

2. Historical Perspective and Current Trends

Fisheries have long played an important role in the economic, social, and cultural life of coastal communities in North-central California.⁹ At the time of European contact, the Costanoan, Pomo, Patwin and Miwok—whose tribal areas comprised roughly the stretch of coast from Fort Bragg to Point Sur and extended inland to the Sacramento Delta—were among the 310,000 people believed to be living in what is now the state of California. All of these communities relied on abundant salmon, shellfish and, to a lesser extent, nearshore finfish to support relatively dense populations and prolific cultures that were among the most complex political and cultural systems on the continent.

During the first fifty years of statehood, successive waves of Anglo-Saxon, Italian, Portuguese, Chinese and other immigrants found ample fishing opportunities and adapted their respective skills, vessels and gears to the local environment. San Francisco was the economic capital of California in the 19th century and supported a diverse, year-round fishery, along with markets for seafood ranging from whale to abalone. Chinese fishermen, for example, began shrimping in San Francisco Bay in 1871, making it the most productive fishery in California by 1895. Hundreds of nets, operated from 50 junks and tended from two dozen camps produced over 5 million pounds of shrimp. Italian immigrants, first from northern Italy and then from Sicily, began dominating the San Francisco waterfront in the 1880s with their lateen-rigged feluccas and supplying North-central California seafood markets from 60 or more boats.

These were just two of the many expansion waves that characterized the fishing economy in North-central California at the turn of the 20th century. Others, like the abalone, urchin, tuna and salmon fisheries, or the Monterey Bay sardine fishery, were characterized by bountiful early landings and eventual collapses—brought on by a combination of environmental factors, pollution, and fishing pressures. The San Francisco Bay Area oyster industry, for example, was wiped out by water pollution—first siltation resulting from mining activities, then effluent from fruit canneries. Yields dropped by half between 1900 and 1904, and collapsed entirely after 1908. The main fisheries of the 20th century—salmon, tuna, and sardines—all started expanding in the 1920s, during a period when ocean conditions were conducive to high biological productivity. By the 1960s, the sardine fishery had collapsed, and tuna and salmon fisheries were undergoing cyclical swings.

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, and ocean fishing for salmon, rockfish, lingcod and other species began expanding rapidly in the 1950s.

The “Americanization” of fisheries in the wake of the Magnuson-Stevens Act of 1976 (subsequently reauthorized as the Fisheries Conservation and Management Act in 1996) was accompanied by financial incentives and technical assistance provided by the U.S. government, leading to an expansion of the fleet nationwide, and making 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

⁹ This section relies heavily on the following sources: McEvoy's (1990) comprehensive history of California fisheries, and their interlinked environmental, economic and cultural dimensions, and the excellent fishery-specific histories compiled in the California “Blue Books” by Leet et al. (1992 and 2001). The discussion of recreational fisheries follows Starr et al. (2002).

for seafood, resulting in the expansion, in both volume and value, of the sea urchin fishery, based in several communities adjacent to current sanctuary waters.

By the time the sanctuaries were designated (Gulf of the Farallones in 1981 and Cordell Bank in 1989, followed by Monterey Bay in 1992), both the fisheries and the coastal communities of North-central California had already experienced several boom and bust cycles. In the 1990s, both commercial and recreational fishing activities were successively more stringently regulated in response to evidence that several economically important species were in steep decline. As a result, landing statistics that had historically been reflective of the relative abundance of a fish species can now also be seen as a reflection of regulatory limits implemented in response to a diminishing biomass of fish.

