

Channel Islands National Park, California Coast

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1 Static Analysis - Collective action

1.1 The Commons Dilemma

Marine sanctuary waters include 1,128 square nautical miles from mean high tide to 6 nautical miles offshore San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara Islands. Warm and cool currents support a great variety of flora and fauna, including giant kelp, fish and invertebrates, marine birds, pinnipeds, and cetaceans. The key resources (natural infrastructure) in the system are the marine food web. The key shared resource relevant to the commons dilemma faced by the community are the fish stocks and their productivity (common-pool) as well as world recognized heritage and biodiversity. This case does not catalog individual fishers or individual fisheries because this information is beyond the current scope of available documentation. The resource unit in the SES are targeted fish in the MPA areas. Fishers are required to obtain licenses to fish in the National Marine Sanctuary (or anywhere in California) and MPAs restrict the activities in specific areas which have been designated as key breeding grounds for fish stocks or sites of high biodiversity.

The California Fish and Wildlife Commission control the monitoring of the MPAs. Most fishermen have fishing rights issued by the CA department of Fish and Wildlife. The CA Department of Fish and Wildlife controls the types and number of fishing permits in CA. The director of the CA Department of Fish and Wildlife is appointed by the governor and confirmed by the senate. Outside of fishing license controls and MPA monitoring, the surrounding fisheries are also regulated through informal social processes, economics limitations/competing industries and fishing effort ability.

1.2 Biophysical Context (IAD)

Natural Infrastructure: Channel Islands National Marine Sanctuary habitat is characterized by rocky intertidal zones, sand beach and kelp forests. Keystone species in the rocky intertidal habitat include Ocher star (*Pisaster ochraceus*); in the beach habitat key-stone species are the sand crab (*Emerita analoga*); in the kelp forest and shallow reed habitat keystone species are red and purple sea urchins, sea star (*Pisaster*, *Pycnopodia* and *P. helianthoides* in the deep seafloor), spiny lobster (*Panulirus interruptus*), California sheephead (*Semicossyphus pulcher*), small plankton, sardines, anchovy, myctophids, hake, rockfish, sanddabs and market squid (*Doryteuthis opalescens*).

Hard human-made infrastructure: The hard human-made infrastructure includes all fishing gear for fishing as well as gear and vessels used for monitoring the MPAs. CA Department of Fish and Wildlife monitors the MPAs with the use of 3 offshore vessels and

10 smaller shore-based boats to monitor all of southern California's MPAs. The rest of the monitoring is done informally by fishers themselves and people spending time on vessels near the MPAs. While the federal government agency, NOAA does real time satellite monitoring of the federally funded parts of the MPA, an interview with local fisher revealed that they have yet to successfully use this data as evidence in court to prosecute a fisher for fishing in an MPA.

1.3 Attributes of the Community (IAD)

Social Infrastructure: The social infrastructure in the National Marine Sanctuary SES include the rules and regulations that guide the various types of use in the MPAs in the park. Most significantly, the Marine Life Protection Act (Fish and Game Code Section 2852) and the Marine Managed Areas Improvement Act (Public Resources Code 36602 and 36700) outline the key aspects of use restriction and biological conservation in the area.

Human Infrastructure: The number of fishers fishing in the area is not currently in the case study. On the Channel Islands there is a reported population of 2 individuals currently living in the Channel Islands National Park, but most of the fishers and recreators entering the park come from the mainland of California as tourists or commercial fishers. An average of 307,829 tourists visited the Channel Islands National Park each year.

1.4 Rules in Use (IAD)

- Position Rules:
 1. Position of commercial fisher
 2. Position of scientist
 3. Position of public university researcher
 4. Position of recreational fisher
 5. Position of recreational swimmer, SCUBA diver, kayaker
 6. Position of abalone fisher (lobster fisher, etc.)
 7. Position of Department of Fish and Wildlife policy maker
 8. Position of Department employee
 9. Position of National Park Service employee
 10. The existence of the position of crowd
 11. The existence of Lottery Committee member
 12. The existence of the position property owner
- Boundary Rules:
 1. Scientists affiliated with public research university are allowed to take in no take zones
 2. Fishers obtain fishing licenses from the CA Department of Fish and Wildlife
 3. CA Department of Fish and Wildlife director is appointed by the governor and confirmed by the US Senate
- Choice Rules:

1. Access into marine protected areas or marine managed areas for non-consumptive uses including but not limited to swimming, surfing, diving, boating, hiking and walking is allowed unless otherwise specified in individual MPA regulations.
 2. The release of any fish or wildlife species, including domestic or domesticated species, or the introduction of any plant species, is prohibited.
 3. No vessel, watercraft (motorized or non-motorized), or floating device may be used to assist in the take, transport or possession of species taken while shore fishing
 4. Fishing gear, except legal fishing gear used to take species identified as allowed for take in individual MPA regulations, shall not be deployed in the water while anchored in a state marine recreational management area, state marine park or state marine conservation area.
 5. Fishing gear shall not be deployed in the water while transiting through a state marine reserve.
 6. Feeding of fish and wildlife is prohibited except permitted scientific collection pursuant to Section 650 or as a result of authorized fishing within state marine conservation areas, state marine parks, and state marine recreational management areas, or unless feeding of fish is specifically authorized in individual MPA regulations for purposes of marine life viewing.
 7. While transiting areas that prohibit spearfishing or while in possession of species not identified as allowed for take in the area being transited, spearfishing gear shall be in an unloaded condition, not carried in hand, and the diver shall remain at the surface.
 8. Public safety activities, including installation, maintenance and/or seasonal placement and removal of safety-related artificial structures, including but not limited to lifeguard towers, are allowed within any MPA classification pursuant to any required federal, state and local permits, or as otherwise authorized by the department.
 9. Any member of a federally recognized tribe authorized to take living marine resources from an area with area-specific take restrictions in individual MPA regulations.
- Aggregation Rules. There are no apparent aggregation rules
 - Scope Rules
 1. Each MPA area is well defined by geographic coordinates
 2. There are seasonal, bag, possession, gear and size limits in existing Fish and Game Code statutes and regulations of the Commission (specifics vary by fishery/type of fish and MPA designation)
 - Information Rules.
 1. Sampling of water, sediment and marine life, for water quality monitoring or pollution research, or as required in a Monitoring and Reporting Program of a National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements issued by the State or Regional Water Boards pursuant

to the United States Clean Water Act and the California Water Code, is allowed within state marine reserves, state marine conservation areas, state marine parks, and state marine recreational management areas pursuant to a valid scientific collecting permit issued by the department.

- Payoff Rules. The case study does not mention pay off rules.

1.5 Summary

In summary, the successful governance of the SES of the Channel Islands National Marine Sanctuary and surrounding marine protected areas is yet to be determined. While on land, conservation efforts have seen tremendous success over time, in the water, initial efforts to monitor the impact of the MPAs on key fish stock have revealed mixed trends of increasing and decreasing keystone species depending on population type (starfish vs. spiny lobster). However, in general, fishers seem to be preferring to fish along the perimeter of the MPAs, which indicates that the MPAs are in fact leading to successful outcomes in maintaining the marine habitat as a productive resource system. Because the Channel Islands National Park marine system is highly dependent upon well-funded institutions (US Department of Fish & Game & publicly funded University of California), its is vulnerable to cuts in federal and state and federal funding. Additionally, the SES is fragile to climate change because fishers rely on selling certain types of fish that might or might not stay present in their current numbers if the oceans temperature changes.

2 Case Contributors

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