

## Marine Life Protection Act Initiative



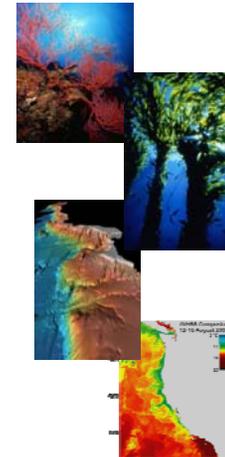
### Draft Habitat, Size and Spacing Evaluations of the Round 1 Draft MPA Arrays/Proposals for the MLPA South Coast Study Region

Presentation to the MLPA Blue Ribbon Task Force  
 by Master Plan Science Advisory Team  
 April 15, 2009 • Dana Point, CA  
 Presented by Dr. Mark Carr

## 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**.

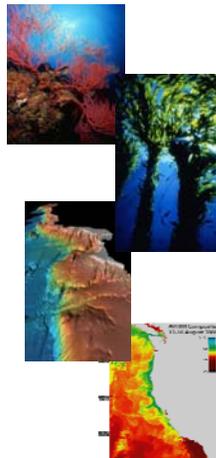


\* Note that this language paraphrases the MLPA goals

## MLPA Goals\*: Habitats



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**.



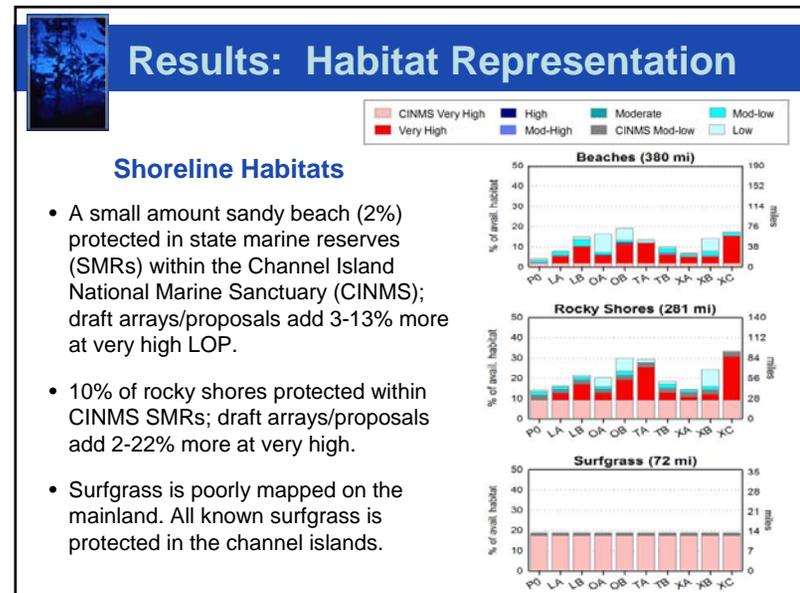
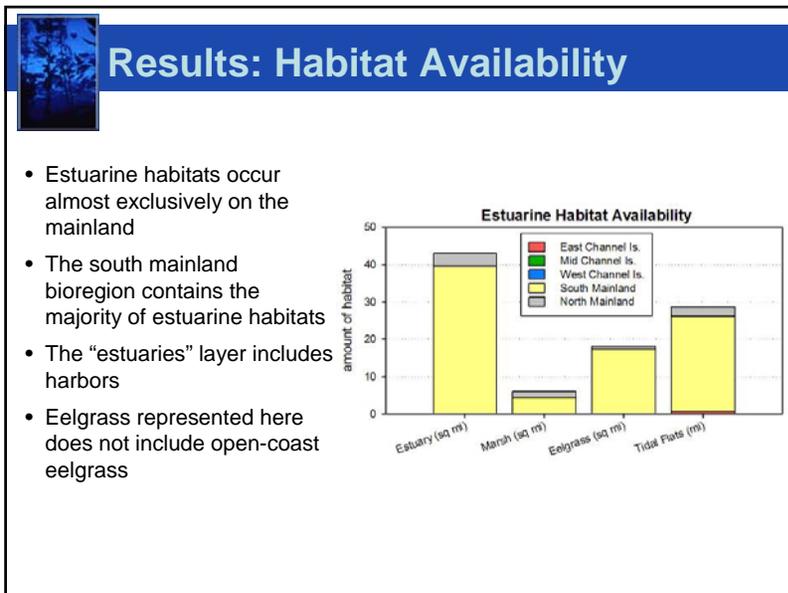
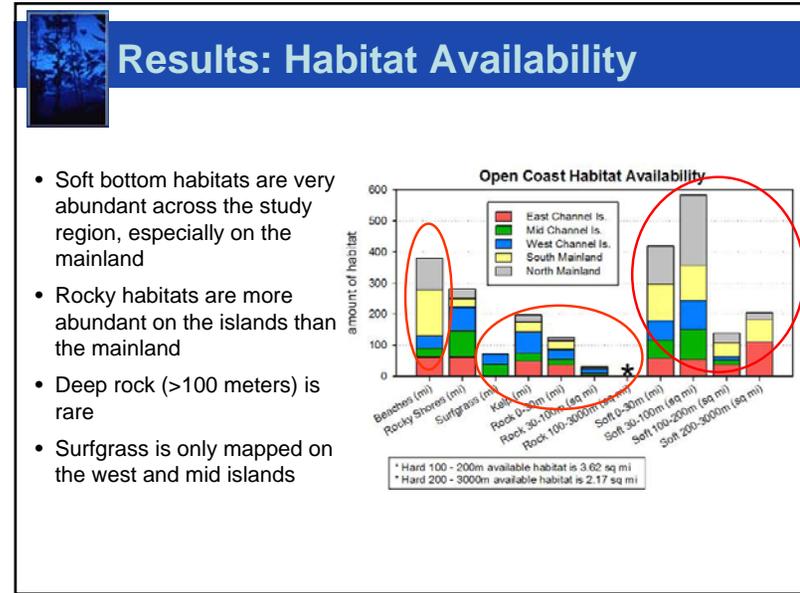
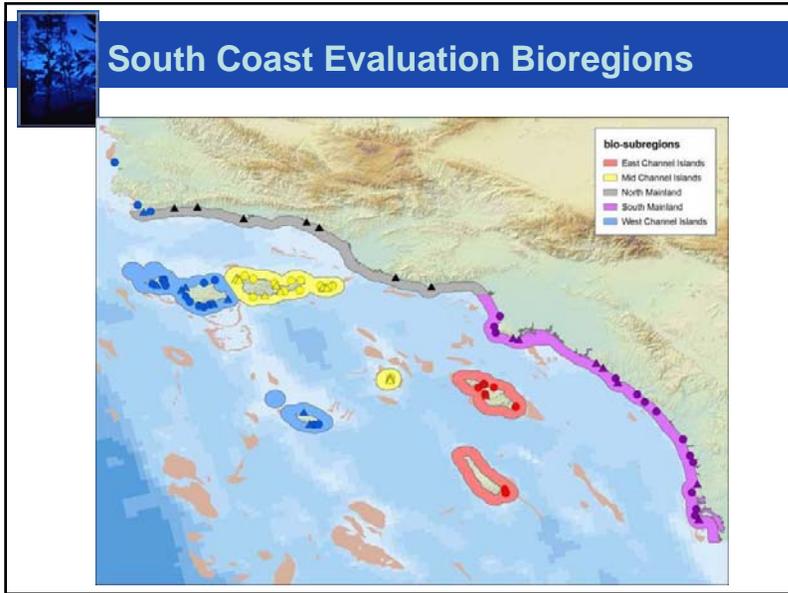
\* Note that this language paraphrases the MLPA goals

