scale substrate included at San Nicolas Island but not other islands
- Representation of depth zones included in evaluation
- Improvements to estuarine eelgrass data

South Coast Evaluation Bioregions



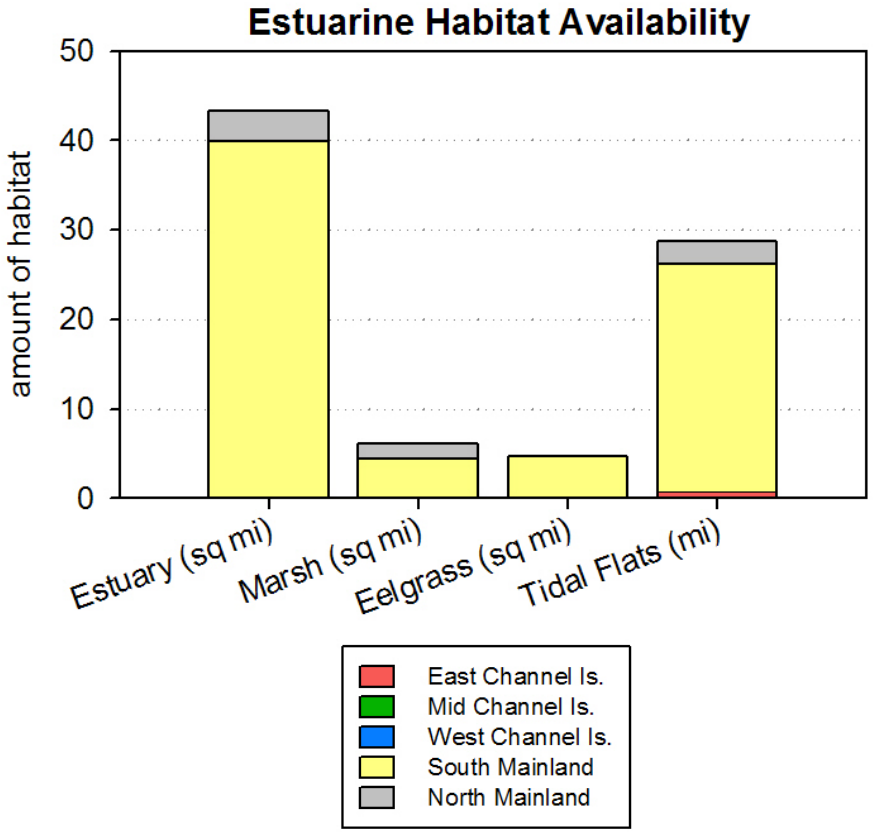
Results: Habitat Availability

- 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
- Large areas available in the three deeper depth zones



Results: Habitat Availability

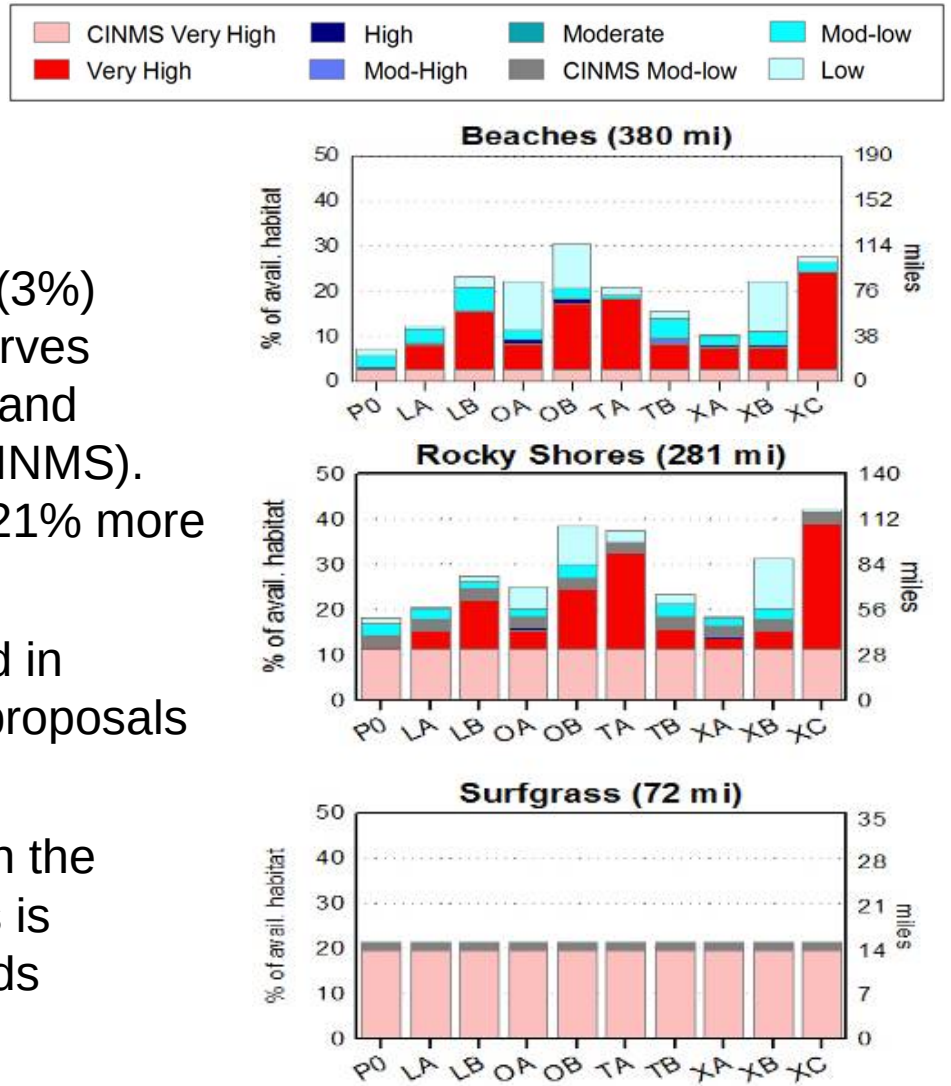
- Estuarine habitats occur almost exclusively on the mainland
- The south mainland bioregion contains the majority of estuarine habitats
- The “estuaries” layer includes harbors
- Eelgrass represented here does not include open-coast eelgrass



