

# **California's North Coast Fishing Communities Historical Perspective and Recent Trends**

## **Fort Bragg/Noyo Harbor Fishing Community Profile**



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# EXECUTIVE SUMMARY

## *Background*

National Standard 8 of the Magnuson-Stevens Fishery Conservation and Management Act requires that fishery managers consider the importance of fishery resources to fishing communities, to provide for their sustained participation and to minimize adverse economic impacts on them, consistent with conservation objectives. Similarly, California's Marine Life Management Act mandates the use of socioeconomic as well as biophysical Essential Fishery Information to meet fishery management goals. Information on how individual fisheries and port communities operate is important to meeting these mandates. Yet, such social science information on Northern California port communities has been sparse until recently.

This profile of the Noyo fishing community describes the history of the area and its fisheries, present-day fishery operations, activities and associated infrastructure. It identifies key regulatory and economic factors highlighted by study participants that interact with and affect the local fishing community. It is intended for use in a range of processes, from local planning and education to state and regional management.

The information presented is based on the collection and integrated analysis of archival and field data to interpret patterns, variability and change within and across fisheries and the fishing community over time. Data sources include:

- Commercial fish landing receipt data for 1981–2007 reconfigured into 34 distinct species/gear combinations;

- Commercial Passenger Fishing Vessel (CPFV) logbook data for 1980–2007;
- An extensive review of the published and gray literature, including fishery status reports and historical fishery statistics (as available); and
- Field observation and interviews and group meetings with about 40 fishery participants and other knowledgeable individuals.

## *History of the Noyo Fishing Community*

Located 170 miles north of San Francisco, Noyo Harbor and the adjacent city of Fort Bragg are situated near highly productive fishing grounds for salmon, groundfish, urchin, crab, abalone and shrimp. People living in this remote part of the state have long utilized fishery resources for livelihood, sport and subsistence. Originally inhabited by the Pomo Indians, Fort Bragg was developed as a logging town in the late 1800s, soon after the establishment of the first sawmill on California's North Coast at the mouth of the Noyo River. Fishing followed soon after, with the establishment of fisheries for salmon, rockfish, lingcod and halibut. The timber and fishing industries grew through the 1900s. In 1950, the Noyo Harbor District was established, and in the 1960s, both the Noyo Harbor mooring basin and the privately owned Dolphin Isle Marina, located about a half mile up the Noyo River, opened, offering a range of facilities, goods and services to support growing and increasingly diverse commercial and recreational fisheries.

By the late 1970s and 1980s, growing concerns about the status of West Coast salmon and groundfish stocks prompted the Pacific Fishery Management Council (PFMC) and the state of California to implement increasingly stringent

management measures for the commercial and recreational fisheries. Cumulatively, these measures have discouraged (nontribal) fishing along much of the North Coast, resulting in substantial reductions in both commercial and recreational fishing activity, and contributing to social and economic impacts in the area.

### ***The Noyo Fishing Community Today***

Noyo's primary commercial fisheries include the groundfish trawl, urchin dive, Chinook salmon troll, Dungeness crab pot, and sablefish and rockfish/lingcod hook-and-line and trap fisheries. Some resident fishermen travel north into Oregon or south (as far as San Francisco) to participate in the Chinook salmon, albacore tuna and/or crab fisheries. Although most resident fishermen participate in more than one fishery, locals describe the approximately 80-vessel fleet as including 30–40 salmon trollers, 15–20 multi-fishery vessels, 10–15 urchin dive boats and seven groundfish trawlers.

Local fish receiving and processing capacity consists of six buyers with receiving stations at the harbor, including three on-site receiver/processors and a live fish buyer. Caito Fisheries is the primary receiver and processor of groundfish, crab and salmon. Sea urchin is received and processed by Pacific Rim Seafoods and by Ocean Fresh Seafoods, which also receives fish for several out-of-area buyers. Much of the catch is processed locally; however, some of it is shipped out of the area for processing as well as distribution. Some buyers and fishermen (through off-the-boat and other direct sales) sell small amounts of salmon, crab, groundfish and albacore seasonally.

Following the reduction in recreational salmon fishing opportunities beginning in the early 1990s and more recent groundfish restrictions,

participation in ocean recreational fishing at Noyo has declined. Today, the most avid anglers pursue an annual round of fisheries that includes salmon (when the season is open), albacore in late summer (when it is within range), abalone (late spring through fall) crab in winter, and rockfish year-round (subject to closure when quotas have been reached). Private boat fishing continues to be the primary recreational fishing mode. Noyo has five active charter operations, which carry between 6 and 40 passengers.

The harbor district, Dolphin Isle Marina and approximately 25 businesses at or near the harbor (and more in the larger region) provide considerable infrastructure, goods and services to support fishing activities. Harbor infrastructure consists of a 240-slip boat basin with service facilities, a work hoist (fish offloading is prohibited), two launch ramps, a fuel dock, parking and storage areas. Dolphin Isle Marina provides 150 slips, RV spaces, a fuel dock, a café and store and a fish-cleaning station. Although their number and scope has diminished in recent years, local support businesses provide goods and services from fuel and ice to refrigeration, vessel repair and maintenance, which address many but not all fishery needs.

### ***Commercial Fishing Activity Highlights***

Relative to the long term (1981–2007), average annual total fishing activity has decreased in recent years (2003–2007) in terms of landings (-52%), ex-vessel value (-31%), boats (-44%) and trips (-54%), while buyers have increased (+15%).

- The groundfish trawl fishery, active at Noyo since the 1930s, accounted for 58% of landings and 37% of ex-vessel value for the long term, and 48% of landings and 24% of ex-vessel value in recent



years. However, the fishery has undergone significant decline, with all measures (except price per pound) 50%–69% lower in recent years relative to the long term.

- The urchin dive fishery, which began in earnest in the mid-1980s, peaked in 1988 when 17.9 million pounds worth nearly \$8 million were landed, then declined substantially. Activity on all measures is down 53%–84% in recent years compared to the long term, due largely to changing environmental and market conditions. However, more recent changes in those conditions have led to a resurgence of the fishery.
- The salmon troll fishery is among the port's top three fisheries, accounting for 7% of landings and 22% of ex-vessel value over the long term, increasing to 19% of landings and 41% of ex-vessel value in recent years. Although the absolute number of boats participating in the fishery has declined (-41%), the proportion of vessels at Noyo Harbor that landed salmon increased to 73% in recent years from 62% for the long term. In contrast to many other fisheries, salmon troll landings and ex-vessel value are greater (52% and 20%, respectively) in recent years.
- Activity in the Dungeness crab fishery is modest compared to other ports, in part due to the fact that several local fishermen target grounds nearer other ports (where crab are more abundant), where they deliver most of their catch. Nonetheless, activity in the fishery has increased since the mid-1990s, with landings and ex-vessel value, respectively, 70% and 46% higher in recent years compared to the long term.
- The sablefish hook-and-line/pot fishery ranks among Noyo's top five fisheries on most measures, with recent activity greater in terms of landings (+3%), ex-vessel value (+26%), boats (+42%), trips (+14%) compared to the long term.

- The rockfish/lingcod hook-and-line/pot fishery accounted on average for less than 5% of landings and ex-vessel value, with an average of 20% of boats participating during the period 1981–2007. Activity in recent years is 74%–88% lower in terms of landings, ex-vessel value and boats, and 31%–39% lower in terms of buyers and trips. However, average annual price per pound is 57% greater in recent years, due in large part to the growth of the live fish market since the mid-1990s.

Total landings and ex-vessel value (for all fisheries) peaked at 32.2 million pounds and \$30.6 million in 1988, with urchin accounting for 56% of landings and salmon accounting for 43% of ex-vessel value. In 2007, 5.3 million pounds worth \$6.5 million was landed at the port, with groundfish accounting for the highest proportion of landings (53%) and value (29%).

The number of boats peaked in 1988, when 968 boats made 20,638 deliveries, 64% of which were salmon and 16% of which were urchin. Vessel participation was lowest in 1998, when 175 boats made 3,520 deliveries, 37% of which were urchin and 22% of which were rockfish/lingcod. In 2007, 242 boats made 2,535 deliveries, 31% of which were salmon, and 20% of which were urchin.

Revenue concentration among buyers has varied. During the 1998–2000 and 2003–2005 periods, 22%–27% of buyers accounted for 90% of the landed value. Revenue concentration was higher in 2001 and 2002 and again in 2006 and 2007, when 15%–19% of buyers accounted for 90% of landed value at Noyo.

Of the 42 buyers that received commercially-caught seafood landed at Noyo Harbor in 2007, at least five were locally-based nonfisherman

businesses, at least four were local fishermen, and 19 were fishermen and smaller receiving operations based in other locations in California, and in Oregon and Washington.

Average annual ex-vessel price per pound was lower in recent years relative to the long term in the urchin (-54%) and crab (-16%) fisheries, and were higher in the rockfish (+58%), sablefish (+23%), albacore (+18%), salmon (+12%) and groundfish trawl (+8%) fisheries.

The number of ‘Noyo Harbor boats’ (i.e., those with a plurality of their ex-vessel revenue at Noyo) declined from an average of 462 per year from 1981 through 1983 to 138 from 1993 through 1995, and 113 from 2005 through 2007, while average revenue per boat increased from \$25,499 to \$67,454 between the first two periods, then declined to \$52,601 for the most recent period. When boats were assigned to their primary fishery (the fishery accounting for the plurality of each vessel’s landed value), this same pattern was apparent in the groundfish trawl, urchin dive and rockfish fisheries, while salmon boats followed the opposite pattern. The only consistent trends observed were among crab boats, which experienced a consistent increase in revenue, and sablefish boats, which experiences a consistent decrease in revenue across the three periods. It is not clear, however, how these changes in revenue per boat compare to costs, which have generally increased over time.

### ***Recreational Fishing Activity***

Recreational fishery data specific to Fort Bragg are limited.

- According to the California Department of Fish and Game’s (CDFG) California Recreational Fisheries Survey, which provides data on fishing activity at the ‘district’ level, an annual average of

130,000 angler trips were made in the Wine District (Mendocino County) between 2005 and 2007. About 52% of these trips were from private boats, and 4% from charter boats.

- CDFG CPFV logbook data for Fort Bragg indicate no change in the average number of CPFVs (8), a 54% increase in the number of boat trips, and a 44% increase in the number of angler trips in recent years (2003–2007) compared to the long term (1980–2007).

### ***Key Factors Affecting Noyo Harbor Fisheries***

**Salmon fishery management:** The Noyo fishing community has been affected by variable and generally reduced access to salmon (Chinook and coho), especially since the late 1980s. The state’s implementation of limited entry coupled with severe weather and poor fishing conditions in the early 1980s led to a sharp drop in salmon fishery activity at Noyo. However, as fishing in the KMZ to the north was sharply curtailed, commercial fishing activity in Fort Bragg increased through the 1980s, peaking in 1988. As with the commercial fishery, the recreational ocean salmon season in the Fort Bragg area was largely unchanged during this period, and fishery-support businesses at Noyo and in Fort Bragg that catered to commercial and recreational salmon fishermen benefited. Reduced allocations to nontribal fisheries in the early 1990s led to sharp reductions in commercial fishing opportunities, which adversely affected local support businesses such as marine supply stores and fuel docks. During the early 2000s, the commercial salmon fishery rebounded some. However, the commercial season in 2006, 2008 and 2009 and the recreational season in 2008 and 2009 have been minimal to nonexistent, with profound effects on the community.

**Groundfish fishery management:**

Increasingly strict federal catch limits since the 1990s, together with the 2003 federal groundfish trawl buyback and the state's implementation of restricted access in the Nearshore Fishery, have limited commercial fishery participation. Of 12 resident groundfish trawlers, seven participated in the 2003 groundfish trawl buyback. Their removal from the local fleet led to a marked reduction in local fishery activity, including seafood processing and the use of fuel, ice and other support services. Recent time and area closures to protect yelloweye rockfish, coupled with the 2008 salmon closure (after an initial 45-day opener off Fort Bragg) and the limited (10-day) 2009 salmon season, eliminated many local recreational fishing opportunities, further straining local support businesses and negatively affected the community's sense of well-being.

**Economics:** Commercial fishery participants and support businesses cited rising operating costs, especially those for fuel, gear, vessel maintenance and insurance. At the same time, many commercial fishermen commented on stagnant or declining prices in several fisheries. Price trends have varied among fisheries – declining in fisheries such as urchin and crab and increasing in others such as salmon, rockfish and sablefish. Similarly, trends in average annual revenue per boat have varied among fisheries. Increasing costs and less favorable economic conditions also have affected fishery-support businesses, both directly and indirectly. The reduction in fishing opportunities and activity has resulted in reduced demand for goods and services that these businesses provide.

**Harbor Infrastructure:** As fishing activity has declined over the last 30 years, so has the harbor's revenue base, making it difficult maintain and improve infrastructure, while

costs, particularly for dredging and dredge material disposal, have become significant for both the harbor district and Dolphin Isle Marina. Use of other infrastructure, including receiving stations, fuel docks and the ice plant, which are privately owned, has declined as well, leading to reductions in the number and types of support businesses. Many study participants expressed concern about the vulnerability of local infrastructure to further declines, noting that the viability of local fisheries and the fishing community depends on a certain level and diversity of activity. Without access to these and other fundamental services, continuing to fish from Noyo may become untenable.

***Current Situation and Outlook***

Following reduced opportunities in the salmon and groundfish fisheries and other regulatory and economic events, a smaller fleet of commercial fishermen and a much-reduced number of resident receivers, processors and fishery-support businesses remain active at Noyo. Once dominated by commercial fishing, the harbor is more dependent on the recreational sector. However, the narrowed range of fishing options and the recent economic downturn have deterred some nonresident anglers from visiting. Although sport fisheries for groundfish, crab and abalone continue, they have not filled the void left by salmon.

With only a core group of support businesses remaining, fishery participants are concerned about the potential for further loss of infrastructure, and its implications for the viability of local fisheries and the fishing community. The need for dredging is acute for fishermen and for others who depend on Noyo for provisions, services and refuge from often dangerous ocean conditions along this isolated stretch of the North Coast.

Study participants also are concerned about recent and pending events in the larger policy arena including the North Coast Marine Life Protection Act process, begun in late 2009, the individual quota program for the federal groundfish trawl fishery, to be implemented in 2011, and potential offshore energy development, which have the potential to

fundamentally change local fisheries and the community.

Taken together, these issues pose serious challenges to the viability of the Noyo fishing community. Yet they also have motivated individuals, families and businesses to identify opportunities for sustaining their livelihoods and heritage.



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Cover photo by C. Pomeroy.

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# INTRODUCTION

Fort Bragg is located along a remote section of the Northern California coast, approximately 170 miles north of San Francisco and 135 miles south of Eureka (Figure 1). Separated from the interior by the rugged North Coast Range, with only two minor highways (Highways 1 and 20) connecting residents with the outside world, Mendocino County's coastal communities historically have been, and still very much are, resource-dependent.<sup>1</sup> Since the early 19<sup>th</sup> century, logging and the manufacturing of timber along with fishing (sport and commercial) have been the basis for Fort Bragg's social and economic growth. According to Gross (1982), the fishing industry involved as much as one quarter of the labor force in Fort Bragg. In recent decades, tourism and agriculture have increased, helping to offset declines in timber production and fisheries.

Noyo Harbor, located along the Noyo River just south of Fort Bragg, is the center of fishing activity in the area. Established around the turn of the 20<sup>th</sup> century, it is the only port of refuge between Bodega Bay and Eureka, a stretch of some 300 miles. Severe weather is common along this part of the North Coast, often

limiting the number of days one can fish safely, and the harbor entrance can be extremely dangerous. Yet the proximity and consistently high quality of fishing grounds, the location and services at the harbor, and other features have long appealed to fishermen.

The port thrived on salmon for the better part of the last century, supporting both residential and transient commercial fleets as well as recreational fishermen and charter businesses. In addition to salmon [Chinook (*Oncorhynchus tshawytscha*) and historically, coho (*Oncorhynchus kisutch*)], Noyo's commercial fisheries include groundfish (various flatfish, roundfish and rockfish, *Sebastes* spp), red sea urchin (*Strongylocentrotus franciscanus*), Dungeness crab (*Cancer magister*), and occasionally albacore tuna (*Thunnus alalunga*). Other fisheries such as ocean (pink) shrimp (*Pandalus jordani*) have occurred from time to time. Recreational anglers target abalone (*Haliotis rufescens*), salmon, rockfish and other nearshore species such as lingcod (*Ophiodon elongatus*), crab and occasionally albacore.



**Figure 1. Maps of Fort Bragg, indicating location on the California coast, and Noyo Harbor and Dolphin Isle Marina.**

This profile provides an historic and contemporary description of the Noyo Harbor fishing community, focusing on the development of fisheries and related infrastructure, with particular emphasis on the period 1981–2007 (for which detailed landings data are available). We describe present-day fishery operations, activities and associated infrastructure, and discuss some of the key regulatory and economic factors highlighted by study participants that interact with the local fishing community.

The information presented here is based on archival and field research conducted between July 2007 and March 2009.<sup>2</sup> Fieldwork included observation, informal and formal interviews and five group meetings. These activities engaged approximately 40 people, including 19 local commercial and recreational fishermen, seven fish buyers, owners and employees of eight fishery-support businesses, managers of Noyo Harbor and Dolphin Isle Marina, as well as other community members who have experience and knowledge of local fisheries. Field data were analyzed together with commercial fishery landings data from the Pacific Fisheries Information Network (PacFIN) database, recreational fishery data from the California Recreational Fisheries Survey (CRFS) and Commercial Passenger Fishing Vessel (CPFV) logbooks, and information from other primary and secondary sources, to interpret patterns, variability and change within and across fisheries and the fishing community over time.

### ***History of the Port and the Surrounding Area***

The Fort Bragg area was originally inhabited by the Pomo Indians, who had a settlement on the Noyo River (Norman et al. 2007). Their first contact with Europeans was with fur traders in the early 1800s, but with the gold rush of the early 1850s, settlers came to stay.

The first sawmill on California's North Coast was built at the mouth of the Noyo River in 1852 (McEvoy 1986). Violent clashes between settlers and the Native American residents motivated the U.S. government to establish the Mendocino Indian Reservation in 1856, a 25,000-acre area between the Noyo and Ten Mile Rivers. The Fort Bragg military outpost was built shortly thereafter to protect the native residents from encroaching settlers, but was abandoned in 1864 when troops were ordered south. In 1866, the Mendocino Indian Reservation was opened for (nontribal) settlement (Hart 1965 in Norman et al. 2007). Many parcels of land with creeks were sought to build mills for the burgeoning timber trade.

The timber industry and the town itself grew substantially after the Union Lumber Company arrived in the area around 1885. The company established a large mill operation employing hundreds of people, planned city infrastructure, and partnered with steamship companies and railroads to export forest products and bring in supplies for the growing community (Norman et al. 2007). The City of Fort Bragg was incorporated in 1889. The first railroad connecting the area with the rest of the state came into service in 1912, with a line going 35 miles inland to the town of Willits.