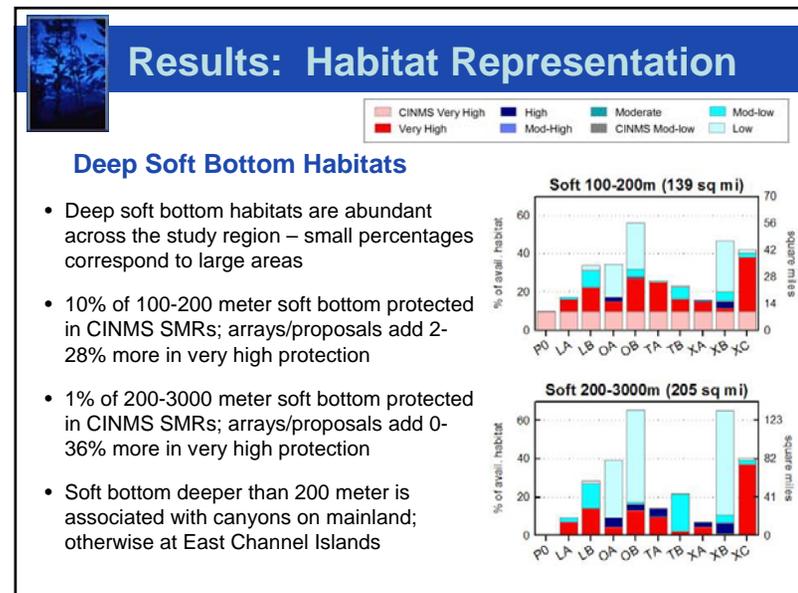
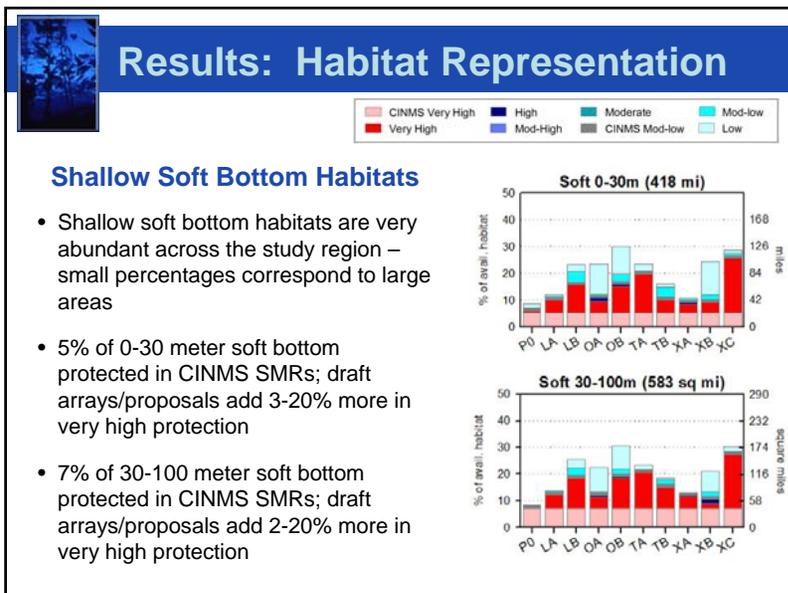
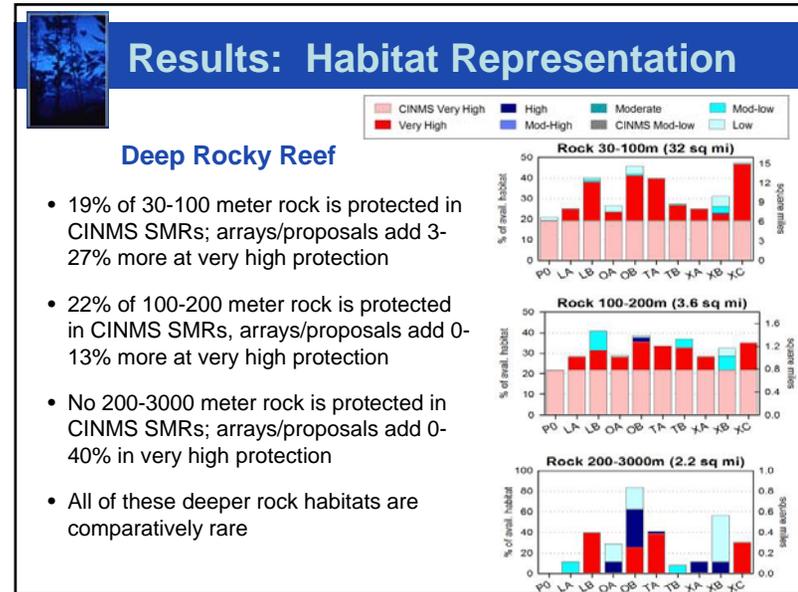
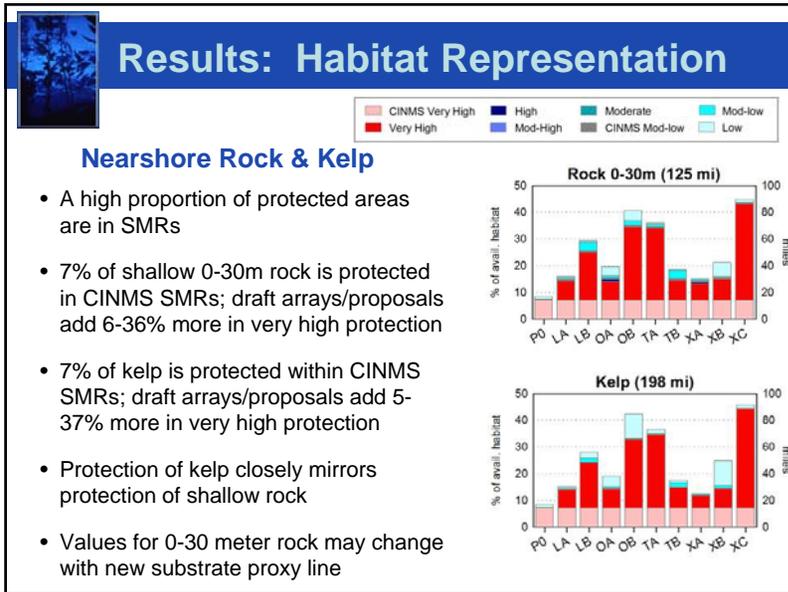
## Evaluation: Habitats

