



Marine Life Protection Act Initiative



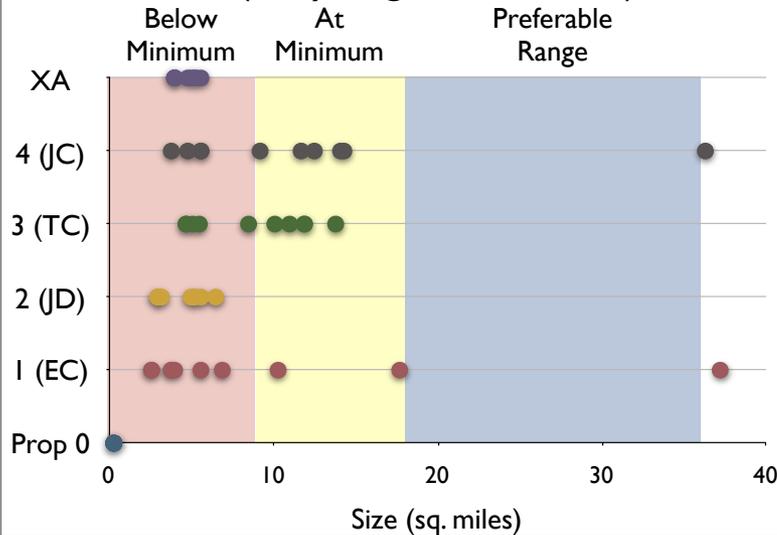
North Central Coast Size & Spacing Evaluations January 23, 2008



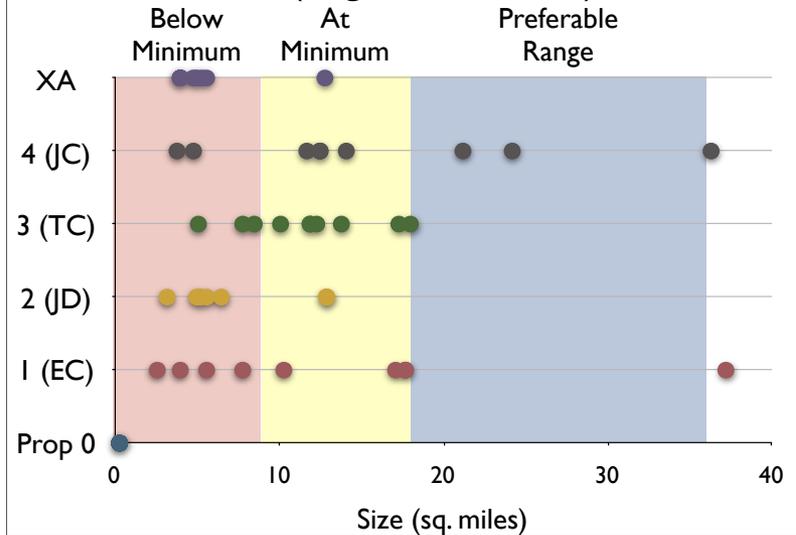
Size Analysis Methods

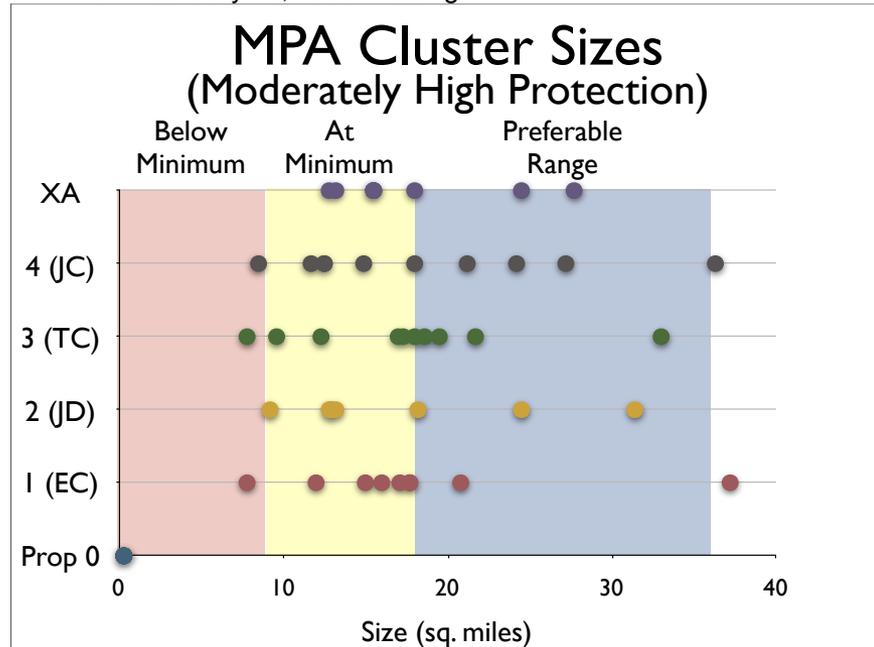
- Measure individual MPA lengths and area
- Combine contiguous MPAs into single MPA complexes
- Consider level of protection
- Tabulate MPA lengths and areas relative to minimum & preferred guidelines

MPA Cluster Sizes (Very High Protection)



MPA Cluster Sizes (High Protection)





MPA Size Conclusions

With **Very High Protection:**

- Pkgs 4 (67%) is the most consistent with the size guidelines. 4 has one reserve in the preferred size range.
- Pkgs 3 (50%) and 1 (38%) have an intermediate fraction of reserves that meet the size guidelines.
- Pkgs 2 and A have no marine reserves that meet the size guidelines.