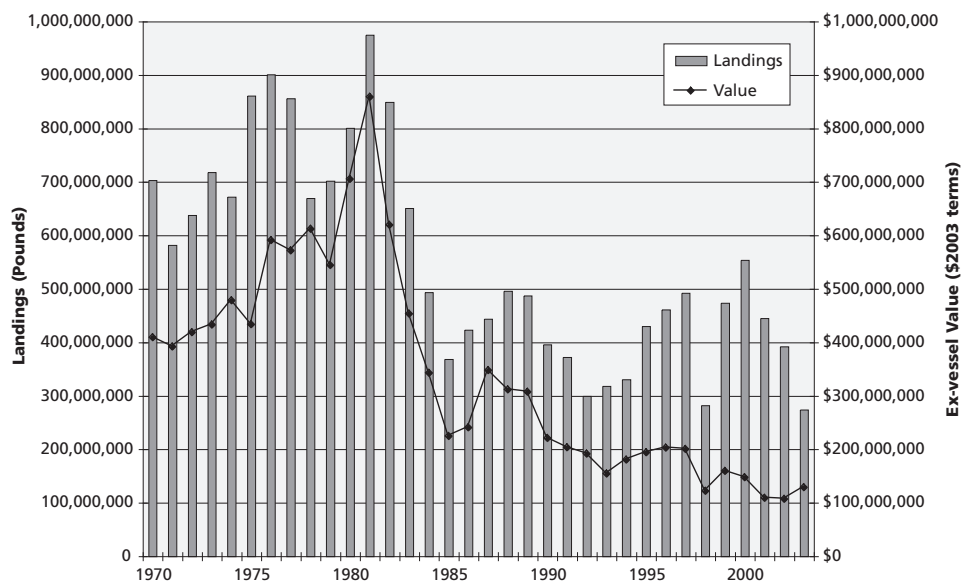
Against this varied historical and economic significance of North-central California’s ocean to coastal communities, the Joint Management Plan Review undertaken by the sanctuaries addresses the concerns of contemporary fisheries and the ports they support. Considering the period from 1981 through 2003, this profile is intended to characterize some of the key trends and describe the status of regional fisheries.

Commercial fisheries

Statewide commercial landings peaked in 1981 at over 900 million pounds and declined to 370 million pounds by 1991. Over the course of the 1990s, statewide landings fluctuated somewhat with El Niño events and were at 274 million pounds in 2003. The value of landings, over the same period and in constant 2003 terms,¹⁰ reached a high of \$850 million in 1981 and declined to \$130 million in 2003.

¹⁰ All dollar figures have been adjusted for inflation and are reported in 2003 terms.

Figure 1. Volume and ex-vessel value of commercial landings in California, 1970–2003

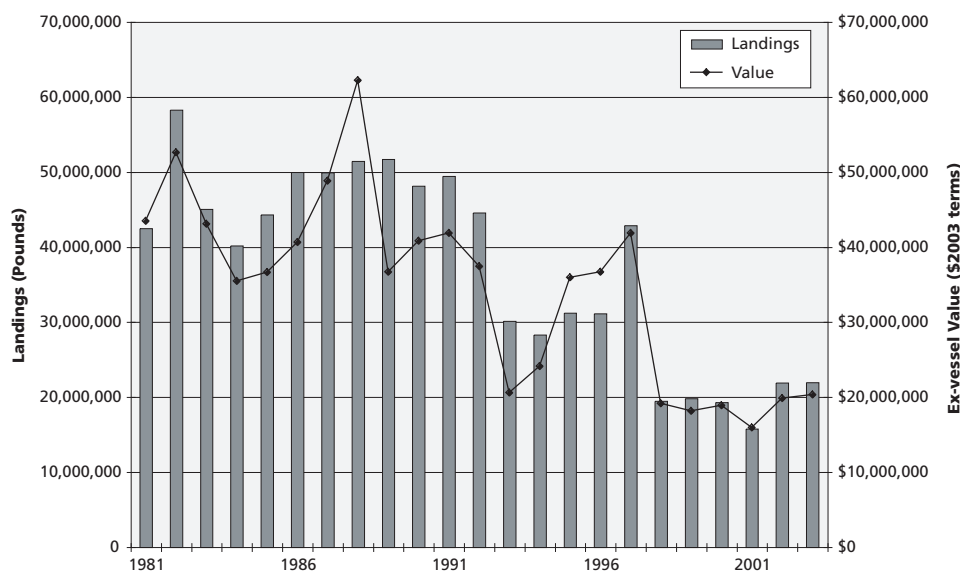


Data for 1970 to 1980 are from Leet et al. (1992). Due to a mismatch in tuna landings between the published data and the CDFG dataset used in this analysis for the period 1981–1986, the 1981 peak is likely an overstatement. The overall shape and trend of the bar chart remain unchanged.

From 1981 to 2003, the overall declining trends in landings and revenues are mirrored in the sanctuaries. From a peak of 58 million pounds in 1982 (approximately 7% of the state total), when groundfish and herring fisheries dominated regional fisheries, landings declined to roughly 22 million pounds in 2003 (8% of state total). The extraordinarily bountiful salmon landings of 1988, combined with relatively high prices, resulted in a historic peak of revenues in the region in 1988, at over \$62 million (in 2003 terms). This is also one of several years when prices per pound averaged more than \$1 over all fisheries.