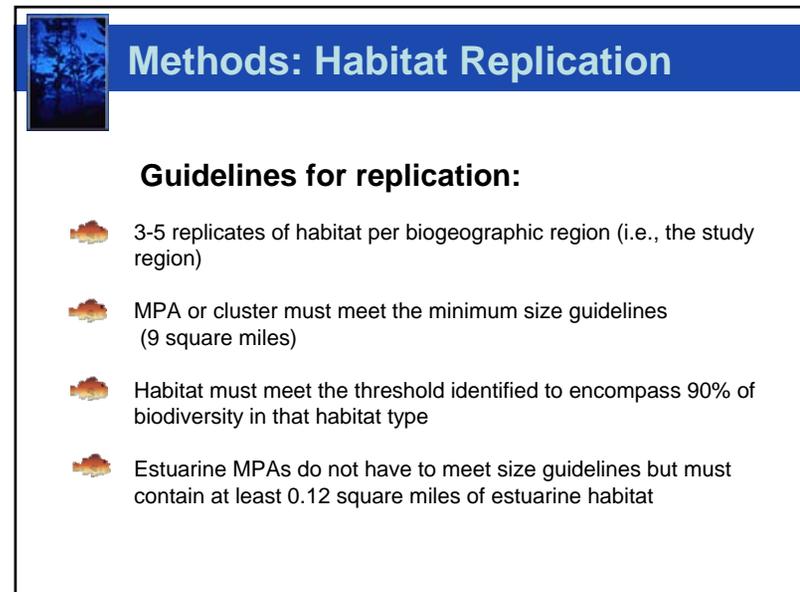
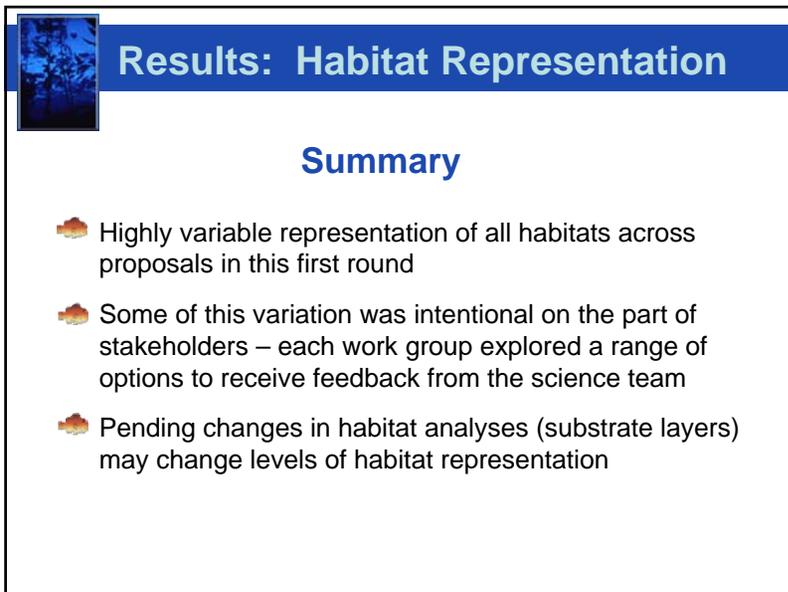
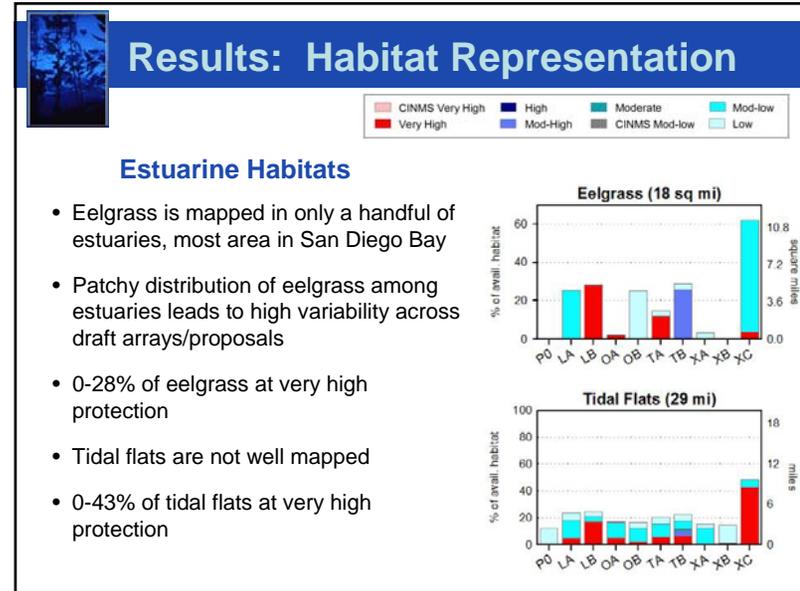
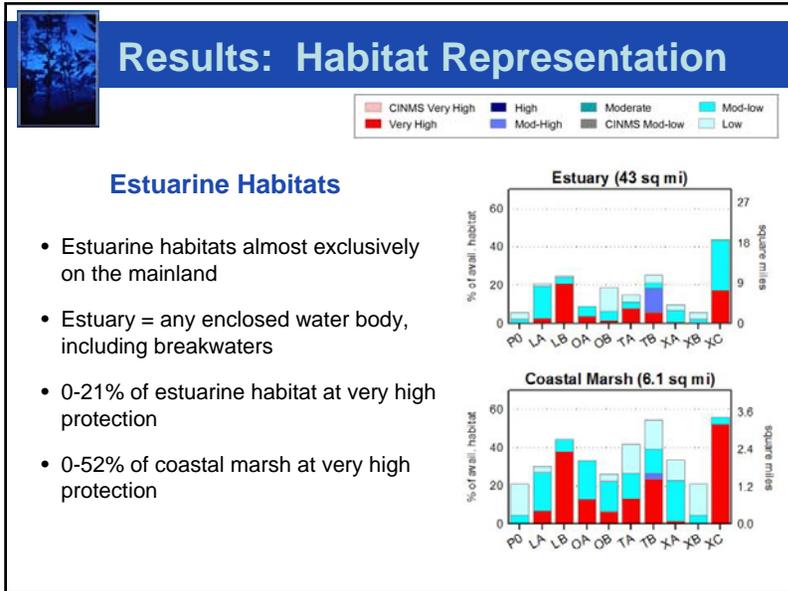