With **High Protection:**

- All Pkgs increase the fraction of reserves that meet at least minimum guidelines.
- The ordering of Pkgs remains the same.



MPA Size Conclusions

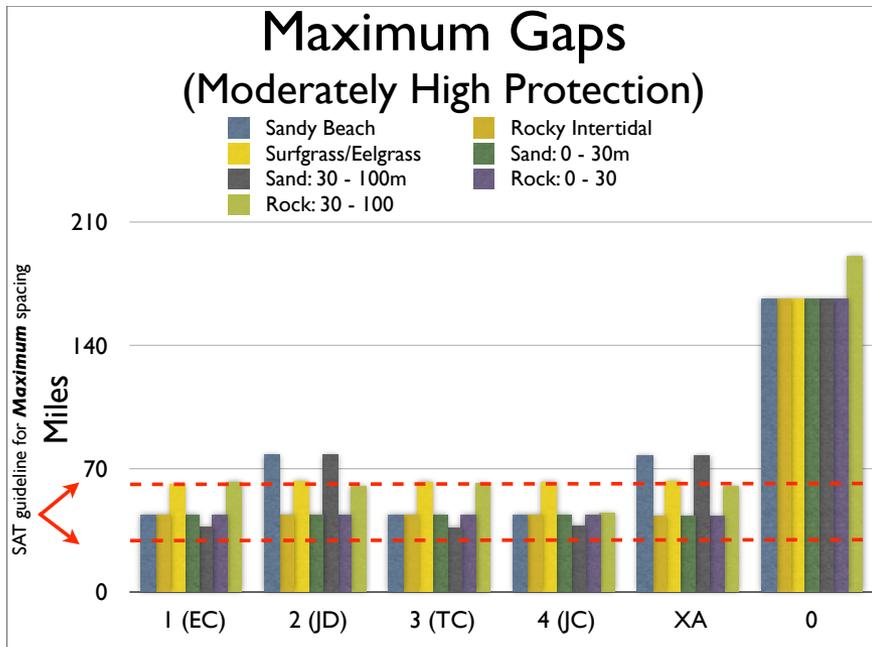
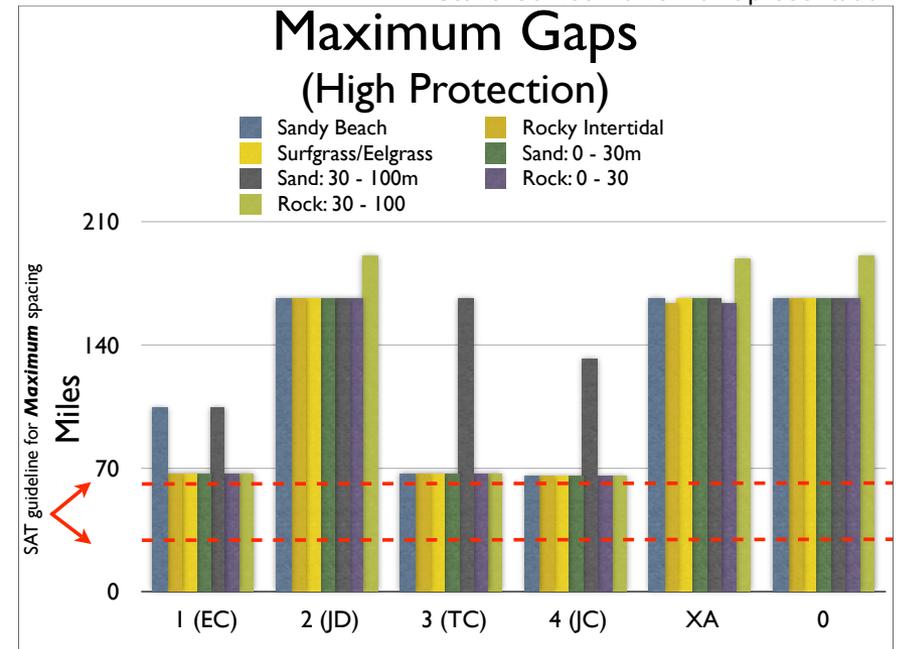
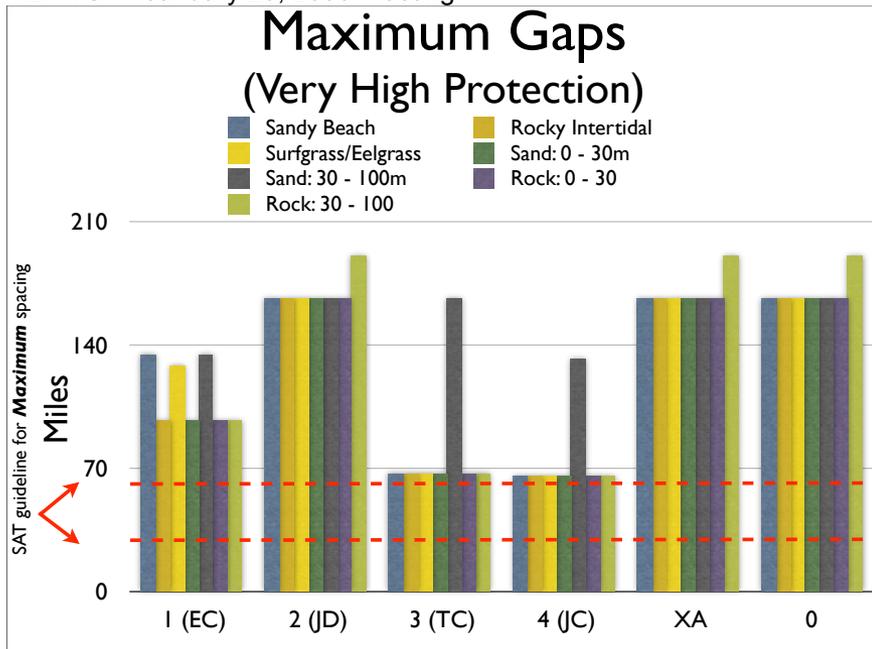
With **Moderately High Levels of Protection:**

