

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

## Regional Profile



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

## **Regional Profile**

**Final Report  
to the  
California State Coastal Conservancy  
Award 06-128**

**August 2010**

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## EXECUTIVE SUMMARY

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 (MLMA) 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, in-depth social science information on California fishing communities remains quite sparse.

The purpose of the Fishing Communities Project was to provide detailed historical and current social science information on four Northern California port communities – Crescent City, Trinidad, Eureka/Fields Landing, and Noyo/Fort Bragg. In addition to profiling each community, the project also provides a regional overview that encompasses the three counties – Mendocino, Humboldt, and Del Norte – in which these communities are situated.

This Regional Profile provides county-level demographic and economic information, a discussion of fishery regulations, and customized summaries of ocean commercial and recreational fishery data for the three North Coast counties and the tri-county region. The information provided here is based on the collection and integrated analysis of archival data to interpret patterns, variability and change within and across fisheries and the fishing community over time. Data sources include:

- PacFIN commercial fish landing receipt data for the period 1981–2007 reconfigured into 34 distinct species/gear combinations;
- Commercial Passenger Fishing Vessel (CPFV) logbook data for the period 1980–2007;
- An extensive review of the published and gray literature, including fishery status reports and historical fishery statistics (as available) from the Pacific Fishery Management Council (PFMC), National Marine Fisheries Service (NMFS), and California Department of Fish and Game (CDFG); and
- Statistics from government sources such as the U.S. Census Bureau, the Economic Research Service, the Bureau of Economic Analysis, and the Bureau of Labor Statistics.

### ***Demographic and Economic Overview***

The three North Coast counties are rural and sparsely populated – a marked contrast to the highly urban nature of other coastal counties in California. Relative to California as a whole, the North Coast population is generally older, more limited in terms of income and education, and less racially diverse. Unemployment rates historically have been much higher in these counties than the state, although that gap narrowed considerably by 2009 due to statewide increases in unemployment associated with the current recession. In 2007, private sector business activity in North Coast counties involved 6,884 establishments (employing 67,326 people) and an additional 20,935 self-employed individuals. Private sector establishments with employees are most likely to be involved in construction, manufacturing, retail trade, health care/social assistance, and accommodation/food services. Self-employed individuals are most likely to be involved in construction, retail trade, real estate/rental and leasing, professional/scientific/

technical services, and health care/social assistance. Earnings in the three counties totaled \$5.7 billion in 2007: 16% in proprietors' income, 61% in private earnings, and 23% in government earnings.

### ***Commercial Fisheries***

Major commercial fisheries on the North Coast include Dungeness crab pot, nonwhiting groundfish trawl, salmon troll, sablefish hook-and-line/pot, albacore troll, rockfish/lingcod hook-and-line/pot, urchin dive, whiting trawl, and shrimp trawl.<sup>1</sup> Fishing activity has generally declined over the past 27 years (1981–2007). Landings and ex-vessel value peaked at 103.7 million pounds and \$80.4 million respectively in 1988. Since 1998, landings and value have been consistently below 45 million pounds and \$50 million, respectively. The number of boats declined precipitously from a peak of 2,550 in 1981 to 500 or fewer boats since 2005. The number of buyers ranged from 73 to 125, with no apparent trend.

From 2003 through 2007, an annual average of 512 boats and 108 buyers participated in North Coast commercial fisheries; landings totaled 37.6 million pounds with an ex-vessel value of \$39.4 million. The top three fisheries in terms of landings (and the proportion of North Coast landings they accounted for) were: crab pot (37%), groundfish trawl (24%), and shrimp trawl (21%). The top three in terms of ex-vessel value were crab pot (64%), groundfish trawl (13%), and salmon troll (10%). The top fisheries in terms of vessel participation were crab pot (50%), salmon troll (45%), and rockfish and sablefish hook-and-line (15% and 14% respectively), while the top three in terms of buyers were crab pot (54%), salmon troll (44%) and rockfish hook-and-line/pot (31%).<sup>2</sup> In recent years, the crab fishery has been the mainstay of the North Coast commercial fishery. In 2003, 2004 and 2006, crab landings ranged from 8.4 to 11.9 million pounds, levels exceeded only once since 1947 (in 1982, when 54.4 million pounds were landed).

Average annual landings, ex-vessel value and vessel participation in North Coast fisheries were 35%, 14% and 52% lower during recent years (2003–2007) relative to the long term (1981–2007). The direction and size of changes in these variables vary widely across fisheries, with individual variables sometimes changing in opposite directions for a given fishery. For instance, crab pot landings and value increased by 74% and 59% respectively, while participation declined by 31%. Sablefish landings decreased by 3%, while value and participation increased by 25% and 43% respectively. Other fisheries (e.g., groundfish trawl, albacore troll, rockfish/lingcod hook-and-line/pot, urchin dive, shrimp trawl) have shown declines on all three measures. Reasons for these changes vary by fishery, and are related to factors such as resource status and availability, regulations, and market conditions.

The salmon and groundfish fisheries have undergone profound changes over the past few decades.

- The commercial salmon fishery in California's Klamath Management Zone (KMZ, roughly encompassing Humboldt and Del Norte counties) has been sharply curtailed since the mid-1980s, and in the Fort Bragg management area (roughly encompassing Mendocino county) since the early 1990s. Both areas (particularly the KMZ) have been subject to dramatically reduced seasons – including complete closures in some years – that are much shorter than the seasons allowed elsewhere in California or even the West Coast. In 2008 and 2009, the commercial salmon fishery was closed statewide; this unprecedented action was due to concerns regarding Sacramento River fall Chinook.

- The groundfish fishery (most notably groundfish trawlers and rockfish hook-and-line/pot vessels) has also been subject to increasingly restrictive regulations, particularly since the late 1990s when eight groundfish stocks were declared overfished. Unprecedented harvest limits, as well a complex array of other regulations, have been implemented to rebuild overfished stocks and address overcapacity in the groundfish trawl sector.

### ***Recreational Fisheries***

Recreational fisheries on the North Coast include salmon, groundfish, albacore, halibut, abalone, and crab. An annual average of 216,000 angler trips were taken on the North Coast from 2005 through 2007: 26% from manmade structures, 29% from beach/bank, 9% from CPFVs, and 36% from private/rental boats.

Salmon and groundfish, which traditionally have been the major target species for CPFVs and private boat anglers, have become less available for harvest in recent decades – largely due to concerns regarding Klamath River fall Chinook and (more recently) Sacramento River fall Chinook, and rebuilding requirements for overfished rockfishes (which include a number of recreationally important species).

- The decline in recreational salmon opportunities experienced since the early 1990s has been largely concentrated in California’s KMZ. The KMZ season was reduced from about nine months in the early 1980s to four to six months in the mid-1980s to zero to four months since the early 1990s, with associated decreases in fishing effort.
- The Fort Bragg management area was generally much less constrained than the KMZ fishery and experienced a general increase in effort during the period 1992–2007; some of this increase may be due to diversion of previous KMZ effort to Fort Bragg.
- In 2008, however, major concerns regarding the status of Sacramento River fall Chinook resulted in a dramatic and unprecedented shortening of recreational seasons statewide. The recreational season in California’s KMZ was zero days in 2008 and ten days in 2009. The Fort Bragg recreational season was 45 days in 2008 (significantly reduced from its normal eight to nine months) and zero days in 2009. While such severe restrictions were not new for the KMZ, they were unprecedented for the Fort Bragg area.
- Like the commercial fishery, the recreational groundfish fishery has been subject to more stringent management since the late 1990s, with management actions including reductions in rockfish and lingcod bag limits, rockfish sublimits, reductions in season length from 12 months to three to four months, and depth-based closures.

### ***Summary***

Over the past three decades, North Coast commercial and recreational fisheries have changed markedly, undergoing expansion through the early 1980s, followed by contraction as regulatory, economic and other factors played out during the 1990s and into the 2000s. Reduced fishing opportunities have increased economic stress and uncertainty for fishery participants, support businesses and the larger community. In the face of such constraints, North Coast communities are confronted with the challenge of maintaining the viability of their fisheries. Decisions and plans are being made at the community level regarding infrastructure and other issues to help address this challenge. These adaptations, which are specific to each community, are discussed in the individual port profiles.

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# INTRODUCTION

The port communities that are the focus of this project are located in three counties: Mendocino County (Noyo/Fort Bragg), Humboldt County (Eureka/Fields Landing and Trinidad) and Del Norte County (Crescent City). The geographic scope of this regional overview encompasses those three counties, with an emphasis on ocean commercial and recreational fisheries.<sup>3</sup> Use of county boundaries was deemed appropriate and useful, as demographic and economic statistics of various types are readily available at the county level, and management boundaries for some major North Coast fisheries coincide approximately with county boundaries.

This Regional Profile provides county-level demographic and economic information, a discussion of fishery regulations, and customized summaries of ocean commercial and recreational fishery data for the three North Coast counties and the tri-county region. The purpose of this overview is to characterize regional fishing activity as well as provide a larger context for the fisheries depicted in the individual port profiles. The demographic and economic data provided here are indicative of the larger context within which North Coast fishing communities operate and adapt to change, and are also suggestive of how life in rural areas contrasts with the largely urban environment in which most Californians live.

The regional and port profiles reflect, respectively, regionally and locally relevant activities and influences. In situations where a factor (e.g., fishery regulations, market influences) is common to the region and/or to multiple ports, that factor is discussed in those profiles for which it is relevant. While this introduces some redundancy among profiles in terms of the information provided, it also allows this Regional Profile and each port profile to be read and used as a stand-alone document.

# SOCIAL AND ECONOMIC BACKGROUND

## *Early History of the Region*

The North Coast region of California encompasses the ports of Fort Bragg, Eureka/Fields Landing, Trinidad, and Crescent City (Figure 1). Separated from the interior by rugged mountains of the Klamath and North Coast ranges, this region's coastal communities historically have been, and still very much are, resource-dependent. Since the early 19<sup>th</sup> century, agriculture, logging and manufacturing of timber, along with fishing (sport and commercial), have been the basis for social and economic growth and well-being.



**Figure 1. Map of the North Coast of California, showing ports and counties of interest.**

For at least 2,000 years before European explorers discovered America, native peoples inhabited the North Coast. Given the incredible wealth of land and water resources, several tribes subsisted and formed their cultures around native plants and animals. Probably the most important of these is the Chinook salmon, which formed the basis of most tribal diets. Several different tribes, from the Pomo Indians of the Mendocino coastal region, the Wiyot and Mattole in the Humboldt Bay area, to the Yurok and Tolowa peoples in the Klamath River/Crescent City area, established communities and relationships with others and the land.

Monumental changes occurred along the North Coast region in the 1850s, as the developing gold mining and timber industries brought thousands of settlers to the area. Crescent City and Trinidad were settled in the early 1850s following the discovery of gold on the Klamath, Trinity and Salmon rivers. The first official town in Humboldt County, Trinidad was the county seat from 1852 to 1854, and connected people and supplies to gold mining operations inland. The center of activity soon shifted to Humboldt Bay and the cities of Eureka and Arcata, where three European-American exploration groups – the Laura Virginia party, the Union Company, and

the Mendocino Company – had laid claim to Humboldt Bay and its surrounding lands (Glatzel 1982). Eureka became the shipping center for the region, serving gold mining and timber harvesting interests in Trinity and Siskiyou counties (Monroe et al. 1973). In the Fort Bragg area, the first sawmill on California’s North Coast was built at the mouth of the Noyo River in 1852 (McEvoy 1986). During this time of intense settlement in the North Coast region, many native peoples were forced off their land. The U.S. Government negotiated with many tribes to establish Indian lands and reservations and quell the violence between settlers and Indians. By the late 1800s, very few Indians remained on their native lands along the coast.

River fisheries for coho (*Oncorhynchus kisutch*) and Chinook salmon (*O. tshawytscha*), along with cannery operations, began in the mid-1800s. The advent of motorized trollers allowed the ocean salmon fishing industry to expand from the Monterey Bay area to the North Coast during the 1920s (Feinberg and Morgan 1980). Groundfish trawlers also became active along the North Coast and specifically in the Eureka area by 1929, where they delivered their catch for shipment to larger population centers by rail (Scofield 1954). Also around that time several seafood companies (many of which originated in San Francisco) began doing business with fishermen along the North Coast. The onset of WWII led to dramatically increased catches of groundfish, particularly Dover sole, which was purchased in large quantities by the U.S. Government to feed soldiers overseas (Hagerman 1952). A lucrative fishery developed for shark livers around this time, but was short-lived.