Expanding activity in the commercial salmon and groundfish fisheries, as well as the growth of the sport fleet, created the need for an adequate harbor and berthing facilities. Access into and out of the river mouth was limited by the narrow, shallow channel and weather conditions, which could cause dangerous waves to break across the bar. In 1924, the first federally funded improvements were made to Noyo Harbor (Bottin 1988). Jetties were constructed on either side of the main channel and hazardous rocks were removed, allowing fishermen to safely and effectively navigate the harbor entrance (Ponts 1965). Further

## Noyo Harbor Fishing Community Timeline

1800s	Pomo Indians' first contact with European-Americans
1850s	Gold rush: European-American settlement begins
1852	First sawmill at mouth of Noyo River
1857	Fort Bragg military outpost founded
1880s	Timber development booms
1889	City of Fort Bragg incorporated
1898	Start of commercial salmon fishery at Noyo
1912	Railroad extends to Willits Fish shipped to San Francisco markets
1913	Paladini begins receiving salmon at Noyo
1920s	First motorized trollers Salmon canneries established along Noyo River
1931	First federal dredging of Noyo Channel
1940s	Seafood companies established
1948	Highway 1 high-span bridge built
1950	Noyo Harbor District established
1953	Salmon Trollers Marketing Association established
1960s	Dolphin Isle Marina & RV Park opens
1968	Noyo boat basin opens
1976	Magnuson-Stevens Fishery Conservation and Management Act (MSA)
1977	Caito Fisheries opens plant
1982	Salmon limited entry Harbor Ice plant opens
1983	North Coast sea urchin fishery begins
1984	Dolphin Isle Marina expanded
1985	Ocean Fresh Seafoods opens
1988	Record year for commercial fishing activity at Noyo
1992	Moratorium on entry into the Dungeness crab fishery
1993	Salmon re-allocation to tribes (50%) Coho retention prohibited in commercial fishery
1994	Groundfish limited entry
1995	Dungeness crab limited entry Salmon disaster Coho retention prohibited in recreational fishery
1996	Sustainable Fisheries Act (MSA re-authorized)
1998	Marine Life and Nearshore Fishery Management Acts
1999	Marine Life Protection Act (MLPA) Pacific Rim Seafood opens
2000	West Coast groundfish disaster
2002	Nearshore FMP adopted First federal Rockfish Conservation Area established Georgia Pacific Lumber ceases operations
2003	West Coast groundfish trawl buybacks
2006	Klamath salmon disaster
2008	Statewide salmon disaster and fishery closure (after 45 days open at Fort Bragg) In-season sport rockfish closure
2009	Statewide salmon disaster and fishery closure North Coast MLPA process begins



improvements were made through the years, including dredging of navigation channels that extended upstream of the mouth by 0.6 miles (Bottin 1988). Major improvements to the Highway 1 bridge were completed in 1948, when a high-span bridge over Noyo Cove replaced the upriver road crossing.

Noyo Harbor District was established in 1950. The U.S. Coast Guard Station Noyo River was established later in the decade the 1950s (and moved to its current location in the harbor in 1994). Further improvements to the harbor were initiated through the 1962 Rivers and Harbors Act, which led to funding for the construction of the 240-berth mooring basin and associated facilities, which opened in October 1968.<sup>3</sup> Dolphin Isle Marina, located less than a mile upriver, was built in the early 1960s by a private landowner.

## ***History of Noyo Harbor Fisheries***

### **The Establishment of Commercial and Recreational Fisheries**

According to Ponds (1965) and Stebbins (1986), commercial fishing at Noyo began in the 1890s with a few men fishing from rowboats to catch silver (coho) salmon, rockfish, lingcod and halibut. They would sell their fresh fish from a horse-drawn wagon in town, with river salmon selling for \$0.25 a fish. In 1898, a Finnish fisherman caught the first king (Chinook) salmon in the area.

Over the next several years, the number of fishermen selling local salmon increased, creating an oversupply of product, especially given that a market had yet to be developed (due in part to the limited transportation options). Hearing word of the abundant resources in the area, Achille Paladini (who at the time was expanding his fish company in San Francisco) arranged market orders with a small group of fishermen for the 1913 season

to buy and ship their salmon (dressed, in iced boxes) via the new rail line to Willits, and then from Willits to San Francisco. Soon afterward, Paladini opened a receiving and processing operation at Noyo, the first to process and ship fish to outside markets. Following Paladini's lead and in response to increased demand and higher prices associated with World War I, the Columbia Northern Fishing and Packing Company built a mild curing<sup>4</sup> and cold storage plant in 1915, and the Small and Uri Company built a salmon cannery in 1916 (Ponds 1965). The California Western Fish Company (later Caito Fisheries) also started receiving salmon around this time. According to LeBaron (1992), during the period 1917–1920, “there were 300 to 400 boats operating out of the Noyo River during the summer months.”

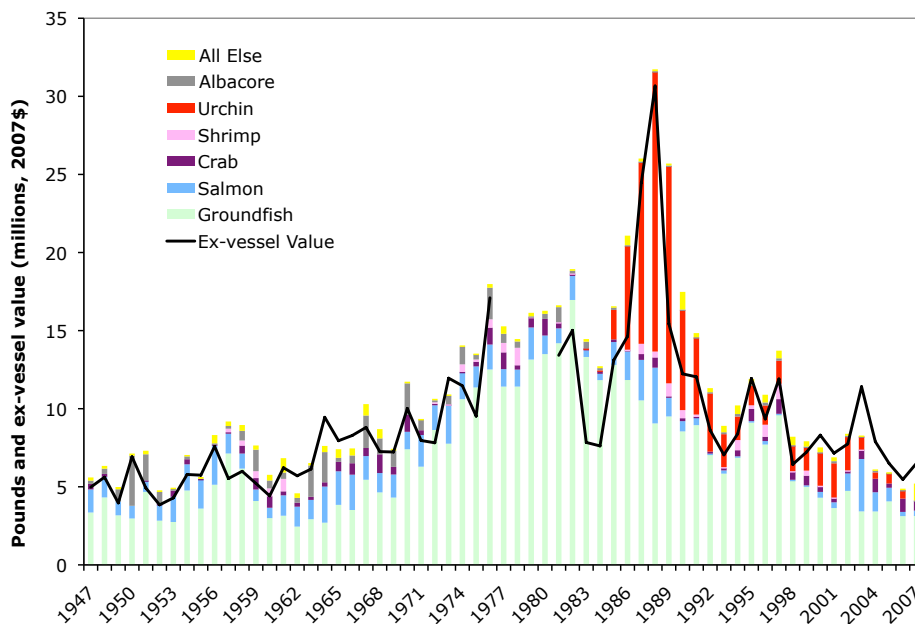
In a 1992 interview, Louis Cavallini, who was raised by pioneering fishermen in Fort Bragg and later managed the Paladini Plant, reported “Out of Noyo they started dragging in the 1920s, but the big boats [trawlers from San Francisco] didn't come in until they built the jetties in 1931” (LeBaron 1992). Cavallini described how trawling for groundfish in the fall and winter gave local fishermen and buyers something to target outside of the salmon season. Starting around 1939, a fishery for soupfin shark, whose livers were sought for vitamin A, exploded. Prices went from \$0.85 per pound in 1939 to \$14 per pound in 1945 (\$10.12 to \$131.58 in 2007\$) before a synthetic alternative was developed, and the fishery ended (Femling 1984). However, many fishermen and processors profited handsomely, and their investments in bigger boats, materials and technology (e.g., nylon nets, radar) that became available following World War II furthered the expansion of local fisheries. Boat building also expanded at Fort Bragg. According to Ponds (1965), the first boat building operation was established by Fred Lankola in 1925. The United Fish Company

ran another boatbuilding company until 1951, then was bought by local fish plant operator Bill Grader.<sup>5</sup> In 1940, the Makela brothers began crafting wooden boats. (Howard, the son of one of the brothers, continues the business to this day.) Paul Lackey, a local fisherman, also built boats in the 1960s, and was the first to build steel boats at Fort Bragg. Many years later, Chris Van Peer established a business building larger steel boats for customers from California to Alaska.

Through the 1950s and 1960s, the salmon fishery was the main focus of commercial activity. Several more fish companies moved to Noyo Harbor, setting up buying stations, canneries or processing plants along the river. According to Pons (1965), these included the F. Alioto (1943), Meredith (1948), Grader (1951), and California Shell (1962) fish companies. Landings of salmon (coho and Chinook) averaged 1.3 million pounds per year (worth \$2.8 million, 2007\$) from 1951 to 1960 (Figure 2). Many of these companies

also bought groundfish from trawl and set line fishermen, with much of the catch trucked to San Francisco for processing (Stebbins 1986). Groundfish catches during that time averaged 4.4 million pounds worth \$1.6 million. The albacore and Dungeness crab fisheries played a lesser role, but nonetheless contributed to activity at the port.

An active sport fishery developed following the commercial salmon fishery, with nonresident participation encouraged by the growth of automobile travel in the 1950s and 1960s. Historic data on recreational finfish catches for 1947–1967 indicate the growth of recreational salmon and groundfish fishing activity in the Fort Bragg area (including Albion and Point Arena) beginning in 1952, with anglers landing some 5,000 salmon and 1,000 groundfish in 1956 (Young 1969). Fishing effort varied widely with 12–3,374 angler days reported in the 1950s, and 837–4,193 angler days reported in the 1960s.<sup>6</sup> Sportsmen’s Dock and RV Park was constructed in 1954 near the river mouth on



**Figure 2. Pounds and ex-vessel value (2007\$) of commercial fishery landings at Noyo Harbor, 1947–2007 (CDFG Fish Bulletin Series). Note: Ex-vessel value data for 1977–1980 are not available; urchin data are available only for 1981-2007.**

the north side of the harbor. The business continued into at least the early 1980s, offering marine supplies (including fuel), a cannery for processing sport catches, and boats for rent (Anon. 1983). In the mid-1960s six to seven party boats (CPFVs) operated out of Noyo Harbor, and during salmon season an estimated 200 private skiffs motored in and out of the harbor daily (Henning 1966).

As early as the 1970s, the seasonal influx of anglers and other tourists would significantly expand the population of Fort Bragg and the surrounding area during the summer months (PFMC 1978). As of the early 1980s, three charter vessels – the *Tally Ho II*, the *Beulah*, and the *Pattercat* – specialized in salmon and albacore fishing out of Noyo Harbor (Anon. 1983).

As the recreational fisheries for finfish species grew, so did the sport fishery for red abalone, which had started well before World War II. According to (Cox 1962), prior to that time, almost all sport fishing for abalone was done in the intertidal zone during low tide. The advent of rubber skin diving suits, however, made collecting in nearshore waters (regardless of the tide) possible, whether from shore or from skiffs launched from the beach, Noyo Harbor or other local landings.

Commercial fishing activity at Noyo Harbor continued to expand through the 1970s, encouraged directly and indirectly by various federal programs aimed at encouraging the development of the nation's fisheries. The 1971 reauthorization of the Farm Credit Act enabled commercial fishermen to obtain loans through local Production Credit Associations, which had been making such loans to farmers and ranchers since 1933 (Deweese 1976, NOAA 1999). Additionally, the Capital Construction Fund and Fishing Vessel Obligation Guarantee program (authorized by the Federal Ship

Financing Act of 1972) offered low interest or government-backed loans, tax-deferred vessel repair and construction programs, fuel tax relief, gear replacement funds, market expansion programs and technical assistance (NOAA 1999). These opportunities helped to substantially increase fleet size and capacity.

Into the 1980s, the mix of commercial fisheries changed somewhat due to increasing regulation of the salmon and groundfish fisheries and the development of the red sea urchin fishery. Originating in Southern California in the early 1970s, the fishery targeted red sea urchin for their roe (eggs), a highly valued seafood in Japan (Kalvass and Hendrix 1997). Although landings were made in the area as early as 1972, the fishery remained small until the early 1980s when fishermen from the maturing Southern California urchin fishery began to explore the grounds off Fort Bragg. At that point, the Northern California fishery grew rapidly, helped by increased market demand, as well as a weak U.S. dollar relative to the Japanese yen at that time (Deweese 2003). Effort and landings in the urchin fishery peaked in the late 1980s, then declined with changing resource conditions, markets and prices. Meanwhile, a commercial fishery for hagfish developed out of Noyo in 1989, but was short-lived due to the collapse of the Korean eel skin market.

According to the Noyo Harbor Plan (Winfield Smith & Associates and Land Planning Research 1992), in 1990 there were five fish and/or urchin processing plants<sup>7</sup>, three boat repair yards, seven stores that provided marine hardware, equipment and repair, and one boat building yard located at the harbor. Berthing included 269 occupied slips (with a waiting list) at the boat basin and just over 100 slips (used mostly by 15- to 18-foot commercial vessels) at Dolphin Isle Marina. As many as 500 boats occupied the harbor during peak

salmon fishing season, and would tie up at any available dock or float, or raft to (tie up alongside) other boats downriver from the boat basin. Harbor District staff report that the boat basin was fully occupied, 85% by commercial boats and 15% by recreational boats, at that time.

### **The Expansion of Fishery Management**

#### *Commercial fishery management*

Through the late 1970s, Fort Bragg area fisheries were subject to modest management, and landings were driven largely by resource availability and market demand. With the passage of the Magnuson-Stevens Fishery Conservation and Management Act in 1976, and the creation of the Pacific Fishery Management Council (PFMC), as well as increased state fishery management, things began to change. By the late 1970s and early 1980s, the fishing community faced increasing restrictions in the salmon troll and groundfish trawl fisheries.

During the period 1971–1979, the California commercial salmon season lasted from mid-April through September (a month shorter for coho; PFMC Salmon Technical Team 1993). In 1979, fishery managers divided the state into north and south management areas and in 1982, implemented a limited entry program that reduced the size of the fleet at Noyo as well as other salmon ports statewide. The troll season off the Mendocino coast declined to 131–153 days during the period 1981–1988, and further contracted to 107–114 days during the period 1989–1991. In 1992, the season was closed. Since then, the season has been open for 1–2½ months – with five exceptions: the 118-day opener in 2003, the 5-day opener in 2006, and the fishery closures in 1992, 2008 and 2009. The 1992 and 2006 actions were due to conservation concerns regarding Klamath fall Chinook, while the 2008 and 2009 closures were due to low escapement of Sacramento River fall Chinook.

Season length and other regulatory constraints since the early 1990s have been related to a number of factors. Beginning in 1992, the PFMC prohibited retention of coho in the commercial salmon fishery south of Cape Falcon (Oregon) to address conservation concerns regarding Oregon Coastal Natural coho (PFMC 1992). This led to fishery disaster declarations for Northern California and Southern Oregon fishing communities in 1994 and 1995.<sup>8</sup> In 1993, the U.S. Department of the Interior Solicitor issued an opinion allocating 50% of Klamath-Trinity River Chinook salmon to the Yurok and Hoopa tribes (Digitale 1992, Pierce 1998). This was significantly higher than the 30% tribal allocation brokered by the Klamath Fishery Management Council in a previous 1987–1991 agreement, and required reduced allocations for the nontribal sectors of the fishery.<sup>9</sup>

As the salmon fishery faced increasing constraints, the sea urchin fishery expanded. The local urchin fishery peaked in 1988 with just over 47 million pounds landed statewide, about 18 million pounds (38%) of which was landed in Fort Bragg.<sup>10</sup> Prior to 1989, the red sea urchin fishery was largely unregulated, and in the 1960s, sea urchin eradication programs were implemented to reduce grazing on kelp, which was harvested for industrial uses (Deweese 2003). In 1987, following recognition by the industry and the CDFG that the fishery was in need of active management, the CDFG Director's Sea Urchin Advisory Committee (DSUAC) was formed, and the state implemented a moratorium on new permits, and restricted access – along with minimum size limits – in 1989. The following year, an effort reduction scheme was implemented, and within-season closures were added in the early 1990s. In 2003, the state eliminated the statewide May through September monthly week-long closures, following an overall effort decline (induced by regulatory and market

conditions) together with industry concerns that the closures made it difficult to maintain a consistent market presence during the summer months (CDFG 2004). At present, the season is open four days per week from June through October, and seven days per week from November through May.

The groundfish fishery also was a key component of activity at Noyo Harbor, although it, too, faced substantial changes over time. In 1982, the PFMC implemented the federal West Coast Groundfish Fishery Management Plan (FMP), and began to manage the commercial fishery with measures such as harvest guidelines, trip landing and trip frequency limits, and gear restrictions. In 1994, the PFMC implemented a coastwide limited entry program for the trawl and fixed gear (hook-and-line and pot) fisheries; a small open access fishery for nontrawl fishermen also was retained.

In 1992, the PFMC adopted a harvest rate policy for groundfish based on the assumption that West Coast groundfish were similar in productivity to other well-studied groundfish stocks. Over the next eight years, as growing scientific evidence indicated that rockfish had productivity rates much lower than other groundfish species, the PFMC adopted increasingly restrictive management measures.<sup>11</sup> To afford fishery participants more flexibility and enable them to reduce discards associated with shrinking trip limits, trip limits were subsequently replaced with cumulative landing limits that gradually expanded in duration: weekly, biweekly, monthly, bimonthly. However, these new restrictions, as unprecedented as they were, came too late to reverse the effects of longstanding harvest policies based on inaccurate assumptions. Between 1999 and 2002, eight groundfish stocks were declared overfished<sup>12</sup> and, in 2000, a federal disaster was declared in the West Coast groundfish fishery.

To rebuild overfished stocks, optimum yields (OYs) and vessel landing limits for healthy stocks typically taken with the species of concern, as well as those overfished species, were cut further for both limited entry and open access vessels. The PFMC also implemented rockfish conservation areas (RCAs) to reduce the catch of overfished species (PFMC 2008). Implemented in September 2002, the first federal RCA closed continental shelf and slope waters to commercial groundfish fishing from near Cape Mendocino (north of Fort Bragg) north to the Canadian border. The severe decline in harvest opportunities exacerbated the problem of excess harvest capacity, and led to measures such as the industry-funded federal West Coast groundfish trawl buyback program in 2003. In subsequent years, groundfish trawlers have been subject to area closures to protect groundfish Essential Fish Habitat and both limited entry and open access vessels have been required to carry vessel-monitoring systems.<sup>13</sup>

Management of the groundfish fishery in state waters (0–3 miles) also became more restrictive during this time. Motivated by the emerging live fish fishery (McKee-Lewis 1996), the passage of the Nearshore Fishery Management Act (within the state's Marine Life Management Act) in 1998 established minimum sizes for 10 commonly caught nearshore species, established a permit for those 10 species (effective in 1999), and mandated the development of a Nearshore FMP. In 2001, the nearshore rockfish fishery was closed outside 20 fathoms from March through June. Two years later, the state implemented the Nearshore FMP which specified management measures for 19 nearshore species including gear and seasonal restrictions, as well as a restricted access program as a means to achieve the statewide capacity goal of 61 participants (down from

1,128 in 1999). Six local fishermen currently hold nearshore fishery permits.

The urchin fishery was managed historically using gear, minimum size and season length measures. Following a sharp increase in effort, the state established a moratorium on new permits in 1987, and limited entry in 1989. Through the early 1990s, the state implemented a stringent effort-reduction scheme, which required a 10-for-one permit swap for entry into the fishery, and established seasonal and weekly closures. In 2003, with fishery participation effectively capped, inseason temporal closures were relaxed.

The Dungeness crab fishery has not experienced the types of dramatic management changes as have occurred in the salmon and groundfish fisheries. The state has used a “three S” (sex, size, season) strategy that includes male-only harvest (since 1897), a minimum size limit (since 1911) and a limited season (since 1957) to manage the fishery. In 1992, the state placed a moratorium on entry; in 1995, a restricted access program was implemented. The northern crab season usually runs from December 1 through July 15 (with an early season opener off San Francisco starting November 15), but its start has been delayed in some years because of price disputes. In addition, the opening of the crab season may be delayed to insure that males have completed molting, as occurred in 2005. In 2009, the state convened a Dungeness Crab Task Force in response to concerns about recent increases in participation and gear use. Following the recommendation of the Task Force (California Dungeness Crab Task Force 2010), a bill that would establish a pilot crab pot allocation program to address those concerns (SB 1039, Wiggins) is pending in the State Legislature.

