

## Marine Life Protection Act Initiative

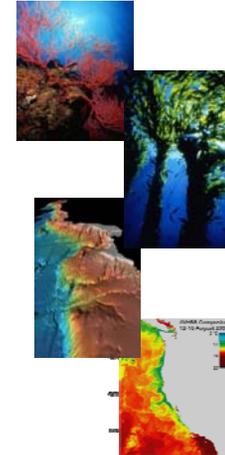


### Draft Size and Spacing Evaluations of the Round 1 Draft MPA Arrays/Proposals for the MLPA South Coast Study Region

Presentation to the MLPA Master Plan Science Advisory Team  
April 1, 2009 • Los Angeles, CA  
Presented by Dr. Larry Allen

## 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 represents a summary of the MLPA goals

## MLPA Goals\*: Populations

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5. Clear objectives, effective management, adequate enforcement, sound science.
6. To ensure that MPAs are designed and managed as a **network**.



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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 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.

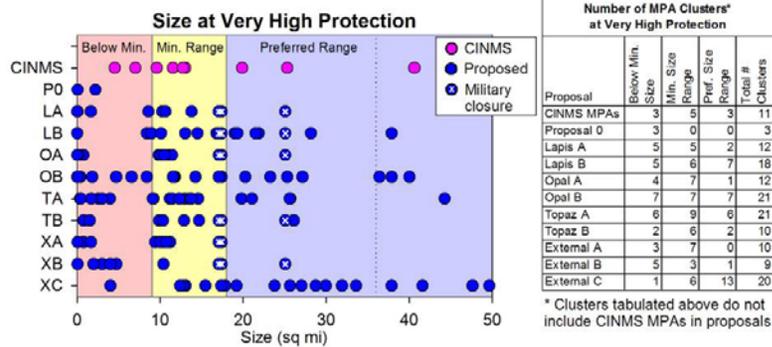
Combined and simplified, these two guidelines yield:

- Minimum range of 9-18 square miles
- Preferred range of 18-36 square miles

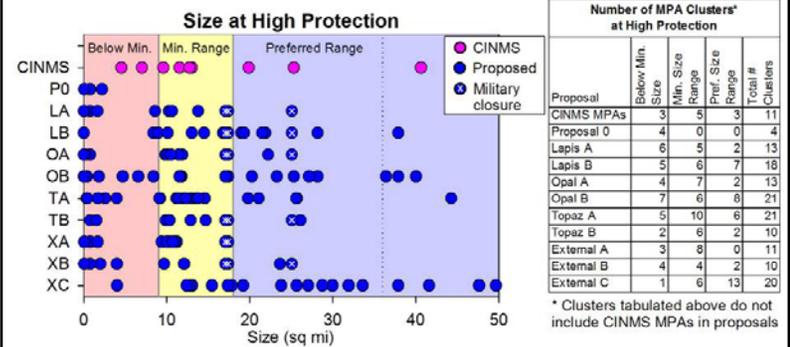
## Size Analysis Methods

- 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

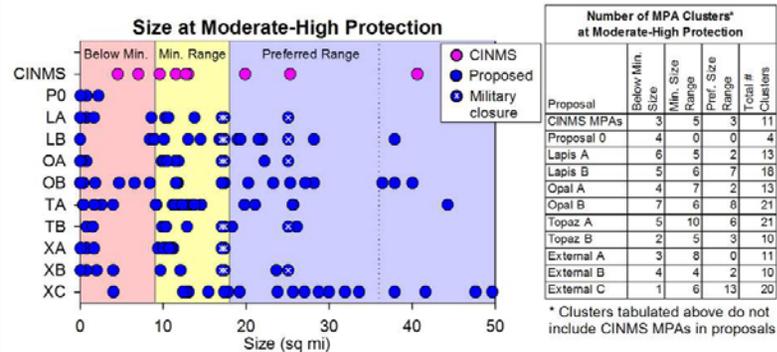


## Cluster Sizes: High Protection\*



\* Evaluated for all MPAs at or above high protection

## Cluster Sizes: Mod-high Protection\*



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

## Size: Conclusions

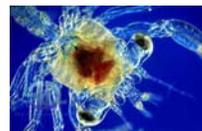
- The number & size of MPAs varies markedly across arrays
- All proposals have 3-9 SMRs within minimum size range
- All proposals except External A have SMRs within the preferred size range, but numbers vary greatly (from 1 in Opal A and External B, to 13 in External C)
- All proposals have some MPAs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

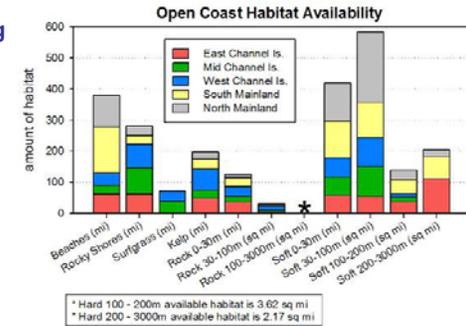
## Spacing Analysis Methods

- 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

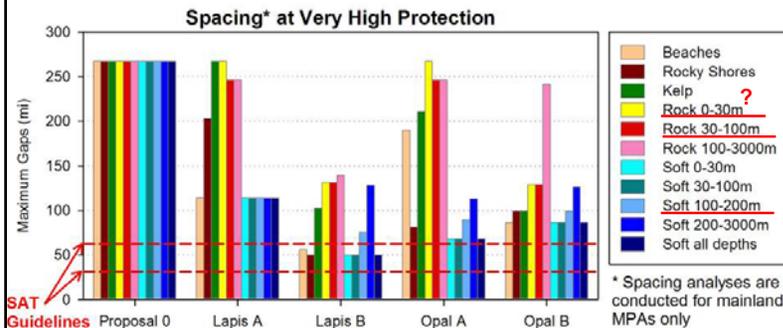
## Habitat Availability and Spacing

### Habitat availability and distribution limits spacing

- >30 meter rocky habitats are rare on the mainland
- 0-30 meter habitat is poorly mapped by the current proxy line
- >200 meter soft bottom on the mainland occurs mostly in canyons
- Surfgrass is not mapped on the mainland so not evaluated for spacing