By the 1960s, with an estimated 90% of the redwoods gone (Norman et al. 2007), fisheries became increasingly important to these communities. Expanding activity in the commercial salmon, crab and groundfish fisheries, as well as the growth of the sportfishing fleet created the need for an adequate harbor and berthing facilities at each port. Dredging and other breakwater construction projects by the Army Corps of Engineers, and various city and county agency efforts, improved harbor access and navigability. Various federal programs further encouraged the development of the nation’s fisheries. For example, 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 (Dewees 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. The passage of the federal Fishery Conservation and Management Act (later the MSA) in 1976, called for the development of U.S. fisheries as well as their management. As in many other places in the United States, the 1970s and 1980s were the boom years for the North Coast fisheries.

### ***Historical Fisheries Data***

Historic data on landings and landed value compiled from California Fish and Game Bulletins<sup>4</sup> provide insights into the nature and extent of commercial fishing activity on the North Coast since 1947. Groundfish, salmon and crab together comprised roughly 80% of average annual landings from 1947 through 1980 and average annual ex-vessel value from 1947 through 1980 and 1981 through 2007, and 63% of average annual landings from 1981 through 2007 (Table 1). The relative contribution of groundfish and crab to total landed value increased between 1947–

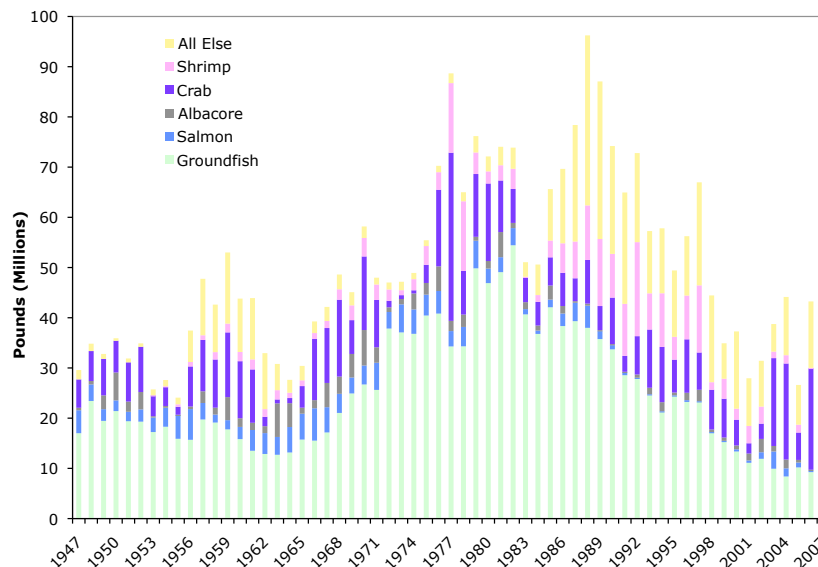


1980 and 1981–2007, while the salmon contribution decreased. Albacore was also harvested in the 1940s and thereafter, and shrimp since the early 1950s, though in smaller quantities than groundfish, salmon or crab.

**Table 1. Average annual landings (pounds, in millions) and ex-vessel value (2007\$, in millions) of major North Coast species, 1947–1980 and 1981–2007 (CDFG Fish Bulletin Series).**

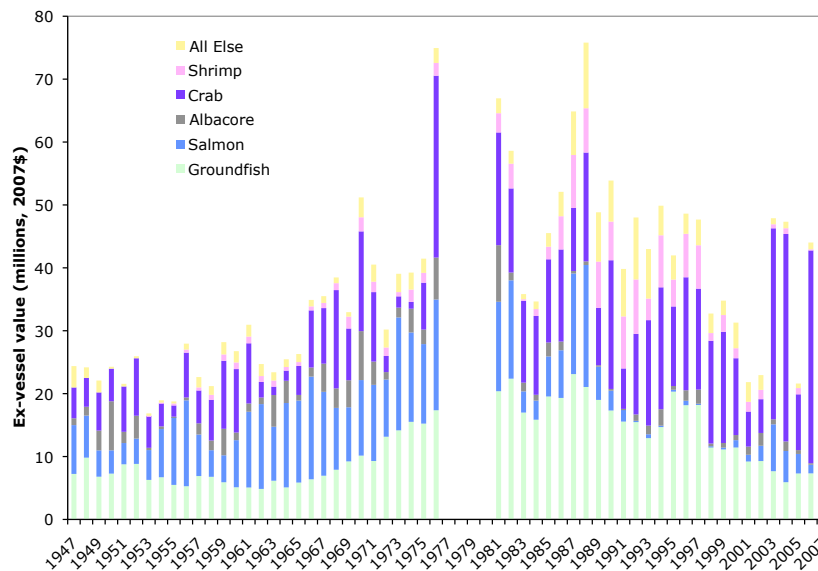
	Groundfish	Salmon	Crab	Subtotal	Total
Average Landings: million pounds (% of total)					
1947–1980	24.0 (54%)	3.8 (9%)	8.3 (19%)	36.1 (82%)	44.7 (100%)
1981–2007	25.9 (46%)	1.2 (2%)	8.2 (15%)	35.3 (63%)	55.8 (100%)
Average Ex-Vessel Value: million \$ (% of total)					
1947–1980	8.3 (27%)	9.8 (32%)	7.2 (24%)	25.3 (83%)	30.4 (100%)
1981–2007	14.8 (33%)	4.5 (10%)	15.8 (36%)	35.1 (79%)	44.2 (100%)

Landings increased from 1947 through the 1980s, peaking in 1977 (88.7 million pounds) and 1988 (96.2 million pounds; Figure 2). Landings subsequently declined to a low of 26.6 million pounds in 2005. This low was rivaled only by 1953 and 1955 landings (25.7 million and 24.1 million pounds, respectively). Groundfish landings peaked at 54.4 million pounds in 1982 and reached their lowest levels (8.4–11.9 million pounds) during the period 2001–2007. Salmon landings peaked at 6.4 million pounds in 1966 and fell below one million pounds in 1984, and during the periods 1990–2001 and 2005–2007. Crab landings during 2003, 2004 and 2006 ranged from 7.5 to 20.2 million pounds, levels exceeded only by the 33.5 million pounds landed in 1977.



**Figure 2. North Coast commercial fishery landings, 1947–2007 (CDFG Fish Bulletin Series).**

The ex-vessel value of landings peaked in 1976 (\$74.9 million) and 1988 (\$75.8 million; Figure 3). Landed value subsequently declined to lows of \$21–\$23 million in 2001, 2002 and 2005. Values lower than \$23 million had not been previously experienced except in seven of the 12 years from 1947 to 1958. The ex-vessel value of groundfish was less than \$6 million from 1955 through 1956, 1959 through 1962, 1964 through 1965 and 2004, and exceeded \$20 million in 1981, 1982, 1987, 1988 and 1995. Salmon landed value reached a low of \$46,000 in 1992 and exceeded \$15 million in 1966, 1973, 1982, 1987 and 1988. Crab landed value was less than \$2 million in 1955, 1963, 1964, 1973 and 1974, and exceeded \$30 million in 2003, 2004 and 2006.



**Figure 3. Ex-vessel value (2007\$) of North Coast commercial fisheries, 1947–2007 (CDFG Fish Bulletin Series). Note: Ex-vessel value data for 1977–1980 are not available.**

## ***Population and Demographics***

### **Rural-Urban Designation**

The three North Coast counties are rural and sparsely populated. According to the rural-urban classification system developed by the Economic Research Service, (Table 2), Mendocino County is categorized as a 4 (nonmetro county with urban population of 20,000 or more, adjacent to a metro area), Humboldt County as a 5 (nonmetro county with urban population of 20,000 or more, not adjacent to a metro area), and Del Norte County as a 7 (nonmetro county with urban population of 2,500–19,999, not adjacent to a metro area). Although population in-migration caused Mendocino County’s status to change between 1983 and 1993, the status of the other two counties has not changed over the past two decades. These counties are a stark contrast to the urban nature of other coastal counties in California. San Luis Obispo County is the next most rural coastal county (urban/rural continuum code=3); all other coastal counties are classified 1 or 2.

**Table 2. North Coast counties classified by rural-urban continuum code (U.S. Department of Agriculture, Economic Research Service).**

County	1983	1993	2003
Mendocino	5	4	4
Humboldt	5	5	5
Del Norte	7	7	7

Rural-urban continuum codes:

- 1 = county in metro area with 1 million population or more.
- 2 = county in metro area of 250,000 to 1 million population.
- 3 = county in metro area of fewer than 250,000 population.
- 4 = nonmetro county with urban population of 20,000 or more, adjacent to a metro area.
- 5 = nonmetro county with urban population of 20,000 or more, not adjacent to a metro area.
- 6 = nonmetro county with urban population of 2,500–19,999, adjacent to a metro area.
- 7 = nonmetro county with urban population of 2,500–19,999, not adjacent to a metro area.
- 8 = nonmetro county completely rural or less than 2,500 urban population, adjacent to a metro area.
- 9 = nonmetro county completely rural or less than 2,500 urban population, not adjacent to a metro area.

**Population**

The combined population of the three counties was 240,258 in 2000, distributed as follows: 36% in Mendocino County, 53% in Humboldt County, and 11% in Del Norte County. Fort Bragg accounted for 8% of the Mendocino population, Eureka for 21% of Humboldt’s population, and Crescent City for 27% of Del Norte’s population. Trinidad (California’s smallest incorporated city) and Fields Landing (an unincorporated area) each accounted for less than 1% of Humboldt County’s population (Table 3).

**Table 3. 2000 population of Mendocino, Humboldt and Del Norte counties and selected fishing ports within each county, and port population as percent of associated county population (U.S. Census Bureau).**

County/Port	2000 Population	Percent of County Population
Mendocino County	86,389	
Fort Bragg	6,818	7.9%
Humboldt County	126,397	
Eureka	26,069	20.6%
Fields Landing	213	0.2%
Trinidad	315	0.2%
Del Norte County	27,472	
Crescent City	7,528	27.4%

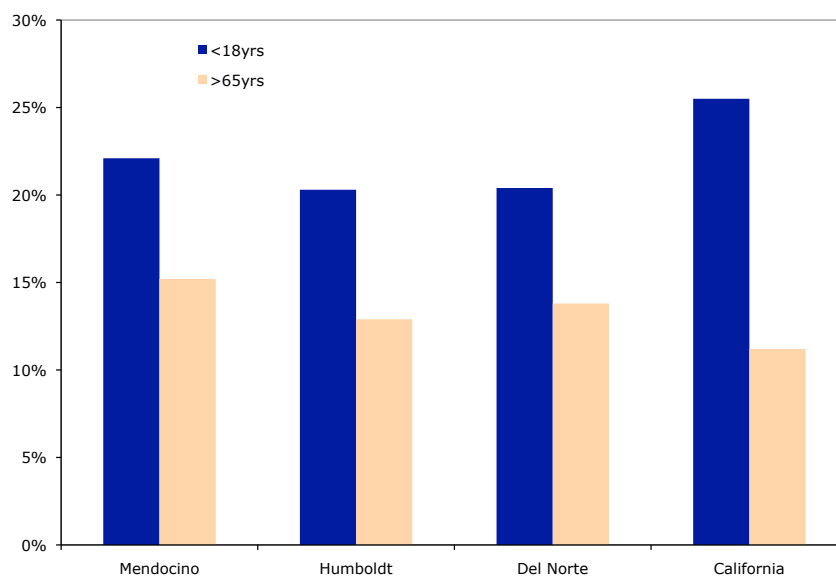
Since 1981, population growth has generally been lower in the North Coast counties than the state as a whole (Table 4). Exceptions to this trend are the unusual population increases in Del Norte County from 1981 through 1990 and 2001 through 2009. One factor contributing to its 1981–1990 growth rate was the establishment of Pelican Bay State Prison near Crescent City in 1989. The prison currently houses about 3,300 inmates.