Fisheries in each region of California are important to the fishermen and communities in each, and comparisons between regions may be of limited use. There emerge, however, some interesting trends when comparing the study area to the state as a whole. In general, fisheries in the study area achieve a higher value per pound than statewide. From 1981 to 2003, the average price (dividing ex-vessel revenues by landings) was \$0.93 per pound in the study region—almost twice the state average of \$0.53 per pound. In other words, the sanctuaries are located in areas of the coast with relatively more valuable commercial fisheries than in other parts of California. This is a testament to the local fisheries' successes in identifying and targeting economically significant species, the local abundance of economically significant species, and ready access to some of the most lucrative seafood markets in the state.

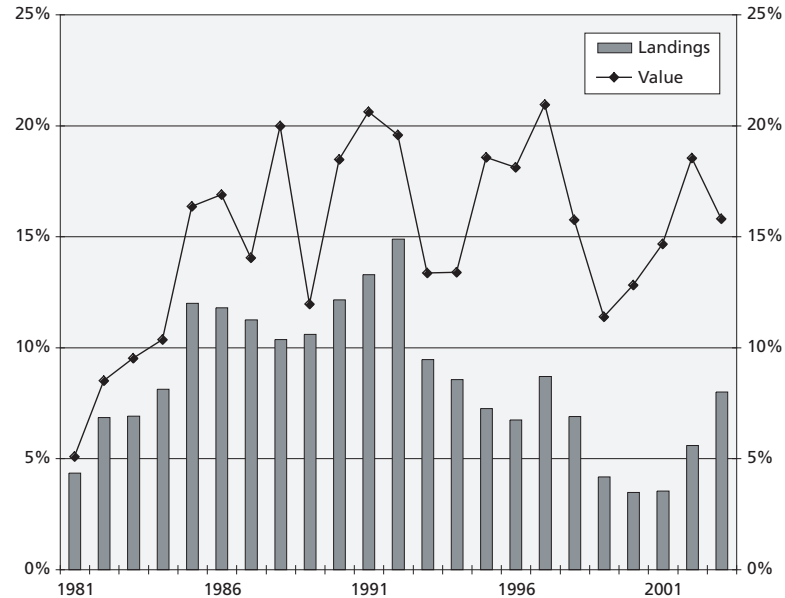
Figure 2. Landings and revenues in study area, 1981–2003



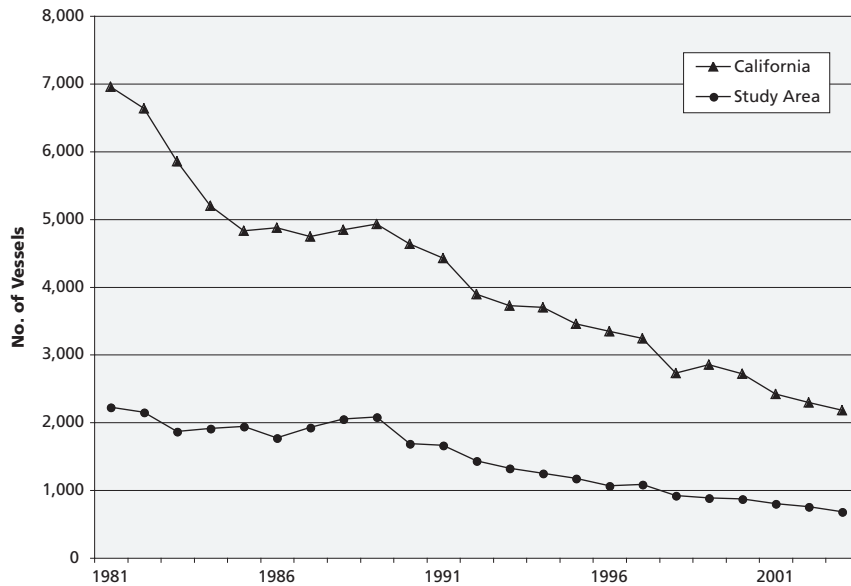
Over time, the significance of the study area relative to state fisheries as a whole has varied considerably. Around 5% of all California landings and revenues in 1981 were made in ports adjacent to the sanctuaries, and landings have returned to that proportion after some more productive years in the later 1980s and early 1990s. In light of the overall decline in landings, ports in the study area have managed to maintain their relative contribution to state fisheries as a whole. In terms of revenues, an encouraging picture emerges. 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. In other words, the regional fisheries contribute a bit over a fifth to the total commercial

fisheries in California. This growth reflects a shift of the region's fisheries towards higher value target species and markets.

