

Changes in Vessel Distributions Before and After State Marine Protected Areas Were Established

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How have the types and distributions of boats changed since state marine protected areas (MPAs) were established around the northern Channel Islands in 2003?

Scientists monitored the types and distributions of boats in the Channel Islands National Marine Sanctuary since 1997 using the Sanctuary Aerial Monitoring and Spatial Analysis Program (SAMSAP). The program is designed to monitor the locations of different kinds of commercial and recreational vessels as well as distributions of some species of interest, including cetaceans, and some physical conditions, such as spilled oil. During aerial surveys, observers document the precise locations of the vessels, animals and physical characteristics using a Global Positioning System (GPS). Observers distinguish between commercial and recreational vessels, and between consumptive and non-consumptive activities. When observers see fishing gear in the water, the type of fishing activity is noted.

Scientists can use SAMSAP data to evaluate changes in patterns of human use that may be associated with changes in environmental conditions and regulatory actions. A total of 175 aerial surveys were conducted as part of SAMSAP between 1997 and 2006. Of these, 97 occurred before and 78 occurred after state MPAs were established in 2003. To evaluate effects of MPAs, scientists compared the numbers and types of boats before and after the MPAs were established, accounting for survey effort.

Key Findings:

- The majority of commercial vessels were in the western portion of the sanctuary (around San Miguel and Santa Rosa Islands) while the majority of recreational vessels were in the eastern portion of the sanctuary (around Anacapa and eastern Santa Cruz Islands).
- Reductions in both recreational and commercial fishing vessels were observed within MPAs after they were established at the Channel Islands.
- After MPAs were established, the number of consumptive recreational vessels increased along the south side of Anacapa Island, which is open to fishing, while the number of non-consumptive recreational vessels increased in Scorpion State Marine Reserve.

Table 1. Numbers of vessels observed during aerial surveys conducted as part of the Sanctuary Aerial Monitoring and Spatial Analysis Program (SAMSAP) before and after state MPAs were established at the Channel Islands.

Activity	Percent & Number of Vessels	Before MPAs	After MPAs
Consumptive Commercial	32% (2830)	35% (1708)	28% (1122)
Consumptive Recreational	16% (1392)	14% (661)	18% (731)
Nonconsumptive Commercial	5% (439)	5% (257)	5% (182)
Nonconsumptive Recreational	48% (4240)	46% (2240)	50% (2000)
<i>Total Number of Vessels</i>	8901	4866	4035