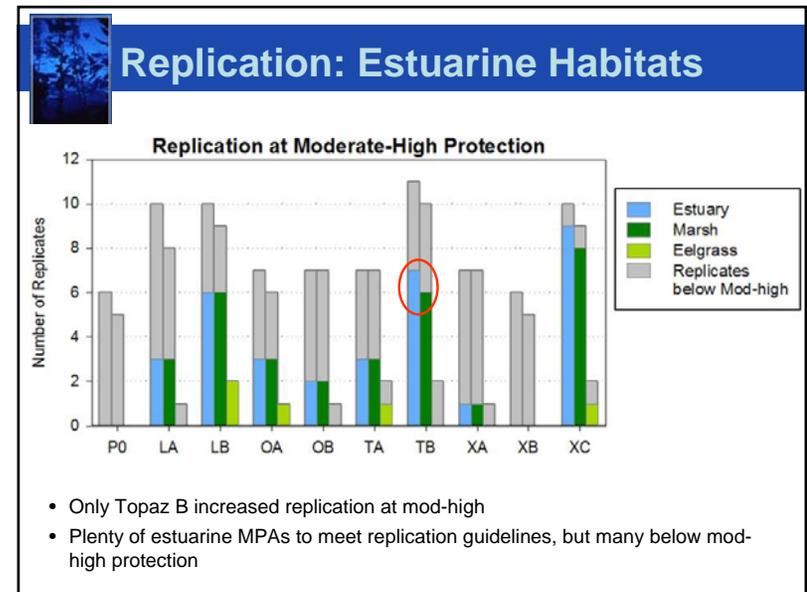
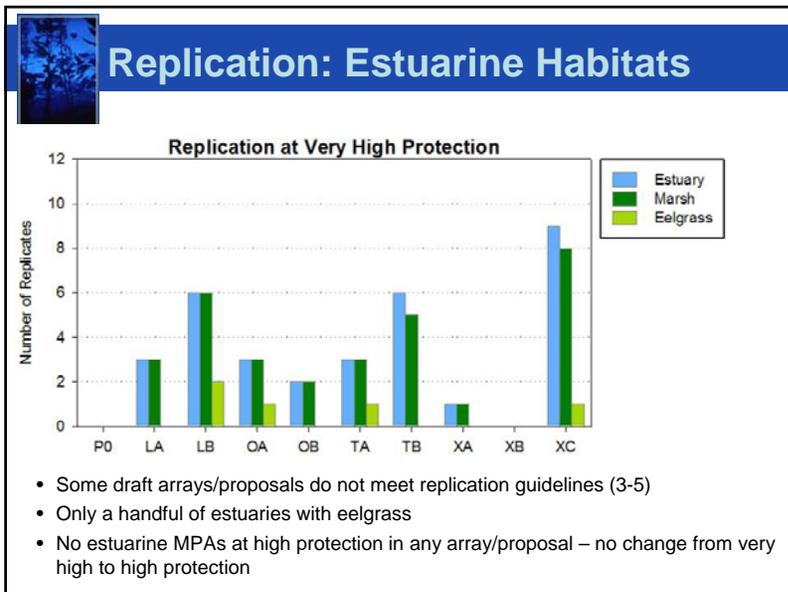
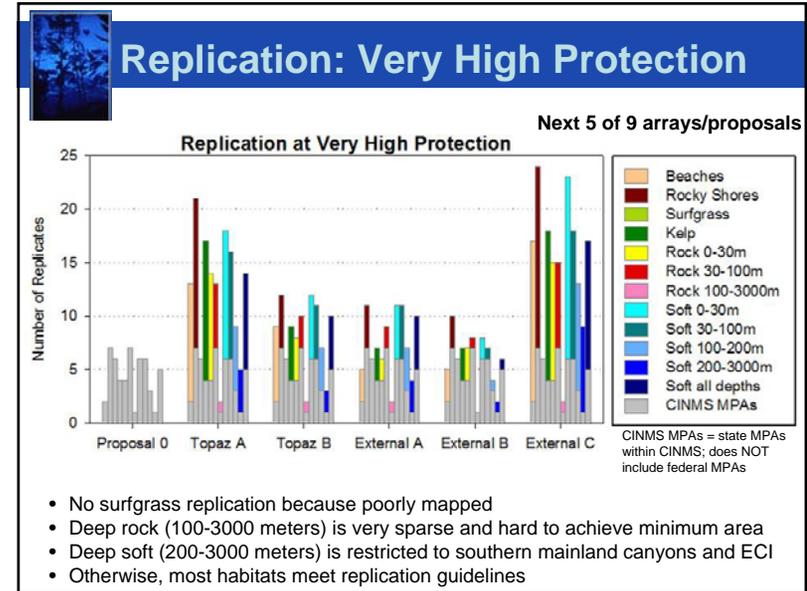
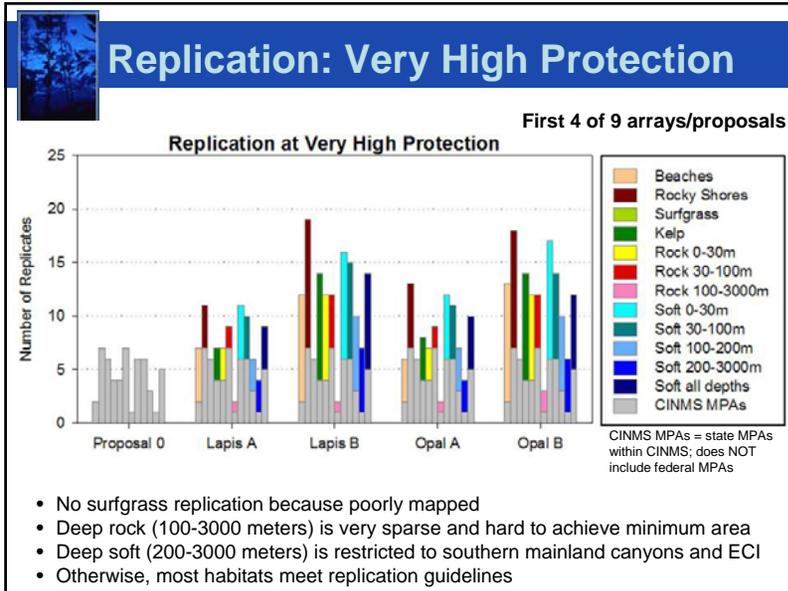
### Key Questions for Each Draft Array/Proposal