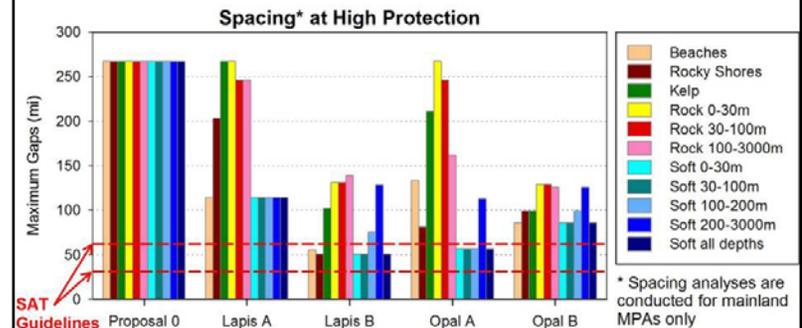
## Max Gaps: Very High Protection



Likely not possible to meet spacing guidelines for >30 meter rock or >20 meter soft habitats

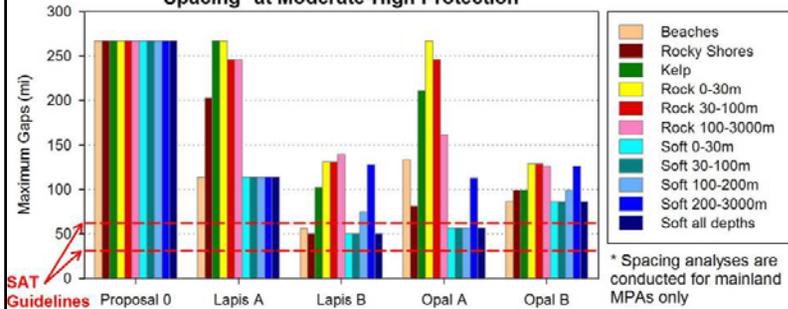
Difficult to meet spacing for 0-30 meter rock due to data that will soon be corrected

## Max Gaps: High Protection



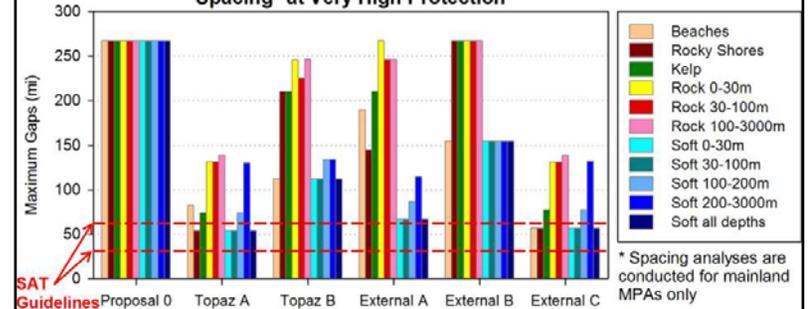
## Max Gaps: Mod-high Protection

Spacing\* at Moderate-High Protection



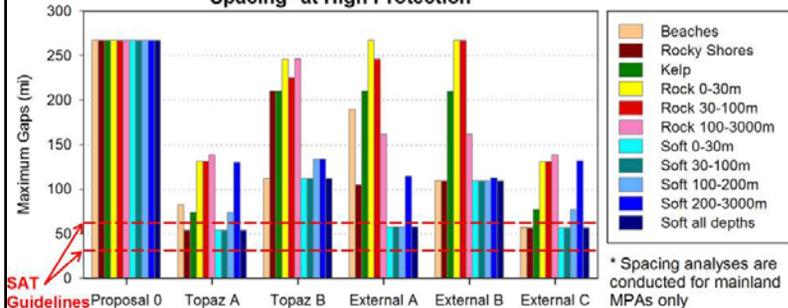
## Max Gaps: Very High Protection

Spacing\* at Very High Protection



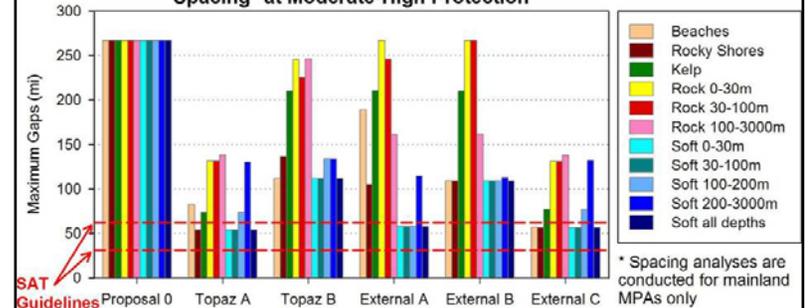
## Max Gaps: High Protection

Spacing\* at High Protection



## Max Gaps: Mod-high Protection

Spacing\* at Moderate-High Protection





## 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 A, Topaz A, and External C come closest to meeting spacing guidelines