Results: Habitat Representation

Shoreline Habitats

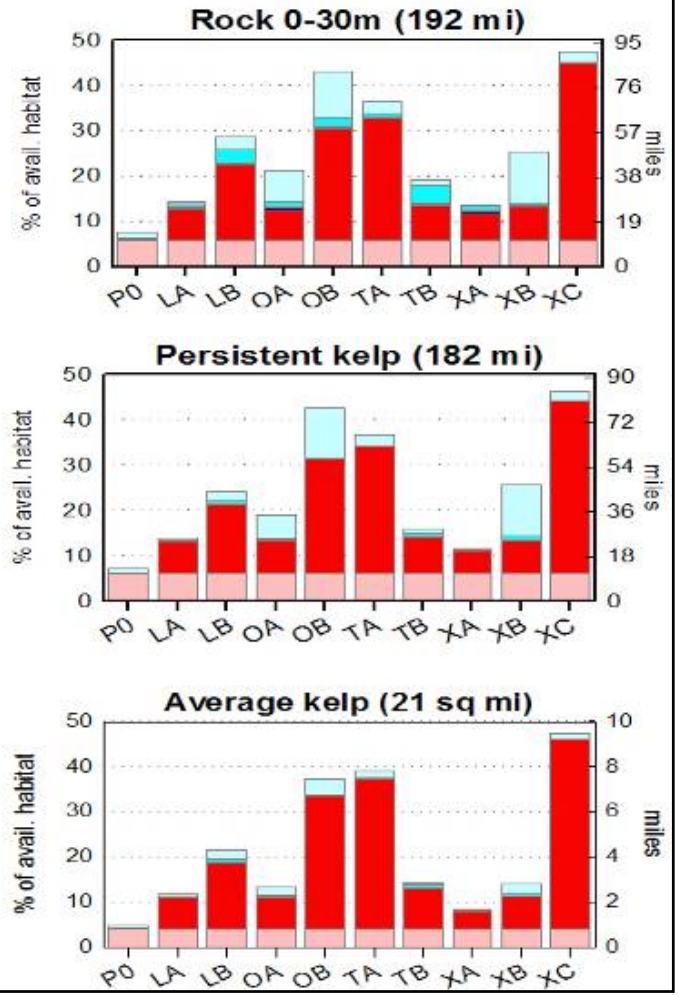
- A small amount sandy beach (3%) protected in state marine reserves (SMRs) within the Channel Island National Marine Sanctuary (CINMS). Draft arrays/proposals add 5-21% more at very high LOP
- 11% of rocky shores protected in SMRs within CINMS. Arrays/proposals add 2-28% more at very high
- Surfgrass is poorly mapped on the mainland. All known surfgrass is protected in the channel islands



Results: Habitat Representation

Nearshore Rock and Kelp

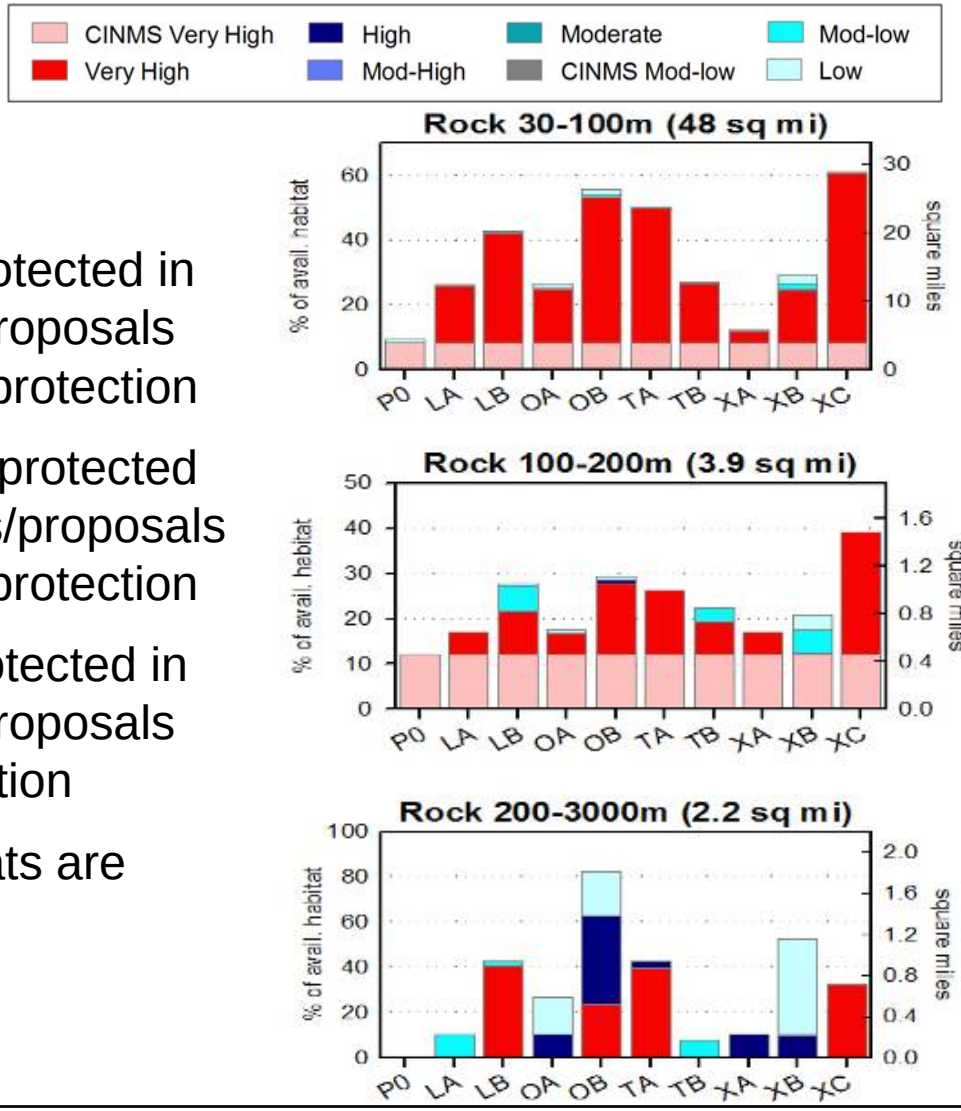
- A high proportion of protected areas are in SMRs
- 6% of shallow 0-30m rock is protected in SMRs within CINMS; draft arrays/proposals add 6-39% more in very high protection
- 6% of persistent kelp is protected in SMRs within CINMS; draft arrays/proposals add 5-38% more in very high protection
- 4% of average kelp area is protected is SMRs within CINMS; draft arrays/proposals add 4-44% more in very high protection