#### *Recreational fishery management*

Recreational fishing activity also has been affected by changes in salmon and groundfish regulations over time. Through 1991, the recreational salmon season was open from about mid- February through mid-November, and averaged 264 days (about nine months). In 1992, however, the season was reduced to 200 days (about six months) to help address concerns about the status of Klamath River fall Chinook. The local fishery was closed during June, the latter half of July, and August, the traditional height of the season when visiting as well as local anglers typically fish from Noyo Harbor. Nevertheless, the Fort Bragg area offered considerably more fishing opportunity than the 14-day season in the California portion of the Klamath Management Zone (KMZ), located north of Fort Bragg. From 1993 through 2007, mid-season closures continued, and the local salmon season averaged 259 days (just under nine months). As in earlier years, the season was longer in the Fort Bragg area than in areas further north. In 2008, however, conservation concerns regarding Sacramento River fall Chinook drastically curtailed the Fort Bragg season to 45 days (with a complete closure everywhere else in the state). In 2009, the fishery was closed statewide (except for a 10-day opener in the California portion of the KMZ).

The recreational groundfish fishery out of Noyo (as elsewhere in the state) has been increasingly constrained since the late 1990s to address concerns regarding depleted or overfished groundfish stocks. Measures have included bag limit reductions first implemented in 1998, season length restrictions since 2001, and depth-based area closures since 2004. In 2001, the once year-round fishery was compressed to two months. Season length in that area gradually increased to nine months in recent years, as area closures have somewhat mitigated the need for short seasons. In

general, seasons have not been as restrictive in Fort Bragg as in the rest of the state, with the exception of 2005, when the state's South-Central season (seven months) exceeded Fort Bragg's (six months).

The recreational fishery for red abalone has been subject to regulation since the early 1900s, with measures related to gear use, timing, species, number and size of animals taken and other aspects of the fishery (CDFG 2006). Starting in the 1950s, the use of scuba gear was prohibited, and the fishery was limited to daylight hours (one-half hour before

sunrise to one-half hour after sunset). Since 1976, the season has been limited to April through June and August through November. Divers have been limited to red abalone since the mid-1990s, and in 1997, the fishery was closed south of San Francisco. In 2000, a mandatory report card and an annual limit of 100 abalone per person were implemented. Two years later, the daily bag limit for red abalone was reduced from 4 to 3, and the annual limit was reduced from 100 to 24 per person, due to concerns about the status of local stocks.

# THE NOYO HARBOR FISHING COMMUNITY TODAY

The Noyo Harbor fishing community is comprised of commercial and recreational fishery participants and their families, as well as fishery-support businesses (including the harbor district), that provide goods and services that fishery participants need to operate safely and effectively (Table 1). Local commercial fisheries include a diversity of participants engaged in a range of fisheries and fishery-related activities. Recreational fisheries include private boat and commercial passenger fishing vessel (CPFV) or ‘charter’ operations that involve locals and nonlocals alike.

## ***Commercial Fisheries***

The primary commercial fisheries at Noyo Harbor currently include the groundfish trawl, urchin dive, Chinook salmon troll, Dungeness crab pot, and sablefish and rockfish/lingcod hook-and-line and trap fisheries.<sup>14</sup> Other fisheries of past or lesser importance include the albacore troll, shrimp trawl, and Humboldt squid jig fisheries, among others.

Most of these fisheries are seasonal as a function of resource availability, regulations, the availability of buyers, and market demand (Table 2). However, it should be noted that the actual temporal distribution of activity is often more compressed, variable and complex than suggested by this table. For instance, the availability of albacore varies widely from year to year, contingent on environmental conditions. The salmon fishery at Noyo Harbor is consistently open in September and sometimes in additional months (most commonly July and/or August), except when the fishery is closed statewide (as it was in 2008 and 2009). The Dungeness crab and sea urchin fisheries are concentrated in the winter months during peak holiday demand, and the urchin fishery is closed three days per

week from June through October. Groundfish seasons tend to be defined in two-month increments (reflecting the use of bimonthly vessel cumulative landing limits), vary by species and fishery sector, and are sometimes subject to inseason closures to prevent optimum yield (OY) of selected species from being exceeded.

As of early 2009, approximately 60–80 commercial fishing vessels were homeported at Noyo Harbor. Fishery participants described the makeup of the resident fleet as including roughly seven trawlers, 30–40 salmon trollers, 15–20 multi-fishery vessels, and about 10–15 urchin dive boats.<sup>15</sup> Although some fishermen in these groups are specialized, most participate in multiple fisheries. Some are full-time, while others are part-time fishermen. Full-time skippers depend on fishing for their livelihood and fish year-round, as resource availability, weather and regulations permit. Part-time skippers fish part of the year, often focusing on a single fishery, and may pursue other activities (on or off the water) as part of their livelihood.

The frequency and duration of fishing trips varies within and among fisheries. Most of Noyo’s hook-and-line groundfish vessels work as day-boats, while most groundfish trawlers are trip-boats, taking trips of one to four days. Local salmon and crab trips last one to five days. Some fishermen travel up and/or down the coast to follow the salmon (and the openers). In addition, some crabbers travel to the San Francisco Bay area for the mid-November opening of the fishery in that region. For those who target albacore, trips last from 14 to 40 days, with deliveries made locally or at Oregon and Washington ports with sufficient receiving and processing capacity.



**Table 1. Support businesses used by Noyo Harbor fishery participants. Note: Blank space in number of employees = unknown; ‘OOB’ = out of business.**

<b>Business Type</b>	<b>Business Name</b>	<b>Number of Employees</b>
Receivers	Caito Fisheries	50
	Captain Bobino’s	
	Ocean Fresh, LLC	45–50
	P Seafoods*	4 FT
	Pacific Rim Seafood	50 FT/PT
	Tommy’s Marine Service & Supply	2 FT
Processors	Caito Fisheries	(see above)
	Ocean Fresh, LLC	(see above)
	Pacific Rim Seafood	(see above)
Marine Supply/Repair (mechanical, electrical, hydraulic)	ACME Hardware	
	Emerson’s Marine Service	
	Estes Marine	OOB
	Fort Bragg Marine	1 FT
	Tommy’s Marine Service & Supply	(see above)
	Westfall Commercial Marine	OOB
Marine Refrigeration	John Ruczak Refrigeration	1FT, 1PT
Cold Storage	None	n/a
Ice Facility	Harbor Ice	1 FT
Fuel	Fort Bragg Marine	1 FT
	Mendocino Coast Petroleum	
Bait	Noyo Fishing Center	1 FT
Vessel Repair/Maintenance	Makela Boat Builders	1 FT
	Tommy’s Marine Service	(see above)
	Van Peer Boat Works	1–3FT
	Dan’s Diving Service	1 PT
Commercial Diver		
Retail Fish Market	Harvest Market	
	Fish Peddler	1 FT
	Nemo’s Market (Ocean Fresh)	
	All Aboard Adventures (F/V <i>Seahawk</i> )	4 FT/PT
Charter Operation	Anchor Charter Boats (F/V <i>Trek II</i> )	
	Fort Bragg Sportfishing (F/V <i>Bragg-N</i> )	2 FT
	North Coast Fishing Adventures & Noyo Fishing Center (F/V <i>Rumblefish</i> )	1 FT
	Telstar Charters (F/V <i>Telstar</i> )	1 FT
	Fort Bragg Marine (kayak/dive gear rentals/sales)	2 FT
	Noyo Fishing Center	(see above)
Kayak Rental	Subsurface Progression	(see above)
	Noyo Harbor District	3 FT, 1PT, seasonal
Port Management	Dolphin Isle Marina	4 FT, 1–2 PT
	SeaPal (fish emulsion producer)	1 FT, 1 PT
Other	Bruce Abernathy (marine salvage)	

\* Out of business as of early 2010; Zephyr Seafoods owns and operates receiving station.

**Table 2. Seasonality of selected commercial fisheries at Noyo Harbor.**

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
<b>Albacore</b>												
<b>Crab</b>												
<b>Groundfish</b>												
<b>Pink shrimp</b>												
<b>Salmon</b>												
<b>Urchin</b>												

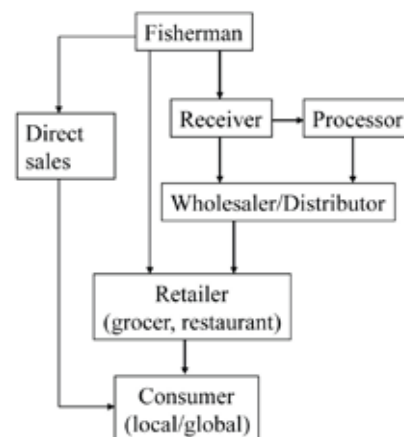
Urchin divers make day trips, but occasionally relocate to other North Coast ports such as Albion, Point Arena and, in the past, Bodega Bay, depending on the distribution and accessibility of the resource.

In addition to resident fishermen, a number of transient fishermen use Noyo Harbor and Fort Bragg’s fishery-support infrastructure, especially during salmon season. Because the fishing grounds off Fort Bragg have historically been among the best for salmon, and because of tighter restrictions to the north, many California commercial salmon fishermen from other ports call at Noyo during the season.

***Noyo Harbor Seafood Receiving, Processing and Marketing***

As of March 2009, local receiving and processing capacity consisted of six buyers with receiving stations, including three receiver/processors. Caito Fisheries processes mainly groundfish,

crab and salmon, while the two other processors (Ocean Fresh and Pacific Rim Seafood) are primarily focused on urchin. In the landings data, several fishermen – and some fishermen from outside the area – are counted among local buyers because they market some of their (and perhaps others’) catch directly to retailers and to consumers (e.g., through ‘off-the-boat’ sales; Figure 3). Because there is no public hoist for offloading fish, some resident buyers also receive fish on behalf of these fishermen as well as other entities based elsewhere along the West Coast. Some fish businesses that operate out of Noyo Harbor are vertically integrated, and function in multiple roles (e.g. receiving, processing, wholesaling and distributing).



**Figure 3. Pathways of seafood landed at Noyo Harbor. Note: thicker arrows indicate most common pathways.**

**Table 3. Product forms, processing location and destination of seafood landed at Noyo Harbor for selected fisheries.**

	<b>Product forms</b>	<b>Processing location</b>	<b>Markets</b>
Albacore	Whole, filet, canned	Noyo Harbor, Other California	Local to nationwide
Crab	Cooked whole & sectioned, picked and canned, live	Noyo Harbor	Local to nationwide
Groundfish	Whole, filet, live	Noyo Harbor, Other California	Local to overseas
Salmon	Whole, filet, steak, smoked	Noyo Harbor, Other California	Local to nationwide
Sea urchin	Packed roe	Noyo Harbor	Large metropolitan areas nationwide, Japan

Product forms vary within and across fisheries (Table 3). Most groundfish – about 50-60%, according to a local receiver – is processed locally. At least one resident fish receiver as well as several local fishermen handle live fish for transport to San Francisco Bay area markets. Salmon and albacore products primarily include whole, dressed fish (which have been gutted); some of the catch is cut into filets and steaks, or processed into smoked or canned products for local or regional sale. Crab landed at Noyo Harbor may be cooked and frozen whole or in sections (with a small amount picked and canned), although live crab has become more common over the past decade, largely due to growing demand in the San Francisco Bay area. Sea urchin is processed by chilling, breaking open the shell to remove the roe, and packing it in wooden trays for shipment to markets throughout the U.S. and Japan.

### ***Ocean Recreational Fishing***

Recreational fishing out of Noyo Harbor is done from private boats as well as charter operations (CPFVs). As of early 2009, five CPFVs (with 6- to 40-person capacity) served resident and nonresident anglers. Kayak-based fishing is increasingly popular, with a number of local shops providing rentals.

Noyo Harbor anglers pursue an annual round of fisheries that primarily includes Chinook salmon, groundfish (especially rockfish and lingcod) and abalone, along with some albacore and Dungeness crab (Table 4). As with commercial fisheries, the seasonality of recreational fisheries is defined by resource availability and regulations, and further limited by conditions at the harbor entrance and weather in general. Therefore, actual recreational activity is often more compressed and variable than indicated by the table.

**Table 4. Seasonality of major recreational fisheries at Noyo Harbor.**

	<b>JAN</b>	<b>FEB</b>	<b>MAR</b>	<b>APR</b>	<b>MAY</b>	<b>JUNE</b>	<b>JULY</b>	<b>AUG</b>	<b>SEP</b>	<b>OCT</b>	<b>NOV</b>	<b>DEC</b>
<b>Abalone</b>												
<b>Albacore</b>												
<b>Crab</b>												
<b>Groundfish</b>												
<b>Salmon</b>												



### ***Harbor Infrastructure and Fishery-Support Businesses***

The port of Noyo is governed by the Noyo Harbor District, an independent special district of the state established in 1950 under the California Harbors and Navigation Code (Sec. 6200 et seq.). The district is governed by a five-member Board of Commissioners appointed by the Fort Bragg City Council and the Mendocino County Board of Supervisors every four years. The district owns land and tideland properties on roughly 41 acres adjacent to the southern city limits (Winfield Smith Associates & Land Planning Research 1992). Funding for improvements and maintenance is derived primarily from slip, hoist and pier use fees.

Harbor-managed infrastructure is primarily located along the south side of the river, and consists of a 240-slip boat basin with service facilities, a work hoist (fish offloading is prohibited), two launch ramps, harbor office building, and parking and storage areas (Table 5). Further upriver is Dolphin Isle Marina and RV Park, with 150 slips (100 in the marina, 50 in the adjacent river for small boats), 85 RV spaces, a fuel dock, a café and store, a fish-cleaning station and a vacation rental (for visiting fishermen and others). Adjacent to the marina are two small businesses, including a small engine repair shop. Both resident and nonresident fishery participants (fishermen and fish buyers) depend on this infrastructure, as well as the goods and services provided by approximately 25 local

fishery-support businesses and at least four located elsewhere in the North Coast region (see Table 1, Table 6). Although the harbor does not have a boatyard to handle larger vessels, one business provides a facility for hauling out smaller boats (up to 50 feet in length) for maintenance and repair, another specializes in wooden boat construction, restoration and repair, and steel boat builder is located within a mile of the harbor.

Although specific needs vary by fishery and fishing operation, the harbor area businesses most commonly used by commercial fishermen include receivers/processors, marine repair and supply services, the fuel dock and the ice plant. Recreational fishermen utilize the marinas at Noyo Harbor and Dolphin Isle, marine supply stores and fuel dock, as well as hotels, campgrounds, restaurants and grocery stores in and around Fort Bragg.

### ***Fishing Organizations and Events***

Several fishing organizations are active in Fort Bragg. The oldest local organization is the Salmon Trollers Marketing Association (STMA), established in 1953 to address fishermen's interests at the harbor and in fishery management. At the height of the salmon fishery in the early 1980s, the STMA had 350 members (Gross 1982); today, it has about 40 members, and is headquartered at the harbor.

The Fishermen's Marketing Association (FMA), based in McKinleyville, California,



**Table 5. Noyo Harbor and Dolphin Isle Marina infrastructure and resident businesses, as of July 2008.**

<b>Location</b>	<b>Harbor-owned facilities and services</b>	<b>Resident business types</b>
Noyo Harbor	Docks/slips Inner basin (240) Transient dock Launch ramps (2) Fuel dock (operated by Fort Bragg Marine Supply)  Offloading infrastructure - None  Other infrastructure - Work dock/hoist - Bilge pump-out station - Oil recycling station - Visitor berthing - Dock power, water - Waste disposal - Storage lot - Parking lot - Bathrooms/showers	Bait/tackle shops (2) Boat building/repair (2) Charter operations (5) Coast Guard station (1) Fish buyer (6) Fish emulsion producer (1) Fish processor (3) Fish market (2) Ice plant (1) Marina (1) Marine salvage (1) Marine surveyor (1) Marine supplies (3) Restaurants (7)
Dolphin Isle Marina	Docks/slips Marina (100) Adjacent to marina (50) Fuel dock Offloading infrastructure - None Other infrastructure - Visitor berthing - Dock power, water - Fish cleaning station - Waste disposal - Parking lot - RV hookups (85) - Vacation rental - Bathrooms/showers - Laundry - Café	Small engine repair (1)

**Table 6. Out-of-area support businesses used by Noyo Harbor fishery participants.**

<b>Business name</b>	<b>Business Type</b>	<b>Location</b>
Trinity Diesel	Hydraulics	Eureka
Englund Marine	Marine supply	Eureka
Fred's Marine Electronics	Marine electrical	Eureka
Fashion Blacksmith	Vessel repair/maintenance, fabrication	Crescent City

was established in 1952 by a group of Eureka-based groundfish trawl fishermen to address marketing issues with fish buyers, and in later years, management issues. In the late 1980s, the organization expanded to include shrimp trawlers and groundfish trawlers from other port areas, including Fort Bragg.

The California Sea Urchin Commission (CSUC), established in 2004 (replacing the Sea Urchin Harvesters' Association California, SUHAC), includes several local fishery participants.<sup>16</sup> The organization plays multiple roles including funding and participating in research on the resource and the fishery; developing management alternatives, educational and marketing programs; and advocating for the industry.

Established in the 1970s, Noyo Women for Fisheries (NWFF) promotes the fishing industry and seafood products through education and advocacy. With 15–20 members at present, it has developed and implemented a fisheries curriculum for local elementary school children, produced seafood cookbooks, and worked together with the STMA, the Salmon Restoration Committee and others in the community to put on the annual “World’s Largest Salmon Barbecue” in July each year.<sup>17</sup>

In addition, NWFF maintains the Memorial Garden at Noyo Harbor, which they established in the early 1970s, to honor those lost at sea.

The North Coast Fishing Association (NCFA), established in 2004, currently has about 120 members, more than half of them from the Fort Bragg area. The NCFA advocates for regional recreational fishing interests on a variety of fishery issues, including the Marine Life Protection Act (MLPA) process and proposed offshore wave energy projects along the North Coast. It also educates anglers, for example, distributing deflator/descender kits to promote safe and effective return of live rockfish to the ocean. The NCFA is affiliated with the national Recreational Fishing Alliance, and communicates with the Humboldt Tuna Club in Eureka.

In 2007, as the North Coast became the focus of wave energy development discussions in the state, local fishing organization representatives and other interests joined in the establishment of Fishermen Interested in Safe Hydrokinetics (FISH). FISH monitors and comments on the wave energy permitting and licenses processes conducted by the Federal Energy Regulatory Commission (FERC) off the Mendocino County coast (Bacher 2009).