**Table 4. Population of Mendocino, Humboldt, Del Norte counties and California in 1981 and 2009, and percent change in population, 1981–1990, 1991–2000, and 2001–2009 (U.S. Census Bureau).**

Location	Population		Population Change		
	1981	2009	1981–1990	1991–2000	2001–2009
Mendocino	68,385	88,040	18.2%	5.9%	1.6%
Humboldt	110,338	129,623	8.4%	4.8%	2.0%
Del Norte	18,789	29,623	27.6%	6.3%	8.3%
California	24,285,933	36,961,664	23.3%	11.8%	7.1%

### Age

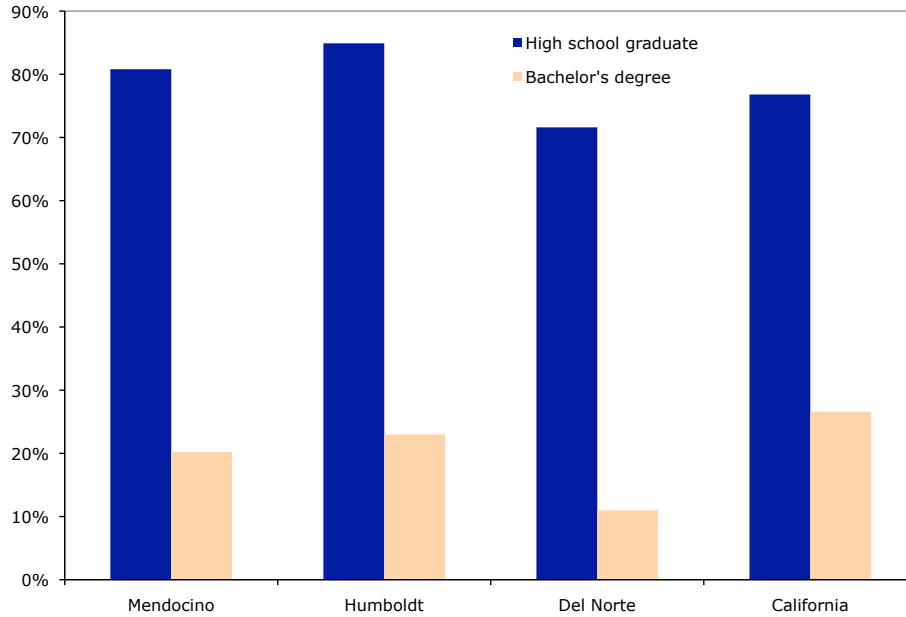
The North Coast population tends to be older than California’s population as a whole (Figure 4). In 2008, individuals under 18 years old comprised 20%–22% of the population in each North Coast county, compared to 26% of the California population. At the other end of the age spectrum, 13%–15% of the county populations were greater than 65 years old, compared to 11% of California’s population.



**Figure 4. Percent of population < 18 years and > 65 years in Mendocino, Humboldt and Del Norte counties and statewide, 2008 (U.S. Census Bureau, State and County Quick Facts).**

### Education

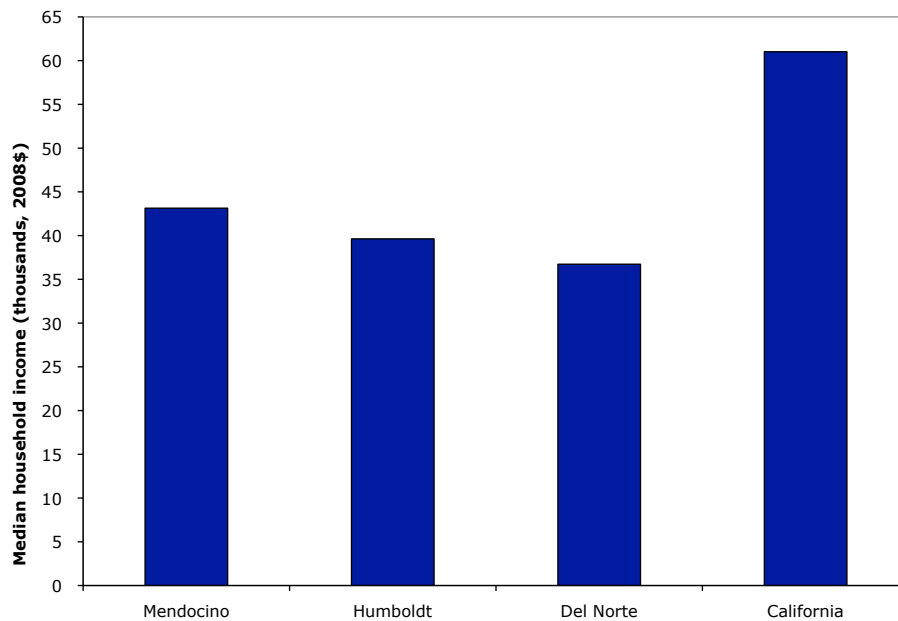
In 2000, the proportion of the population age 25 and older whose maximum education was a high school degree was 81% in Mendocino County, 85% in Humboldt County and 72% in Del Norte County, compared to 77% statewide (Figure 5). The proportion whose maximum education was a bachelor’s degree was lower in these counties (20%, 23% and 11%, respectively) than for California as a whole (27%).



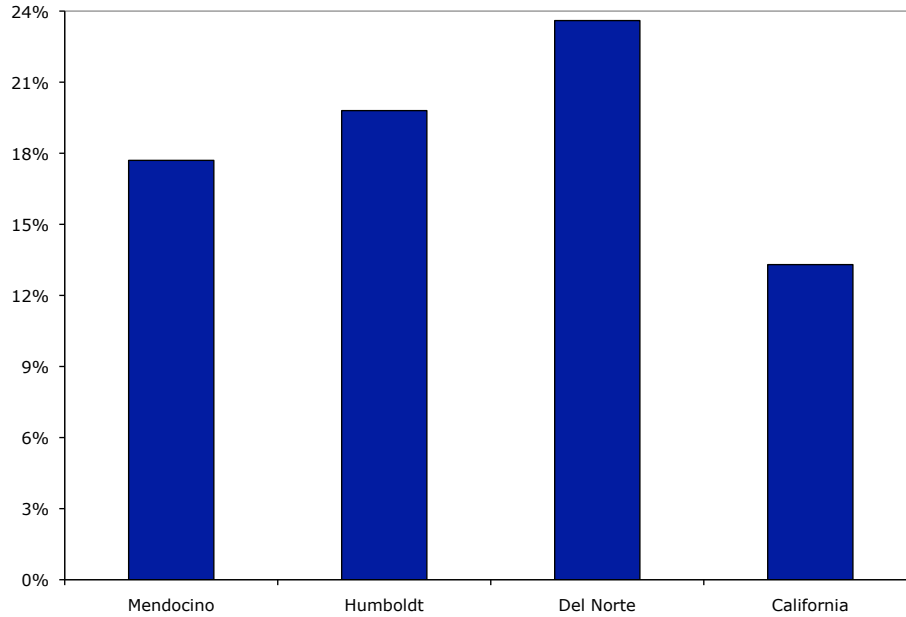
**Figure 5. Percent of population 25+ years in Mendocino, Humboldt and Del Norte counties and statewide with maximum education attainment of high school degree and bachelor's degree, 2000 (U.S. Census Bureau, State and County Quick Facts).**

### Income

Median household income in 2008 was considerably lower in Mendocino (\$43,100), Humboldt (\$39,600) and Del Norte counties (\$36,000) than in California as a whole (\$61,000; Figure 6). The proportion of the population below the poverty level in 2008 was also higher in these counties (18%, 20% and 24%, respectively) than the state as a whole (13%; Figure 7).



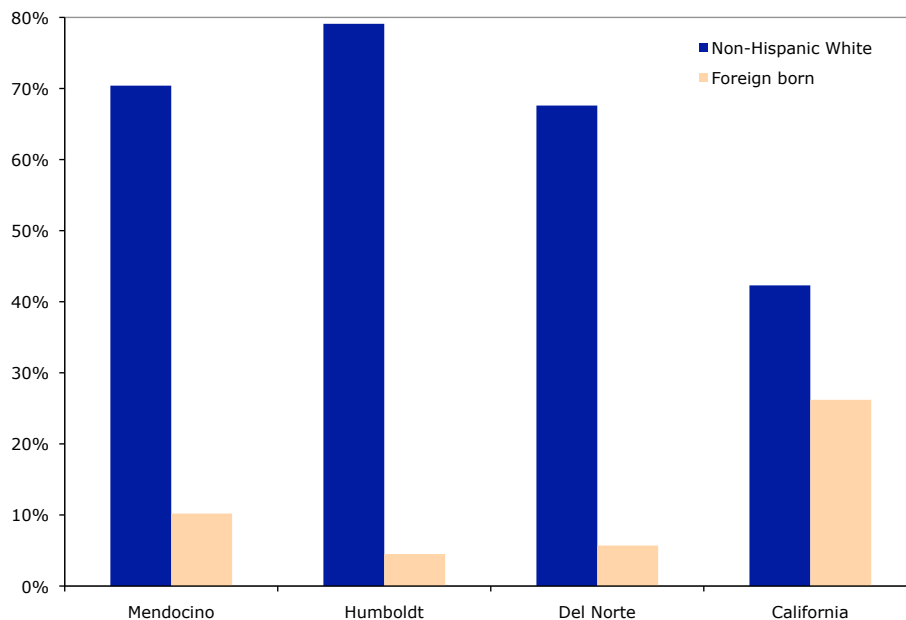
**Figure 6. Median household income in Mendocino, Humboldt and Del Norte counties and statewide, 2008 (U.S. Census Bureau, State and County Quick Facts).**



**Figure 7. Percent of population below poverty level in Mendocino, Humboldt and Del Norte counties and statewide, 2008 (U.S. Census Bureau, State and County Quick Facts).**

**Race/Ethnicity and Foreign Born**

In 2000, the proportion of the population identified as non-Hispanic white was 70% in Mendocino County, 79% in Humboldt County and 68% in Del Norte County, while the proportion foreign-born was 10%, 5%, and 6%, respectively (Figure 8). These numbers contrast sharply with California as a whole, where a minority of the population (42%) is non-Hispanic white and 26% are foreign-born.



**Figure 8. Percent of population identified as non-Hispanic white and percent foreign-born in Mendocino, Humboldt and Del Norte counties and statewide, 2000 (U.S. Census Bureau, State and County Quick Facts).**

## Economic Overview

### Unemployment Rate

Until the early 2000s, the unemployment rate was notably higher in the North Coast counties (particularly Del Norte) than California as a whole (Figure 9). The gap between the statewide unemployment rate and the rates in Mendocino and Humboldt counties began narrowing in the early 2000s. In recent years, unemployment rates have increased in all three counties and statewide, reflecting the effects of the current recession. While the unemployment rate in Del Norte County has increased dramatically since 2006 (from 6.9% to 12.2% in 2009) and remains higher than elsewhere, the gap has narrowed in recent years between Del Norte County's rate and the rates experienced in Mendocino and Humboldt counties and California.

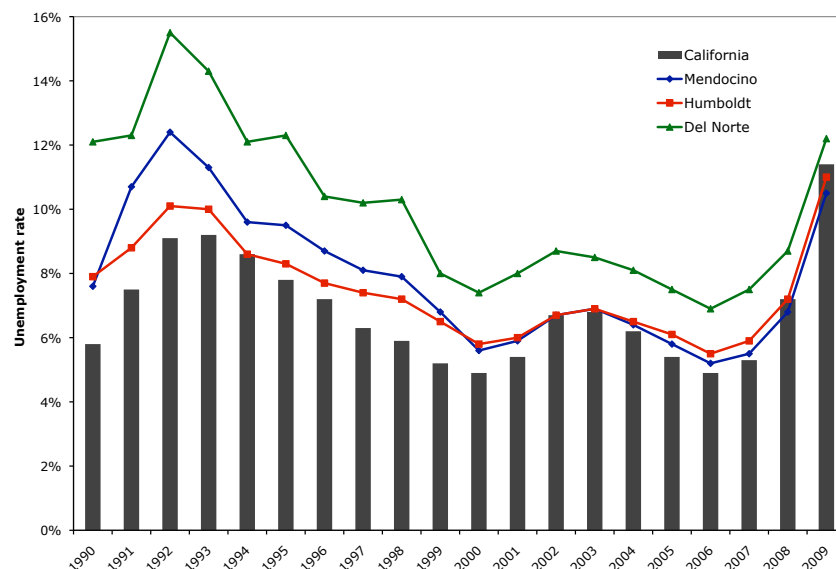


Figure 9. Unemployment rates in Mendocino, Humboldt and Del Norte counties and statewide, 1990–2009 (U.S. Department of Labor, Bureau of Labor Statistics).

### Business Activity: County Business Patterns

The U.S. Census's County Business Patterns (CBP) provides annual, county-level information on economic activity by businesses with paid employees. Activity is described in terms of mid-March employment, first-quarter payroll, annual payroll, and number of establishments.<sup>5</sup> Activity is categorized by sector, using the North American Industrial Classification System (NAICS).

Tables 5, 6 and 8 provide information on 2007 business activity by NAICS sector for each North Coast county. Adding across the Tables, 2007 business activity in the three counties combined included mid-March employment of 67,326, a first-quarter payroll of \$450.6 million, an annual payroll of \$1.9 million, and 6,884 establishments. Depending on which of these four CBP measures is considered, Mendocino County accounted for 37%–40%, Humboldt County for 52%–56%, and Del Norte County for 6%–8% of North Coast business activity. Humboldt County's contribution to business activity (53%) corresponds closely to its share of the 2007 tri-county population. Mendocino County's share of business activity (35%) is somewhat higher than its population share, while Del Norte County's contribution to business activity (12%) is lower than its population share.

