

Marine Life Protection Act Initiative



Marine Protected Area Spacing Guidelines and Evaluation

Satie Airame, Science and Planning Advisor • California MLPA Initiative

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Connectivity in Southern California

- Connectivity is heterogeneous and asymmetric
- Some connections between bioregions
- Strong poleward transport along mainland
- Retention in Santa Barbara Channel and around San Clemente Island

Mitarai, S., D. Siegel, J. Watson, C. Dong, and J. McWilliams



Connectivity in Southern California

- For species with short larval duration, mainland and islands are not strongly connected
- For species with longer larval duration, connection from mainland to islands is stronger, but connection from islands to mainland is not as strong
- Connection between northwestern islands and southeastern islands is not strong, except for species with longer larval duration (e.g., cabezon and rockfish)

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Consideration of MPA Spacing

- Mainland Coast: Master plan guidelines for spacing of marine protected areas (MPAs) apply to the mainland coast of California, including the south coast study region
- Channel Islands: MPAs must be evaluated differently from other regions along the mainland coast of California

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MPA Spacing Guideline: Mainland

- For an objective of facilitating dispersal of important bottom-dwelling fish and invertebrate groups among MPAs, based on currently known scales of larval dispersal, MPAs should be placed within 50-100 kilometers (31-62 miles or 27-54 nautical miles) of each other

Master Plan for Marine Protected Areas (2008)



MPA Spacing Evaluation: Mainland

- Tabulate maximum gaps between MPAs or MPA clusters
- Consider spacing of key habitats separately
- Consider only MPAs or MPA clusters of sufficient size to contain adult movement ranges
- Consider only MPAs or MPA clusters that include sufficient amount of key and unique habitats
- Consider only MPAs or MPA clusters at moderate-high, high, or very high levels of protection

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MPA Design for the Channel Islands

- Connectivity between Channel Islands (and between islands and mainland) is influenced and limited by their complex geography and ocean circulation, among other factors
- A simple guideline for MPA spacing does not account for these complex variables
- Guidelines other than spacing, which are described in the master plan, will serve as a starting point for design of MPAs at the Channel Islands

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Other MPA Design Guidelines

- Guidelines
 - Bioregions
 - Level of protection
 - Representation of key and unique habitats
 - Replication of habitats within a biogeographical region
 - MPA size
- These guidelines are a starting point for MPA design

Master Plan for Marine Protected Areas (2008)



MPA Spacing Evaluation: Models

- Spatially explicit models will provide additional evaluation of contribution of proposed MPAs to biomass, larval supply and fish yield
- The models confirm assumptions about movement of larvae along the mainland coast
- The SAT has confidence that the models also can evaluate connectivity at the Channel Islands arising from larvae that travel beyond local retention areas
- The models consider potential contributions of proposed MPAs, regardless of size or spacing