

Socioeconomic Profile of
Fishing Activities and Communities
Associated with
the Gulf of the Farallones
and Cordell Bank
National Marine Sanctuaries

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Ecotrust is a conservation organization committed to strengthening communities and the environment from Alaska to California. We work with native peoples and in the fisheries, forestry, and farming sectors to build a regional economy that is based on social and ecological opportunities.

FRONT COVER PHOTOS

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Report at a Glance

Ports and port groups profiled

- Bodega Bay
- Greater Bodega Bay Area
- San Francisco
- Greater San Francisco Area
- Half Moon Bay

Fisheries profiled

- California halibut
- Dungeness crab
- Groundfish
- Herring
- Nearshore species
- Salmon
- Squid
- Tuna
- Urchins

Analytical framework

- Followed a participatory approach, drawing upon fishermen's expert knowledge
- Utilized both quantitative and qualitative data
- Developed lines of analysis that are spatially explicit

Methods

- Conducted local knowledge interviews with fishermen
- Used this information to improve on spatial resolution of existing data in characterizing fishing grounds
- Employed research and fieldwork to develop socioeconomic characterizations of ports and port groups

Relative economic importance of sanctuary waters for select study area fisheries (1997–2003)

	Average revenue of sanctuary waters	Average revenue, as a percentage of study area total revenue	Average revenue, as a percentage of state total revenue
Albacore*	\$76,003	23%	1%
California halibut (hook-and-line)*	\$44,146	17%	10%
California halibut (trawl)**	\$233,317	27%	15%
Dungeness crab*	\$3,283,100	55%	17%
Groundfish			
Rockfish (hook-and-line)*	\$442,200	77%	17%
Flatfish (trawl)**	\$331,894	28%	6%
Rockfish (shelf trawl)**	\$150,203	66%	22%
Rockfish (slope trawl)**	\$61,095	42%	9%
Salmon*	\$1,929,946	46%	24%
Squid*	\$59,763	21%	0%

*Percentage of study area revenue associated with each of the fishing grounds derived from local knowledge interviews.

**Derived from tows within sanctuary waters.

Study area: total area of sanctuary waters and fishing grounds

	Sq. Kilometers	Sq. Miles	Sq. Nautical Miles
Cordell Bank	1,362	526	397
Gulf of the Farallones	3,250	1,255	948
Estimated Size of Fishing Grounds*	28,572	11,031	8,339

*Derived from local knowledge interviews.

Executive Summary

In the spring of 2004, the Gulf of the Farallones and Cordell Bank National Marine Sanctuaries commissioned Ecotrust to perform a socioeconomic profile of fishing activities and port communities on the North-central California coast. The sanctuaries had recently received a biogeographic assessment of sanctuary waters—characterizing the spatial and temporal distributions of select fish species, marine mammals, sea birds, and other marine resources—and sought a complementary publication to evaluate the social and economic importance of these waters.

The analytical framework employed by Ecotrust, a participatory approach that utilizes both qualitative and quantitative data in a range of spatially explicit analyses, appealed especially to fishermen on the joint Fishing Activities Working Group. Working within this framework, Ecotrust conducted interviews, research, and fieldwork to develop socioeconomic profiles of both the fisheries and ports that rely upon sanctuary waters. This framework is informative of methodological innovations that may be useful in area-based marine management more generally, and could be extended to fill information gaps that state and federal agencies face routinely, for example in the context of the adaptive management mandate of the Marine Life Protection Act or Executive Order 13158.

Under the principles of adaptive management, marine resource managers seek to understand and respond to the effects of various marine uses, and of management measures on fisheries and other user groups. Although biological data to support marine resource management can be traced back through decades, comparable socioeconomic data is both incomplete and faulty. The analytical framework adopted for this project allows us to ameliorate these deficiencies by incorporating qualitative data to develop a baseline for future analyses. The fishery and port profiles in this report are best considered as pieces of a larger socioeconomic portrait of fishing communities along the North-central California coast. Other components might include a comprehensive analysis of the cost structure of commercial fisheries and characterizations of local port economies and coastal industries.

The spatially explicit nature of this work not only provides a common basis for the comparison of socioeconomic to ecologic information, but also for the comparison of consumptive to non-consumptive uses of the marine environment. At least two projects are now underway to assess the relative economic values of activities such as wildlife viewing, kayaking, and photography along the North-central California coast, for which datasets have been heretofore non-existent.

By the time of the designation of the North-central California sanctuaries (Gulf of the Farallones in 1981 and Cordell Bank in 1989, followed by Monterey Bay in 1992), the coastal communities and commercial fisheries of North-central California had already experienced several boom and bust cycles. As early as 1908, the San Francisco Bay Area oyster industry had been wiped out by water pollution. By the 1960s, the main fisheries of the 20th century—salmon, tuna, and sardines—were undergoing cyclical swings or outright collapse.

Examining the Dungeness crab fishery, local knowledge interviews inform us that sanctuary waters account for 53% of 2003 revenues.

During the 1970 and '80s, financial and technical assistance from the U.S. government in the wake of the Magnuson–Stevens Act led to an expansion of the fleet nationwide and made trawl fisheries for rockfish and flatfishes a staple of the North-central California fleet. During the same time period, Japan's economic growth fueled a burgeoning demand for seafood, resulting in the expansion of the sea urchin fishery, based in what are now sanctuary waters.