For Mendocino and Humboldt counties, Construction, Manufacturing, Retail Trade, Health Care/Social Assistance, and Accommodation/Food Services each accounted for at least 10% of total business activity (according to at least one of the four CBP measures of economic activity Tables 5 and 6). For Del Norte County, the same sectors (with the exception of Manufacturing) also satisfied the 10% criterion (Table 7).<sup>6</sup>

**Table 5. Mid-March employment, first-quarter payroll, annual payroll, and number of establishments with paid employees in Mendocino County, 2007, by NAICS sector (U.S. Census Bureau, CBP). Note: Blank cells indicate data withheld to ensure confidentiality. NAICS sectors accounting for at least 10% of total economic activity according to at least one of the four CBP measures of economic activity are bold and italicized.**

NAICS Code	NAICS Sector	Mendocino County			
		Paid Employees March 12 Pay Period	First- Quarter Payroll (\$1000s)	Annual Payroll (\$1000s)	Total Establish- ments
11----	Agriculture/Forestry/Fishing/Hunting	506	3,654	24,327	60
21----	Mining				3
22----	Utilities				7
<b>23----</b>	<b><i>Construction</i></b>	<b><i>1,361</i></b>	<b><i>11,207</i></b>	<b><i>51,673</i></b>	<b><i>357</i></b>
<b>31----</b>	<b><i>Manufacturing</i></b>	<b><i>3,118</i></b>	<b><i>25,854</i></b>	<b><i>114,503</i></b>	<b><i>147</i></b>
42----	Wholesale Trade	758	6,521	33,506	94
<b>44----</b>	<b><i>Retail Trade</i></b>	<b><i>5,172</i></b>	<b><i>29,544</i></b>	<b><i>126,983</i></b>	<b><i>492</i></b>
48----	Transportation/Warehousing	582	5,987	25,147	49
51----	Information	353	3,570	12,800	48
52----	Finance/Insurance	600	5,924	23,864	97
53----	Real Estate/Rental&Leasing	632	2,989	11,972	141
54----	Professional/Scientific/Technical Svcs	734	5,237	23,115	214
55----	Management of Companies/Enterprises		7,167	34,235	12
56----	Admin/Support/WasteMgmt&RemedSvcs	424	2,454	11,103	99
61----	Educational Services	276	1,388	6,023	24
<b>62----</b>	<b><i>Health Care/Social Assistance</i></b>	<b><i>4,218</i></b>	<b><i>36,222</i></b>	<b><i>149,362</i></b>	<b><i>293</i></b>
71----	Arts/Entertainment/Recreation	957	4,741	18,876	53
<b>72----</b>	<b><i>Accommodation/Food Services</i></b>	<b><i>3,892</i></b>	<b><i>12,242</i></b>	<b><i>54,851</i></b>	<b><i>343</i></b>
81----	Other Services (except Public Admin)	885	4,503	18,799	219
99----	Unclassified		20	57	4
-----	<b>Total</b>	<b>25,124</b>	<b>172,221</b>	<b>754,373</b>	<b>2,756</b>



**Table 6. Mid-March employment, first-quarter payroll, annual payroll, and number of establishments with paid employees in Humboldt County, 2007, by NAICS sector (U.S. Census Bureau, CBP). Note: Blank cells indicate data withheld to ensure confidentiality. NAICS sectors accounting for at least 10% of total economic activity according to at least one of the four CBP measures of economic activity are bold and italicized.**

NAICS Code	NAICS Sector	Humboldt County			
		Employees Paid March 12 Pay Period	First-Quarter Payroll (\$1000s)	Annual Payroll (\$1000s)	Total Establishments
11----	Agriculture/Forestry/Fishing/Hunting	618	8,128	35,430	82
21----	Mining				
22----	Utilities				8
<b>23----</b>	<b><i>Construction</i></b>	<b><i>2,410</i></b>	<b><i>19,345</i></b>	<b><i>89,510</i></b>	<b><i>414</i></b>
<b>31----</b>	<b><i>Manufacturing</i></b>	<b><i>3,335</i></b>	<b><i>29,127</i></b>	<b><i>119,312</i></b>	<b><i>152</i></b>
42----	Wholesale Trade	1,204	10,506	44,425	109
<b>44----</b>	<b><i>Retail Trade</i></b>	<b><i>7,724</i></b>	<b><i>41,722</i></b>	<b><i>171,960</i></b>	<b><i>650</i></b>
48----	Transportation/Warehousing	973	7,864	36,735	94
51----	Information	635	5,406	21,090	61
52----	Finance/Insurance	1,300	15,373	58,201	169
53----	Real Estate/Rental&Leasing	633	3,801	16,937	183
54----	Professional/Scientific/Technical Svcs	1,807	12,955	54,361	269
55----	Management of Companies/Enterprises	145	1,133	3,720	12
56----	Admin/Support/WasteMgmt&RmdSvcs	1,112	7,654	30,105	117
61----	Educational Services	292	1,033	4,167	33
<b>62----</b>	<b><i>Health Care/Social Assistance</i></b>	<b><i>6,865</i></b>	<b><i>50,033</i></b>	<b><i>222,211</i></b>	<b><i>465</i></b>
71----	Arts/Entertainment/Recreation	1,056	4,425	18,939	61
<b>72----</b>	<b><i>Accommodation/Food Services</i></b>	<b><i>5,362</i></b>	<b><i>15,572</i></b>	<b><i>67,033</i></b>	<b><i>360</i></b>
81----	Other Services (except Public Admin)	1,782	9,596	39,601	347
99----	Unclassified			123	6
<b>-----</b>	<b>Total</b>	<b>37,559</b>	<b>250,132</b>	<b>1,059,505</b>	<b>3,592</b>

**Table 7. Mid-March employment, first-quarter payroll, annual payroll, and number of establishments with paid employees in Del Norte County, 2007, by NAICS sector (U.S. Census Bureau, CBP). Note: Blank cells indicate data withheld to ensure confidentiality. NAICS sectors accounting for at least 10% of total economic activity according to at least one of the four CBP measures of economic activity are bold and italicized.**

NAICS Code	NAICS Sector	Del Norte County Paid			
		Employees March 12 Pay Period	First-Quarter Payroll (\$1000s)	Annual Payroll (\$1000s)	Total Establishments
11----	Agriculture/Forestry/Fishing/Hunting	48	269	1,390	23
21----	Mining				
22----	Utilities				1
<b>23----</b>	<b><i>Construction</i></b>	<b>201</b>	<b>1,116</b>	<b>5,600</b>	<b>73</b>
31----	Manufacturing				11
42----	Wholesale Trade				10
<b>44----</b>	<b><i>Retail Trade</i></b>	<b>1,040</b>	<b>5,617</b>	<b>22,903</b>	<b>75</b>
48----	Transportation/Warehousing	158	1,273	5,522	15
51----	Information	124	995	4,105	14
52----	Finance/Insurance	134	981	3,926	27
53----	Real Estate/Rental&Leasing	106	610	2,726	32
54----	Professional/Scientific/Technical Svcs	139	1,122	4,268	38
55----	Management of Companies/Enterprises				
56----	Admin/Support/WasteMgmt&RmdSvcs	45	404	1,838	14
61----	Educational Services			626	5
<b>62----</b>	<b><i>Health Care/Social Assistance</i></b>	<b>1,246</b>	<b>9,945</b>	<b>39,593</b>	<b>74</b>
71----	Arts/Entertainment/Recreation				9
<b>72----</b>	<b><i>Accommodation/Food Services</i></b>	<b>697</b>	<b>1,630</b>	<b>8,291</b>	<b>75</b>
81----	Other Services (except Public Admin)	191	851	3,297	39
99----	Unclassified				1
-----	<b>Total</b>	<b>4,643</b>	<b>28,231</b>	<b>116,874</b>	<b>536</b>

### **Business Activity: Nonemployer Statistics**

While CBP focuses on businesses *with* paid employees, the Census Bureau's Nonemployer Statistics data series provides information on businesses *without* paid employees who are subject to federal income taxes.<sup>7</sup> In the three North Coast counties, the number of establishments without paid employees (20,935) is three times higher than the number with paid employees (6,884), although the number of people employed by the latter establishments (67,326) is more than three times the number of individuals (20,935) who are self-employed (Table 8).

**Table 8. Number of establishments with paid employees and number of people employed by those establishments, and number of establishments without paid employees in Mendocino, Humboldt and Del Norte counties, 2007 (CBP and Nonemployer Statistics).**

County	Establishments With Paid Employees		Number of Establishments Without Paid Employees
	Number of Establishments	Number of Employees	
Mendocino	2,756	25,124	8,577
Humboldt	3,592	37,559	11,034
Del Norte	536	4,643	1,324
<b>Total</b>	<b>6,884</b>	<b>67,326</b>	<b>20,935</b>

Table 9 describes the number of nonemployer establishments and their annual receipts in 2007 by NAICS sector.<sup>8</sup> Sectors accounting for at least 10% of establishments and/or receipts include Construction, Real Estate/Rental&Leasing, and Professional/Scientific/Technical Svcs (all three counties), Retail Trade (Mendocino and Del Norte counties only), and Agriculture/Forestry/Fishing/Hunting and Health Care/Social Assistance (Del Norte County only).

**Table 9. Total establishments and total receipts by businesses without paid employees in Mendocino, Humboldt and Del Norte counties, 2007, by NAICS sector (U.S. Census Bureau, Nonemployer Statistics). Note: Blank cells indicate data withheld to ensure confidentiality. NAICS sectors accounting for at least 10% of total establishments or receipts in a county are bold and italicized for that county.**

NAICS Code	NAICS Sector	Mendocino		Humboldt		Del Norte	
		Total Estab	Receipts (\$1000s)	Total Estab	Receipts (\$1000s)	Total Estab	Receipts (\$1000s)
<i>11---</i>	<i>Agriculture/Forestry/Fishing/Hunting</i>	384	19,150	570	24,385	<i>175</i>	<i>7,856</i>
21---	Mining	5	315	27	1,627		
22---	Utilities	20	600	12	307		
<i>23---</i>	<i>Construction</i>	<i>1,372</i>	<i>73,976</i>	<i>1,738</i>	<i>80,773</i>	<i>127</i>	<i>6,915</i>
31---	Manufacturing	261	10,070	379	12,613	24	1,248
42---	Wholesale Trade	114	6,879	188	7,489	23	1,738
<i>44---</i>	<i>Retail Trade</i>	<i>633</i>	<i>34,530</i>	821	30,866	<i>124</i>	<i>5,550</i>
48---	Transportation/Warehousing	195	13,883	289	20,579	47	2,071
51---	Information	114	2,229	125	3,947	9	88
52---	Finance/Insurance	130	5,450	121	7,566	20	570
<i>53---</i>	<i>Real Estate/Rental&amp;Leasing</i>	<i>565</i>	<i>36,646</i>	<i>780</i>	<i>56,820</i>	<i>103</i>	<i>6,079</i>
<i>54---</i>	<i>Professional/Scientific/Tech Svcs Admin/Sprt/</i>	<i>1,246</i>	<i>44,836</i>	<i>1,463</i>	<i>43,440</i>	<i>133</i>	<i>3,612</i>
56---	WasteMgmt&RmdSvcs	662	15,204	913	18,069	71	1,263
61---	Educational Services	171	3,059	229	2,948	23	216
<i>62---</i>	<i>Health Care/Social Assistance</i>	750	20,418	928	27,745	<i>163</i>	<i>5,158</i>
71---	Arts/Entertainment/Recreation	556	12,248	783	13,415	36	997
72---	Accommodation/Food Services Other Services (except Public	163	7,688	148	7,361	27	1,139
81---	Admin)	1,236	35,016	1,520	36,554	218	4,452
<b>----</b>	<b>Total</b>	<b>8,577</b>	<b>342,197</b>	<b>11,034</b>	<b>396,504</b>	<b>1,324</b>	<b>48,958</b>

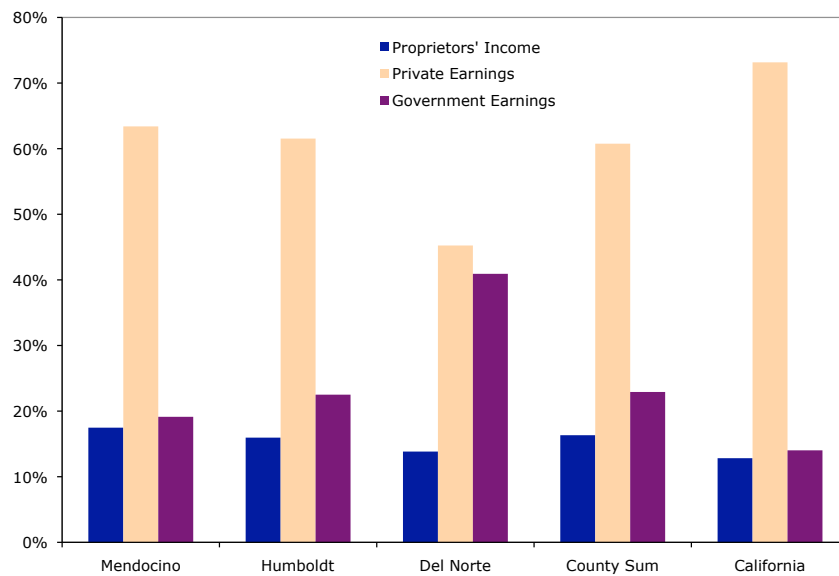
## **Earnings by Place of Work**

Both CBP and Nonemployer Statistics pertain to private sector business activity. The Department of Commerce data series, Earnings by Place of Work<sup>9</sup>, includes government as well as private earnings and thus provides a means of gauging the impact of government on county economies. Earnings in the three North Coast counties totaled \$5.8 billion in 2007: \$2.1 billion (37%) in Mendocino County, \$3.1 billion (54%) in Humboldt County, and \$520 million (9%) in Del Norte County (Table 10). Of this total, \$945.4 million (16%) was proprietors' income, \$3.5 billion (61%) was private earnings, and \$1.3 billion (23%) was government earnings.