## COMMERCIAL FISHERY ACTIVITY AT NOYO HARBOR

The information in this section is based on customized summaries of Pacific Fisheries Information Network (PacFIN) landings receipt data, augmented by sources that provide earlier and/or longer-term data, as well as data from fieldwork conducted in 2007 and 2008. In the discussion that follows, the *long term* is the period from 1981 through 2007, whereas *recent years* pertains to the most recent five years of the time series (2003–2007), unless otherwise noted.<sup>18</sup> The purpose of focusing on these two time periods is to demonstrate how recent activity compares to the longer-term. While the long-term trends described in this section begin in 1981, it should be noted that some local fisheries (e.g., groundfish, salmon, crab) were established well before that year (see Figure 2).<sup>19</sup>

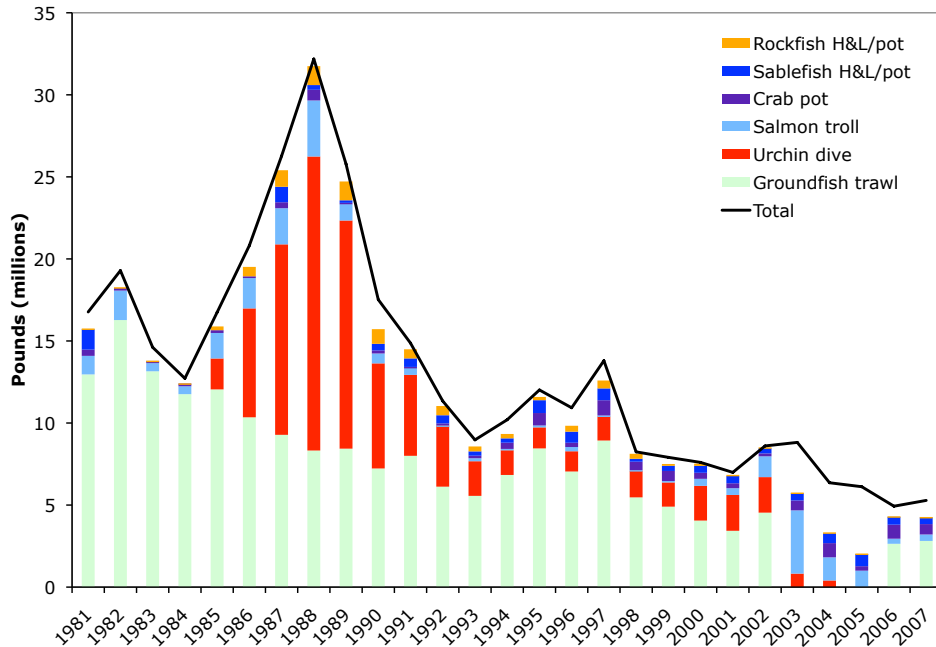
We use five measures of fishing activity derived from the landings receipt data. Landings are reported as ‘round weight’ (in pounds), reflecting the total weight of the fish caught. (For species like salmon, which are gutted at sea, landed weights are converted to round weights to provide comparability with other species.) Ex-vessel value represents the amount paid to fishermen at the first point of sale (usually to a dockside buyer or receiver). Prices are calculated as the total ex-vessel value divided by total pounds landed. Both ex-vessel value and price are adjusted for inflation using 2007 values as a base. Boat counts represent individual (resident and nonresident) fishing operations, though not necessarily individual fishermen, as some fishermen may own and/or operate multiple boats, and most boats have crew (and possibly multiple skippers) that these counts do not include. Buyer counts are based on the number of unique buyer IDs in the landings data, and include fishermen who land their own catch (e.g., for off-the-boat sales, direct sales to

grocers and restaurants) as well as buyers who purchase fish from fishermen delivering their catch at the docks.<sup>20</sup> The number of trips provides a count of the number of deliveries each boat makes at the port.<sup>21</sup> To insure confidentiality, data are not reported for some fisheries and/or years if fewer than three vessels or buyers participated.

Overall fishing activity at Noyo has declined over time, as indicated by most measures. Total annual landings (all species) have ranged from a high of 32.2 million pounds (in 1988) to a low of about 4.9 million pounds (in 2006; Figure 4, Table 7). Average annual landings were 52% lower in recent years (6.3 million pounds) relative to the long-term average (13.2 million pounds). This difference reflects an 81% reduction in urchin landings and a 60% reduction in groundfish trawl landings, partially offset by a 52% increase in salmon landings and a 70% increase in crab landings between the long term and recent years.

Groundfish trawl, urchin and salmon were the top three fisheries over the long term, accounting on average for 58%, 20% and 7%, respectively, of total landings. These fisheries’ contribution to total landings peaked as follows: groundfish in 1982 (at 92%), urchin in 1988 (at 56%), and salmon in 2003 (at 44%). These fisheries continue to dominate landings





**Figure 4. Commercial fishery landings (millions of pounds) at Noyo Harbor for selected fisheries and overall, 1981–2007. Note: Activity cannot be reported for years when more than zero but fewer than three boats or buyers participated in the groundfish trawl (2003–2005), sablefish (1982–1986) and urchin (1983–1984, 2005–2007) fisheries.**

**Table 7. Long-term and recent annual average, percent difference, and highs and lows in selected measures for commercial fisheries at Noyo Harbor, 1981–2007.**

All fisheries	Long-term average (1981–2007)	Recent average (2003–2007)	Percent difference	High year(s) (amount)	Low year(s) (amount)
Landings (lbs)	13,173,619	6,302,142	-52	1988 (32,185,639)	2006 (4,930,105)
Ex-vessel value (\$)	11,017,673	7,560,411	-31	1988 (30,616,680)	2006 (5,474,908)
Boats	458	258	-44	1988 (968)	1998 (175)
Buyers	39	45	+15	2003 (56)	1982 (20)
Trips	6,744	3,097	-54	1988 (20,638)	2006 (2,322)
Price (\$/lb)	0.88	1.19	+34	2003 (1.30)	1983 (0.54)

at the port, accounting for 48%, 11% and 19%, respectively, of landings in recent years.

The crab and sablefish fisheries each accounted for less than 5% of landings over the long term, but increased to 11% and 9%, respectively, in recent years. The rockfish fishery has played a

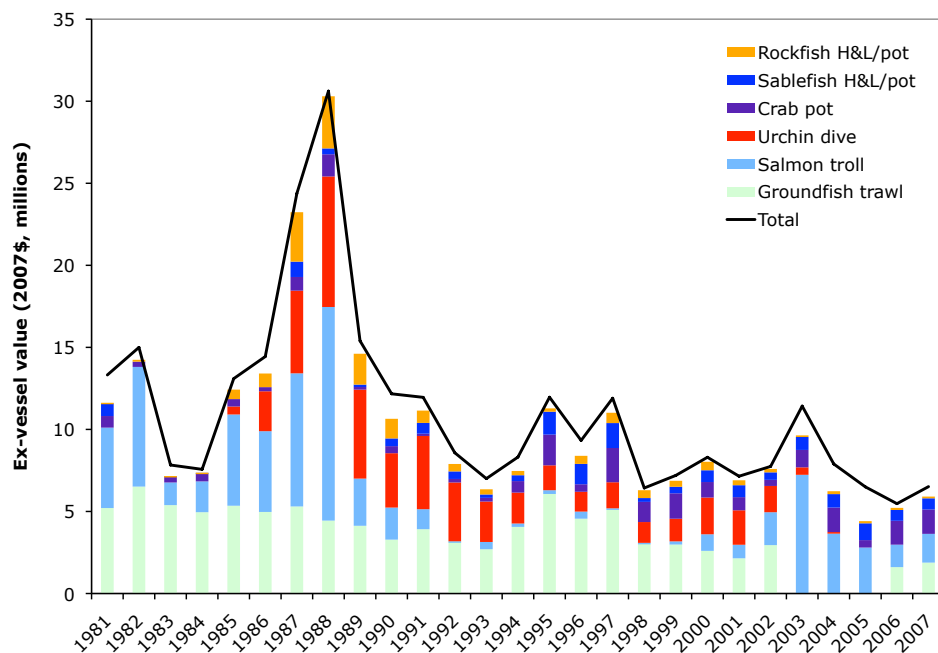
lesser role, accounting for 2% of landings over the long term and less than 1% in recent years. Still other fisheries, including albacore, shrimp, shark and hagfish, have played a small or intermittent role at the port, even if they have figured more importantly in the annual round of fisheries for some individuals.



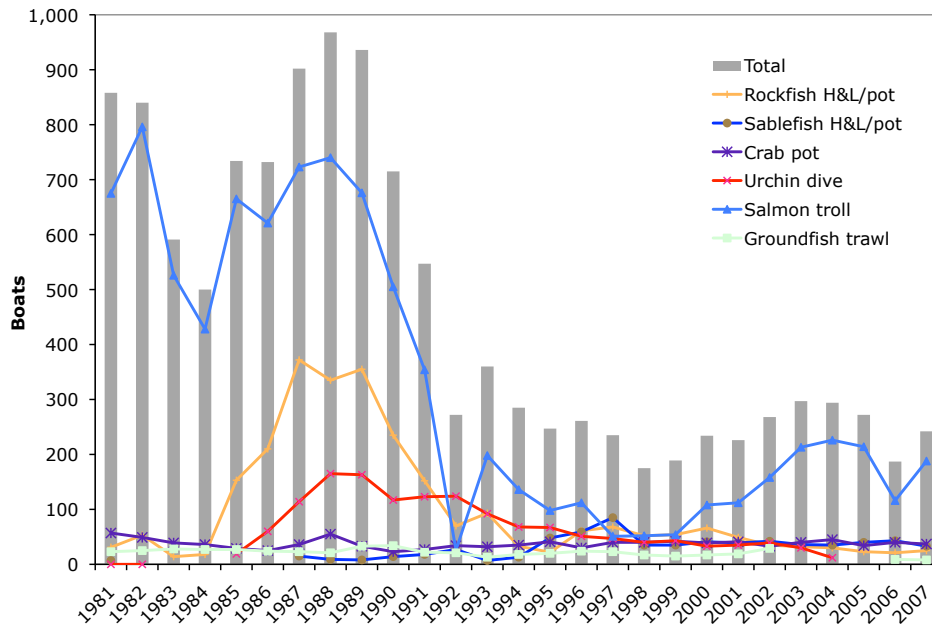
The ex-vessel value of commercial fishery landings at Noyo Harbor ranged from a high of \$30.6 million (in 1988) to a low of \$5.5 million (in 2006), averaging \$11 million over the long term and \$7.6 million in recent years (Figure 5, Table 7). Over the long term, groundfish trawl, salmon and urchin were the top three fisheries, averaging 37%, 22% and 16%, respectively, of ex-vessel value. In recent years, salmon ranked first, accounting for 41% of ex-vessel value, followed by groundfish trawl (24%) and crab (17%), while the urchin fishery contribution dropped to an average of 4% of ex-vessel value. The rockfish, albacore and shrimp trawl fisheries averaged 1%–5% of ex-vessel value over the long term and less than 2% in recent years. In contrast, the ex-vessel value of sablefish landings increased from about 7% over the long term to 11% in recent years. The number of boats with landings at Noyo Harbor (including nonresident as well as resident boats) ranged between a high of 968 (in 1988) and a low of 175 (in 1998). About

one-third (80) of the 242 boats that landed at Noyo Harbor in 2007 were resident boats. The annual average number of boats is about 44% lower in recent years (258 boats) relative to the long term (458 boats; Figure 6, Table 7) Most of this change is due to the substantial decline in the number of salmon trollers (-41%), reflecting the implementation of a statewide limited entry program in the early 1980s and reduced fishing opportunities following harvest reallocation between tribal and nontribal fisheries in the early 1990s.

The number of boats participating in other fisheries has declined as well. Average annual participation has been lower in recent years relative to the long term by about 73% in the urchin and rockfish fisheries, and about 50% in the groundfish trawl and albacore fisheries. As at some other North Coast ports, an exception is the sablefish fishery, where the average number of boats has been 42% higher in recent years relative to the long term. Average annual



**Figure 5. Ex-vessel value (2007\$) of commercial fishery landings at Noyo Harbor for selected fisheries and overall, 1981–2007. Note: Activity cannot be reported for years when more than zero but fewer than three boats or buyers participated in the groundfish trawl (2003–2005), sablefish (1982–1986) and urchin (1983–1984, 2005–2007) fisheries.**



**Figure 6. Number of boats with commercial fishery landings at Noyo Harbor for selected fisheries and overall, 1981–2007. Note: Activity cannot be reported for years when more than zero but fewer than three boats or buyers participated in the groundfish trawl (2003–2005), sablefish (1982–1986) and urchin (1983–1984, 2005–2007) fisheries.**

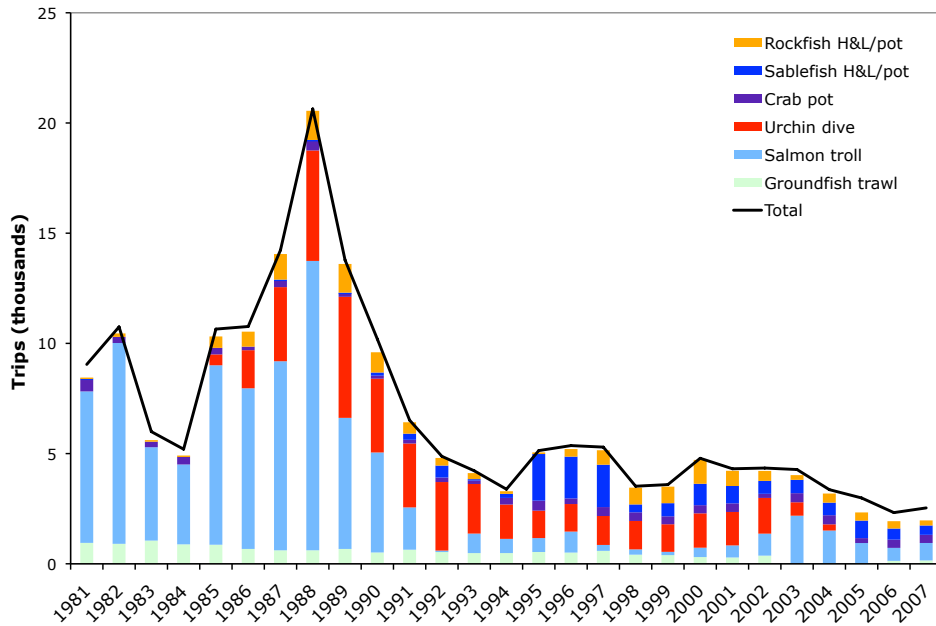
participation in the crab fishery has been modestly higher (5%) in recent years relative to the long term.

Over the long term, the salmon, rockfish and urchin fisheries had the highest proportion of participants, averaging 62%, 20% and 14%, respectively. The crab and sablefish fisheries followed, with an average of 10%–11% of boats. For the recent term, the average proportion of boats participating increased to 73% in the salmon fishery and more than 15% in the crab and sablefish fisheries. At the same time, rockfish and urchin fishery participation declined to averages of 10% and 6%, respectively. Fewer than 5% of boats participated in the groundfish trawl and albacore fisheries over the long term, with fewer than 4% in recent years.

Noyo Harbor also has experienced an overall decrease in the number of fishing trips (or

deliveries; Figure 7, Table 7). Average annual activity in recent years (3,097 trips) is down 54% from the long-term average of more than 6,700 trips. This decline is primarily due to the 62% difference in salmon trips, which accounted for at least 70% of deliveries at the port between 1981 and 1985. The number of trips is lower in the recent term for several other fisheries, including urchin (-72%), groundfish trawl (-69%) and rockfish (-39%), although the absolute numbers of trips and boats involved in each fishery are small. In contrast, the crab and sablefish fisheries have experienced an increase in the average number of trips in recent years compared to the long term (+16% and +14%, respectively), although the number of boats and trips in these fisheries is relatively small, as well.

On average, salmon trips accounted for 37% of all deliveries over both the long term and in recent years, and peaked at 85% of deliveries



**Figure 7. Number of trips by commercial fishing vessels landing at Noyo Harbor for selected fisheries and overall, 1981–2007. Note: Activity cannot be reported for years when more than zero but fewer than three boats or buyers participated in the groundfish trawl (2003–2005), sablefish (1982–1986) and urchin (1983–1984, 2005–2007) fisheries.**

in 1982. Also notable are urchin trips, which peaked at 64% of all trips in 1992, but have declined from a long-term average of 25% of trips to 14% of trips in recent years. During the period 1995–1997, sablefish trips accounted for 35%–41% of trips, with long-term and recent averages of 12% and 19%, respectively. During the period 1981–1986, 20–29 buyers per year participated in Noyo Harbor fisheries. Since 1986, the number of buyers has varied widely from 28 (in 1997) to 56 (in 2003). Fewer than 30 buyers participated in 1995 and 1997, while more than 50 participated during between 1987 and 1990 and in 2003 and 2004. Of the 42 buyers that received commercially-caught seafood landed at Noyo Harbor in 2007, at least five were locally-based nonfisherman businesses, at least four were local fishermen, and 19 were fishermen and smaller receiving operations based in other locations in California, and in Oregon and Washington.

Over the long term, an average of 48% of Noyo Harbor buyers participated in the salmon fishery, 35% participated in the rockfish fishery, 29% participated in the crab fishery, and at least 15% participated in the groundfish trawl, urchin and albacore fisheries. In recent years, the average proportion of buyers participating in the salmon and crab fisheries increased to 70% and 34%, respectively. At the same time, the proportion of buyers participating in several fisheries declined to lower levels including: rockfish (21%), albacore (14%), sablefish (12%), and groundfish trawl and urchin (6%).

The average annual ex-vessel price per pound in recent years for all fisheries combined (\$1.19) is 34% greater than the long-term average of \$0.88 (Table 7). These overall averages, however, mask some substantial differences among fisheries. Prices have been lower in recent years relative to the long term

in the urchin (-54%) and crab (-16%) fisheries. In contrast, average annual ex-vessel prices were greater in the recent term compared to the long term for several fisheries including rockfish (+58%), sablefish (+23%), albacore (+18%), salmon (+12%) and groundfish trawl (+8%).

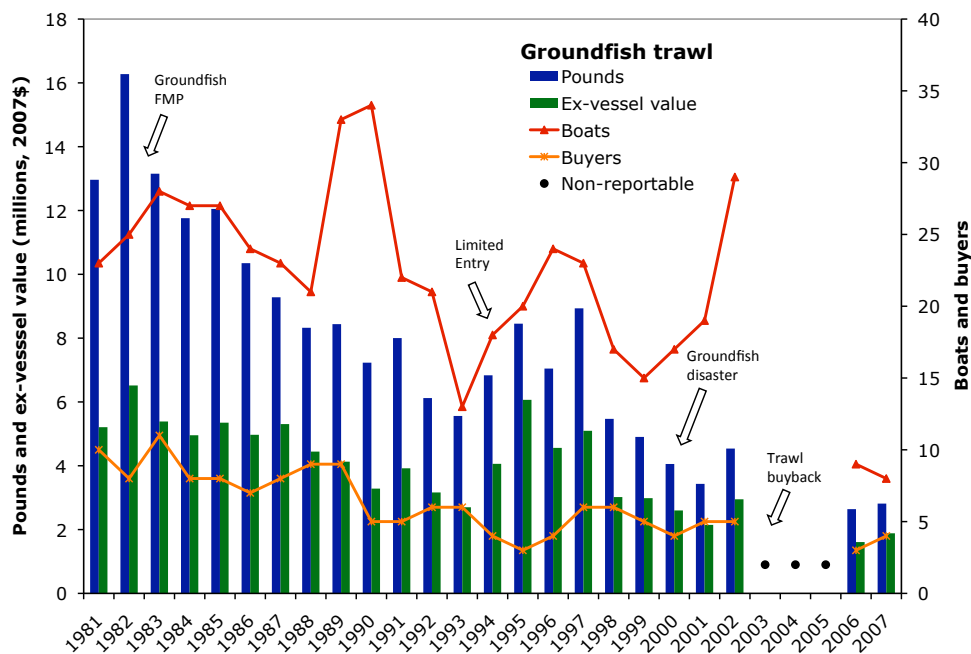
The distribution of ex-vessel value among boats and buyers provides insights into whether consolidation of fishing activity has occurred.<sup>22</sup> The proportion of vessels accounting for 90% of the ex-vessel value of landings steadily increased from 29%–30% during the period 1998–1999 to 50%–53% during the period 2003–2005, then declined slightly to 44%–48% during the period 2006–2007. These changes suggest a general decline in revenue concentration among vessels. Among buyers, revenue concentration, measured as the proportion of buyers that account for 90% of the ex-vessel value of local landings, has been more variable. Between 1998 and 2000 and

2003 and 2005, 22%–27% of buyers accounted for 90% of the landed value. Concentration increased in the 2001–2002 and 2006–2007 periods, when 15%–19% of buyers accounted for 90% of landed value at Noyo.