Results: Habitat Representation

Deep Rocky Reef

- 8% of 30-100 meter rock is protected in SMRs within CINMS; arrays/proposals add 4-53% more at very high protection
- 12% of 100-200 meter rock is protected in SMRs within CINMS, arrays/proposals add 0-27% more at very high protection
- No 200-3000 meter rock is protected in SMRs within CINMS; arrays/proposals add 0-40% in very high protection
- All of these deeper rock habitats are comparatively rare

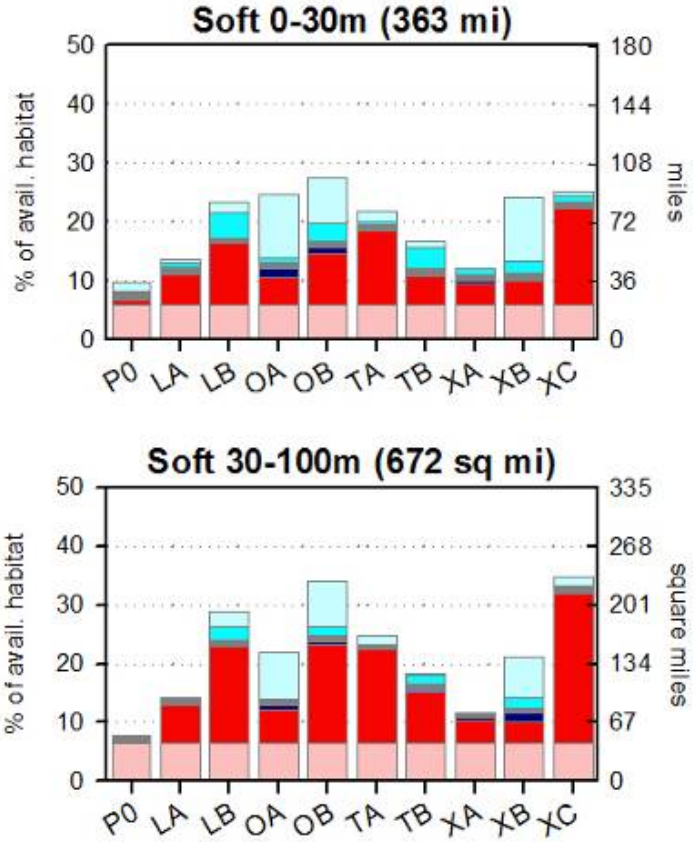


Results: Habitat Representation

CINMS Very High | High | Moderate | Mod-low
Very High | Mod-High | CINMS Mod-low | Low

Shallow Soft Bottom Habitats

- Shallow soft bottom habitats are very abundant across the study region – small percentages correspond to large areas
- 6% of 0-30 meter soft bottom protected in SMRs within CINMS; draft arrays/proposals add 4-16% more in very high protection
- 7% of 30-100 meter soft bottom protected in SMRs within CINMS; draft arrays/proposals add 4-25% more in very high protection

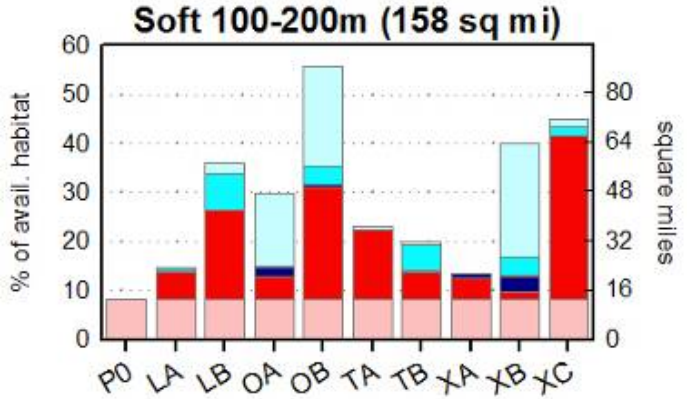


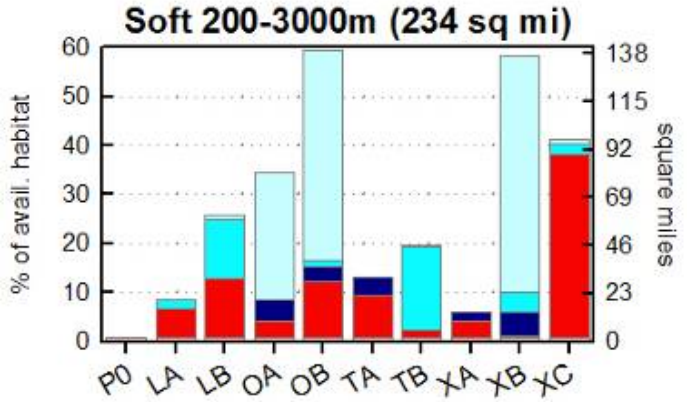
Results: Habitat Representation

CINMS Very High | High | Moderate | Mod-low
Very High | Mod-High | CINMS Mod-low | Low