**Table 10. Earnings by place of work (2007\$, in thousands) in Mendocino, Humboldt and Del Norte counties, 2007 (U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System). Note: Blank cells indicate data withheld to ensure confidentiality.**

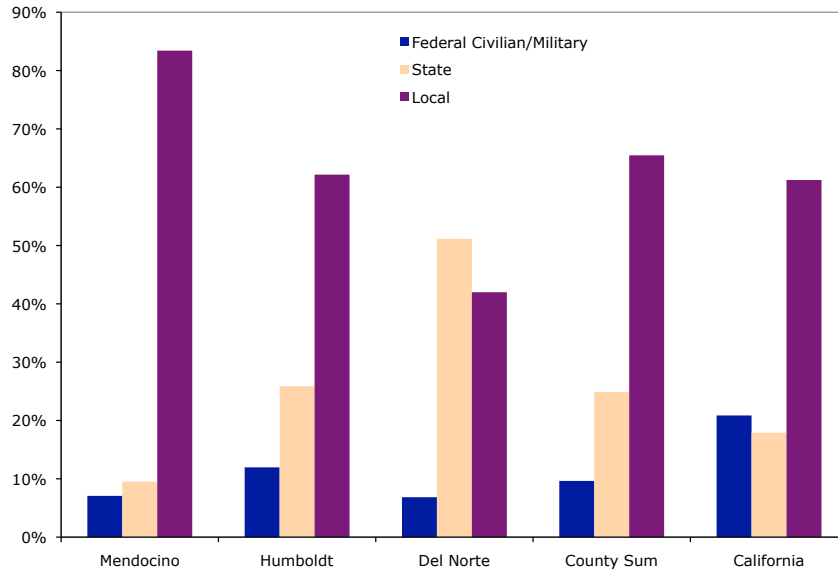
<b>Source of Earnings</b>	<b>Mendocino</b>	<b>Humboldt</b>	<b>Del Norte</b>
Proprietors' Income (Farm & Nonfarm)	372,944	500,522	71,929
Private Earnings:			
Farm	9,255	42,689	11,818
Agriculture/Forestry/Fishing/Hunting	56,914		
Mining	3,287		
Utilities	16,665		
Construction	168,115	222,810	25,194
Manufacturing	147,484	174,940	8,907
Wholesale Trade	52,609	58,788	
Retail Trade	210,883	288,098	39,271
Transportation/Warehousing	39,727		7,296
Information	20,417	34,056	4,672
Finance/Insurance	45,341	106,287	5,760
Real Estate/Rental&Leasing	36,527	40,374	8,522
Professional/Scientific/Technical Svcs	74,388	138,420	9,106
Management of Companies/Enterprises	12,243	18,347	
Admin/Support/WasteMgmt&RmdSvcs	49,864	60,134	
Educational Services	9,775	8,822	961
Health Care/Social Assistance	195,348	308,835	60,315
Arts/Entertainment/Recreation	12,723	16,338	338
Accommodation/Food Services	88,540	91,851	15,992
Other Services (Except Public Admin)	102,762	156,418	16,905
Subtotal	1,352,867	1,930,294	235,239
Government Earnings:			
Federal Civilian/Military	28,878	84,462	14,562
State	38,831	182,704	108,859
Local	340,564	438,805	89,363
Subtotal	408,273	705,971	212,784
<b>Total</b>	<b>2,134,084</b>	<b>3,136,787</b>	<b>519,952</b>

In 2007, statewide earnings in California totaled \$1.4 trillion, comprised of 73% in private earnings, 13% in proprietors' income, and 14% in government earnings (Figure 10). By contrast, in Mendocino and Humboldt counties the private earnings share was lower (63% and 62%, respectively), and the shares attributable to proprietors' income and government earnings were somewhat higher (16%–18% and 19%–23%, respectively) compared to California. In Del Norte County, the private earnings share (45%) was considerably lower, whereas the government earnings share was considerably higher (41%) relative to the other counties and the state. Two indicators of the influence of government on Del Norte County's economy are the inordinate amount of public land in the county and the presence of Pelican Bay State Prison.



**Figure 10. Percent of 2007 earnings in Mendocino, Humboldt and Del Norte counties and California attributable to proprietors' income, private earnings and government earnings (derived from Table 10).**

The origin of government earnings in 2007 varied considerably by county and between the counties and the state (Figure 11). Federal civilian/military earnings comprised a much smaller share of government earnings in the three counties (7%–12%) than in the state (21%). The state share of government earnings in Mendocino, Humboldt and Del Norte counties was 10%, 26% and 51% respectively, while the local share in these counties was 83%, 62%, and 42%, respectively.



**Figure 11. Percent of 2007 government earnings in Mendocino, Humboldt, Del Norte counties and California attributable to federal civilian/military, state and local government sources (derived from Table 10).**

## *U.S. Census Information on Fishery-Related Business Activity*

### **County Business Patterns**

Estimates of mid-March employment, first-quarter payroll, annual payroll and number of establishments for NAICS sector 3117 (“Seafood Production, Preparation and Packaging”) are provided in Table 11 for the three North Coast counties. In 2003, the four establishments in Humboldt County reported first-quarter employment of 312, first-quarter payroll of \$1 million, and annual payroll of \$4.9 million. Employment and payroll generally declined between 2003 and 2005. For all other years and counties, CBP has suppressed information other than number of establishments to insure confidentiality.

**Table 11. Mid-March employment, first-quarter payroll, annual payroll, and number of establishments associated with NAICS code 3117 (“Seafood Production, Preparation and Packaging”), by county, 2003–2007 (U.S. Census Bureau, CBP). Note: Blank cells indicate no data reported or data withheld to ensure confidentiality.**

County and Year	Paid Employees March 12 Pay Period	First Quarter Payroll (\$1000s)	Annual Payroll (\$1000s)	Total Estab- lishments
<b>Mendocino</b>				
2003				1
2004				1
2005				1
2006				1
2007				2
<b>Humboldt</b>				
2003	312	996	4,939	4
2004	416	885	3,590	3
2005	197	451	2,801	3
2006				3
2007				4
<b>Del Norte</b>				
2003				
2004				
2005				
2006				
2007				1

CBP estimates of mid-March employment, first-quarter payroll, annual payroll and number of establishments for NAICS sector 1141 (“Fishing”) are provided in Table 12 for the three North Coast counties. From 2003 through 2007, the number of fishing establishments declined in Mendocino County, remained fairly stable in Humboldt County, and increased in Del Norte County. As was the case for the seafood production sector (Table 11), much of the data for the fishing sector is suppressed. It is also important to note that, for reasons to be discussed in the next section, only a small fraction of the harvesting sector is represented in CBP.

**Table 12. Mid-March employment, first-quarter payroll, annual payroll, and number of establishments associated with NAICS code 1141 (“Fishing”), by county, 2003–2007 (U.S. Census Bureau, CBP). Note: Blank cells indicate data withheld to ensure confidentiality.**

County and Year	Paid Employees March 12 Pay Period	First-Quarter Payroll (\$1000s)	Annual Payroll (\$1000s)	Total Establishments
<b>Mendocino</b>				
2003				22
2004				17
2005	14	69	386	13
2006	15	234	622	12
2007		108	541	12
<b>Humboldt</b>				
2003				12
2004				10
2005				9
2006				10
2007		103	594	8
<b>Del Norte</b>				
2003	65	401	1,797	11
2004				11
2005				10
2006				14
2007	24	150	501	18

### **Nonemployer Statistics**

Because CBP (Table 11 and Table 12) focuses on establishments with paid employees, Nonemployer Statistics is a more suitable source of data on the fishing sector, as fishermen largely consist of self-employed entities. Table 13 describes the number of vessels landing fish in each county (from PacFIN) and the number of fishing entities (as reported in Nonemployer Statistics) for the period 2003–2007. The numbers are not strictly comparable, as PacFIN was used to assign vessels to counties where they land fish, while nonemployer entities are assigned to their mailing address, which is not necessarily where they do business. Moreover, it is not clear what mix of fishermen (e.g., vessel operators, crew members) is included in Nonemployer Statistics. Thus, while Nonemployer Statistics provides general county-level information on the fishing sector, specialized fishery databases like PacFIN are more precise and detailed in terms of conveying the nature and extent of fishing vessel activity. Most of the commercial fishery analysis contained in the remainder of this report is based on PacFIN data.



**Table 13. Number of boats making commercial landings at North Coast ports, and number of nonemployer entities associated with NAICS code 1141 (“Fishing”), by county, 2003–2007 (PacFIN and U.S. Census Bureau, Nonemployer Statistics).**

<b>County and Year</b>	<b>Commercial Fishing Vessels</b>	<b>Nonemployer Fishing Entities</b>
<b>Mendocino</b>		
2003	324	157
2004	319	152
2005	290	136
2006	205	132
2007	259	149
<b>Humboldt</b>		
2003	189	208
2004	196	217
2005	144	210
2006	142	203
2007	223	217
<b>Del Norte</b>		
2003	155	120
2004	169	132
2005	137	123
2006	155	129
2007	158	135

# MANAGEMENT OF NORTH COAST FISHERIES

Passage of the federal Fishery Conservation and Management Act (MSA) in 1976 led to the establishment of regional management councils, including the Pacific Fishery Management Council (PFMC). The PFMC implemented its Salmon Fishery Management Plan (FMP) in 1977 and its Groundfish FMP in 1982.

As a voting member of the PFMC, the state of California plays an important role in federal salmon and groundfish management and also has jurisdiction over recreational fisheries (which occur largely in state waters). State management jurisdiction also extends to the nearshore commercial groundfish fishery, as well as other important North Coast fisheries including crab, urchin and shrimp.

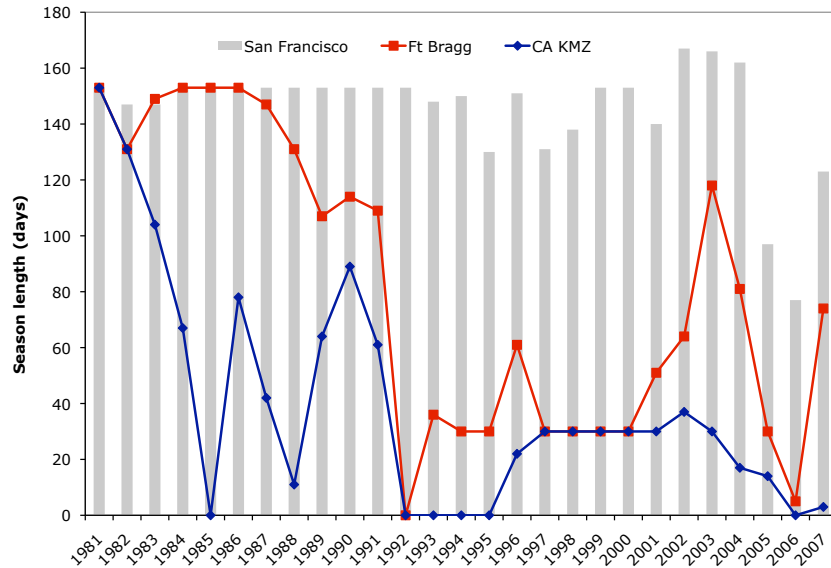
This section discusses commercial and recreational fishery management as it relates to North Coast fisheries. Salmon and groundfish are the major focus of this discussion, as regulations for these fisheries are inordinately complex and dynamic and have had profound effects on fishery participants and communities.

## *Commercial Fishery Management*

### Commercial Salmon Fishery

The PFMC manages the West Coast commercial salmon fishery under its Salmon FMP. Since the early 1980s, the PFMC has followed a policy of “weak stock management” whereby fishing for healthier stocks in mixed-stock ocean fisheries is constrained to meet management requirements for less abundant stocks. Klamath River fall Chinook has customarily been the constraining stock for the ocean fishery south of Cape Falcon, Oregon. The PFMC’s approach to management has been to impose stringent regulations in those areas with greatest impact on Klamath fall Chinook, namely the Klamath Management Zone (KMZ; roughly encompassing Curry county in Oregon and Humboldt and Del Norte counties in California) and to a lesser extent the Fort Bragg management area (roughly encompassing Mendocino County). By severely constraining harvest in the KMZ, the PFMC is able to maintain fishing opportunities in areas farther from the KMZ (e.g., San Francisco, Monterey) that have lesser impacts on this stock.