## Activity Within Commercial Fisheries

### The Groundfish Trawl Fishery

The groundfish trawl fishery, active since the 1930s, ranks first among Noyo Harbor fisheries in landings and ex-vessel value for the long term, and first in landings and second in value in recent years. Over the last 27 years, the fishery has undergone significant decline, with all measures (except price per pound) 50%–60% lower in recent years relative to the long term (Figure 8, Table 8). Within this larger trend, activity in the fishery has varied, especially in terms of the number of boats participating and, to a lesser extent, landings. Factors that have affected activity include limited entry (1994), reduced vessel landing



**Figure 8. Landings, ex-vessel value (2007\$), and number of boats and buyers for the commercial groundfish trawl fishery at Noyo Harbor, 1981–2007. Note: Activity cannot be reported for 2003–2005, when more than zero but fewer than three boats or buyers participated.**

**Table 8. Long-term and recent annual average, percent difference, and highs and lows in selected measures for the commercial groundfish trawl fishery at Noyo Harbor, 1981–2007. Note: Years when more than zero and fewer than three boats or buyers participated (i.e., 2003–2005) are included in averages, but excluded from highs and lows.**

<b>Groundfish trawl</b>	<b>Long-term average (1981–2007)</b>	<b>Recent average (2003–2007)</b>	<b>Percent difference</b>	<b>High year(s) (amount)</b>	<b>Low year(s) (amount)</b>
Landings (lbs)	7,331,649	2,955,869	-60	1982 (16,274,625)	2006 (2,640,210)
Ex-vessel value (\$)	3,757,033	1,724,623	-54	1982 (6,516,562)	2006 (1,608,579)
Boats	21	10	-52	1990 (34)	2006 (9)
Buyers	6	3	-50	1983 (11)	1995, 2006 (3)
Trips	523	165	-69	1983 (1,053)	2006 (133)
Price/lb (\$/lb)	0.54	0.59	+8	1995 (0.72)	1982 (0.40)

limits and the 2003 industry-funded buyback, which resulted in the departure of five of 12 resident trawlers from the fleet.

In 1982, a high of more than 16 millions pounds of trawl-caught groundfish valued at \$6.5 million was landed at Noyo Harbor. This represents a high for the fishery not only for 1981–2007 but also historically (since 1947, as far back as continuous data are available). Other than a short-term increase during the period 1995–1997, landings dropped steadily from the 1982 high to less than 3 million pounds in 2007. Average annual landings in recent years (3 million pounds) are 60% lower than the long-term average of 7.3 million pounds, due largely to increasingly stringent regulation of the fishery in response to declining abundance of some species.

Ex-vessel value also followed a decreasing trend, declining from a high of \$6.5 million in 1982 to less than \$1.8 million since 2003. Like landings, value also spiked (at \$4.7–\$6.1 million) during the 1995–1997 period before resuming its downward trends. The average value of landings in recent years (\$1.7 million) is 54% lower than the long-term average (\$3.7 million).

The average numbers of boats and buyers participating in the fishery are, respectively, 52% and 50% lower in recent years relative to the long term (Table 8). Vessel participation was 21–28 boats between 1981 and 1988, peaked at 33–34 in 1989–1990, then declined to 13–24 through 2001. Participation again increased to 29 boats in 2002, then declined to a long-term low of eight boats in 2007 (largely due to the buyback). The number of buyers also declined, from 8–11 between 1981 and 1985, to 3–6 between 1990 and 2002, and 2–4 through 2007.

The most marked change in groundfish trawl fishery activity is in the number of trips, which is 69% lower in recent years (165 trips) relative to the long term (523 trips). Fishing activity declined steadily from more than 900 trips per year between 1981 and 1983, to 485–674 trips between 1986 and 1997, and further declined to 133–180 trips during the period 2004–2007. This decline is proportionally greater than the decline in the number of trawlers, and reflects the shift from trip limits (which encouraged multiple trips of smaller landings in the 1990s) to weekly, biweekly, monthly and ultimately bimonthly limits (which allowed vessels to attain their limits with fewer trips).

Average annual prices for trawl-caught groundfish have increased slightly over time, due to factors such as changes in market conditions and the mix of species landed. (In addition, some fishermen have installed live tanks in their holds to allow for live fish production.) Prices ranged from \$0.40 to \$0.49 per pound between 1981 and 1993, then shifted upward to \$0.54–\$0.72 beginning in 1994. The peak price of \$0.72 occurred in 1995, a year of unusually high landings and revenues.



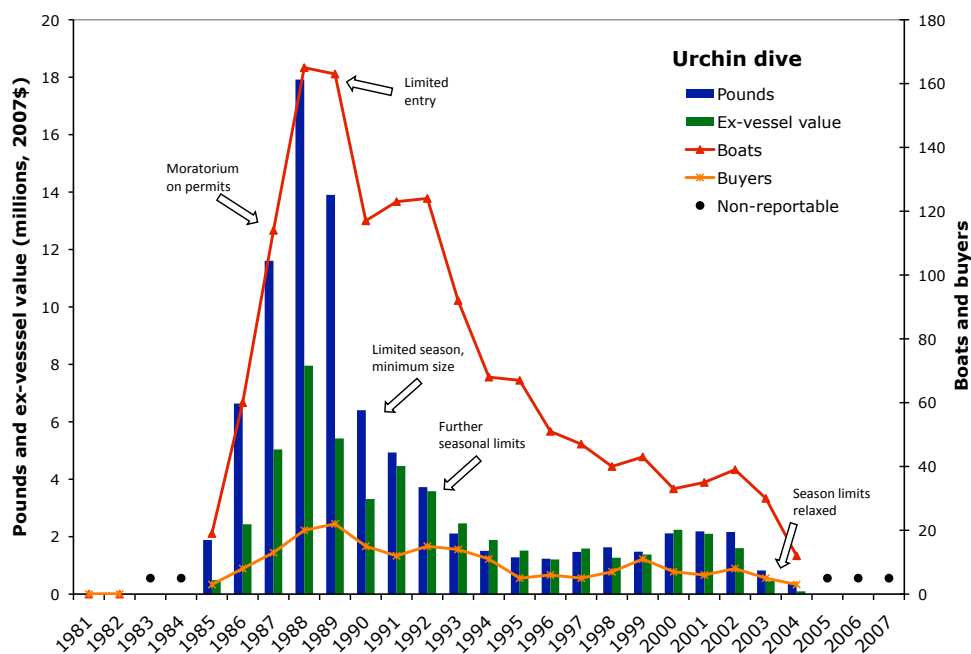
### The Sea Urchin Dive Fishery

The commercial sea urchin dive fishery at Noyo Harbor began in earnest in the early 1980s, with the first reportable (nonzero) landings occurring in 1985 (Figure 9, Table 9). Activity increased rapidly through the decade as divers from Southern California’s crowded urchin fishery (where urchin quality had declined) and some local salmon fishermen entered the fishery. According to one fishery participant, “People came from everywhere – even the Gulf of

Mexico oil industry – it was a Gold Rush.”

However, the fishery declined substantially on all measures after 1989 amid a marked drop in the quality of urchin roe and competition from other (international) sources. Nonetheless, the fishery ranked among the port’s top three in terms of landings, buyers and trips, and the top five in terms of ex-vessel value and boats in recent years as well as the long term.

Landings jumped from zero pounds in 1981 and 1982 to a high of 17.9 million pounds in 1988, then fell to 3.7 million pounds by 1992. Landings



**Figure 9. Landings, ex-vessel value (2007\$), and number of boats and buyers for the commercial urchin dive fishery at Noyo Harbor, 1981–2007. Note: Activity cannot be reported for 1983–1984 and 2005–2007, when more than zero but fewer than three boats or buyers participated.<sup>23</sup>**

**Table 9. Long-term and recent annual average, percent difference, and highs and lows in selected measures for the commercial urchin dive fishery at Noyo Harbor, 1981–2007. Note: Years when more than zero but fewer than three boats or buyers participated (i.e., 1983, 1984, 2005–2007) are included in averages, but excluded from highs and lows.**

<b>Urchin dive</b>	<b>Long-term average (1981–2007)</b>	<b>Recent average (2003–2007)</b>	<b>Percent difference</b>	<b>High year(s) (amount)</b>	<b>Low year(s) (amount)</b>
Landings (lbs)	3,500,515	656,066	-81	1988 (17,917,284)	1981, 1982 (0)
Ex-vessel value (\$)	1,905,496	296,693	-84	1988 (7,954,080)	1981, 1982 (0)
Boats	55	15	-73	1988 (165)	1981, 1982 (0)
Buyers	8	3	-63	1989 (22)	1981, 1982 (0)
Trips	1,573	433	-72	1989 (5,492)	1981, 1982 (0)
Price/lb (\$/lb)	0.90	0.42	-54	1983 (5.51)	2004 (0.24)

ranged from 1.2 to 2.2 million pounds during the 1993–2002 period, then declined to 400,000–870,000 pounds through 2007. At 656,000 pounds, average annual landings in recent years are 81% lower than the long-term average of 3.5 million pounds.

Similarly, the ex-vessel value of sea urchin landings grew sharply through the 1980s, peaking at \$8 million in 1988, then fell to \$3.6 million by 1992. Value ranged from \$1.2 to \$2.5 million during the period 1993–2002, then declined to \$96,000–\$536,000 through 2007. The average annual ex-vessel value in recent years (\$297,000) is 84% less than the long-term average (\$1.9 million).

The number of boats increased sharply from 19 in 1985 (when first reportable) to 163–165 in 1988–1989, then declined to 92 by 1993. The fleet declined further from 68 boats in 1994 to 30 in 2003, then stabilized at 11–12 boats through 2007. The number of buyers increased from 3 in 1985 to 22 in 1989. During the period 1990–94, 11–15 buyers participated in the fishery; since then, 2–8 buyers have participated (except in 1999, when 11 did). Overall, the average numbers of boats and

buyers are, respectively, 73% and 63% lower in recent years compared to the long term. The number of trips also grew rapidly in the mid-1980s, peaking at nearly 5,500 in 1989. The number of trips declined after that, to 2,250–3,347 between 1990 and 1993, and 1,243–1,620 between 1994 and 2002. The average for the recent term (433 trips) is 72% less than the long-term average (1,573 trips).<sup>24</sup> Between 1985 and 1990, local ex-vessel prices for sea urchin averaged about \$0.40 per pound, then increased to \$1.02 per pound during the period 1991–2000. Prices then declined, averaging \$0.42 per pound in recent years, a difference of -54% compared to the long-term average of \$0.90 per pound. One local urchin processor noted that this change was related to the interaction between market and environmental factors. The fishery faced strong competition from Chilean suppliers in 1992 and 1993, and Russian and Korean suppliers in the early 2000s. The subsequent decline in kelp coverage in nearby waters led to reduced urchin roe quality, further limiting markets and prices for local product. However, environmental and market conditions have changed, and activity in the fishery has increased since 2005.

## The Salmon Troll Fishery

The commercial salmon troll fishery has long played a central role at Noyo Harbor, ranking among the top three fisheries on all measures both recently and over the long term (Figure 10, Table 10; see also Figure 4). The average numbers of boats and trips are, respectively, 41% and 62% lower in recent years compared to the long term. However, average landings, ex-vessel value, number of buyers, and ex-vessel price are higher in recent years (by 52%, 20%, 68% and 12%, respectively) compared to the long term.

Salmon landings peaked in 1988 and 2003 (at 3.4 and 3.9 million pounds, respectively), although ex-vessel prices and revenues were much higher in 1988 (\$3.81 per pound and \$13 million) than in 2003 (\$1.88 per pound and \$7.2 million). According to news reports at the time, the high price in 1988 was due to a strong market and mistaken predictions by fish buyers that salmon would be scarce that year

(Digitale 1990). Landings and value were at their lowest between 1992 and 1999, (6,700–259,000 pounds, \$19,400–\$229,000). In 1992, the fishery was closed north of Point Arena and remained constrained through the remainder of the decade.<sup>25</sup> Regulations were relaxed somewhat during the 2000s, except in 2006, when the Fort Bragg season was limited to five days. Nonetheless, recent average landings and ex-vessel value are, respectively, 52% and 20% compared to the long term.

The number of trollers landing at Noyo Harbor in the 1980s was quite high, peaking in 1982 (796 boats, just prior to the state limited entry program) and 1988 (740 boats, also the fishery’s record high revenue year). From 1981 through 1991, an average of 610 boats landed salmon at Noyo Harbor. Following the 1988 peak, the number of vessels declined to a low of 26 in 1992. Participation averaged 91 boats during the low-landing years 1992–1999, then increased to 167 boats through 2000–2007. Despite the recent upsurge, the average number

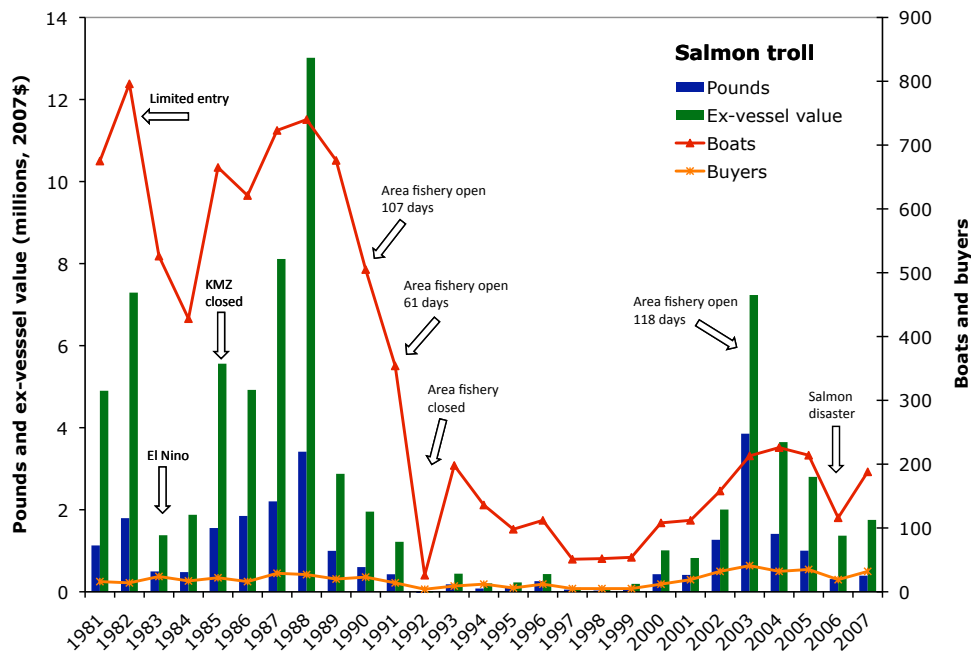


Figure 10. Landings, ex-vessel value (2007\$), and number of boats and buyers for the commercial salmon troll fishery at Noyo Harbor, 1981–2007.



**Table 10. Long-term and recent annual average, percent difference, and highs and lows in selected measures for the commercial salmon troll fishery at Noyo Harbor, 1981–2007.**

<b>Salmon troll</b>	<b>Long-term average (1981–2007)</b>	<b>Recent average (2003–2007)</b>	<b>Percent difference</b>	<b>High year(s) (amount)</b>	<b>Low year(s) (amount)</b>
Landings (lbs)	920,046	1,394,201	+52	2003 (3,853,867)	1992 (6,687)
Ex-vessel value (\$)	2,793,923	3,360,851	+20	1988 (13,016,951)	1992 (19,365)
Boats	325	191	-41	1982 (796)	1992 (26)
Buyers	19	32	+68	2003 (41)	1992 (4)
Trips	3,155	1,203	-62	1988 (13,128)	1992 (52)
Price (\$/lb)	2.88	3.22	+12	2007 (4.46)	2002 (1.58)

of boats in recent years (191) is 41% less than the long-term average (325), which reflects the influence of the high level of participation in the 1980s and measures to curtail it since.

As with boats, the average number of buyers (7) was lowest during the 1992–1999 period. However, unlike boats, buyer participation has been higher since 1999, (averaging 28 buyers for the period 2000–2007) than in the pre-1992 years (1981–1991, with an average of 20 buyers). These recent increases are perhaps partially due to an increase in fishermen marketing their own catch. The difference in the number of buyers in recent years relative to the long term (+68%) is greater than the increase in landings (52%) and value (20%) over the same periods.

Between 1981 and 1991, the number of salmon trips averaged 6,671 per year, peaking at more than 13,000 in 1988 before declining sharply to 52 trips in 1992. Between 1992 and 1999, the number of trips averaged 478, then increased to 998 through 2007. The decline in the number of trips in recent years relative to the long term was greater (-62%) than the decline in the number of boats (-41%), suggesting a tendency for boats to make fewer trips in recent years.

Ex-vessel salmon prices were strong through the 1980s, but declined through the 1990s to a low of \$1.58 per pound in 2002, due in part to increased

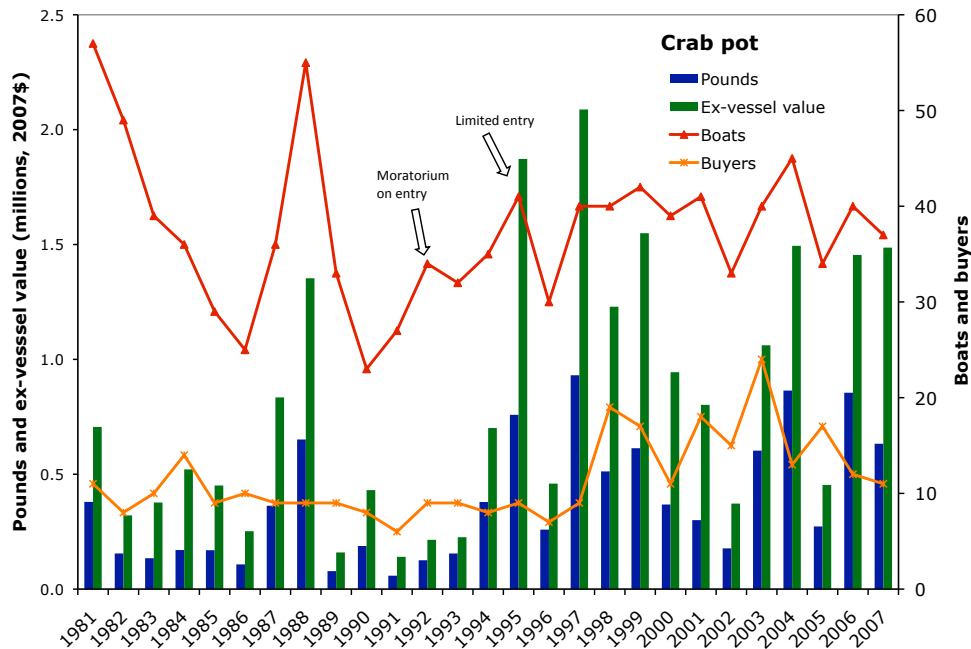
competition from farmed salmon (Sylvia et al. 1998). Since 2003, however, prices have increased, reaching record highs of \$4.41–\$4.46 in 2006–2007. Nonetheless, revenues in recent years have not achieved equivalent highs, due to limited seasons and very low landings.

#### **The Dungeness Crab Pot Fishery**

The crab pot fishery at Noyo Harbor has a variable history, owing in part to the cyclical nature of the resource and effort shifts among fisheries (Figure 11, Table 11; see also Figure 4). Although not as highly ranked as the groundfish, urchin and salmon fisheries, crab has ranked among the top five on most measures for the long term, and somewhat higher in recent years, especially as opportunities in other fisheries such as groundfish have declined.