Figure 3. Study-area landings and revenues as percentage of state totals, 1981–2003



Overall, 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 has declined to fewer than 2,000 in 2003. This overall decline masks the differential trends in various fisheries, which are further elaborated in the following fishery profiles. These aggregate numbers mask the movement in and out of fisheries, and it would be interesting to study the rate of entry and exit over the study period. As we discuss below, some fisheries on the west coast exhibit successional patterns, with fishermen changing their target strategies and moving into entirely new fisheries in response to incentives, market opportunities, and regulations. In general, fishermen report that there are fewer young people entering the fisheries. In the study area, the number of unique vessels making landings in the ports bordering the sanctuaries has also declined, to just over a quarter of the 1981 level, i.e. 603 vessels in the first part of 2004. Fewer than half of these vessels are responsible for 90% of landed catch.

Figure 4. Number of commercial fishing vessels in California, 1981–2003

Recreational fisheries

Marine recreational fishing—as with other recreational activities—is an important social, cultural, and economic influence in California. It is a year-round activity that involves many different gear types and fishing modes, including fishing from beaches, docks and piers, privately owned or rented boats, and commercially operated charter boats, as well as spear fishing. The variety of modes reflects the diversity of habitat and species targeted by recreational anglers. This diversity, along with the spatially and temporally diffuse nature of recreational fishing activities, makes monitoring a challenge and leads to datasets of varying quality, as discussed in Appendix A (Methods).

Recreational fishing effort in California grew rapidly in the second half of the 20th century. After World War II, there was a dramatic increase in effort, reaching roughly 1.5 million angler-hours in 1947. This more than doubled the effort before WWII, which peaked at around 600,000 angler-hours in 1940. Effort continued to grow throughout the 1960s and early 1970s, peaking in 1970 at around 4.5 million angler-hours. Effort decreased slightly in the late 1970s and throughout the 1980s, averaging an estimated 3.75 million angler-hours over this period. The trend in effort started to decline beginning in 1990, from close to 4 million angler-hours to 3.25 in 1993, but rose dramatically 3 years later to just over 4.5 million in 1997.¹¹

Increasing effort is reflected in increasing recreational catches. The annual average catch rose from 3.9 million fish in 1958–61 to 6.5 million fish in 1981–85. Average annual landings of lingcod alone nearly doubled to 900,000 pounds a year. Over the same time period, annual fishing effort (in terms of angler trips) increased by 65%. Not only have recreational catches gone up, prompting a gradual shift in allocations away from the commercial towards the recreational sector over the course of the existence of the Pacific Fishery Management Council, but the nature of the recreational effort has changed as well. Whereas in 1961, 61% of recreational fishing

¹¹¹ Kevin T. Hill and Niklas Schneider. Historical Logbook Databases from California's Commercial Passenger Fishing Vessel (Partyboat) Fishery, 1936–97. December 1999. SIO Reference 99-19. <http://repositories.cdlib.org/sio/reference/99-19>

took place from charter boats, also known as commercial passenger fishing vessels (CPFVs) or “party boats,” more than 70% of recreational landings now come from private vessels.

In total, some 4.7 million angler trips were made in California in 1999. Two-thirds of marine recreational fishing activity takes place south of Pt. Conception. For several major recreationally targeted species, however— notably nearshore rockfishes, surfperches, greenlings, lingcod, flatfishes, salmonids, and sculpins— North-central California accounts for the majority of the statewide recreational catch.