Management measures for the commercial salmon fishery include a complex mix of size and landing limits, gear restrictions and area and season closures. Salmon trollers are also subject to the state’s limited entry program, which was implemented in 1982. From early on, the KMZ has been a focal point of PFMC management. By 1984 the PFMC shortened the commercial salmon season in the KMZ to approximately two months, much shorter than the five- to six-month season in other areas south of Cape Falcon. At times, the commercial season in the California KMZ has been only days or weeks in duration, with complete closures occurring in years of particularly low Klamath escapement (e.g., 1985).<sup>10</sup> Figure 12 depicts the very different season constraints imposed in the California KMZ, Fort Bragg and San Francisco management areas from 1981 through 2007.



**Figure 12. Length (days) of the commercial Chinook salmon troll season in the San Francisco, Fort Bragg and California KMZ management areas (PFMC 2002, PFMC 2009).**

Beginning in 1992, the PFMC prohibited retention of coho in the commercial salmon fishery south of Cape Falcon due to conservation concerns regarding Oregon Coastal Natural (OCN) coho (PFMC 1992). This decision led to fishery disaster declarations for California and Oregon fishing communities in 1994 and 1995.<sup>11</sup> Although the KMZ commercial fishery was not as dependent on coho as fisheries further north, the California KMZ was completely closed from 1992 through 1995, largely due to more localized factors that compounded the effects of the coho nonretention policy. In 1993, Klamath fall Chinook was declared overfished, after failing to meet the PFMC’s spawner escapement floor for three consecutive years (PFMC 1994). The same year, the Department of Interior Solicitor issued an opinion allocating 50% of Klamath-Trinity River salmon to the Yurok and Hoopa tribes. 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 to nontribal fisheries (including the commercial fishery in the KMZ; Pierce 1998).<sup>12</sup>

In 2006, failure of Klamath fall Chinook to achieve its escapement floor for the third consecutive year triggered a conservation alert and prompted the PFMC to close the commercial fishery in the California KMZ and curtail the season in other areas. In 2008 and 2009, unprecedented low escapements of Sacramento River fall Chinook caused the Sacramento fall run to replace the Klamath fall run as the constraining stock. The management response included unprecedented closures of California’s commercial fishery and dramatically curtailed seasons in Oregon. These three recent closures were accompanied by disaster relief for affected fishing communities.

### **Commercial Groundfish Fishery**

The PFMC implemented its Groundfish FMP in 1982 and managed the commercial fishery with measures such as harvest guidelines, trip landing and trip frequency limits, species size limits, and gear restrictions (e.g., biodegradable escape ports for pots, mesh size limit for trawls). In 1992 the

PFMC adopted a harvest rate policy for groundfish, based on scientific evidence indicating that this would result in harvests approximating maximum sustainable yield for the range of productivities exhibited by other well-studied groundfish stocks with long histories of exploitation. Over the next eight years, growing scientific evidence indicated that the productivity of *Sebastes* rockfish was anomalously low relative to other groundfishes, prompting the PFMC to adopt increasingly restrictive management measures for rockfishes.<sup>13</sup> However, these measures came too late to reverse the effects of longstanding harvest policies based on inaccurate productivity assumptions (Ralston 2002).

Eight groundfish stocks were declared overfished between 1999 and 2002<sup>14</sup>, and a fishery disaster was declared by the Secretary of Commerce in 2000. In order to rebuild overfished stocks, optimum yields (OYs) and trip landing limits were drastically reduced and became more finely delineated to species. Moreover, these reductions were not confined to depleted and overfished stocks. To minimize bycatch of depleted stocks, species-to-species landing limit ratios were adjusted to constrain harvests of healthier stocks that are typically taken with depleted ones; as a result, harvests of healthier stocks often fell well below their OYs. Harvest constraints required drastic reductions in trip landing limits, which had the unintended consequence of increasing regulatory-induced discards. To give vessels the operational flexibility needed to minimize such discards, trip limits were replaced with vessel cumulative landing limits that gradually expanded in duration from one- to two-week to one- to two-month limits. Groundfish fishery sectors are also subject to inseason adjustment to two-month landing limits or outright closure (as needed) to ensure congruence between actual harvests and OYs for constraining stocks.

Additional measures to minimize bycatch of overfished stocks included restrictions on the use of large footropes (2000)<sup>15</sup>, season closures (reversing the PFMC's longstanding policy of maintaining a year-round groundfish fishery), and establishment of Rockfish Conservation Areas (RCAs; 2002), closures on the continental shelf where overfished rockfishes tend to concentrate.<sup>16</sup> Although limited entry permits for trawl and fixed gear vessels had been required since 1994, the dramatic decline in harvest opportunities since the late 1990s exacerbated the problem of excess harvest capacity, leading to measures such as permit stacking for sablefish fixed gear vessels (2001)<sup>17</sup>, and an industry-funded buyback (2003)<sup>18</sup> and individual quotas (pending in 2011) for groundfish trawlers. In addition to the long-standing trawl logbook requirement (1981), an observer program was implemented to monitor discarded fish (2001)<sup>19</sup>, and vessel monitoring systems (VMS) were required for limited entry trawl and fixed gear vessels (2004) and open access groundfish vessels and nongroundfish trawlers (2007) to better monitor compliance with closed areas. Also, to address a MSA requirement to protect essential fish habitat (EFH), additional areas over and above the RCAs were closed to vessels operating with bottom trawl or bottom contact gear (2006).

Under the Groundfish FMP, open access vessels are given small groundfish landing limits that allow smaller vessels to target groundfish in modest quantities and nongroundfish vessels to harvest groundfish incidentally while discouraging targeting. Like their limited entry counterparts, these vessels have also been subject to shrinking OYs, increasingly restrictive landing limits, and season and area closures to protect overfished rockfishes. Some nongroundfish vessels have also been subject to groundfish-related regulations. For instance, restrictions on shrimp trawlers include finfish excluder devices to minimize groundfish bycatch (2002), area closures to protect groundfish EFH (2006), and VMS (2007).

During the 1990s, development of a lucrative, live fish fishery for nearshore species (largely groundfish) encouraged entry into the groundfish directed open access fishery. By 1999, 1,128 individuals participated in California's nearshore commercial fishery. To prevent further expansion of the fishery, the state began requiring a nearshore fishery permit to harvest shallow nearshore species. In accordance with the 1998 MLMA, the state implemented the Nearshore FMP in 2002 and adopted a nearshore restricted access program in 2003 as means of achieving the statewide capacity goal of 61 participants. Under the program, 216 transferable, nearshore fishery permits and 286 nontransferable, deeper nearshore fishery permits were issued. The transferable permits were issued on a regional basis: 29 for the North Coast, 38 for the North Central Coast, 83 for the South Central Coast, and 74 for the South Coast.<sup>20</sup> Despite considerable attrition, the number of permits remains well above the capacity goal (CDFG 2006b). Sixteen of the 19 species covered by the Nearshore FMP are also included in the PFMC's Groundfish FMP. The PFMC's groundfish management specifications reflect state recommendations regarding harvest management of these species.

### **Other Commercial Fisheries**

The state manages the Dungeness crab fishery on the basis of 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). 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 ensure 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.

Shrimp trawlers are subject to state regulations in addition to those related to federal groundfish management. State management includes limited entry (for vessels north of Point Conception), a November-March closure (to protect egg-bearing females), and maximum count-per-pound and minimum mesh size (to protect juvenile shrimp; CDFG 2007). In 2008, trawling for shrimp in state waters, which had previously been limited to the area between two and three miles from shore, was prohibited in all state waters.

The urchin fishery is managed exclusively by the state. In 1987, the California Fish and Game Commission implemented a moratorium on new urchin permits, and restricted access 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 week-long closures that occurred statewide from May through September, in response to an effort decline in the fishery (induced by regulatory and market conditions) and industry concerns that the closures made it difficult to maintain a consistent market presence during the summer months (CDFG 2004).

### ***Recreational Fishery Management***

Recreational fisheries on the North Coast, which primarily target salmon and groundfish, have contracted over time, largely due to salmon restrictions in the KMZ and rebuilding requirements for overfished rockfishes (which include a number of recreationally important species).

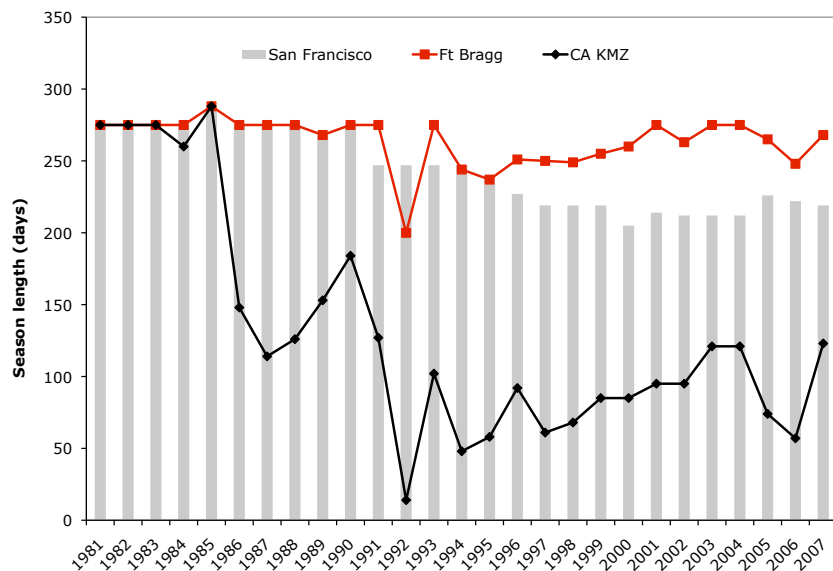
### Recreational Salmon Fishery

Since the late 1970s, concerns regarding Klamath fall Chinook have influenced management of recreational as well as commercial salmon fisheries in the KMZ. Many of the factors constraining the KMZ commercial fishery (i.e., the Klamath fall Chinook escapement floor; 50/50 tribal/nontribal allocation initiated in 1993; stringent constraints on coho retention, which began in 1994 for the recreational fishery) also have affected the KMZ recreational fishery.

However, due to its lesser impact on Klamath fall Chinook, the KMZ recreational fishery has generally been less constrained than the KMZ commercial fishery (though more constrained than the recreational salmon fishery elsewhere in the state). In 1979, the KMZ recreational season and bag limit were reduced for the first time (PFMC 2005). In 1986, the season in the California KMZ was reduced from about nine to five months. Further season reductions occurred through the remainder of the 1980s. Since the early 1990s, seasons in the California KMZ have generally ranged from one to four months, with several notable exceptions (i.e., the 14-, zero-, and ten-day openings in 1992, 2008, and 2009 respectively). This is in contrast to other parts of the state, where the recreational season generally extends for six to nine months (PFMC 2009).

In contrast to the KMZ, recreational fishing in the Fort Bragg management area (encompassing Mendocino County), as well as management areas further south, have much smaller impacts on Klamath fall Chinook and thus have generally been unaffected by measures taken to protect that stock. Figure 13 depicts the very different seasonal constraints imposed in the California KMZ relative to the Fort Bragg and San Francisco management areas from 1981 through 2007.

Since 2007, major concerns regarding the status of Sacramento River fall Chinook resulted in a dramatic and unprecedented shortening of recreational seasons statewide. The season in California's KMZ was zero days in 2008 and ten days in 2009. The Fort Bragg recreational season was 45 days in 2008 (significantly reduced from its normal eight to nine months) and zero days in 2009. While such severe restrictions were not new for the KMZ, they were unprecedented for the Fort Bragg area.



**Figure 13. Length (days) of the recreational Chinook salmon season in the San Francisco, Fort Bragg and California KMZ management areas, 1981–2007 (PFMC 2002, PFMC 2009).**

## **Recreational Groundfish Fishery**

The recreational groundfish fishery has been increasingly constrained since the late 1990s to address concerns regarding depleted or overfished groundfish stocks (Table 14). California’s longstanding groundfish bag limit of 15 fish was reduced to ten fish in 2000. Beginning in 1998, sublimits were added to the overall groundfish bag limit to provide more specific protection to species of concern, and the number of species subject to sublimits has increased over time. Depth-based restrictions were first imposed in 2001 for selected species and for almost all species by 2003. By 2005, pre-season specifications included closures or depth-based restrictions for every month of the year. The once year-round recreational season was compressed to three to four months by 2008. In recent years, California has also considered implementing Yelloweye Rockfish Conservation Areas (YRCAs) – localized nearshore closures to protect yelloweye rockfish – in Northern California as inseason management measures, but instead has opted to close the season early to ensure that the yelloweye OY was not exceeded. Highly constraining OYs for overfished rockfishes require the state to make difficult trade-offs between closing areas (such as YRCAs) and shortening the fishing season.