Deep Soft Bottom Habitats

- Deep soft bottom habitats are abundant across the study region – small percentages correspond to large areas
- 8% of 100-200 meter soft bottom protected in SMRs within CINMS; arrays/proposals add 2-33% more in very high protection
- 1% of 200-3000 meter soft bottom protected in SMRs within CINMS; arrays/proposals add 0-38% more in very high protection
- Soft bottom deeper than 200 meter is associated with canyons on mainland; otherwise at East Channel Islands

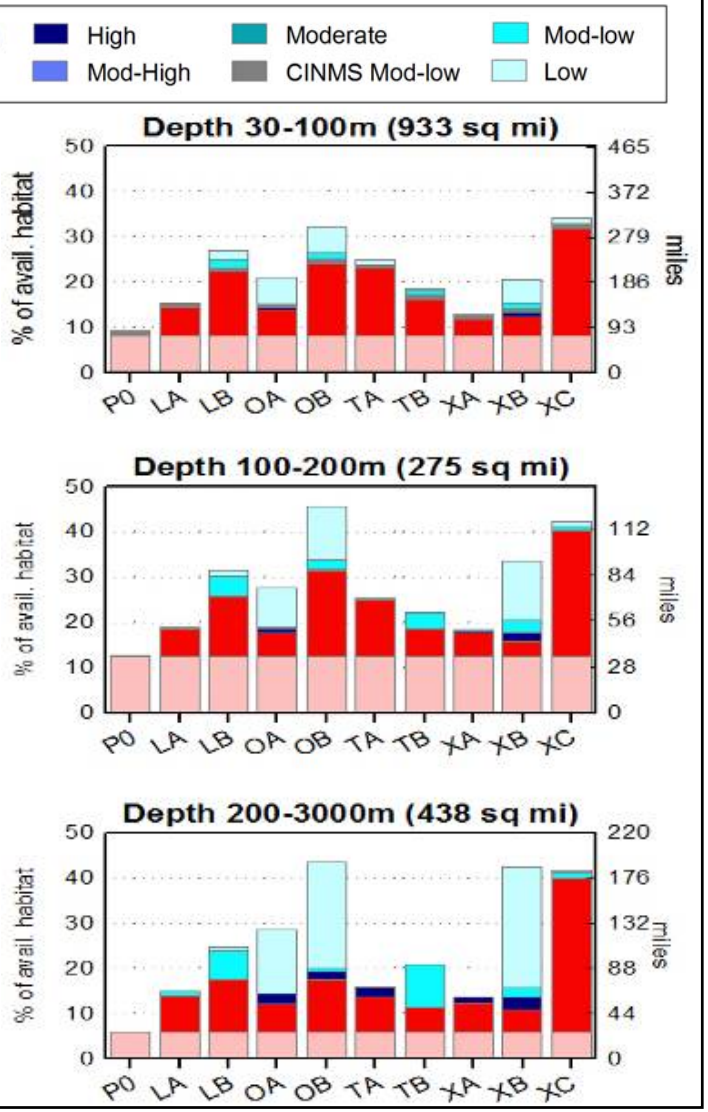




Results: Habitat Representation

Depth Zones

- There are large areas in all depth zones from 30-3000 meters
- 8% of 30-100 meter depth zone is protected in SMRs within CINMS; arrays/proposals add 4-24% more in very high protection
- 12% of 100-200 meter depth zone is protected in SMRs within CINMS; arrays/proposals add 3-28% more in very high protection
- 6% of 200-3000 meter deoth zone is protected in SMRs within CINMS; arrays/proposals add 5-34% more in very high protection



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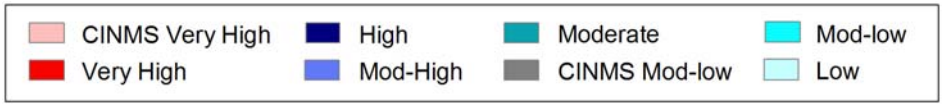
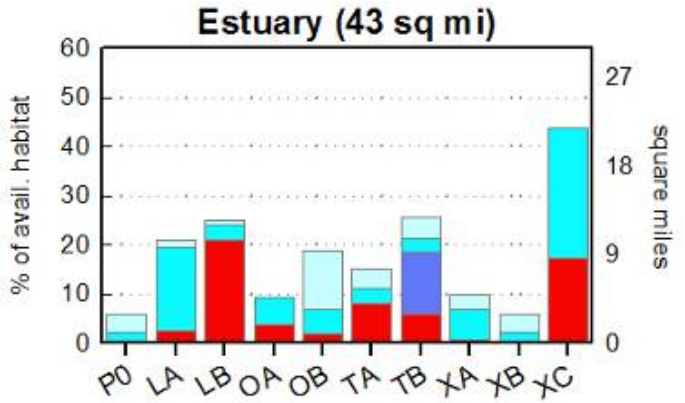
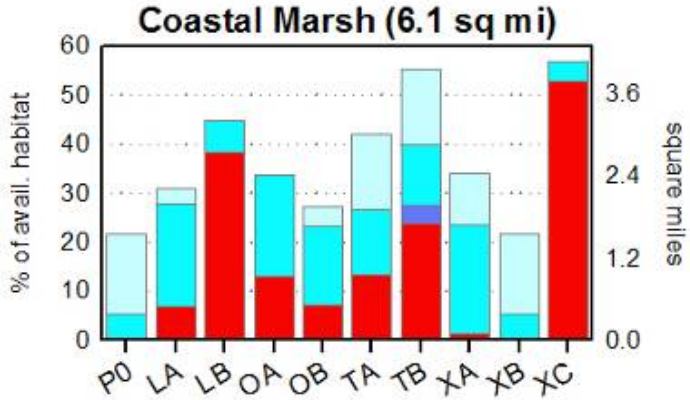


