

Monitoring Marine Protected Areas

Priorities for Marine Protected Area (MPA) Monitoring

In 2004, the California Department of Fish and Game established 6 priorities for monitoring marine protected areas (MPAs) in the Channel Islands region.

- 1) Determine changes in abundance, size, biomass and spawning biomass of species likely to benefit from MPAs;
- 2) Determine changes in species composition as it relates to ecosystem function;
- 3) Determine habitat changes as they relate to physical alteration (e.g. trawling) and secondary impacts of biological community changes (e.g. habitat-forming algae);
- 4) Determine the amount of spillover for fish and invertebrates from MPAs to surrounding areas;
- 5) Estimate changes in catch per unit effort (CPUE) and total catch; and
- 6) Consider distribution of vessels and compliance.

*Numbering does not indicate relative importance.

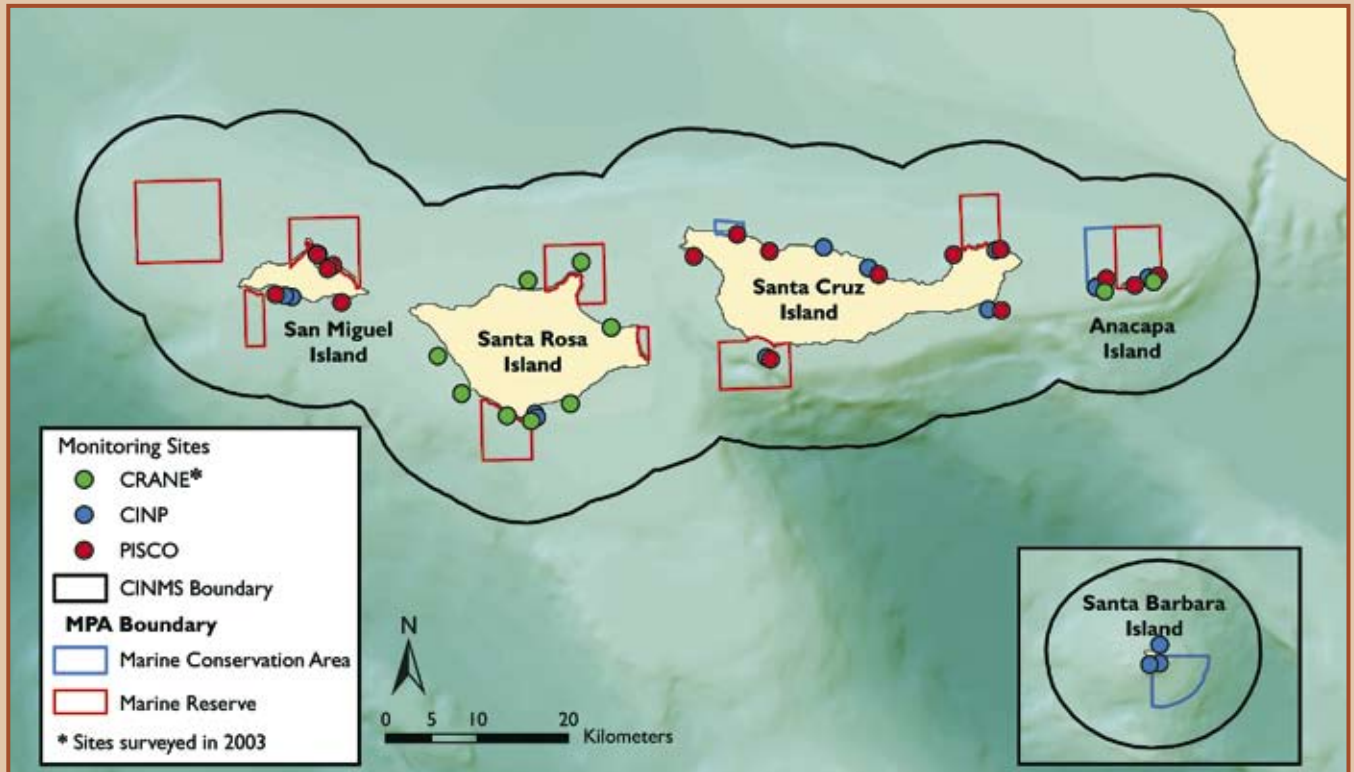
Scientists from the California Department of Fish and Game, Channel Islands National Park, Channel Islands National Marine Sanctuary and local research institutions worked together to develop an effective monitoring plan for marine protected areas (MPAs) in the Channel Islands region.

Different research organizations address different monitoring priorities. The table (right) indicates monitoring programs (left column) that address monitoring priorities (numbered across the top row). All monitoring priorities are addressed at some locations, for key species over selected time intervals. Results from the first five years of monitoring MPAs in the Channel Islands will be presented in March 2008.

Monitoring Programs	Monitoring Priorities					
	1	2	3	4	5	6
CDFG	✓	✓	✓		✓	✓
CRANE	✓	✓	✓			
CINP KFMP	✓	✓	✓			
SAMSAP						✓
PISCO, UCSB	✓	✓	✓	✓		
PIER (ending 2006)				✓		
REEF	✓					
CINMS Collaborative Research				✓		
Jack Engle, UCSB	✓	✓	✓			
Kevin Lafferty, USGS		✓				
Hunter Lenihan, UCSB	✓					
Milton Love, UCSB	✓					
Chris Lowe, CSULB				✓		
Donna Schroeder, UCSB	✓		✓			
Thom Young, UCSB		✓				
Reefcheck	✓		✓	✓		

Monitoring Marine Protected Areas

Locations of MPA monitoring sites in the Channel Islands region.



Map (above) shows locations of MPA monitoring sites where researchers survey fish, invertebrates, and marine habitats. Researchers from several agencies and organizations (noted by color of dots) use the same monitoring protocol and their combined efforts provide information about almost all MPAs in the region.

Researchers from the Channel Islands National Park (CINP) monitored kelp forests at some sites for over 25 years, providing a baseline of information prior to the establishment of MPAs. Using data from these historical monitoring sites, scientists can observe differences before and after MPAs were established. Even without historical monitoring in a particular place, much can be learned from a simple comparison of data from inside and outside MPAs over time.

Monitoring sites are located inside and outside of MPAs, in areas with similar biological and physical characteristics, so that researchers can evaluate the ecological differences between MPAs and surrounding fished areas. Together, these monitoring efforts provide a clearer understanding of ocean ecosystems and how MPAs work as a marine management tool.

Acronyms:

- CDFG:** California Department of Fish and Game
- CINMS:** Channel Islands National Marine Sanctuary
- CINP:** Channel Islands National Park
- CRANE:** Cooperative Research and Assessment of Nearshore Ecosystems
- CSULB:** California State University, Long Beach
- KFMP:** Kelp Forest Monitoring Program
- PIER:** Pflieger Institute of Environmental Research
- PISCO:** Partnership for Interdisciplinary Studies of Coastal Oceans
- REEF:** Reef Environment Education Foundation
- SAMSAP:** Sanctuary Aerial Monitoring and Spatial Analysis Program
- USGS:** United States Geological Survey
- UCSB:** University of California, Santa Barbara