**Table 14. Recreational groundfish regulations, 1997–2008. Notes: Northern California defined as California/Oregon border to Cape Mendocino (including Del Norte County and most of Humboldt County), North Central California defined as Cape Mendocino to Point Arena (including Mendocino County and Southern Humboldt County). Season length includes effect of inseason closures. Month counted as closed if closed for at least four of eight species/species groups (nearshore rockfish, California scorpionfish and sheephead, cabezon, greenlings, ocean whitefish, shelf rockfish, lingcod) (CDFG).**

Year	Lingcod Bag Limit	Rockfish Bag Limit	Rockfish Sub- limits	Season Length (Months)		Depth- Based Closures
				North CA	North Central CA	
1997	5	15	No	12	12	No
1998	3	15	Yes	12	12	No
1999	2	15	Yes	12	12	No
2000	2	10	Yes	12	12	No
2001	2	10	Yes	12	10	Yes
2002	2	10	Yes	12	8	Yes
2003	2	10	Yes	11	5	Yes
2004	2	10	Yes	12	5	Yes
2005	2	10	Yes	8	6	Yes
2006	2	10	Yes	8	6	Yes
2007	2	10	Yes	5	4	Yes
2008	2	10	Yes	4	3	Yes

### **Recreational Abalone Fishery**

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 2006a). Starting in the 1950s, the use of scuba 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 four to three, and the annual limit was reduced from 100 to 24 per person due to concerns about the status of local stocks.



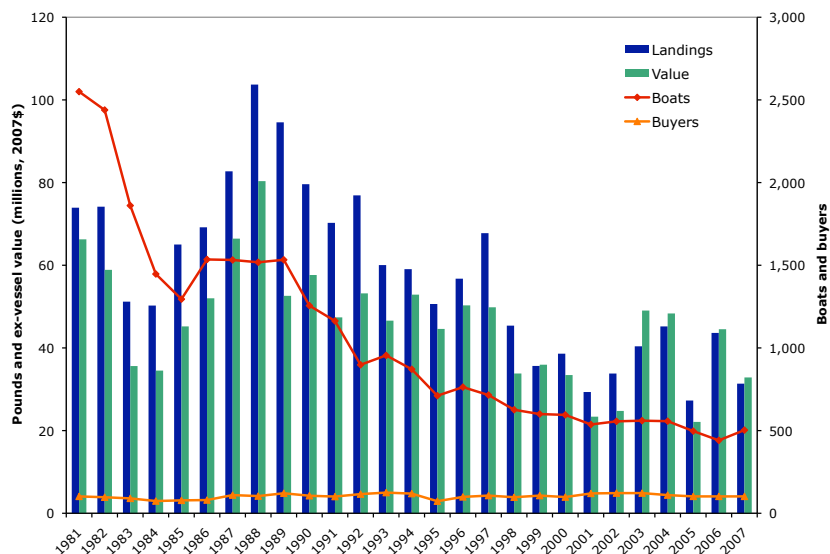
## PRESENT DAY COMMERCIAL FISHERIES

### *Major North Coast Commercial Fisheries, 1981–2007*

This section focuses on fishing activity in the three North Coast counties between 1981 and 2007.<sup>21</sup> The information presented is based on customized summaries of Pacific Fisheries Information Network (PacFIN) landings receipt data, augmented by information from published and gray literature, 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 period from 2003 through 2007, unless otherwise noted. The purpose of focusing on these two time periods is to demonstrate how recent activity compares to longer-term historical levels. While the long-term trends discussed in this section begin in 1981, it should be noted that some North Coast fisheries (e.g., groundfish, salmon, crab) were established well before that year (see Figure 2 and Figure 3).

We use five measures of fishing activity derived from the landings receipt data. Landings are reported in ‘round weight’ (in pounds).<sup>22</sup> Ex-vessel value represents the amount paid to fishermen at the first point of sale, usually to a dockside buyer or receiver. Average prices represent price per pound (round weight) and are calculated as the total ex-vessel value divided by total pounds. Both ex-vessel values and prices are adjusted for inflation with 2007 as the base year. Boat counts represent individual (resident and nonresident) vessels, though not necessarily individual vessel owners/operators as some individuals may own or operate multiple boats. Buyer counts are based on the number of unique buyers in the landings data, and include fishermen who land their own catch (e.g., for off-the-boat sales, direct sales to restaurants), as well as buyers who purchase fish from fishermen delivering their catch at the docks. The number of trips provides a count of the deliveries each boat makes at a port. To ensure confidentiality, data are not reported for some fisheries and/or years if fewer than three vessels or buyers participated in that year or fishery.

Fishing activity in North Coast counties has generally declined over the past 27 years (1981–2007; Figure 14). Landings and ex-vessel value peaked at 103.7 million pounds and \$80.4 million respectively in 1988. Since 1998, landings and value have been consistently below 45 million pounds and \$50 million, respectively. The number of boats declined precipitously from a peak of 2,550 in 1981 to 500 and fewer boats since 2005. The number of buyers ranged from 73 to 125, with no apparent trend.



**Figure 14. Landings (pounds, in millions), ex-vessel value (2007\$), and number of boats and buyers for North Coast fisheries, 1981–2007.**

Average annual landings, value, boats, trips, and prices all declined in recent years relative to the long term, while number of buyers increased by a modest 5% (Table 15). To understand these changes, it is important to consider the nature of the individual fisheries on the North Coast and factors affecting each of them over time.

**Table 15. Long-term and recent annual average, percent difference, and highs and lows for selected measures of fishing activity at North Coast ports, 1981–2007.**

	Long-term average 1981–2007	Recent average 2003–2007	Percent difference	High year(s) (amount)	Low year(s) (amount)
North Coast fisheries					
Landings (lbs)	57,600,000	37,600,000	-35	1988 (103,700,000)	2005 (27,300,000)
Ex-vessel value (\$)	46,000,000	39,400,000	-14	1988 (80,400,000)	2005 (22,100,000)
Boats	1,056	512	-52	1981 (2,550)	2006 (441)
Buyers	103	108	+5	1993 (125)	1995 (73)
Trips	2,416	2,108	-13	1982 (3,880)	2002 (730)
Price (\$/lb)	2.04	1.81	-11	1983 (2.80)	1993 (1.46)

Since 1981, major commercial fisheries on the North Coast have included: crab pot, (nonwhiting) groundfish trawl, salmon troll, sablefish hook-and-line/pot, albacore troll, rockfish/lingcod hook-and-line/pot, urchin dive, whiting trawl, and shrimp trawl. The contribution of each fishery to North Coast landings, ex-vessel value, and fishing effort (boats and trips) depends on the nature of the fishery (e.g., high- versus low-volume, high- versus low-effort, high- versus low-price), biological, regulatory and market factors affecting that fishery, and the extent of concurrent opportunities in other fisheries.

## The Dungeness Crab Pot Fishery

Crab pot landings and value are highly variable (Figure 15, Table 16). Between 1981 and 2000, North Coast landings ranged from 3.2 million to 11.5 million pounds, and value ranged from \$6.6 million to \$20.4 million.<sup>23</sup> Since 2001, the fishery has experienced more extreme swings, with landings ranging from 2.0 million to 20.2 million pounds, and value from \$5.4 million to \$34.0 million. The number of boats has declined over time from about 530 in 1981 and 1982 to 219–269 since 2001. From 1981 through 2007, 32–71 buyers participated in the fishery.

Crab pot

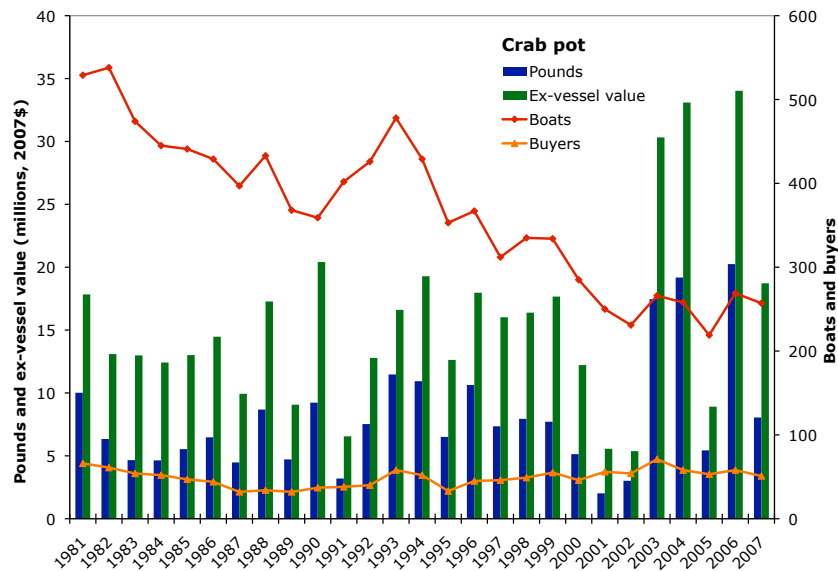
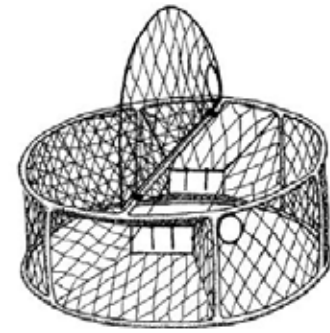


Figure 15. Landings (pounds), ex-vessel value (2007\$), and number of boats and buyers in the North Coast crab pot fishery, 1981–2007.

Crab landings and value increased in recent years relative to the long term by 74% and 59% respectively. While the number of boats declined by 31%, the number of trips declined by a lesser 12%, suggesting an increase in number of trips per boat.

Table 16. Long-term and recent annual average, percent difference, and highs and lows for selected measures of crab pot activity at North Coast ports, 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)	8,095,308	14,073,752	+74	2006 (20,246,945)	2001 (2,018,817)
Ex-vessel value (\$)	15,726,692	25,014,286	+59	2006 (34,025,965)	2002 (5,375,186)
Boats	366	254	-31	1982 (538)	2005 (219)
Buyers	49	58	+18	2003 (71)	1987,1989 (32)
Trips	5,623	4,913	-12	1981 (8,850)	2002 (1,978)
Price (\$/lb)	2.05	1.82	-11	1983 (2.79)	1993 (1.45)

## The Groundfish Trawl Fishery

The groundfish trawl fishery has experienced large declines in landings, value, boats and buyers since 1981. In the late 1990s and early 2000s, eight groundfish stocks were declared overfished, leading to sharp reductions in vessel landing limits, area and gear restrictions, and a federal disaster declaration for West Coast groundfish. An industry-funded buyback was implemented in 2004 to deal with the overcapacity problem, which had been exacerbated by the reduction in harvest opportunities.

Groundfish trawl landings fell from 47.5 to 52.9 million pounds in 1981 and 1982 to 10.7 million pounds or less since 2003 (Figure 16, Table 17). The ex-vessel value of landings, which ranged from \$11.8 to \$20.9 million between 1981 and 1998, has been less than \$6.4 million since 2003. The number of boats fell from 93–107 between 1981 and 1985 to 25–31 since 2004. The precipitous decline from 56 boats in 2003 to 26 boats in 2004 is related to the implementation of the 2003 trawl buyback program. The number of buyers also declined, from 23 to 32 between 1981 and 1986 to three to five since 2003.