Estuarine Habitats

- Estuarine habitats almost exclusively on the mainland
- Estuary = any enclosed water body, including those enclosed by breakwaters
- 0-21% of estuarine habitat at very high protection
- 0-53% of coastal marsh at very high protection





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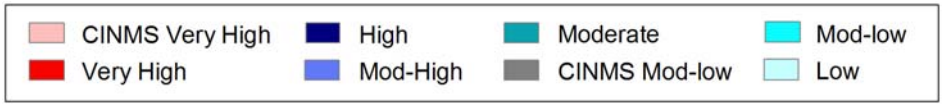
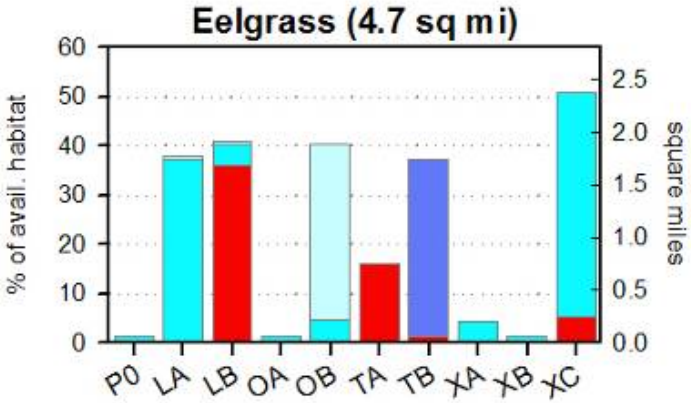
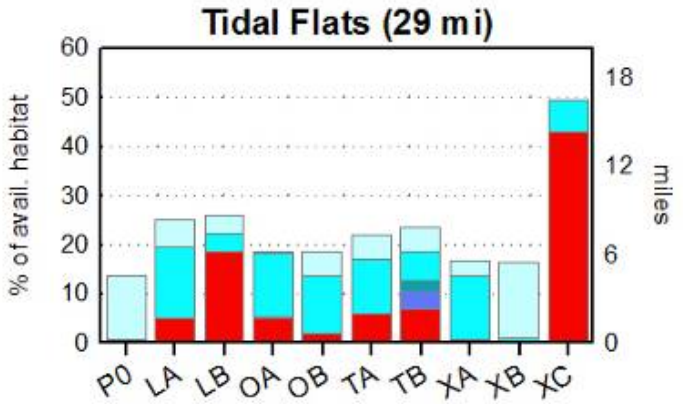


Estuarine Habitats

- Eelgrass is mapped in only a handful of estuaries
- Patchy distribution of eelgrass among estuaries leads to high variability across draft arrays/proposals
- 0-36% of eelgrass at very high protection
- Tidal flats are not well mapped
- 0-43% of tidal flats at very high protection





Results: Habitat Representation

Summary

- Highly variable representation of all habitats across proposals in this first round
- Some of this variation was intentional on the part of stakeholders – each work group explored a range of options to receive feedback from the science team
- Recent updates to habitat layers included in this evaluation – major influence is on how much deeper rocky reef habitats are represented in the CINMS (lower now) compared to the proposals (higher now)