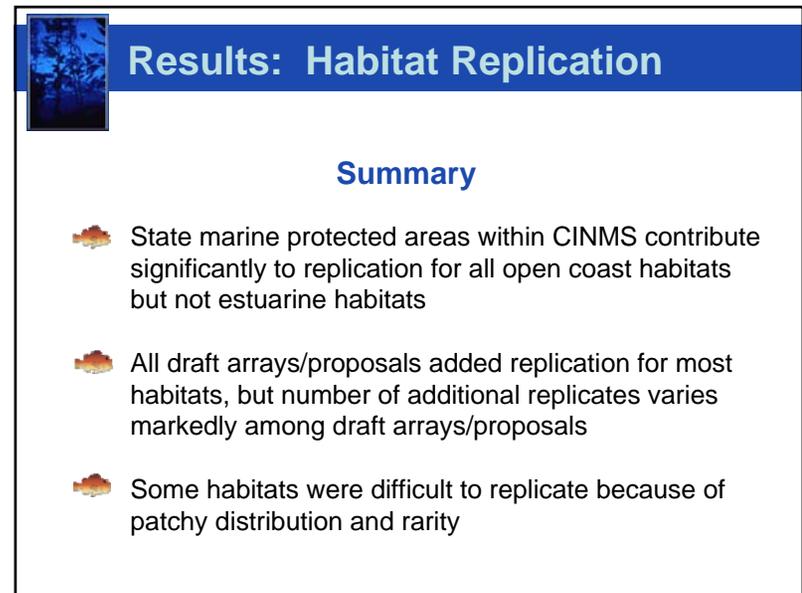
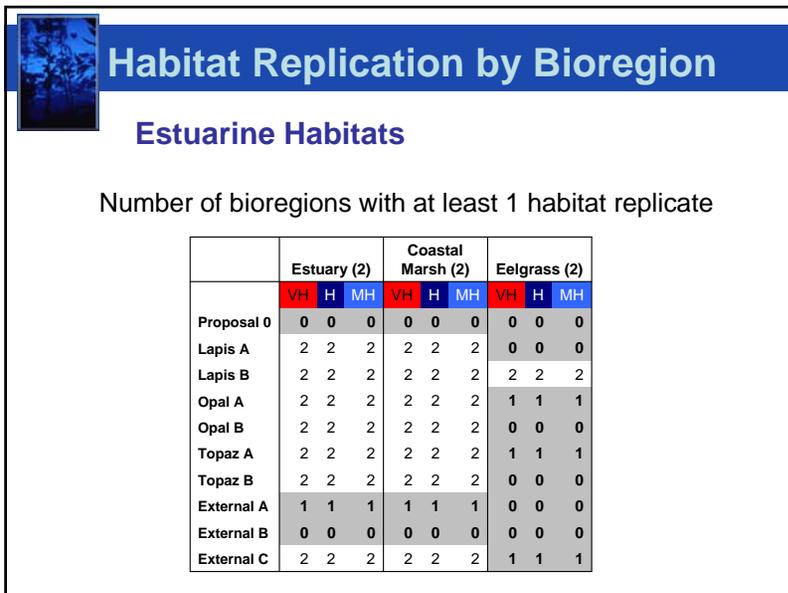
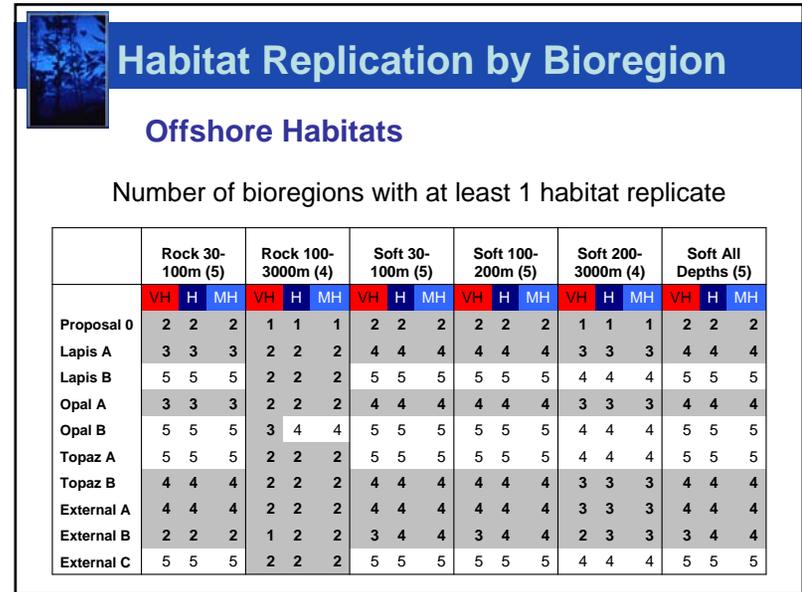
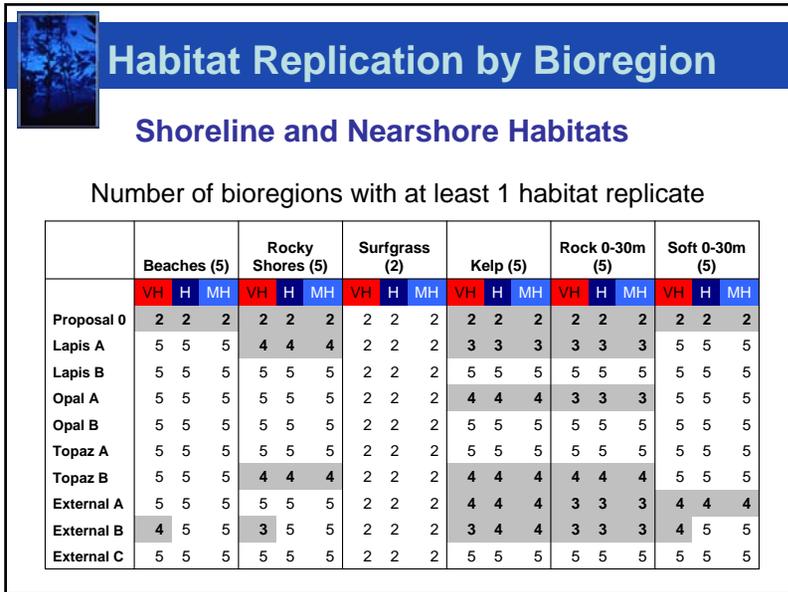
1. How well are key habitat types represented in draft MPA arrays/proposals?
2. What are the proposed levels of protection for these habitat types?
3. How well are habitats and levels of protection distributed across the study region?