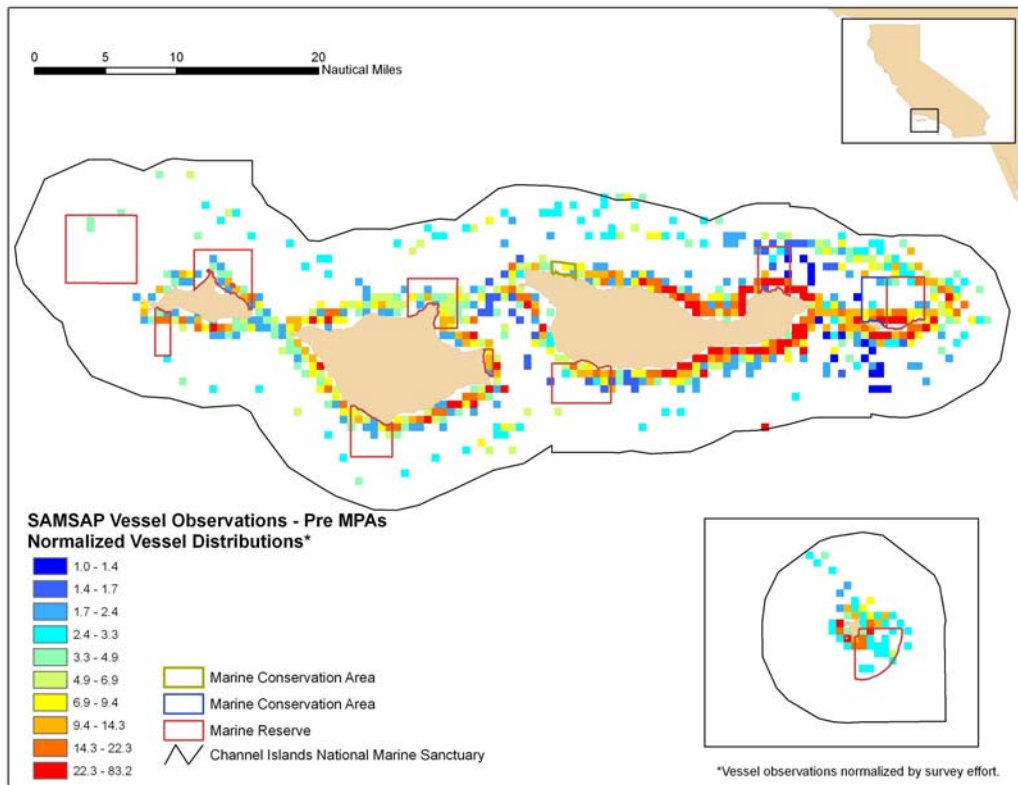


Figure 1. Distribution of vessels observed by SAMSAP before state MPAs were established (1997 – 2003). Vessel distributions were normalized for survey effort.

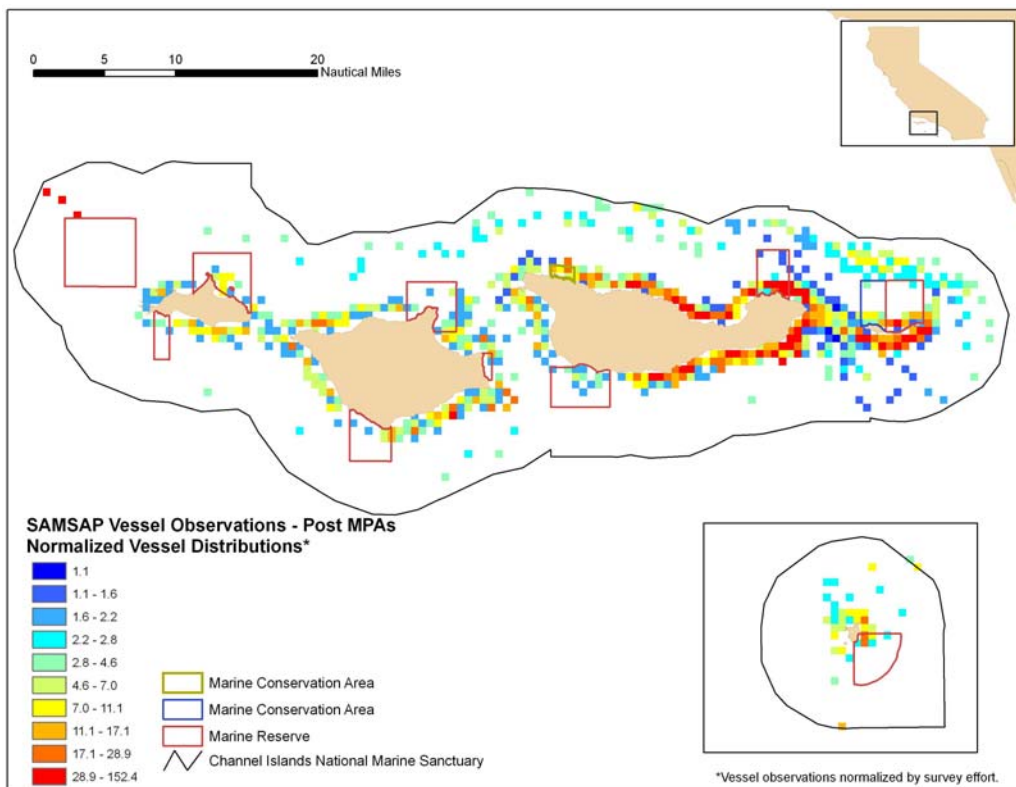


Figure 2. Distribution of vessels observed by SAMSAP after state MPAs were established (2003 – 2006). Vessel distributions were normalized for survey effort.