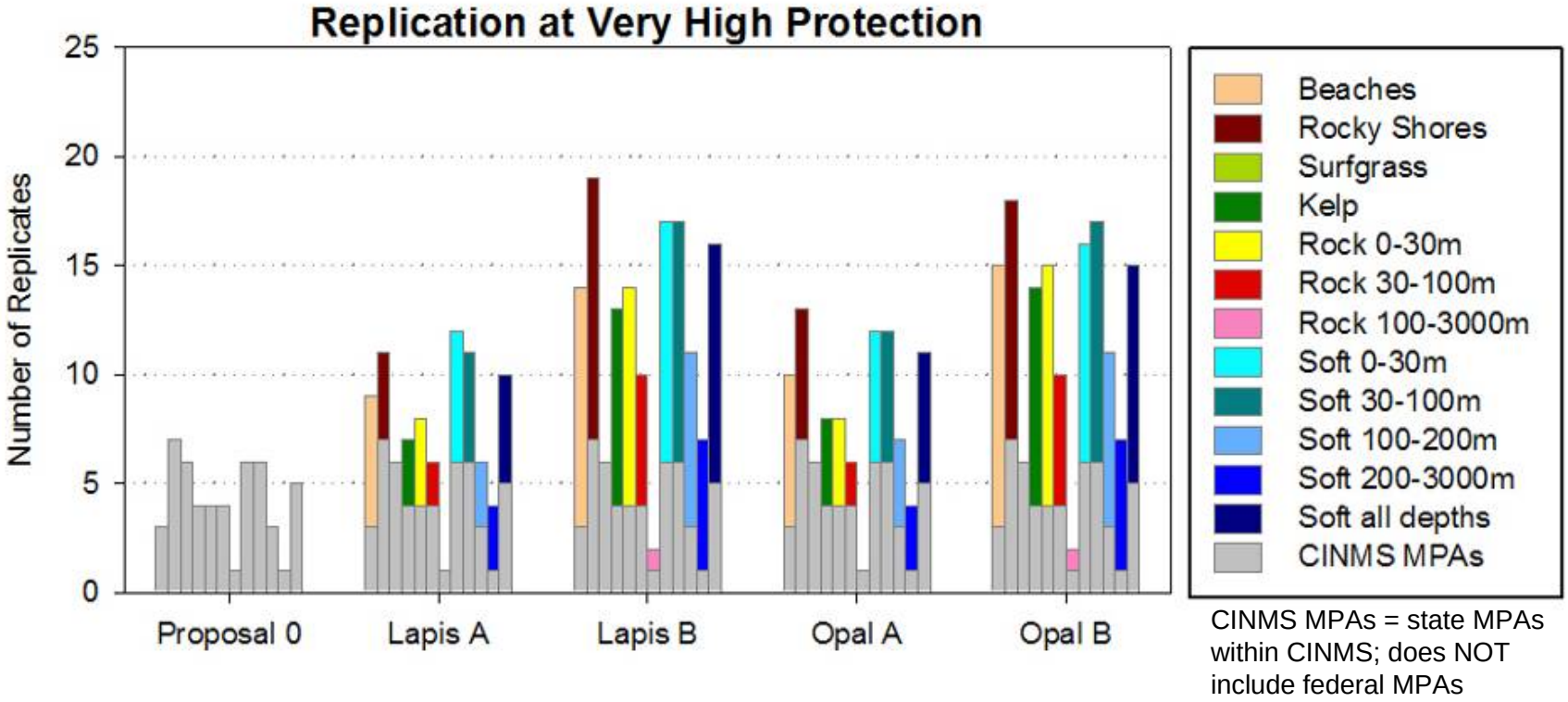
Methods: Habitat Replication

Guidelines for replication:

- 3-5 replicates of habitat per biogeographic region (i.e., the study region)
- SAT recommended at least 1 replicate of each habitat per bioregion
- 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 4 of 9 arrays/proposals

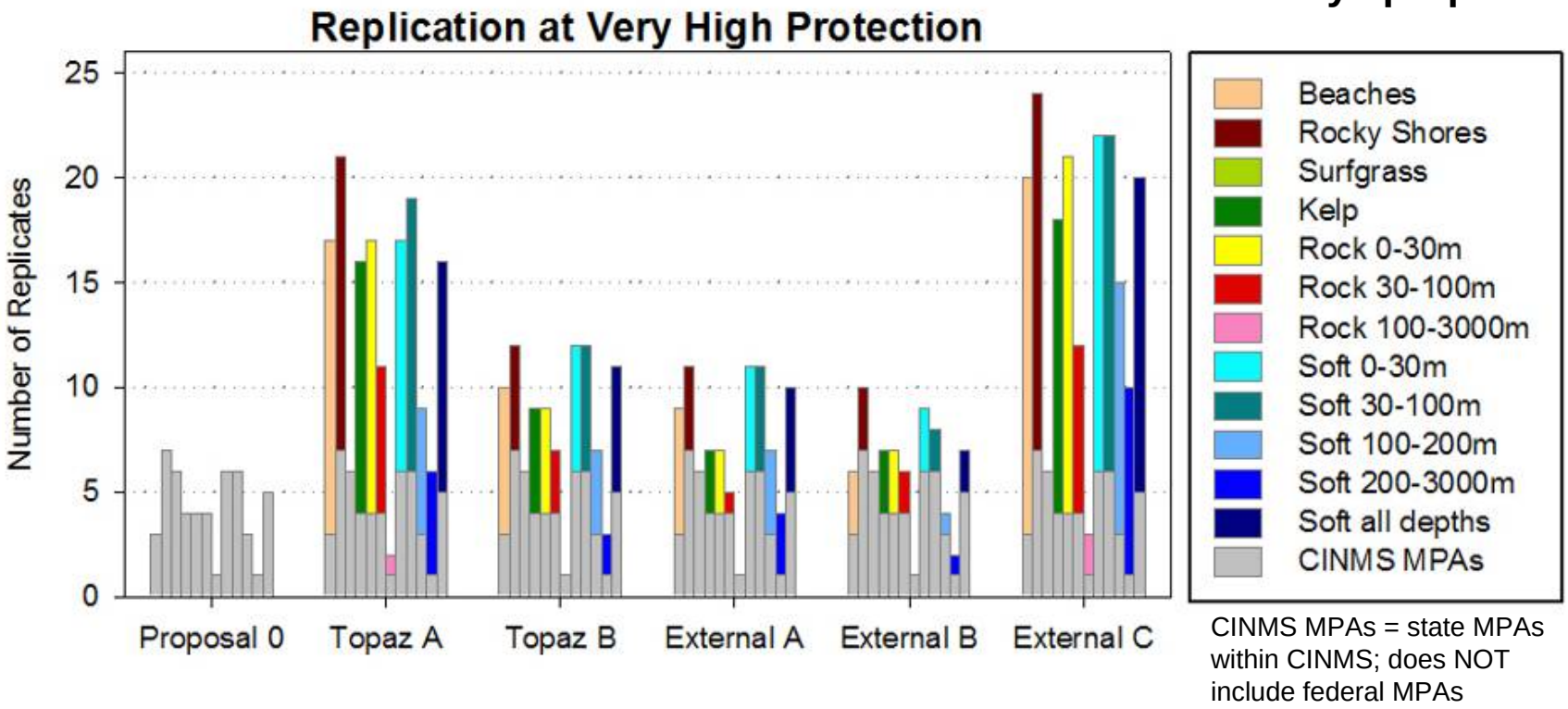


CINMS MPAs = state MPAs within CINMS; does NOT include federal MPAs

- No surfgrass replication because poorly mapped
- Deep rock (100-3000 meters) is very sparse and hard to achieve minimum area
- Deep soft (200-3000 meters) is restricted to southern mainland canyons and ECI
- Most habitats meet replication guidelines