Although highly variable, crab landings and ex-vessel value have shown a general upward trend over time, with recent averages 70% and 46% higher, respectively, relative to the long term.<sup>26</sup> Annual landings averaged 240,000, 416,000 and 529,000 pounds respectively during the periods 1981–1990, 1991–2000 and 2001–2007. Average revenues increased from \$541,000 to \$942,000 to \$1,018,000 over these same periods.

The numbers of boats, buyers and trips were, respectively, 5%, 34%, and 17% higher in recent



**Figure 11. Landings, ex-vessel value (2007\$), and number of boats and buyers for the commercial Dungeness crab pot fishery at Noyo Harbor, 1981–2007.**

years relative to the long term. Between 1981 and 1991, 23–57 boats per year landed crab at Noyo Harbor; between 1992 (when the moratorium on entry was implemented) and 2007, 30–45 boats participated in the fishery each year. Between 1981 and 1997, 6–14 buyers (averaging 9 per year) received crab at Noyo Harbor, increasing to 11–24 buyers through 2007 (averaging 16 per year). Between 1981 and 1993, the number of crab trips ranged from 138 to 517 (averaging 262 trips per year), increasing to 187–454 (averaging 351 trips) during the period 1994–2007.

Crab prices vary widely within and across years, depending on supply and demand, availability of buyers, and end product type (cooked and frozen versus live). Crab prices averaged \$1.84 per pound in recent years, 16% lower than the long-term average of \$2.18 per pound. The drop in crab prices may be attributed to the substantial growth in crab production, with the majority of landings still being purchased for the lower price cooked (rather than live) crab market. However, average annual prices increased between 2005 and 2007, from \$1.39 per pound to \$2.35 per pound, higher than averages for both the long

**Table 11. Long-term and recent annual average, percent difference, and highs and lows in selected measures for the commercial crab pot fishery at Noyo Harbor, 1981–2007.**

Crab pot	Long-term average (1981–2007)	Recent average (2003–2007)	Percent difference	High year(s) (amount)	Low year(s) (amount)
Landings (lbs)	380,078	645,472	+70	1997 (930,886)	1991 (58,461)
Ex-vessel value (\$)	813,124	1,189,974	+46	1997 (2,087,826)	1991 (140,530)
Boats	37	39	+5	1981 (57)	1990 (23)
Buyers	12	15	+34	2003 (24)	1991 (6)
Trips	308	359	+17	1981 (517)	1990 (138)
Price (\$/lb)	2.18	1.84	-16	1984 (3.06)	1993 (1.46)

term and recent years (\$2.18 and \$1.84 per pound, respectively).

### **The Sablefish Hook-and-Line/Pot Fishery**

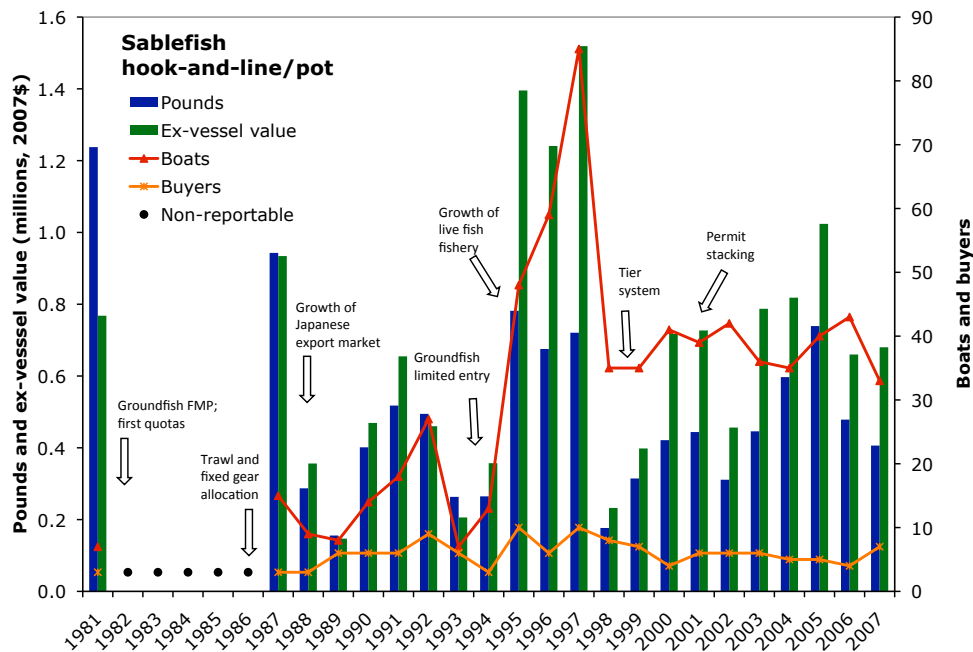
The sablefish (blackcod) hook-and-line (longline)/pot fishery has ranked among Noyo Harbor’s top five fisheries on most measures, with higher levels of activity in recent years relative to the long term. Although highly variable from year to year, average long-term and recent landings are similar, at a little more than 500,000 pounds (Figure 12, Table 12). Landings ranged between a low of 156,000 pounds in 1989 and a high of 1.2 million pounds in 1981. In recent years, landings peaked at 739,000 pounds (worth over \$1 million) in 2005.

Ex-vessel value of sablefish has varied widely, between a low of \$147,000 in 1989 and a high of \$1.5 million in 1997. Ex-vessel value averaged \$794,000 in recent years, 26% higher than the long-term average of \$632,000. Demand is largely driven by the Japanese market for product



and, to a lesser extent, the domestic fresh and live fish markets.

Vessel participation in the sablefish fishery has increased over time as opportunities in other fisheries have diminished. The number of sablefish boats averaged 37 in recent years, a 42% increase over the long-term average of 26 boats. Participation peaked at 85 boats in 1997, and has been more stable, with 33–43 boats participating annually (under both limited entry and open access permits) since 1998.



**Figure 12. Landings, ex-vessel value (2007\$), and number of boats and buyers for the commercial sablefish hook-and-line/pot fishery in the Noyo Harbor, 1981–2007. Note: Activity cannot be reported for years when fewer than three boats or buyers participated.**

**Table 12. Long-term and recent annual average, percent difference, and highs and lows in selected measures for the commercial sablefish hook-and-line/pot fishery at Noyo Harbor, 1981–2007. Note: Years when more than zero but fewer than three boats or buyers participated (i.e., 1982–1986) are included in averages, but excluded from highs and lows.**

<b>Sablefish hook-and-line</b>	<b>Long-term average (1981–2007)</b>	<b>Recent average (2003–2007)</b>	<b>Percent difference</b>	<b>High year(s) (amount)</b>	<b>Low year(s) (amount)</b>
Landings (lbs)	516,949	533,347	+3	1981 (1,237,676)	1989 (155,602)
Ex-vessel value (\$)	631,851	793,882	+26	1997 (1,519,010)	1989 (146,959)
Boats	26	37	+42	1997 (85)	1981, 1993 (7)
Buyers	5	5	0	1995 (10)	1983, 1987–88, 1994 (3)
Trips	507	579	+14	1995 (2,116)	1988 (28)
Price (\$/lb)	1.23	1.51	+23	1997 (2.11)	1981 (0.62)

Buyer participation in the fishery has been more modest, averaging five over the long term and in recent years. Between 1981 and 1990, an average of three buyers were active in the fishery. Since then, the average number of buyers has doubled, with as many as 10 receiving sablefish (in 1995 and 1997).

The average number of sablefish trips was 14% higher in recent years relative to the long term, increasing from an average of 49 in the 1980s to nearly 900 in the 1990s, when 500-pound trip limits led many fishermen to make 2–3 trips per day. The average number of trips declined to about 600 in the 2000s, as trip limits were replaced with cumulative limits for longer periods.

The average annual price per pound for sablefish was 23% higher in recent years compared to the long term. Prices have increased fairly steadily over time, from \$0.53–\$1.26 per pound during the 1981–1993 period to \$1.27–\$2.11 per pound during the 1994–2007 period.

### **The Rockfish/Lingcod Hook-and-Line/Pot Fishery**

The hook-and-line/pot fishery for rockfish and lingcod at Noyo Harbor is relatively small in terms of landings and ex-vessel value,

averaging less than 2% of activity overall. However, the fishery ranks second in vessel participation for the long term, and fourth in vessel participation and third for buyer participation in recent years.

Development of the lucrative live fish market for certain rockfish species caused landings and value to accelerate rapidly to more than one million pounds worth \$2–3 million from 1987 through 1989 (Figure 13, Table 13). Although activity in the fishery then declined sharply through 1995, it increased again with renewed growth of the live fish market, with lower landings but markedly higher value reflecting the high price per pound for live fish. However, subsequent regulations, including highly constraining harvest limits on several species and implementation of restricted access in 2003 under the state’s Nearshore FMP, led to sharp curtailment of the fishery. In recent years, average annual landings and ex-vessel value (6,000 pounds and \$38,000) have been modest, and considerably lower (88% and 79%, respectively) compared to the long term. In recent years, landings and value ranged between 27,000 to 59,000 pounds worth \$100,000–\$176,000, respectively.

Fishing effort peaked during the period 1987–1989, with 335–372 boats making 1,160–1,322

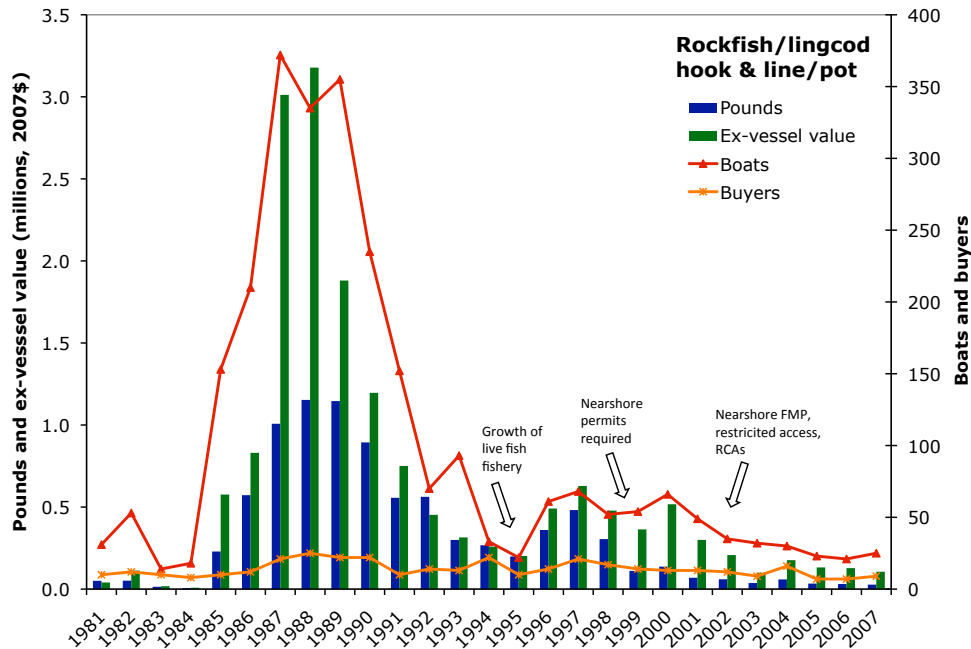


Figure 13. Landings, ex-vessel value (2007\$), and number of boats and buyers for the commercial rockfish/lingcod hook-and-line/pot fishery at Noyo Harbor, 1981–2007.

Table 13. Long-term and recent annual average, percent difference, and highs and lows in selected measures for the commercial rockfish/lingcod hook-and-line fishery at Noyo Harbor, 1981–2007.

Rockfish/Lingcod hook-and-line	Long-term average (1981–2007)	Recent average (2003–2007)	Percent difference	High year(s) (amount)	Low year(s) (amount)
Landings (lbs)	323,016	37,679	-88	1988 (1,153,025)	1984 (6,321)
Ex-vessel value (\$)	609,651	128,439	-79	1988 (3,177,956)	1984 (8,437)
Boats	99	26	-74	1987 (372)	1983 (14)
Buyers	14	10	-31	1988 (25)	2005 (7)
Trips	513	312	-39	1988 (1,322)	1981 (46)
Price (\$/lb)	2.23	3.51	+57	2001 (4.34)	1981 (0.80)

trips, falling to 21–32 boats and 214–413 trips in recent years (2003–2007). The number of buyers followed a similar pattern, increasing to 21–25 during the 1987–1989 period and falling to 7–16 in recent years.

Average annual price per pound fluctuated widely between \$0.80 to \$2.99 per pound during the period 1981–1988, narrowed to \$0.97–\$1.57 during the 1990–1998 period, and increased sharply to \$2.99–\$4.34 during subsequent years. In addition to market

conditions, average prices also reflect species composition and the relative proportion of live and dead fish in the catch.

### Other Noyo Harbor Fisheries

Although not as central as some other fisheries, the albacore and shrimp fisheries have played an important role at Noyo Harbor from time to time and/or in the annual round of fisheries pursued by some fishermen. Because overall activity in these fisheries has been erratic, with fewer than three boats and/or buyers in several

years, reporting here is more limited. Albacore tuna is a highly migratory species whose distribution is affected strongly by oceanic conditions such as warm water currents (particularly El Niño events) and availability of prey. In some years, the fish migrate within 10 to 50 miles of the coast near Mendocino County; in other years, they are distributed much farther offshore and/or north off the coast of Humboldt and Del Norte Counties, Oregon and Washington. Although some of the catch is delivered at Noyo, some is delivered at ports north of California that have or are near canning facilities.

Albacore landings, ex-vessel value, boats and trips were extraordinarily high in 1981 relative to subsequent years (and the twelfth highest year for 1947–2007; see Figure 2). Following landings of nearly 900,000 pounds worth nearly \$1.6 million in 1981 made by more than 200 boats, activity dropped abruptly, reflecting a statewide contraction of the tuna fishery precipitated by the offshore relocation of major Southern California tuna canneries. During the period 1982–2007, landings averaged 69,000 pounds, ex-vessel value averaged \$77,000, and an average of 10 boats delivered and 6 buyers received troll-caught albacore at Noyo Harbor each year.

The trawl fishery for ocean (pink) shrimp started along the North Coast in the 1950s, with landings first recorded at Noyo in 1957 (Figure 2). Shrimp trawl activity has occurred in pulses, with deliveries in the late 1950s to 1962, 1975–1979, 1987–1990, and 1994–1997. Over the long term (1981–2007), landings averaged 214,000 pounds worth \$175,000 per year. (Trawl-caught shrimp were not landed in nine of those years, including 2003–2007). On average, five trawlers (including resident and nonresident operations) and two buyers participated in the fishery, with the number of deliveries averaging 23 per year. The average,



long-term ex-vessel price per pound was \$1.89, almost three times higher than at Eureka and Crescent City.

### ***Commercial Fishery Combinations***

Commercial fishery participants move among fisheries, ports and fishing areas in response to changes in resource availability, regulations, weather and other factors. For purposes of identifying trends in fishery participation, it would be reasonable to focus on boats that are resident (homeported) at Noyo Harbor. Although recent data on resident vessels were collected during fieldwork for this project, similar data for earlier years are not readily available. Thus, rather than focusing on resident vessels, we focus on those boats that earned a plurality (i.e., the greatest proportion) of their annual ex-vessel revenue from landings at Noyo Harbor. For the remainder of this section, ‘Noyo Harbor boats’ refers only to those boats that meet this plurality of revenue criterion. Although there may be some coincidence between these two methods of vessel classification, plurality of revenue is at best a rough criterion for identifying a vessel’s homeport, given the importance of mobility to the viability of many fishing operations. We identified 16 one-, two- and three-way fishery combinations common to these Noyo vessels during three periods: 1981–1983, 1993–1995 and 2005–2007 (Figure 14, Table 14). In Figure 14, the numbers in each box indicate the average number of vessels per year that participated exclusively in that fishery in

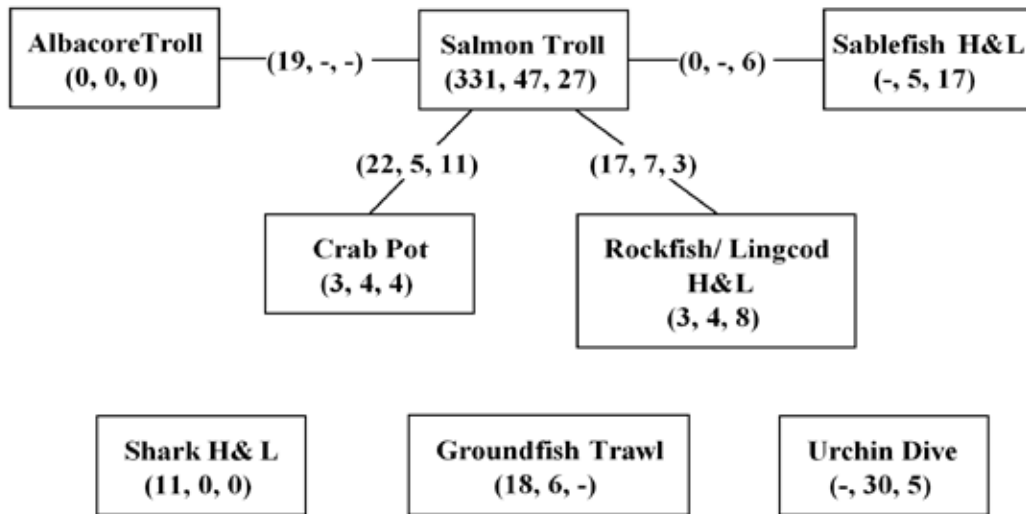


Figure 14. Major one- and two-way fishery combinations utilized by Noyo Harbor boats based on three-year averages for 1981–1983, 1993–1995 and 2005–2007. Note: “-” indicates fishery combinations involving only one or two boats, and cannot be reported. H&L = hook-and-line fishery.

Table 14. Major three-way fishery combinations utilized by Noyo Harbor boats in each of three periods. Note: “-” indicates fishery combinations involving only one or two boats, and cannot be reported. H&L = hook-and-line fishery.

Fishery Combination	1981–1983	1993–1995	2005–2007
	Average	Average	Average
Salmon Troll - Crab Pot - Albacore Troll	11	0	0
Salmon Troll - Crab Pot - Rockfish H&L/Pot	5	-	-
Salmon Troll - Crab Pot - Sablefish H&L/Pot	0	-	4
Groundfish Trawl - Crab Pot - Shrimp Trawl	0	3	0

each period. For example, an annual average of 331 boats participated only in the salmon troll fishery during the first period (1981–1983), 47 participated only in this fishery during the second period (1993–1995), and 27 participated during the third period (2005–2007). The numbers on the lines connecting two boxes indicate the average number of vessels that participated exclusively in the fisheries denoted by those two boxes. For example, the line connecting the salmon troll and crab pot boxes indicates that an annual average of 22 vessels participated in both the salmon and crab fisheries (only) during the first period, 5 did during the second period, and 11 did during the third period.

A number of fishery combinations that existed in 1981–1983 and 1993–1995 are no longer pursued (or are pursued by too few boats to report). Most notable is the drop in salmon-only operations, from an average of 331 boats during the first period, to 47 during the second period, and 27 during the third period. The numbers of salmon/albacore, salmon/rockfish, and salmon/albacore/crab boats also have declined substantially, while the number of sablefish-only boats has increased. Several study participants attributed this increase to the implementation of limited entry in many fisheries and the RCAs together with the reduction in salmon fishing opportunities. These changes notwithstanding, salmon-only

operations and those that occur in combination with other fisheries have consistently accounted for the majority of fishing operations at the port, even if their absolute numbers have declined. One local receiver noted that the small salmon day boats, which used to be very common at the port, “are mostly gone.”