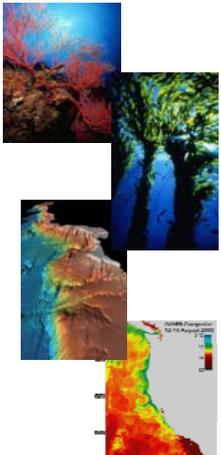




## MLPA Goals\*

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**.

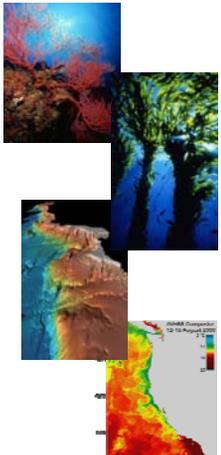
\* Note that this language paraphrases the MLPA goals



## MLPA Goals\*: Populations

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



## Protecting Populations (Goals 2 & 6)

### Size and Spacing

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



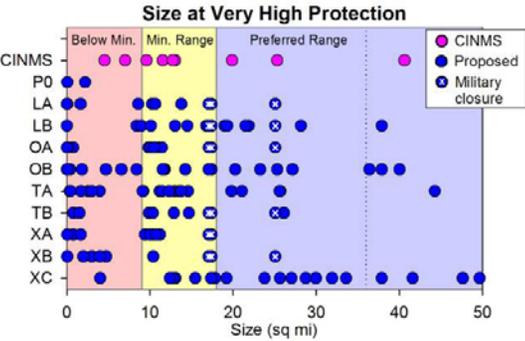
## Size Guidelines

-  **MPAs should have an alongshore span of 5-10 kilometers (3-6 miles) of coastline, and preferably 10-20 kilometers (6-12.5 miles) to protect adult populations, based on adult neighborhood sizes and movement patterns. Larger MPAs should be required to fully protect marine birds, mammals, and migratory fish.**
-  **MPAs should extend from the intertidal zone to deep waters offshore to protect the diversity of species that live at different depths and to accommodate the ontogenetic movement of individuals to and from nursery or spawning grounds to adult habitats.**
-  Combined and simplified, these two guidelines yield:  
**Minimum range of 9-18 square miles**  
**Preferred range of 18-36 square miles**

## Size Analysis Methods

-  Measure individual MPA areas
-  Combine contiguous MPAs into MPA clusters
-  Consider level of protection
-  Tabulate MPA cluster areas relative to minimum and preferred guidelines
-  Estuarine MPAs are not included in size evaluation

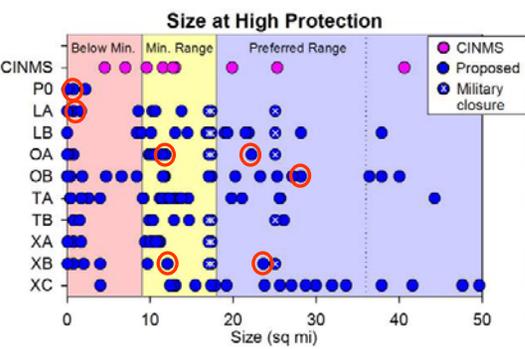
## Cluster Sizes: Very High Protection



Proposal	Below Min. Size	Min. Size Range	Preferred Size Range	Total # Clusters
CINMS MPAs	3	5	3	11
Proposal 0	3	0	0	3
Lapis A	5	5	2	12
Lapis B	5	6	7	18
Opal A	4	7	1	12
Opal B	7	7	7	21
Topaz A	6	9	6	21
Topaz B	2	6	2	10
External A	3	7	0	10
External B	5	3	1	9
External C	1	6	13	20

\* Clusters tabulated above do not include CINMS MPAs in proposals

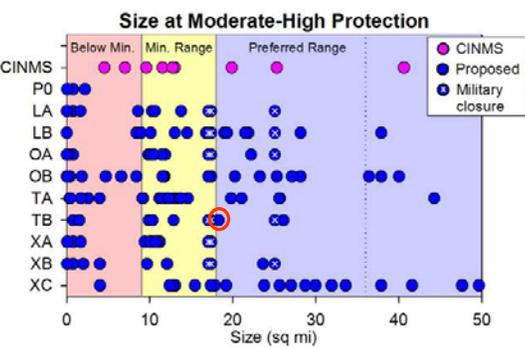
## Cluster Sizes: High Protection\*



Proposal	Below Min. Size	Min. Size Range	Preferred Size Range	Total # Clusters
CINMS MPAs	3	5	3	11
Proposal 0	4	0	0	4
Lapis A	6	5	2	13
Lapis B	5	6	7	18
Opal A	4	7	2	13
Opal B	7	6	8	21
Topaz A	5	10	6	21
Topaz B	2	6	2	10
External A	3	8	0	11
External B	4	4	2	10
External C	1	6	13	20

\* Evaluated for all MPAs at or above high protection

## Cluster Sizes: Mod-high Protection\*



Proposal	Below Min. Size	Min. Size Range	Preferred Size Range	Total # Clusters
CINMS MPAs	3	5	3	11
Proposal 0	4	0	0	4
Lapis A	6	5	2	13
Lapis B	5	6	7	18
Opal A	4	7	2	13
Opal B	7	6	8	21
Topaz A	5	10	6	21
Topaz B	2	5	3	10
External A	3	8	0	11
External B	4	4	2	10
External C	1	6	13	20