Replication: Very High Protection

Next 5 of 9 arrays/proposals



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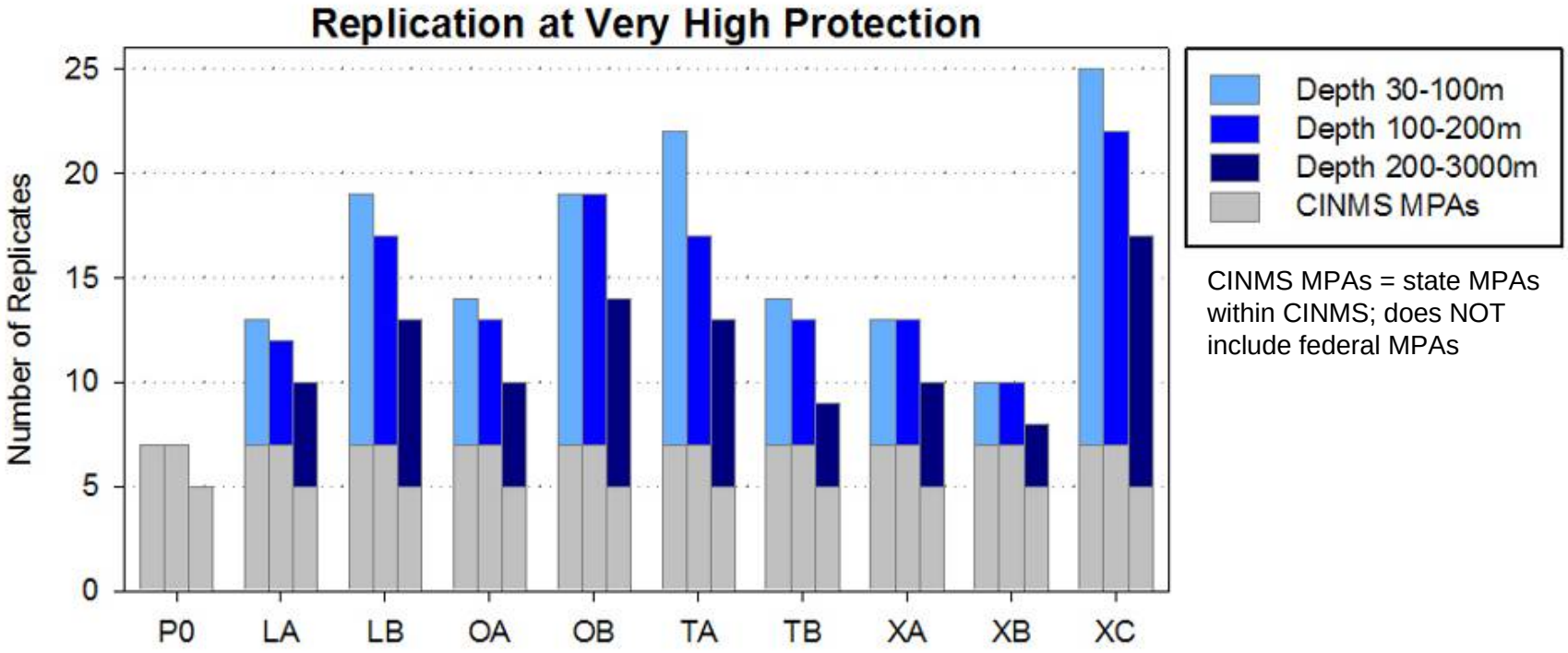
- No surfgrass replication because poorly mapped
- Deep rock (100-3000 meters) is very sparse and hard to achieve minimum area
- Deep soft (200-3000 meters) is restricted to southern mainland canyons and ECI
- Otherwise, most habitats meet replication guidelines