The numbers of groundfish trawl-only and shark-only operations have clearly declined across the three periods. The number of urchin-only boats increased sharply from the first period, when no landings occurred, to 30 boats about 4–5 years after the fishery peaked in 1988–1989. Because of the high earnings potential in the local fishery at the time, some of the boats fishing out of Noyo Harbor (90%, according to one study participant) came from ports in Southern California. The number then dropped in the most recent period to five operations. According to a local urchin processor:

*Sea urchin boats from Southern California came for the bonanza (in the mid-1980s) and left in the 1990s because the Japanese market favored Santa Barbara urchin quality and paid the best prices until [the early 2000s]. Some Fort Bragg (Noyo) divers spent most of their time there until 2007 (when market and resource conditions in the Northern California fishery improved).*

The decline in the number of vessels participating in many of these combinations reflects the general downsizing of commercial fisheries at Noyo (as at other ports coastwide) as well as a number of fishery-specific events. Particularly noteworthy are the declines in the salmon troll and groundfish trawl fleets. Based on this analysis, increased participation in some fisheries – most notably sablefish and crab – appears to have modestly offset this overall fleet reduction.

### ***Revenue Per Boat***

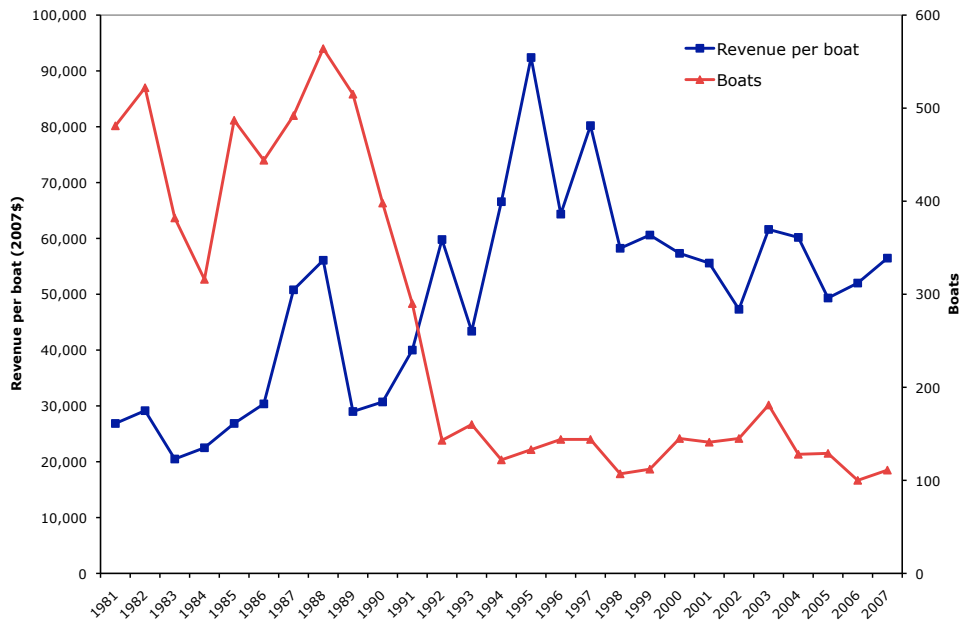
While aggregate revenue at Noyo Harbor has declined from the peak of the late 1980s (see Figure 5), this trend is not necessarily indicative of how individual Noyo Harbor boats are faring in terms of revenue. To illustrate this point, we estimated the annual average ex-vessel revenue per boat for those boats that earned a plurality of their revenues from landings at Noyo Harbor.

Before 1992, the first year the salmon fishery off Fort Bragg was closed, the number of Noyo Harbor boats averaged 445 and ranged between 290 in 1984 and 564 in 1988, when the number of salmon and sea urchin fishery participants peaked (Figure 15). From 1992 through 2007, the number of such boats was considerably lower, averaging 134 and ranging between 100 and 181. In contrast, average annual revenue per boat (based on these boats’ landings at all ports) was consistently at or below \$30,000 between 1981 and 1986, increased to a high of \$92,400 in 1995, then shifted downward to \$47,000–\$62,000 during the period 1998–2007.

To better understand how vessel revenue is affected by fishery-specific participation, we assigned each Noyo Harbor boat to its ‘principal fishery’, that is, the fishery from which the boat earned the plurality of its annual revenue. For vessels associated with each principal fishery, we then estimated average annual revenue per boat (based on their landings at all ports and for all fisheries) for three periods: 1981–1983, 1993–1995 and 2005–2007 (Table 15).

The numbers of salmon trollers and groundfish trawlers declined consistently over the three periods, with trollers accounting for the vast majority of the overall decline in the Noyo Harbor fleet. The number of rockfish/lingcod and sablefish boats consistently increased over





**Figure 15. Number of boats with the plurality of revenue from landings at Noyo Harbor, and average annual revenue per boat, 1981–2007.**

**Table 15. Average annual revenue per boat (2007\$) for Noyo Harbor boats, by major fishery and overall, 1981–1983, 1993–1995 and 2005–2007. Notes: Data for urchin dive boats (1981–1983 average) are not reported to ensure confidentiality. At least 3 unique boats participated in each fishery during the three periods.**

Principal Fishery	Number of Boats			Average Annual Revenue Per Boat (All Ports, All Fisheries, 2007\$)		
	1981–	1993–	2005–	1981–1983	1993–1995	2005–2007
	1983	1995	2007			
Groundfish trawl	22	11	6	262,382	401,973	260,142
Urchin dive		35	8		57,551	42,044
Salmon troll	404	57	52	10,284	3,748	29,169
Crab pot	10	16	13	41,427	81,986	99,903
Rockfish/Lingcod						
H&L/pot	2	6	11	1,116	11,514	7,871
Sablefish H&L/pot	2	9	22	420,584	103,718	38,919
<b>Total</b>	<b>462</b>	<b>138</b>	<b>113</b>	<b>25,499</b>	<b>67,454</b>	<b>52,601</b>

the three periods. Following no activity in the urchin fishery in the first period, the number of boats increased sharply in the second period, then declined substantially in the third period. Average annual revenue per boat varied widely among principal fisheries, with groundfish trawl,

crab, urchin and sablefish vessels having the highest revenue. Revenue per boat increased over the three periods for crab vessels, decreased for sablefish vessels, and peaked during the 1993–1995 period for groundfish trawlers and rockfish/lingcod vessels.

The changes in both numbers of boats and revenue per boat reflect changes in the composition and focus of the fleet. Even though salmon and groundfish continue to account for a substantial portion of the fleet's revenues, its emphasis on crab and sablefish has increased relative to the earlier periods examined here.



## RECREATIONAL FISHERY ACTIVITY AT NOYO

Noyo Harbor and nearby Dolphin Isle Marina have long supported recreational ocean fisheries for salmon, groundfish and abalone, along with other species such as crab and halibut. The recreational fishery information presented here is based primarily on: 1) CPFV (commercial passenger fishing vessel, or charter) logbook data; 2) recreational salmon effort data (for CPFV and private boat modes) collected by CDFG and published by the PFMC; and 3) field data collected for this project. In addition, we use Noyo Harbor boat launch and CDFG abalone report card data to provide partial estimates of recent effort in those subsectors. Private boat catch and effort estimates for all fisheries are not available at the port level. The California Recreational Fisheries Survey (CRFS) data, which are available only at the district level, are used to place Noyo’s recreational fisheries in context.<sup>27</sup> In the discussion that follows, the *long term* represents 1980–2007, while *recent years* pertains to the most recent five years of the time series (2003–2007).<sup>28</sup> The CPFV trends described here must be viewed with caution because not all CPFV operators comply with the logbook requirement.

We use four measures of fishing activity derived from the recreational fishery landings data. ‘Boats’ are counted as the number of unique fishing vessels that operated in a given

year. A ‘boat trip’ represents a combined departure and return of a boat, regardless of trip length. An ‘angler trip’ is defined as one angler spending part or all of one or more days fishing before returning to the location where the trip began. An ‘angler day’ is defined as one person’s fishing on a given day. For example, two anglers each fishing for three days are counted as six angler days.

According to the CRFS, an annual average of 130,000 angler trips were made in the Wine District (which comprises Mendocino and Sonoma counties) between 2005 and 2007. About 52% of these trips were from private boats, 30% from beach or bank, 15% from shoreside structures, and 4% from CPFVs. While Noyo is an important hub of recreational activity, it is difficult to determine exactly how much of total recreational effort in the Wine District (all modes) originates from the harbor, as the CRFS does not provide effort estimates by port.

### *Charter Fishing Activity*

Based on our analysis of CPFV logbook data, the average number of active CPFVs (eight boats) is the same for the long term and in recent years (Table 16). However, both the average numbers of boat trips and angler trips (1,027 and 12,914, respectively), are 54% and 44% greater in recent years compared to the

**Table 16. Long-term and recent annual average, percent difference, and highs and lows in selected measures for CPFV fisheries at Ft. Bragg, 1980–2007.**

	Long-term average (1980–2007)	Recent average (2003–2007)	Percent difference	High year(s) (amount)	Low year(s) (amount)
All fisheries	8	8	0	1989 (21)	1996, 1997 (4)
Boats	8	8	0	1989 (21)	1996, 1997 (4)
Boat trips	668	1,027	+54	2003 (1,167)	1993 (237)
Angler trips	7,225	12,914	+44	2004 (14,483)	1993 (1,871)

long term (668 boat trips and 7,225 angler trips).

A closer look suggests considerable variability over time (Figure 16). During the 1980s, an average of 10 CPFVs (range = 5–21) reported activity out of Noyo, with an average of 568 boat trips and 5,712 angler trips per year.<sup>29</sup> Activity decreased in the 1990s, most notably in terms of the number of boats (average = 6, range = 4–9), and less so in terms of the numbers of boat trip and anglers trips, which averaged 511 and 4,850, respectively. During the 2000s, the average number of boats increased modestly to eight, while the average numbers of boat trips nearly doubled (to 990) and angler trips nearly tripled (to 12,084). Note, however, that the number of boats and boat trips declined after 2003, and the number of angler trips declined after 2004.

Based on CPFV logbook data, charter activity out of Noyo Harbor has varied with larger Wine District activity, accounting for variable proportions of activity in the district over time and by measure. CPFVs at Noyo Harbor

accounted for an average of 44% of boats in the Wine District in the long term and slightly less (42%) in the recent term. However, CPFVs accounted for a greater proportion of boat days and angler days in the recent term (57% and 60%, respectively) compared to the long term (48% and 36%, respectively). Thus the share of regional CPFV activity originating from Noyo has also increased in recent years.

### Private Boat Fishing Activity

Private boat fishing out of Noyo has focused largely on salmon, although anglers participate in several other fisheries, including rockfish, lingcod and halibut hook-and-line, albacore troll, crab pot and abalone dive. When salmon fishing opportunities are limited, private boat anglers rely more on groundfish – especially rockfish and lingcod – in the nearshore ocean fishery. However, since the late 1990s, groundfish fishing opportunities have become increasingly constrained by regulations. Several private boat anglers also target abalone during the seven-month season, diving at grounds located a few miles north and south of the harbor.

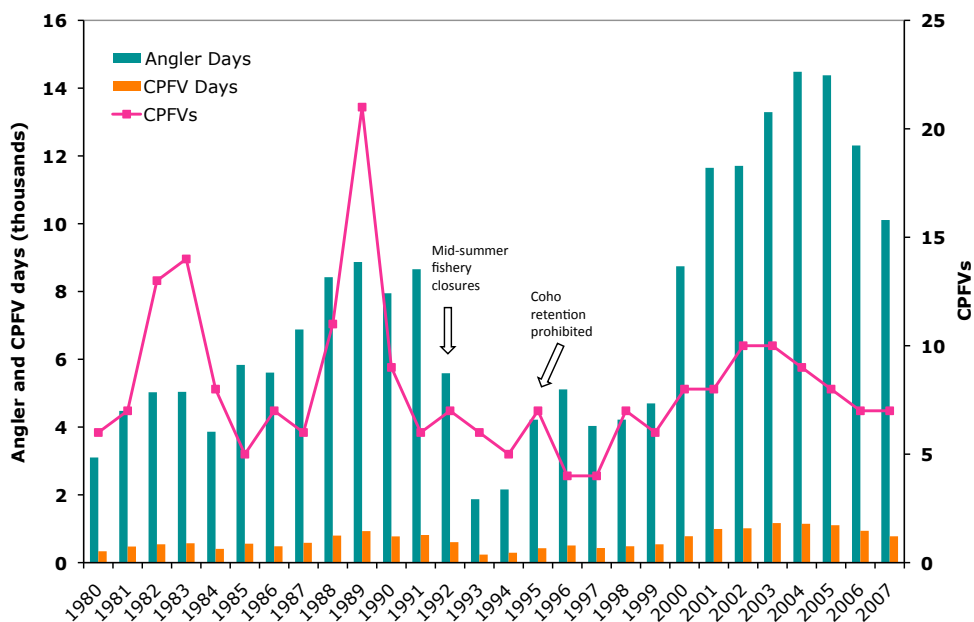


Figure 16. Angler days, boat days and number of CPFVs at Noyo Harbor, 1980–2007 (CPFV logbook data).

Although private boat catch and effort estimates are not available at the port level, other measures provide an indication of changes in effort in recent years. According to harbor district staff, the number of launches from harbor ramps declined from 3,500–3,600 during the period 2006–2007 to 1,350 in 2008 and 1,250 in 2009 as the salmon fishery was sharply curtailed and then closed. Harbor staff estimate 2.5 anglers per launch, for a high of 8,750 angler trips and a low of 3,125 angler trips per year between 2006 and 2009.<sup>30</sup> Kayak-based fishing has increased in popularity, with four shops currently providing rentals. The operator of one shop reported a marked increase in kayak rentals since opening in 2006, with about half rented to anglers, an estimated 90% of which are for ocean fishing and 10% are for inriver fishing.

Estimates of abalone effort (from charter and private boats) originating from Noyo Harbor can be derived from CDFG abalone report card data. According to CDFG staff, three sites are most likely primarily accessed by boat from Noyo Harbor: Pacific Mill, Todd's Point and Hare Creek. An estimated 5,500–6,000 abalone dive trips occurred annually between 2002 and 2008 at these three sites combined, with little variation among years.



## KEY FACTORS AFFECTING NOYO FISHERIES

Noyo's fisheries and fishing community have experienced considerable social and economic change over the past 30 years. Regulatory, market and environmental factors have influenced individuals and communities, sometimes gradually and at other times more abruptly. Some of these factors originated locally, while others are regional, national or even international in nature. Moreover, these forces do not operate in isolation. Rather, they interact in complex and cumulative ways, posing both challenges and opportunities to the viability and resilience of the Noyo fishing community. The following discussion focuses on specific factors highlighted by study participants as having most influenced local fisheries, infrastructure and the community.

### *Regulatory Factors*

#### Salmon

The most significant regulatory factor affecting the Noyo fishing community has been variable and generally reduced access to salmon (Chinook and coho), especially since the late 1980s. The state's implementation of limited entry coupled with severe weather and poor fishing conditions in the early 1980s led to a sharp drop in salmon fishery activity at Noyo. In 1984, the commercial season in the adjacent northern management area (the KMZ) was cut from 104 to 67 days, and closed in 1985, while the season in the Fort Bragg area remained relatively unchanged at 153 days. This pattern of much greater restriction in the KMZ relative to Fort Bragg persisted through the 1980s. Local activity in Fort Bragg increased over that period, peaking in 1988, when nearly 4 million pounds of salmon with an ex-vessel value of more than \$13 million were landed. According to one study participant, many fishermen "migrated here from Eureka and Crescent

City...they spread down the coast with [the] closures." The fishery-support businesses at Noyo and in Fort Bragg that catered to commercial salmon fishermen – both local and transient – benefited as a result.

As with the commercial fishery, recreational ocean salmon seasons were considerably curtailed in more northerly California ports during the mid- to late-1980s. Recreational ocean salmon seasons in the Fort Bragg area, however, remained unchanged at 275 days (nine months) over that period (except 1989, when the season was reduced by one week).

In 1992, however, the commercial salmon fishery was closed from Point Arena north to the Oregon border, and the local recreational salmon season was reduced to 200 days (about 6½ months). Although the change in the recreational fishery was not nearly as dramatic as in the KMZ (where the season was cut to 14 days), it was closed during most of the summer, the traditional height of the season. Together, the commercial fishery closure and the reduced recreational season "brought Noyo to its knees" as demand for support goods and services such as fuel, ice, marine supplies and provisions dropped abruptly. According to local press at the time:

*Don Bradley, chairman of the Noyo Port District ... estimates that the businesses serving the Fort Bragg fishermen have suffered a 60%–80% drop in income, one major marine supply store has closed, three fish processors have left and other related businesses are 'floundering'.... Harbormaster Howard Merritt said the restricted seasons deprive the port of thousands of dollars from visiting fishing boats. The port district stands in danger of being unable to pay its state loan (Digitale 1992).*

Shoreside businesses that relied on sustained and considerable fishing activity from early spring through the fall suddenly were faced with substantial drops in activity. Through much of the 1990s the commercial season was open between 0–2 months per year, and landings were very low. For a fishing port whose history is inextricably tied to salmon, this new reality was hard to reconcile, both financially and socially. Those who remained in the fishing community adapted, some by shifting effort to other fisheries (and/or other livelihoods for additional income), others by altering inventories to serve the recreational sector. Over the past decade, the commercial salmon fishery off Fort Bragg has rebounded some, and a small contingent (by comparison with historical participation) of dedicated salmon trollers continues to depend on this fishery (often in combination with other fisheries) for their livelihood.

### **Groundfish**

The groundfish fishery, considered by many to be a mainstay at the port due to its year-round, high volume activity, showed signs of decline during the 1980s and 1990s. Beginning in the late 1990s, the need for aggressive measures to rebuild overfished stocks and address overcapacity in the fishery prompted increasingly restrictive harvest measures, additional monitoring requirements, the establishment of rockfish conservation areas (RCAs) in 2002, and an industry-funded groundfish trawl buyback in 2003. The effect of these measures on Noyo (as with many other ports along the West Coast) has been fewer trawl vessels, fewer (and smaller) deliveries, a shift in species targeted, and fewer receivers and processors.

Five of the 12 Noyo-based trawlers participated in the 2003 federal West Coast groundfish trawl buyback. Trawl vessels use substantial volumes of fuel and ice for their

trips. The loss of these five operations at the harbor sharply reduced the need for fuel and ice, among other services. It also contributed to the eventual departure of a large nonresident groundfish and shrimp buyer, with financial implications for the local receiver used by that buyer, and further limited market options for fishermen.

The nearshore groundfish fishery also has been subject to increasingly strict regulation. According to one study participant:

*In the early 1990s, they started cutting the quotas. There weren't enough fish for [local fishermen] to keep fishing. Then the live fish market started up. One fishery stopped and another started. Around 1995, there was a boom in the [live fish] fishery, then a decline with the RCA implementation, and California slashed its live fish fleet [with restricted access in the nearshore fishery] and cut quotas.*

Despite these cuts, the live fish fishery and the hook-and-line fishery for groundfish as a whole persist at Noyo, with a small core group of fishermen who sell their catch to the local live fish buyer and/or directly to restaurants and markets in the San Francisco Bay area.