\* Evaluated for all MPAs at or above mod-high protection

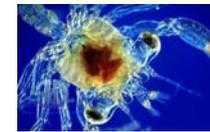
## Size: Conclusions

-  The number & size of MPAs varies markedly across arrays
-  All proposals have 3-9 SMRs within minimum size range
-  All proposals except External A have SMRs within the preferred size range, but numbers vary greatly (from 1 in Opal A and External B, to 13 in External C)
-  All proposals have some MPAs that do not meet minimum size guidelines
-  Most MPAs in this analysis are SMRs; few SMCAs achieved high or mod-high protection across all arrays

## Protecting Populations

### Size and Spacing

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

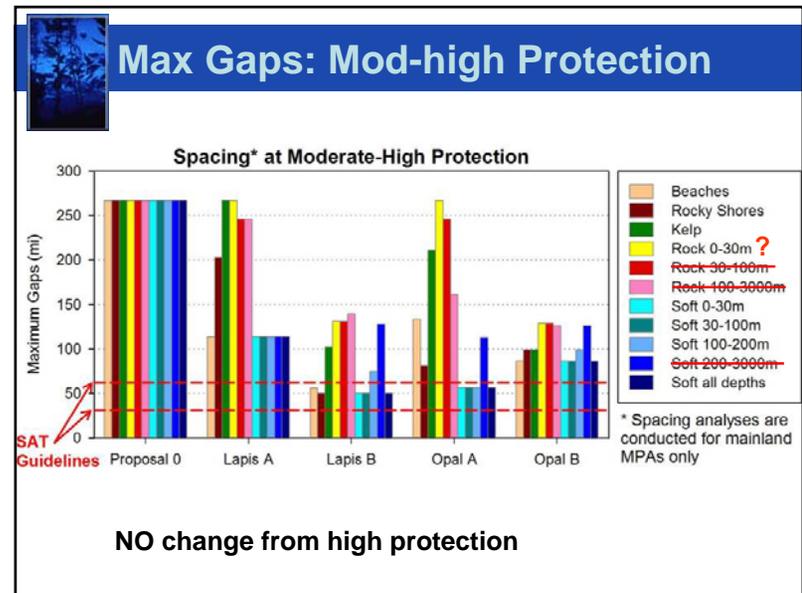
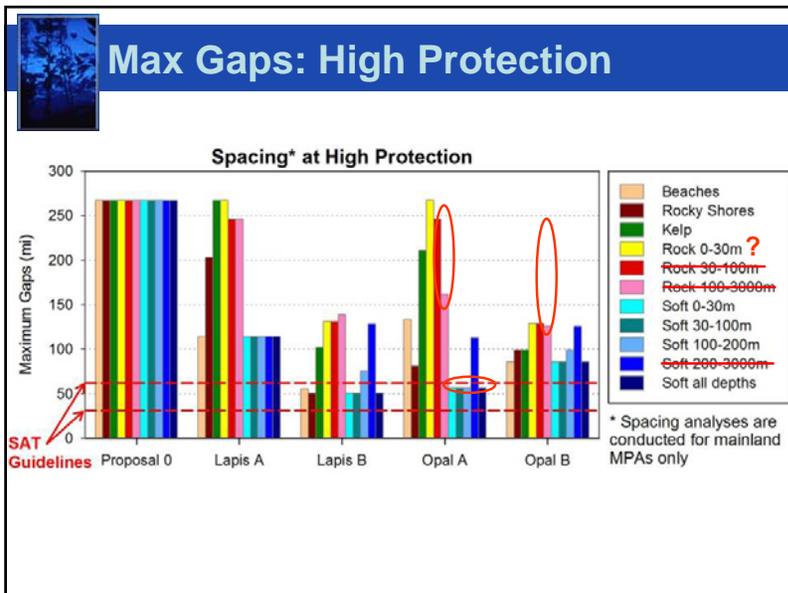
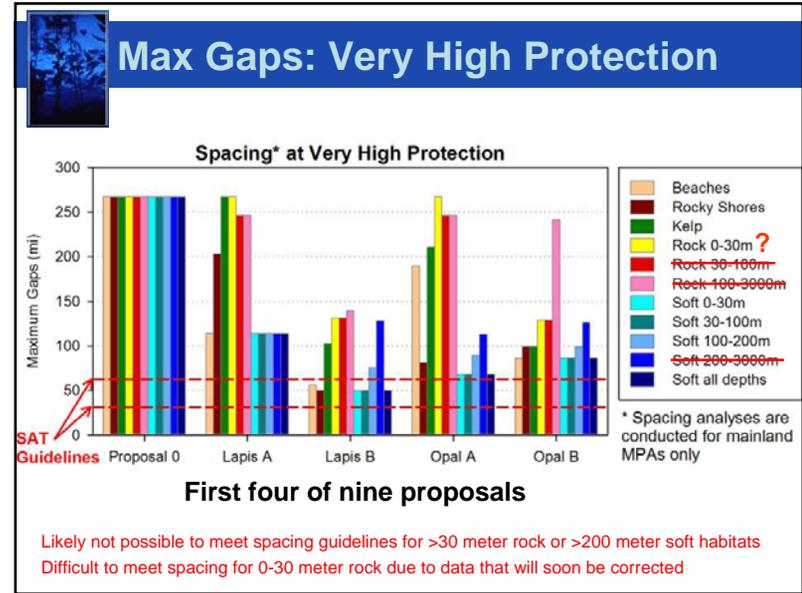
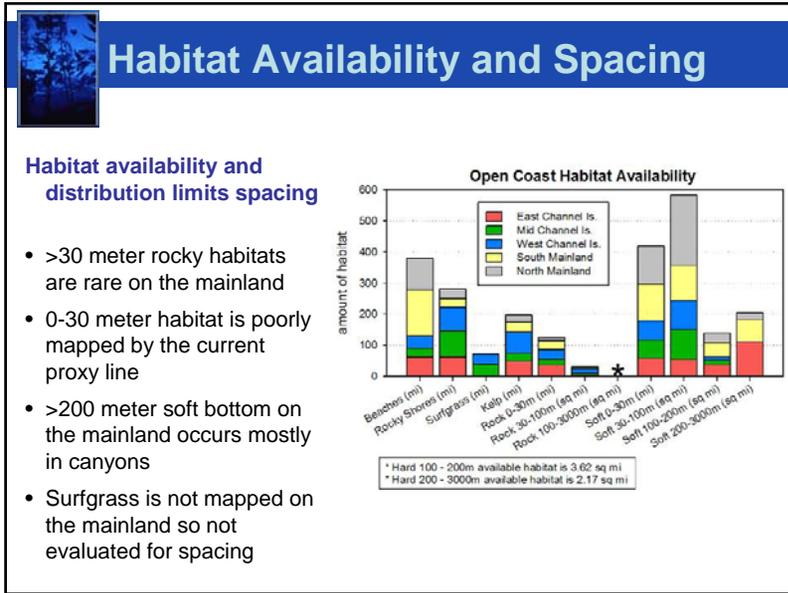