Landing statistics once reflected the relative abundance of different fisheries. More recently, they tend to reflect regulatory limits implemented in response to a diminishing biomass of fish.

Statewide commercial landings peaked in 1981 at over 900 million pounds, and declined to 370 million pounds by 1991. Thus, in response to evidence that several economically important species were in steep decline, commercial fishing activities were ever stringently regulated in the 1990s. The declining trend over this period is mirrored in the sanctuaries.

Currently, the most important fisheries in the study area — the Cordell Bank and Gulf of the Farallones and adjacent port communities from Bodega Bay to Pillar Point (Half Moon Bay) — are Dungeness crab, groundfish (including several nearshore species), herring, salmon, squid, tuna and urchins. Between 1981 and 2003, these seven fisheries yielded an average of nearly 35 million pounds of landings worth over \$31 million per year (in constant 2003 dollars). Collectively, they accounted for 92% of landings and revenues in the study-area ports.

In general, the fisheries in the study area are more valuable than in the state as a whole. This is a testament to the success of local fisheries in identifying and targeting economically significant species, the local abundance of species, and ready access to some of the most lucrative seafood markets in the state. Over the past 23 years, the proportion of revenues derived from commercial fisheries' landings in study-area ports has increased, from 5% of the state total in 1981 to several times that number in recent years.

Overall, commercial fisheries are conducted with fewer vessels than a generation ago. Since the most recent peak of commercial fisheries in 1981, the number of fishing vessels in California has declined steadily. From a high of almost 7,000, the number of vessels declined to fewer than 2,000 in 2003. The number of vessels making landings in study-area ports has similarly declined, from 2,200 in 1981 to 603 in 2004. Fewer than half of these vessels are responsible for 90% of landed catch. The fisheries are not just losing vessels. In general, fishermen report that there are fewer young people entering the fisheries.

On average, 62% of the vessels making landings in sanctuary ports do so exclusively, i.e. they are recorded making landings only in the small number of port groups adjacent to the sanctuaries. From 1981 to 2003, vessels landing exclusively in the study area averaged roughly 25,000 pounds per vessel and year and \$21,000 in revenues per vessel and year. In contrast, vessels making landings both inside and outside sanctuary ports averaged 100,000 pounds per vessel and year and \$70,000 in revenues per vessel and year.

On some parts of the west coast, diminished fishing opportunities have spurred increased diversification of the remaining fleet, as fishermen have sought to expand their portfolio of fisheries to achieve a desired level of income. This does not appear to be the case for the study area; the majority of commercial fishing vessels

appear to only participate in one fishery. This suggests that local fisheries may be disproportionately vulnerable to management changes, especially those pertaining to fisheries that may be the single source of revenues for many vessels and, by extension, fishing families.

Recreational fishing became an industry in its own right in the period between the two World Wars. California's 22% increase in population in the 1930s was outpaced by the 56% increase in angling licenses. By the 1940s, sportfishing rivaled the commercial sector in economic importance. This increasing effort is reflected in landings. The annual average catch increased from 3.9 million fish in 1958–61 to 6.5 million fish in 1981–85. The nature of recreational effort has changed as well. Whereas in 1961, 61% of recreational landings took place aboard charter boats, more than 70% now take place on private vessels.

About two thirds of marine recreational fishing in California takes place south of Pt. Conception, far to the south of the study area covered in this project. However, for several major species— notably nearshore rockfishes, surfperches, greenlings, lingcod, flatfishes, salmonids, and sculpins— North-central California accounts for a majority of the statewide recreational catch.

Generally speaking, recreational fisheries provide considerable value to coastal economies. Based on the average annual number of fishing trips of residents and non-residents in 1998–99, aggregate annual expenditures related to marine recreational fishing, including costs for gear, licenses, and other supplies, amounted to \$570 million (in 2003 terms), \$200 million of which derived from fishing activity in North-central California.

In terms of the trends in local ports, landings and revenues declined in all study-area ports from 1981 to 2003, some more steeply than others. San Francisco and Bodega Bay have maintained their share of study-area landings and revenues, while the role of Half Moon Bay has expanded and that of San Francisco Bay Area ports has diminished. San Francisco is the major fishing port in the study area, accounting for over 40% of study-area landings and revenues.

Primary data sources for this project include California Department of Fish and Game (CDFG) commercial fishery logbooks, line item Commercial Passenger Fishing Vessel logbooks, and line item CDFG landing receipts for all fisheries. Virtually none of the existing data sources were designed to address subjects of central interest to the sanctuaries: the spatial extent and intensity of fishing effort by different gear types and the relative importance of particular ocean areas for various commercial and recreational fisheries. For each existing dataset, we distinguish between thematic, temporal and spatial resolution, generating a baseline for subsequent analyses. We find that there is 99% correlation between logbook and landing receipt datasets in terms of landings and revenues, but a considerably poorer match in terms of spatial specificity. Our use of local expert knowledge to characterize the fishing grounds in the study area is directly motivated by these limitations.

We hope that the approach and materials presented in this report and the accompanying data CD and information system prove useful as the sanctuaries proceed with the Joint Management Plan Review and subsequent management measures.