Recreational fishery participants noted that the combination of reduced salmon seasons and increasingly strict regulation of the recreational groundfish fishery since 2000 have affected their operations and the community overall. They reported less reliance on fishing for subsistence because of reduced seasons and catch limits, and noted that some local anglers have shifted from boat-based to shore-based fishing, where fishing is still possible year-round. According to a study participant knowledgeable of the fishery and the harbor,

*“[Recreational fishing effort] was about 85% by boat versus 15% from shore in the past. Now, it’s more like 60–65% by boat and 35–40% from shore.... If there’s just rockfish fishing, locals pull their boats out. If there’s salmon, they’ll keep them in.”*

Especially in more recent years, depth and time closures increasingly have been employed to manage the fishery and inseason closures have added to uncertainty about the length of the season and the timing of fishing opportunities. The 2008 closure of the nearshore recreational groundfish fishery four months early (on September 2) to protect yelloweye (*Sebastes ruberrimus*) and canary (*S. diploproa*) rockfish was difficult for community members, especially in light of the salmon closure. One participant summarized this change: “Ten or 15 years ago it was phenomenal. People didn’t have to plan [for seasons], they’d just come... Some would stay [in the area] for a month. Now seasons are inadequate [and] don’t mesh together. So people only come for a day or so.”

While these regulatory changes are intended to help sustain fish stocks, the resulting uncertainty also has made it difficult for fishermen, charter operators and other businesses to plan their activities and businesses (e.g., anticipate inventory needs and income potential). One study participant familiar with the charter industry noted that the substantially reduced (or eliminated) recreational salmon and groundfish fishery options have discouraged some visitors who might normally come to the area for a mix of activities (e.g., salmon and rockfish fishing and abalone diving).

*Salmon is a word that’s key. If that’s closed, we lose 25% of our business. If there’s no opportunity to fish salmon, people won’t even book trips... Many people who would come here would go*

*for salmon in the morning and rockcod in the afternoon. For the fisherman and his wife to fish, that’s \$750 a day spent in the community. If you take 1,000 people away, that’s a lot of money!*

### ***Economic Factors: Costs, Prices and Revenues***

Fishing operations have fixed and variable costs. Fixed costs include items such as vessels, gear and equipment (for navigation, safety and maintaining the quality of the catch), slip fees, permit fees, insurance and vessel maintenance and repair, which are required to keep their operations functioning safely and effectively. Variable (operating) costs include fuel, ice and other provisions, as well as crew. Fish buyers and processors, support businesses and the harbor likewise have fixed and variable costs including facilities, equipment, labor (and associated costs such as workers’ compensation), supplies, and maintenance and repair.

Commercial and recreational fishery participants and other community members cited rising costs such as fuel, insurance, and gear and vessel maintenance as a key factor affecting the fishing community. Of these, fuel costs were the most frequently cited. According to the PSMFC’s annual West Coast Marine Fuel Price Survey, average pretax fuel prices at Northern California ports increased nearly three-fold from \$1.22 per gallon in December 1999 to \$3.19 in December 2007, and about 21% between January and December 2007 (2007\$; PSMFC 2000, 2008). As one person noted, “If your fuel costs are coupled with reduced quotas, you can’t make the bottom line.”

Some commercial fishery participants commented on stagnant or declining prices in several fisheries. Based on our analysis of the landings data, this appears to be true



for urchin and crab prices, which have been lower in recent years relative to the long term (-54% and -16%, respectively). However, average annual ex-vessel prices (per pound) are greater for most other fisheries, including rockfish (+58%), sablefish (+23%), albacore (+18%), salmon (+12%) and groundfish trawl (+8%). These increases can be attributed in part to changes in market opportunities such as the live fish fishery, and efforts by fishermen such as freezing and boxing their fish at sea to enhance the quality of their product to supply higher end markets. Some study participants reported that they use such strategies to help offset increasing costs.

While overall commercial landings and revenues have declined in Noyo Harbor, this decline is not necessarily the case for all Noyo Harbor fishermen and fishing operations. Our estimates of average annual revenue per boat for boats that earned a plurality (i.e., the greatest proportion) of their annual ex-vessel revenues from landings at Noyo Harbor indicate a variable and complex pattern. Between 1981–1983 and 1993–1995, average revenue per boat increased while the average number of ‘Noyo Harbor boats’ decreased overall. Exceptions to this trend were the salmon and sablefish fisheries, where average ex-vessel revenues dropped sharply. Between 1993–1995 and 2005–2007, however, average ex-vessel revenues increased only in the salmon and crab fisheries, and declined in most other fisheries and overall.

The wide fluctuations in revenue trends are indicative of the substantial variability in resource availability, regulations and market factors within and across fisheries. As a result, it is not clear whether or how these revenue patterns are indicative of future trends. It is also unclear whether increases in revenue per vessel have kept pace with increasing costs.

### *Cumulative Effects of Change*

The cumulative effect of reduced fishing activity on the Noyo fishing community has been an overall reduction in the number of fishery-support businesses and the continued deterioration of harbor infrastructure. Current local support business owners reported a reduction in sales of fuel, ice and other provisions, which they attributed in part to the trawl buyback, ongoing reductions in groundfish and salmon fishing activity, and the larger economic downturn. For the harbor, the reductions in commercial fishing opportunities and associated activity have led to a fundamental shift in berth occupancy from primarily commercial fishing vessels (80%–90% or more) through the 1990s to more than 50% recreational vessels in recent years. Although recreational fishermen generate revenues (from slip and launch fees) for the Harbor District, they tend to use fewer goods and services at the harbor. Since 2006, especially with the 2008 and 2009 salmon closures, overall berth and launch ramp usage have declined, although berth occupancy increased to 90% by June 2010 with the reopening of the salmon fishery. (However, most of these are monthly rather than seasonal rentals, which were the norm in earlier years.)

Study participants highlighted the importance of fishery-support infrastructure at Noyo, and discussed challenges to maintaining and enhancing waterfront infrastructure within the current regulatory and economic climate. Of critical concern was harbor maintenance (primarily dredging of the navigation channel and boat basin), continued access to fundamental goods and services, and public facilities for loading and unloading gear and associated activities.

Two provisions that are essential for most fishing operations are fuel and ice. At Noyo, there are currently two fuel docks, one at Noyo Harbor, the other at Dolphin Isle Marina. Only the Noyo Harbor fuel dock is accessible to deep-draft vessels. Some boats in the trawl fleet, which uses higher volumes of fuel, receive fuel delivered by truck from Mendocino Coast Petroleum. Given the reduced level of fuel use following reductions in vessel activity at Noyo, neither of these operations is self-sustaining.<sup>31</sup> Since 2006, the ice plant has been subsidized by the Point Arena Submarine Cable Committee. This support has been essential to the plant's continued operation, although the owner remains concerned about its future:

*We have to sell ice to make money, and we need fish for that. When they cut the season, sales decline, you don't do repairs, and so on. We're way behind on ours. We kept up maintenance the last [few] years, but now I'm not sure [what will happen].*

Many fishermen expressed concern about the vulnerability of local infrastructure, noting that the viability of local fisheries and the fishing community depends on a certain level and diversity of activity. Without access to these and other fundamental services, resident fishermen may be left with two choices: quit fishing or take their operations elsewhere:

*Shoreside infrastructure is directly proportional to community size. In the 1970s, 1980s there were a lot of support businesses – seven major receivers, four [of which] processed and had a high number of employees, and trucks to haul [the product] to market. When the industry was curtailed, many support businesses left, so the fishermen that are [here] now don't have enough support.*

*It sounds good to have two fishermen making money versus 10 fishermen starving, but the two fishermen can't support the community.*

A major challenge facing the port is the ongoing need for dredging the harbor entrance, navigation channel and boat basin. Periodic dredging by the Army Corps of Engineers has occurred since the 1930s (U.S. Army Corps of Engineers San Francisco District 1975). Maintenance has been delayed in recent years due to limited federal funding and the need for additional dredge disposal capacity. Emergency dredging was done in 2006 after U.S. Coast Guard vessels had to “wait out a storm” in Noyo Cove, with the cost shared by the County Office of Emergency Services (75%) and the Harbor District (25%), as federal funds (via the Corps of Engineers) were not forthcoming. In 2009, dredging funds finally were obtained after a fishing vessel scraped bottom trying to enter the river channel.<sup>32</sup> Dredging of the harbor entrance and navigation channels was completed in October 2009; however the boat basin and some other areas still need to be dredged (Korbell 2010). The harbor district is considering a 20-year plan for dredging, and hopes to find another site for approximately 400,000 cubic yards of dredged material.

Siltation further upriver and at Dolphin Isle Marina also has presented a challenge to fishermen and marina operators. Dredging has not been done since the 1960s, and the need to maintain access to the marina and slips is now critical. According to the manager, the shallow draft, which has a maximum of about nine feet on a spring tide, affects both commercial and recreational fishery participants, as well as the marina: “we are very limited to the smaller sized vessels.”

## CURRENT SITUATION AND OUTLOOK

The Noyo fishing community faces challenges as it continues to adjust to changes in fishing opportunities brought about by variable and uncertain regulatory, economic and environmental conditions. The cumulative effects of reduced opportunities in the salmon and groundfish fisheries, recent high fuel costs, and the broader economic downturn have put a strain on the community. Reduced revenues together with regulatory and economic uncertainty have made it difficult for local commercial fishermen and business owners to plan for and invest in their operations. A smaller fleet of active commercial fishermen and a much-reduced number of resident receivers, processors and fishery-support businesses remains. The harbor, once dominated by commercial fishing, is now more dependent on the recreational sector. At the same time, the narrowed range of fishing options (along with the recent general economic downturn) has deterred some nonresident anglers from visiting, which ultimately affects the larger Fort Bragg service industry and community as well. Other sport fisheries for groundfish, crab and abalone continue, but have not filled the void left by salmon.

Maintaining a working waterfront to service commercial and recreational fisheries is a critical concern, both for the functionality of the fleet and to preserve the area's maritime heritage. The reductions in fishing opportunities and activity have reduced shoreside activity and associated revenues, which in turn have affected fishery-support businesses and the harbor itself. With only a core group of support businesses remaining, fishery participants are concerned about the further loss of this infrastructure to the point that Noyo can no longer support fishing

In addition, the need for dredging of the navigation channels and basins is acute, both for residents (including the Coast Guard), and for transient users seeking provisions, services and refuge from often dangerous ocean conditions while traveling the coast.

In addition, study participants are concerned about three larger policy events that have the potential to fundamentally change local fisheries and the community. First, the state's Marine Life Protection Act (MLPA) process, begun in late 2009, is moving forward to establish a network of marine protected areas (MPAs) in the North Coast region (Point Arena, located just south of Fort Bragg, to the Oregon border). In Fall 2009, the Mendocino County citizens formed the Mendocino Ocean Community Alliance to coordinate participation and input into the North Coast MLPA process. Meanwhile, local fishermen must adapt to recently implemented MPAs in the North-Central Coast region (from Pigeon Point to Point Arena), which took effect on May 1, 2010. For example, one sea urchin processor noted:

*In 2009, 48% of the sea urchin processed in our plant came from between Point Arena and Bodega Bay. The North-Central closures due to the MLPA will decrease these landings 20% or more by my estimation due to the loss of key, most productive areas.*

Second, an individual quota program for the federal groundfish trawl fishery, to be implemented in 2011, has raised concerns among some about potential conflicts should effort shift from the trawl fishery into other fisheries, and infrastructure losses if vessels and/or catch shares ultimately leave the area

(or the fishery). Finally, potential offshore renewable energy development could further reduce access to customary fishing grounds. The Federal Energy Regulatory Commission (FERC) has issued two preliminary permits for wave energy development offshore from Fort Bragg. The Pacific Gas and Electric Company recently surrendered its permit when studies showed that Noyo Harbor infrastructure is inadequate to support the deployment of wave energy devices. The second permit, issued to Green Wave Energy Solutions LLC for a 17-square-mile area just south of Fort Bragg, is in litigation in the U.S. Ninth Circuit Court

of Appeals (Fishermen Interested in Safe Hydrokinetics v. FERC, No. 09-72920; E. Mitchell, pers. comm.).

These issues, in conjunction with generally declining and highly variable fishing opportunities, pose serious challenges to the viability of the Noyo fishing community. Yet they also have fueled the determination and adaptability of individuals, families and businesses to confront those challenges, and identify opportunities for sustaining their livelihoods and heritage.

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## ENDNOTES

- <sup>1</sup> Fishing is also important to the communities of Albion and Point Arena, as are shore-based ocean, inland and river fisheries and other collecting activities - both tribal and nontribal - to the community and the region. However, these are beyond the scope of this report.
- <sup>2</sup> See Appendix C for methodological detail.
- <sup>3</sup> Reports of the number of berths vary across sources and over time.
- <sup>4</sup> Mild curing consists of splitting (rough filleting) and salting salmon and storing it in wooden barrels. Fish processed in this way could be kept indefinitely in cold storage, but was usually sold and consumed within a year (Ponts 1965).
- <sup>5</sup> Grader's son Zeke wrote of growing up in Fort Bragg in the mid-1950s: "The mooring basin was still 10 years away and to protect the boats from being washed to sea during the winter freshets, when the river would surge with muddy water and debris from logging operations upstream, most would haul their boats out for the winter and the boat yards were as much for storage as they were for repair or maintenance" (Grader 2005).
- <sup>6</sup> Young (1969) reports these data as 'angler days' for 1947–1960, and 'anglers' for 1960–1967. Based on the overlap, they appear to be equivalent measures.
- <sup>7</sup> According to one long-time receiver/processor, there were seven seafood processing plants at that time.
- <sup>8</sup> Federal fishery disaster declarations afford affected fishery participants and coastal communities access to economic aid to help them deal with poor economic conditions in a fishery and/or a stock collapse. Such federal disaster relief assistance programs have been in place since the 1960s.
- <sup>9</sup> The tribal allocation was upheld in *Parravano v. Babbitt*, 70 F.3d 539 (9th Cir. 1995), cert. denied, 518 US. 1016 (1996).
- <sup>10</sup> Another 3 million pounds were landed at nearby Albion and Point Arena that year (Anon. 1994).
- <sup>11</sup> See Ralston (2002) for a discussion of the biology of West Coast groundfish and how growing understanding of that biology affected PFMC management.
- <sup>12</sup> See Appendix B for a glossary with definitions of this and other key terms used throughout this report. Pacific ocean perch, bocaccio and lingcod were declared overfished in 1999, canary rockfish and cowcod in 2000, darkblotched and widow rockfish in 2001, and yelloweye rockfish in 2002. Lingcod was declared rebuilt in 2005.
- <sup>13</sup> Vessel monitoring systems are electronic transmitters placed on fishing vessels that transmit information about a vessel's position to enforcement agencies via satellite to determine, for example, whether a vessel is in a closed area.
- <sup>14</sup> See Leet et al. 2001 and Starr et al. 2002 for descriptions of these fisheries and gear types.



- <sup>15</sup> Most Fort Bragg urchin boats carry two divers.
- <sup>16</sup> Over time, a succession of organizations, beginning with the Director’s Sea Urchin Advisory Committee (DSUAC, established in 1987) through the current CSUC, has represented California’s sea urchin fishery participants. Halmay, P. 2009. A new beginning for the California Sea Urchin Commission. CommUNItY. Sacramento, CA: California Sea Urchin Commission. 1,4.
- <sup>17</sup> The salmon barbecue was initiated by the fishing community in 1971 to support hatchery production. With the curtailment of the salmon fishery and the growth of tourism, however, the barbecue has become more of a tourism event, attracting 2,500–3,000 people and raising \$30,000–\$40,000 to support restoration activities. The event also is a U.S. Library of Congress ‘Local Legacy Project’ (<http://www.salmonrestoration.com/>).
- <sup>18</sup> The 1981 start date for this analysis is based on the availability the Pacific States Marine Fisheries Commission’s (PSMFC) PacFIN database, which integrates Washington, Oregon and California commercial fishery landings data to provide a consistent coast-wide electronic record of landings from 1981 forward. The PacFIN data for California are based on the C-MASTER data provided by CDFG to the PSMFC.
- <sup>19</sup> Throughout we abbreviate the names of these fisheries as follows: albacore for albacore troll, crab for crab pot, rockfish for rockfish/lingcod hook-and-line/pot, sablefish for sablefish hook-and-line/pot, salmon for salmon troll, shrimp for shrimp trawl, and urchin for urchin dive.
- <sup>20</sup> An entity is counted as a buyer in a given year if it receives at least one delivery. In reality, the number of active buyers capable of regularly receiving the catch from multiple boats is considerably smaller.
- <sup>21</sup> Because multiple species may be caught during a fishing trip, trips are measured by assigning each delivery to the fishery accounting for the greatest (i.e., plurality of) ex-vessel value associated with that delivery. In some cases, fishing for particular combinations of species and/or using multiple gear types on a single trip is prohibited.
- <sup>22</sup> Consolidation refers to the concentration of fish catch or fish receiving among a smaller number of entities.
- <sup>23</sup> Although 2005–2007 PacFIN data cannot be reported (because of confidentiality requirements), data published in CDFG’s 2008 report on the fishery indicate an increase in fishery activity at Noyo in recent years as follows: 648,277 pounds (2005), 532,208 pounds (2006), 871,870 pounds (2007) and 1,373,499 pounds (2008 preliminary data; <http://www.dfg.ca.gov/marine/seaurchin/report2008.asp>, accessed 8/3/10).
- <sup>24</sup> The recent CDFG report on the fishery indicates an overall increase in the number of receipts (or deliveries) at Noyo in recent years, with 772 deliveries in 2005, 639 in 2006, 898 in 2007 and 1,178 in 2008 (preliminary data; (<http://www.dfg.ca.gov/marine/seaurchin/report2008.asp>, accessed 8/3/10).

- <sup>25</sup> The fishery was open south of Point Arena for 153 days, so that fishermen could land their catch at Noyo at the end of the season or before transiting north to continue fishing and delivering at ports north of the closed areas.
- <sup>26</sup> Note that crab season straddles the calendar year (December through July), and most landings occur within the first one to two months of the season (Hankin et al. 2001). As a result, activity reported for a given year may not correspond to that of a season, *per se*. We analyzed the data by calendar year for consistency with analyses for other fisheries, most of which have seasons that lie within the calendar year.
- <sup>27</sup> The CDFG initiated the CRFS in 2004 to continue and fine-tune research conducted through NMFS' coastwide Marine Recreational Fisheries Statistical Survey since 1980 to document and estimate recreational fishing effort (<http://www.dfg.ca.gov/marine/crfs.asp>, <http://www.recfn.org/pcmrfss.htm>). The CRFS provides comprehensive estimates of effort and catch for all recreational fishing modes and species. (Modes are the locations/facilities anglers fish from, and include: manmade structures, beaches and banks, CPFVs (or charter boats), and private boats.) See Regional Profile for a discussion of recreational fishing in the larger North Coast region.
- <sup>28</sup> The 1980 start date for this analysis is based on the availability of electronic CPFV logbook data.
- <sup>29</sup> The peak of 21 CPFVs in 1989 should be viewed with caution. Study participants report about six active CPFVs at that time, with remainder likely operating temporarily as charters in an effort to adapt to the increasing constraints on commercial salmon fishing. Subsequent changes in rules pertaining to fishing commercially and recreationally from the same vessel and U.S. Coast Guard passenger vessel safety requirements prompted a return to numbers observed in most earlier years.
- <sup>30</sup> As of June 30, 2010, 744 launches had been made from Noyo Harbor, for an estimated 1,860 angler trips for the year to date.
- <sup>31</sup> According to study participants here and at other ports, fuel sales have a very small profit margin, so that it takes substantial volume of sales to support such an operation independently.
- <sup>32</sup> [http://www.spn.usace.army.mil/press\\_release/PR-2009-08-06\\_August\\_Corps\\_Awards\\_Contract.html](http://www.spn.usace.army.mil/press_release/PR-2009-08-06_August_Corps_Awards_Contract.html), accessed 3/29/10.