- Nearly all MPA clusters in all packages meet at least the minimum size guidelines.
- Pkgs 4 and 3 have the most MPA clusters in the preferred size range.



Spacing Analysis Methods

- Characterize each MPA by the habitats included
- For each habitat, measure the gaps between adjacent, high protection MPAs that meet the minimum size guidelines



MPA Spacing Conclusions

With **Very High of Protection:**

- Pkgs 4 and 3 were close to meeting the spacing guidelines for all habitats except deep sand.
- Pkgs 1, 2 and A greatly exceeded the spacing guidelines for all habitats. In this group, the maximum gaps for Pkg 1 were consistently smaller than those for 2 and A

With **High Protection:**

- All patterns remain unchanged *except*: Pkg 1 now meets the spacing guidelines for all habitats except sandy beach and deep sand.



MPA Spacing Conclusions

With Moderately High Levels of Protection:

- Pkgs 4, 3 and 1 meet the spacing guidelines for all habitats. Maximum gaps are in the middle of the recommended range for most habitats.
- Pkgs 2 and A meet the spacing guidelines for all habitats except two: sandy beaches and deep sand.

Replicates Per Habitat (Very High Protection)

Pkg	Sandy or gravel Beaches	Rocky intertidal and cliff	Surfgrass	Soft 0 - 30m	Soft 30 - 100m	Hard 0 - 30m	Hard 30 - 100m	Average Kelp	Average
1 (EC)	1	3	1	2	2	3	3	1	2
2 (JD)	0	0	0	0	0	0	0	0	0
3 (TC)	3	4	2	3	1	4	4	1	2.8
4 (JC)	4	5	2	4	1	5	6	1	3.5
XA	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

Replicates Per Habitat (High Protection)

Pkg	Sandy or gravel Beaches	Rocky intertidal and cliff	Surfgrass	Soft 0 - 30m	Soft 30 - 100m	Hard 0 - 30m	Hard 30 - 100m	Average Kelp	Average
1 (EC)	2	5	2	3	4	5	5	1	3.3
2 (JD)	0	1	0	0	0	1	1	0	0.4
3 (TC)	3	4	2	3	1	5	5	2	3.1
4 (JC)	4	6	2	4	3	6	7	2	4.3
XA	0	1	0	0	0	1	1	1	0.5
0	0	0	0	0	0	0	0	0	0

Replicates Per Habitat (Moderately High Protection)

Pkg	Sandy or gravel Beaches	Rocky intertidal and cliff	Surfgrass	Soft 0 - 30m	Soft 30 - 100m	Hard 0 - 30m	Hard 30 - 100m	Average Kelp	Average
1 (EC)	5	8	4	5	7	7	8	3	5.9
2 (JD)	2	6	3	4	3	6	7	2	4.1
3 (TC)	5	6	4	5	6	6	7	3	5.3
4 (JC)	6	8	4	6	6	7	9	3	6.1
XA	2	6	3	4	4	6	6	2	4.1
0	0	0	0	0	0	0	0	0	0



MPA Spacing Conclusions

With **Very High Levels of Protection:**

- Pkg 4 has the highest average number of replicates across the habitats. It averages 3.5 marine reserves per habitat.
- Pkgs 3 and 1 have an intermediate number of replicates.
- Packages 2 and A have no reserves in any habitat that meet the minimum size guidelines.

With **Lower Levels of Protection (High or Mod High)**

- The number of replicates increases in all packages.
- The rank order of the packages remains the same.