Replication: Depth Zones

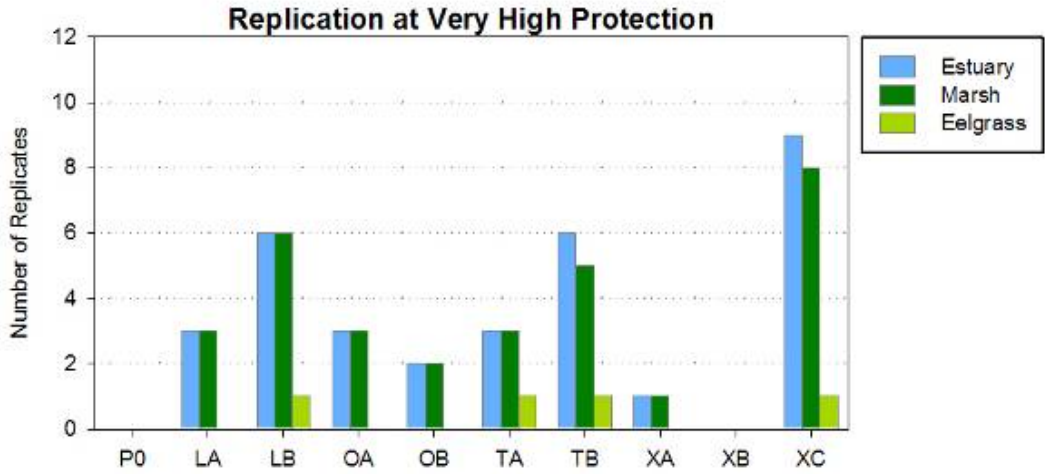


CINMS MPAs = state MPAs within CINMS; does NOT include federal MPAs

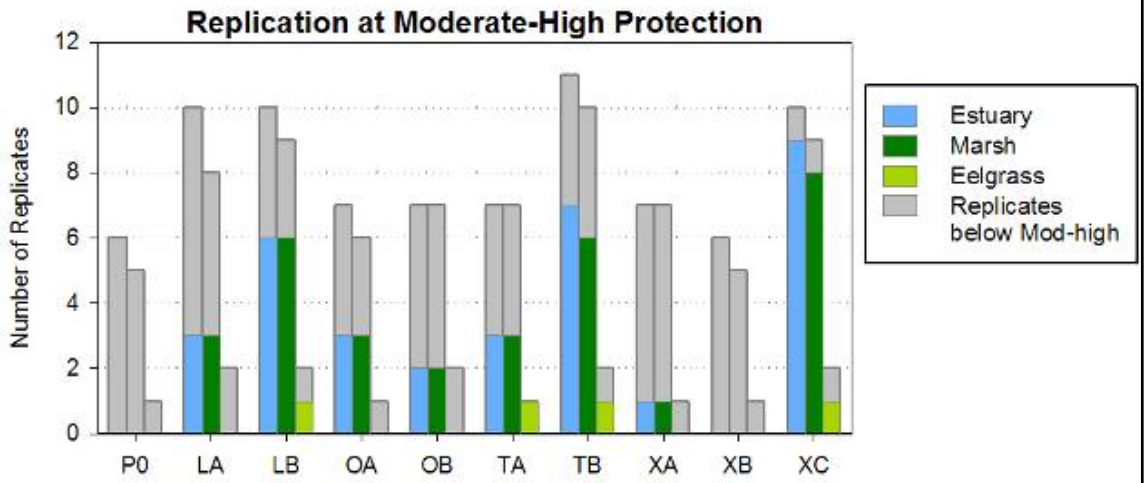
- Depth zone replication evaluated independent of substrate type to show how unknown substrate may contribute
- All proposals have MPAs that encompass the range of depth zones and meet replication guidelines

Replication: Estuarine Habitats

- Some draft arrays/proposals do not meet replication guidelines (3-5)
- Only a handful of estuaries with eelgrass



- Only Topaz B increased replication at mod-high
- Plenty of estuarine MPAs to meet replication guidelines, but many below mod-high protection



Habitat Replication by Bioregion

Shoreline and Nearshore Habitats

Number of bioregions with at least 1 habitat replicate

	Beaches (5)			Rocky Shores (5)			Surfgrass (2)			Persistent kelp (5)			Rock 0-30m (5)			Soft 0-30m (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**	**2**	**2**	**2**	**2**	**2**	**2**
Lapis A	5	5	5	**4**	**4**	**4**	2	2	2	**3**	**3**	**3**	**4**	**4**	**4**	5	5	5
Lapis B	5	5	5	5	5	5	2	2	2	5	5	5	5	5	5	5	5	5
Opal A	5	5	5	5	5	5	2	2	2	**4**	**4**	**4**	**4**	5	5	5	5	5
Opal B	5	5	5	5	5	5	2	2	2	5	5	5	5	5	5	5	5	5
Topaz A	5	5	5	5	5	5	2	2	2	5	5	5	5	5	5	5	5	5
Topaz B	5	5	5	**4**	**4**	**4**	2	2	2	**4**	**4**	**4**	**4**	**4**	**4**	5	5	5
External A	5	5	5	5	5	5	2	2	2	**4**	**4**	**4**	**4**	**4**	**4**	5	5	5
External B	**4**	5	5	**3**	5	5	2	2	2	**3**	**4**	**4**	**3**	5	5	**4**	5	5
External C	5	5	5	5	5	5	2	2	2	5	5	5	5	5	5	5	5	5

Habitat Replication by Bioregion

Offshore Habitats

Number of bioregions with at least 1 habitat replicate

	Rock 30-100m (5)			Rock 100-3000m (4)			Soft 30-100m (5)			Soft 100-200m (5)			Soft 200-3000m (5)			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**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**2**	**2**	**2**
Lapis A	**3**	**3**	**3**	**1**	**1**	**1**	**4**	**4**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**4**	**4**	**4**
Lapis B	**4**	**4**	**4**	**2**	**2**	**2**	5	5	5	5	5	5	**4**	**4**	**4**	5	5	5
Opal A	**3**	**3**	**3**	**1**	**1**	**1**	**4**	**4**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**4**	**4**	**4**
Opal B	**4**	**4**	**4**	**2**	**3**	**3**	5	5	5	5	5	5	5	5	5	5	5	5
Topaz A	**4**	**4**	**4**	**2**	**2**	**2**	5	5	5	5	5	5	5	5	5	5	5	5
Topaz B	**4**	**4**	**4**	**1**	**1**	**1**	**4**	**4**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**4**	**4**	**4**
External A	**3**	**3**	**3**	**1**	**1**	**1**	**4**	**4**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**4**	**4**	**4**
External B	**3**	**3**	**3**	**1**	**1**	**1**	**3**	**4**	**4**	**3**	**4**	**4**	**2**	**3**	**3**	**3**	**4**	**4**
External C	**4**	**4**	**4**	**2**	**2**	**2**	5	5	5	5	5	5	5	5	5	5	5	5

Habitat Replication by Bioregion

Offshore Habitats

Number of bioregions with at least 1 habitat replicate

	Depth 30-100m (5)			Depth 100-200m (5)			Depth 200-3000m (5)		
	VH	H	MH	VH	H	MH	VH	H	MH
Proposal 0	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Lapis A	5	5	5	5	5	5	5	5	5
Lapis B	5	5	5	5	5	5	5	5	5
Opal A	5	5	5	5	5	5	5	5	5
Opal B	5	5	5	5	5	5	5	5	5
Topaz A	5	5	5	5	5	5	5	5	5
Topaz B	5	5	5	5	5	5	5	5	5
External A	5	5	5	5	5	5	5	5	5
External B	**4**	5	5	**4**	5	5	**4**	5	5
External C	5	5	5	5	5	5	5	5	5

Habitat Replication by Bioregion

Estuarine Habitats

Number of bioregions with at least 1 habitat replicate

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

Results: Habitat Replication

Summary

- State marine protected areas within CINMS contribute significantly to replication for all open coast habitats but not estuarine habitats
- All draft arrays/proposals added replication for most habitats, but number of additional replicates varies markedly among draft arrays/proposals
- Some habitats were difficult to replicate because of patchy distribution and rarity
- Updated habitat data has led to increases in replication of some habitats and decreases in others