Table 1. Proportion of recreational fishing effort by mode in 1998/99

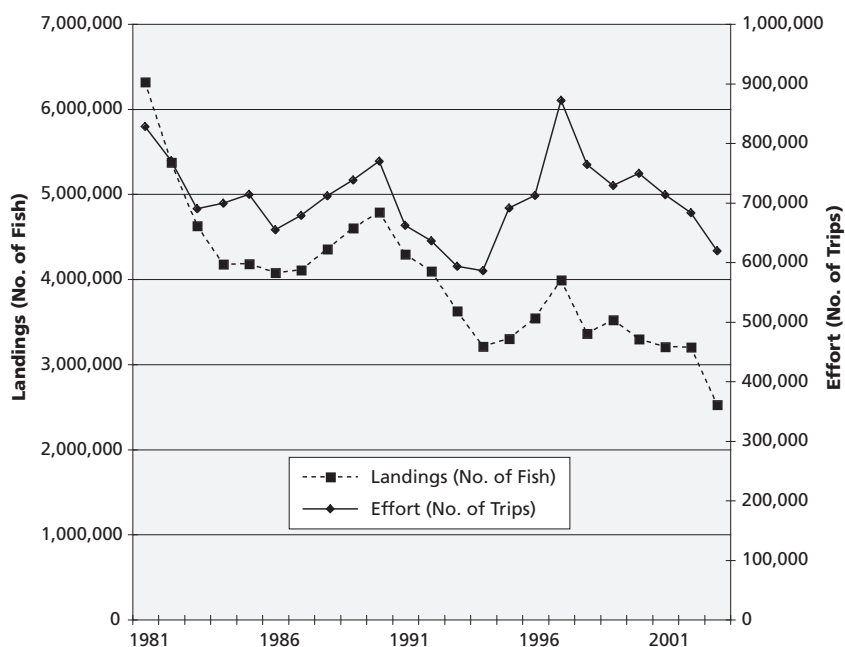
Fishing mode	North-central California	Southern California
Shore-side fishing*	42%	32%
CPFVs	9%	22%
Private boats	49%	46%

*Shore-side fishing includes effort from piers/docks, jetties/breakwaters, beaches/banks. Adapted from Leet et al., 2001, p 53.

As Table 1 illustrates, private boats comprise the dominant mode of recreational fishing, accounting for close to half the fishing effort, as measured in angler trips. The second largest share is shore-side fishing from beaches and banks, along with man-made structures such as piers and jetties, which together account for 42% of recreational fishing activity in North-central California¹² and 32% in Southern California. Charter boat fishing takes the smallest share and is more significant in Southern California, where, for example, the San Diego area is home to a large, long distance charter boat fleet. By contrast, charter boats in North-central California tend to be smaller and operate day-trips or half-day trips.

The number of CPFVs participating in the marine recreational fishery averaged close to 300 vessels annually from 1980 through 1998. Whereas some parts of the charter boat sector increased, notably the Southern California long distance CPFV fleet that fishes in Mexican waters, the number of North-central California CPFVs declined from an annual average of 137 vessels during the 1980s to 105 in the 1990s. Over the course of the last 23 years, CPFV catches have declined from 6.3 million fish kept statewide to just over 2.5 million, and fishing effort has decreased from almost 830,000 angler trips to 620,000.

¹² We use “North-central California” to describe a region larger than the study area of this project, as this section illustrates.

Figure 5. Statewide CPFV landings and effort, 1981–2003

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.¹³

¹³ Estimates converted from Starr et al. (2002), p. 29, and Leet et al. (2001), p. 53.

Chapter 2: Findings

- ▶ During the first fifty years of statehood, successive waves of Anglo-Saxon, Italian, Portuguese, Chinese, and other immigrants found ample fishing opportunities and adapted their respective skills, vessels, and gears to the local environment.
- ▶ 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, and ocean fishing for salmon, rockfish, lingcod and other species began expanding rapidly in the 1950s.
- ▶ By the time the sanctuaries were designated, both the fisheries and the coastal communities of North-central California had already experienced several boom and bust cycles. In the 1990s, both commercial and recreational fishing activities were successively more stringently regulated in response to evidence that several economically important species were in steep decline.
- ▶ From 1981 to 2003, the overall declining trends in landings and revenues are mirrored in the sanctuaries. From a peak of 58 million pounds in 1982 (approximately 7% of the state total), when groundfish and herring fisheries dominated regional fisheries, landings declined to roughly 22 million pounds in 2003 (8% of state total).
- ▶ In general, fisheries in the study area achieve a higher value per pound than statewide. From 1981 to 2003, the average price (dividing ex-vessel revenues by landings) was \$0.93 per pound in the study region — almost twice the state average of \$0.53 per pound.
- ▶ 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. In other words, the regional fisheries contribute a bit over a fifth to the total commercial fisheries in California. This growth reflects a shift of the region's fisheries towards higher value target species and markets.
- ▶ Overall, fisheries are conducted with fewer vessels than a generation ago.
- ▶ In total, some 4.7 million angler trips were made in California in 1999. Two-thirds of marine recreational fishing activity takes place south of Pt. Conception. For several major recreationally targeted species, however — notably nearshore rockfishes, surfperches, greenlings, lingcod, flatfishes, salmonids, and sculpins — North-central California accounts for the majority of the statewide recreational catch.