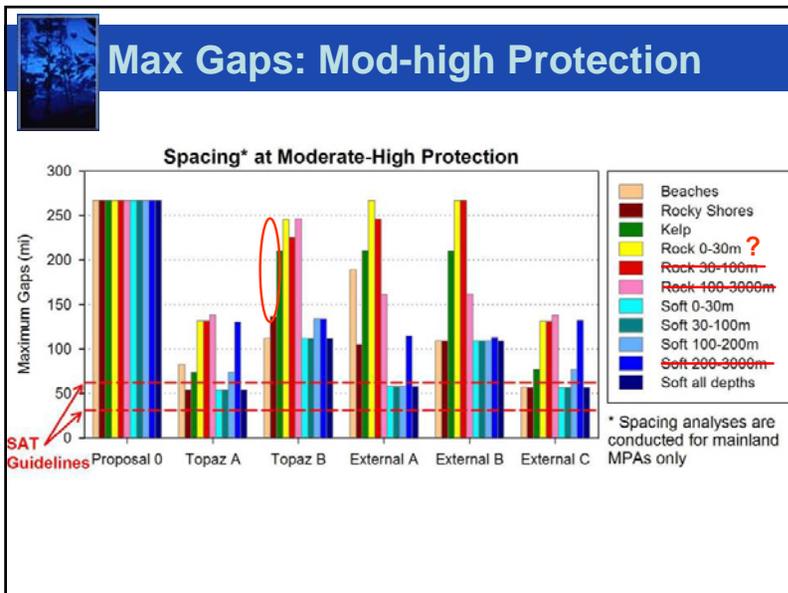
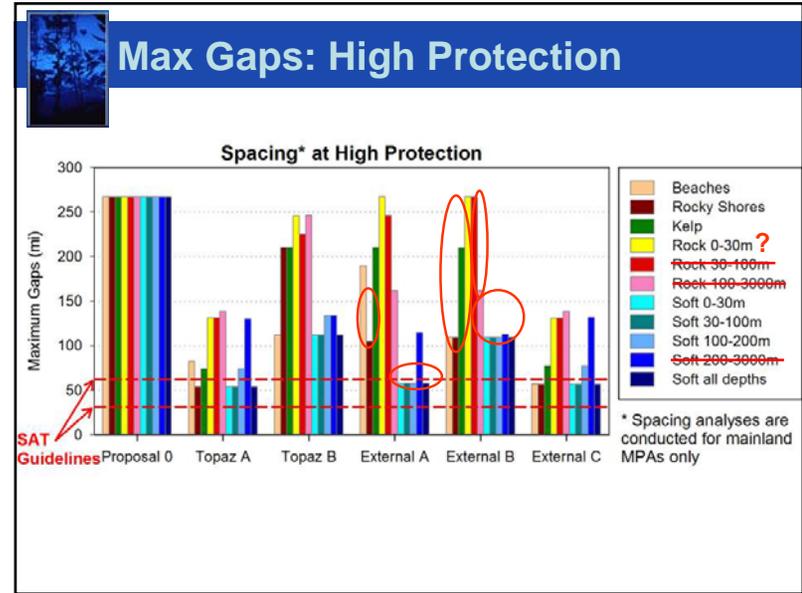
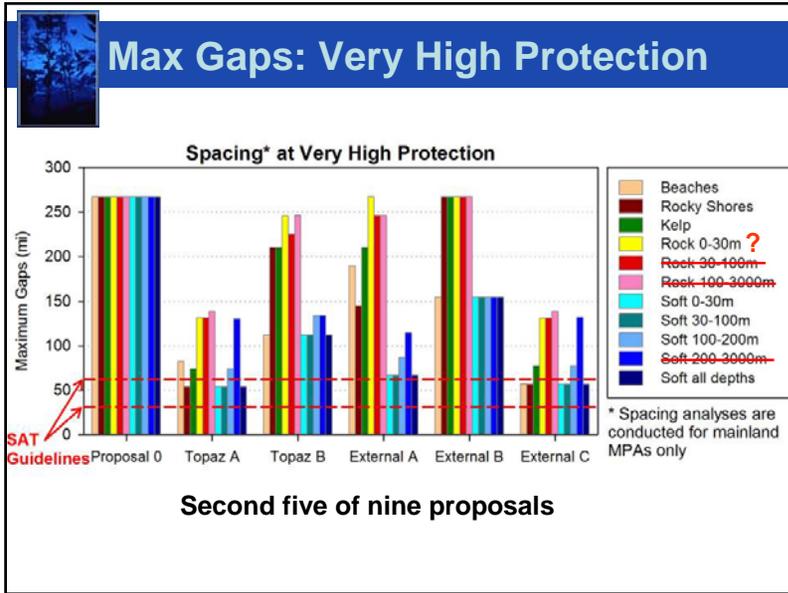
## Design Guidelines: Goals 2 and 6

-  **MPAs should be placed within 50-100 kilometers (31-62 miles) of each other** to facilitate dispersal and connectedness of important bottom-dwelling fish and invertebrate groups among MPAs
-  Because many populations are habitat-specific, spacing is evaluated for each habitat

## Spacing Analysis Methods

-  MPAs or clusters must meet the minimum size guidelines (9 square miles) to be included in the spacing analysis
-  Identify the habitats included in sufficient amounts to count as a "replicate" within each MPA cluster
-  Measure gaps between adjacent MPA clusters that contain a given habitat
-  Spacing is calculated for mainland MPAs only





- ### Spacing: Conclusions
-  Spacing guidelines may be impossible to meet for some habitats—in other cases habitat data limitations have an impact on spacing analyses (0-30 meter rock)
  -  No proposals meet spacing guidelines for all possible habitats
  -  Gaps between rocky habitats are generally larger than between soft habitats even where guidelines are achievable
  -  Lapis B, Topaz A, and External C come closest to meeting spacing guidelines