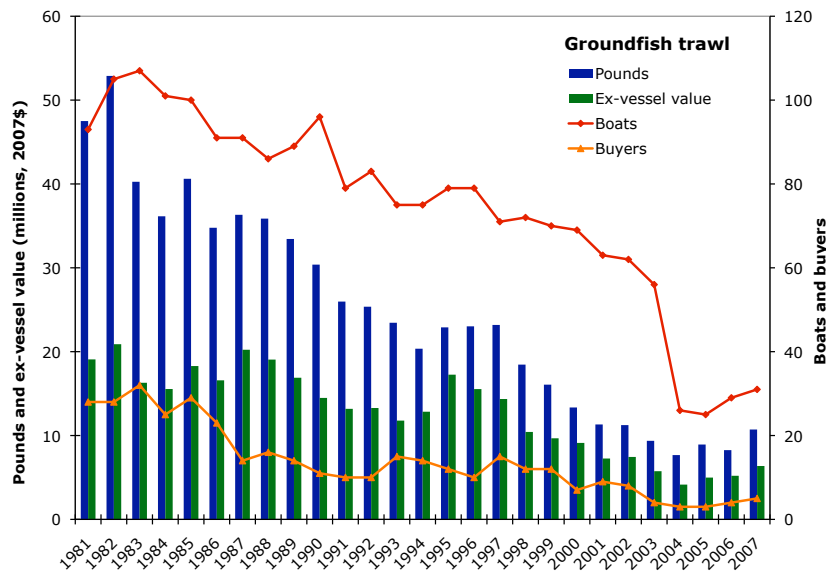
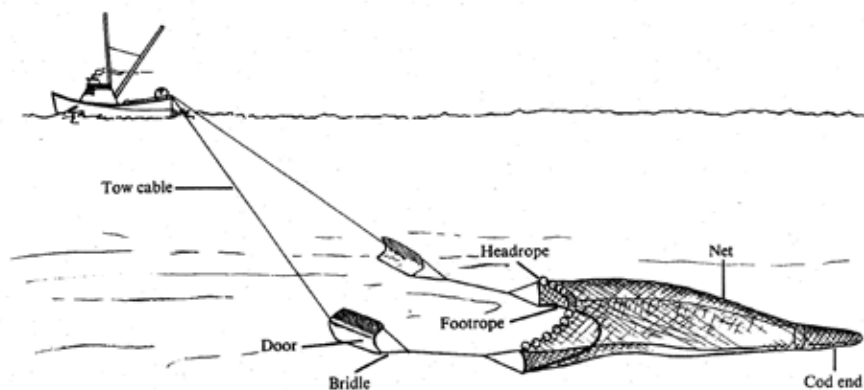


Figure 16. Landings (pounds), ex-vessel value (2007\$), and number of boats and buyers in the North Coast groundfish trawl fishery, 1981–2007.



Bottom trawler

Landings, landed value, and numbers of boats buyers and trips have all been considerably lower (by 55% to 72%) in recent years relative to the long term. While groundfish prices have increased, the increase has been too modest (+7%) to offset the decline in landings.

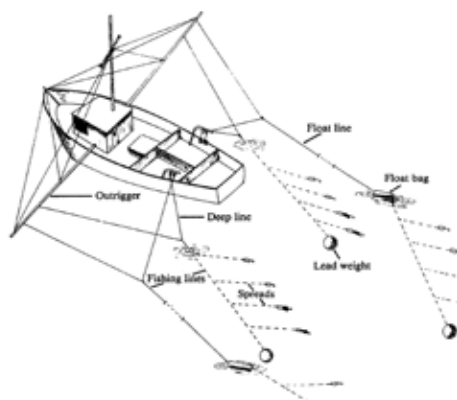
**Table 17. Long-term and recent annual average, percent difference, and highs and lows for selected measures of groundfish trawl activity at North Coast ports, 1981–2007.**

<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)	24,732,976	8,987,454	-64	1982 (52,883,220)	2004 (7,667,833)
Ex-vessel value (\$)	12,812,254	5,289,022	-59	1982 (20,889,729)	2004 (4,147,816)
Boats	74	33	-55	1983 (107)	2005 (25)
Buyers	14	4	-71	1983 (32)	2004, 2005 (3)
Trips	1,910	538	-72	1983 (3,483)	2004 (408)
Price (\$/lb)	0.55	0.59	+7	1981–1983 (0.40)	1995 (0.75)

### **The Salmon Troll Fishery**

Salmon troll landings on the North Coast were 3.8–4.5 million pounds in 1981 and 1982, declined precipitously during the 1982–1983 El Niño, then rebounded to 3.4–4.5 million pounds in 1987 and 1988 (Figure 17, Table 18). Ex-vessel value was also unusually high during the high-landing years, coinciding with periods of high prices. Beginning in the early 1990s, however, North Coast landings plummeted due to several factors, including a new 50/50 allocation of Klamath-Trinity River salmon between tribal and nontribal fisheries, and a PFMC declaration in 1993 that Klamath fall Chinook was overfished. Ongoing efforts to protect Klamath fall Chinook have resulted in disproportionate fishery restrictions in California’s KMZ (Humboldt and Del Norte counties) that continue to the present. Thus a large majority of North Coast salmon landings since the early 1990s, including the landings spike of 1.2–4.1 million pounds from 2002 through 2005, has occurred outside the KMZ (i.e., in Mendocino County). The number of boats declined precipitously from 2,137 in 1981 to 1,060 in 1984 (after implementation of California’s salmon limited entry program) to 39 during the 1992 El Niño. Although the number of trollers increased in subsequent years, it has exceeded 200 boats in only five years since 1993.

Salmon troll landings were 18% higher and ex-vessel value was 7% lower in recent years relative to the long term. The largest change, however, has been the 60% decrease in boats and 70% decrease in trips in this traditionally high-effort fishery.



Salmon troller

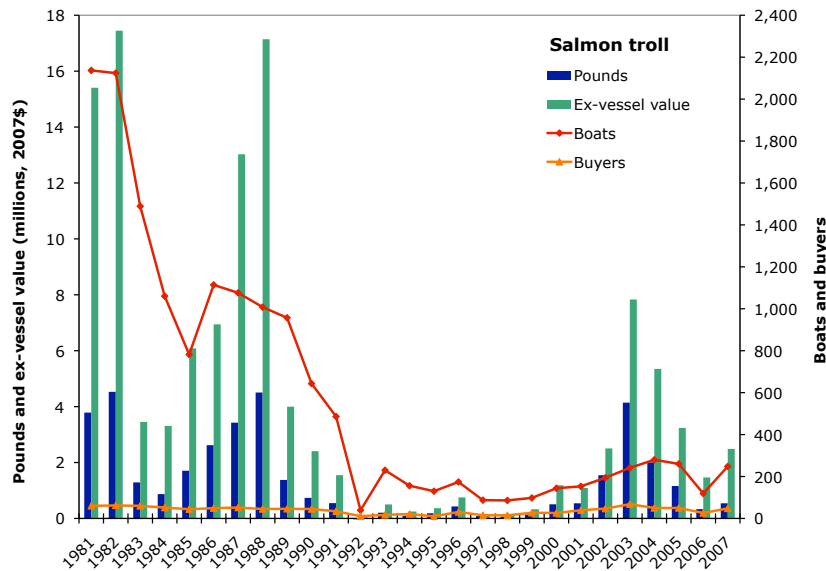


Figure 17. Landings (pounds), ex-vessel value (2007\$), and number of boats and buyers in the North Coast salmon troll fishery, 1981–2007.

Table 18. Long-term and recent annual average, percent difference, and highs and lows for selected measures of salmon troll activity at North Coast ports, 1981–2007.

Salmon troll	Long-term average 1981–2007	Recent average 2003–2007	Percent difference	High year(s) (amount)	Low year(s) (amount)
Landings (lbs)	1,384,526	1,636,664	+18	1982 (4,528,768)	1992 (12,664)
Ex-vessel value (\$)	4,386,894	4,073,848	-7	1982 (17,446,316)	1992 (38,259)
Boats	575	230	-60	1981 (2,137)	1992 (39)
Buyers	39	48	+23	2003 (68)	1995 (10)
Trips	5,723	1,731	-70	1982 (27,805)	1992 (111)
Price (\$/lb)	2.88	3.27	+14	2007 (4.59)	2002 (1.62)

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

Ex-vessel sablefish prices, which ranged from \$0.60 to \$1.24 per pound between 1981 and 1994, increased to \$1.22–\$2.06 per pound between 1995 and 2006. The peak price of \$2.06 occurred in 1997 – also the year of peak revenue (\$3.1 million) and peak participation (127 boats) (Figure 18, Table 19). Revenues and participation in the post-1997 years have exhibited no discernible pattern. The number of buyers also peaked at 22 in 1997 but has declined to seven to 12 since 2002.



Finfish pot

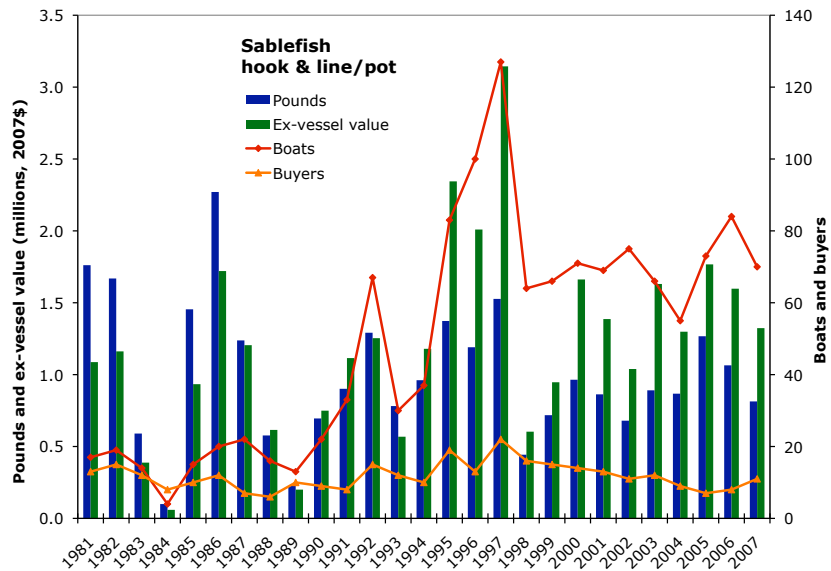
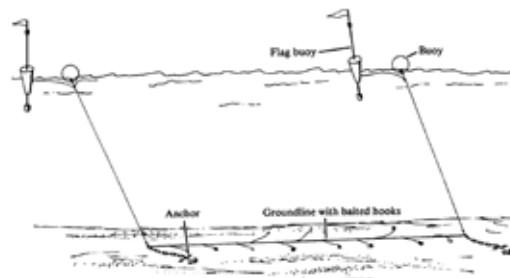


Figure 18. Landings (pounds), ex-vessel value (2007\$), and number of boats and buyers in the North Coast sablefish hook-and-line fishery, 1981–2007.

While sablefish landings peaked in 1986, all other measures of activity (value, boats, buyers, trips) peaked in 1997, the year of peak prices. Ex-vessel value, vessel participation and prices are considerably higher in recent years relative to the long term.

Table 19. Long-term and recent annual average, percent difference, and highs and lows for selected measures of sablefish hook-and-line activity at North Coast ports, 1981–2007.

	Long-term average	Recent average	Percent difference	High year(s)	Low year(s)
Sablefish hook-and-line	1981–2007	2003–2007		(amount)	(amount)
Landings (lbs)	1,006,595	980,695	-3	1986 (2,270,547)	1984 (99,609)
Ex-vessel value (\$)	1,221,810	1,523,439	+25	1997 (3,144,352)	1984 (59,354)
Boats	49	70	+43	1997 (127)	1984 (4)
Buyers	12	9	-25	1997 (22)	1988 (6)
Trips	795	793	0	1997 (2,925)	1984 (15)
Price (\$/lb)	1.22	1.57	+29	1997 (2.06)	1984 (0.60)



Bottom longline gear

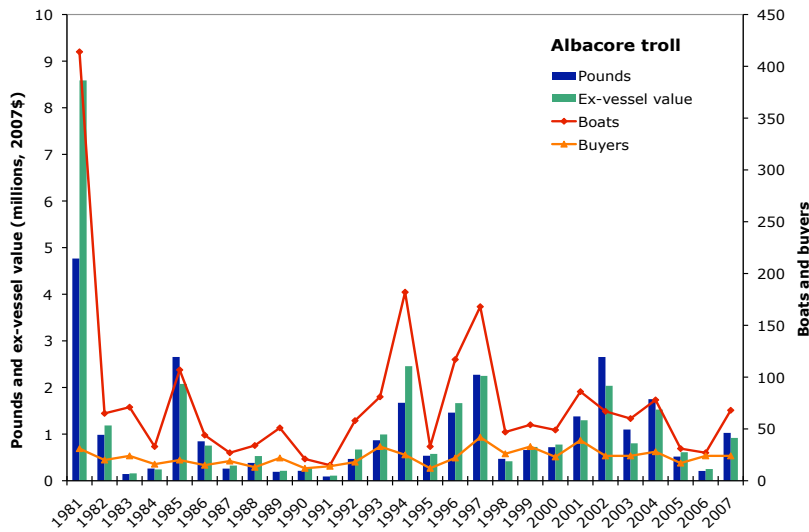


Figure 19. Landings (pounds), ex-vessel value (2007\$), and number of boats and buyers in the North Coast albacore troll fishery, 1981–2007.

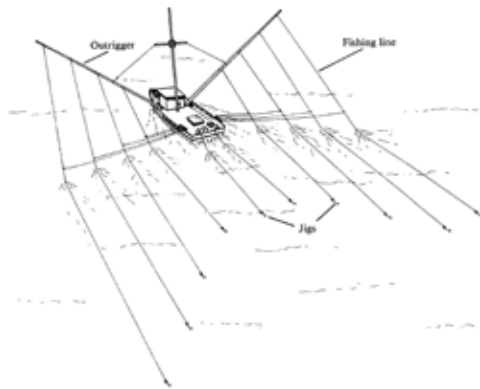
### **The Albacore Troll Fishery**

The precipitous decline in the albacore troll fishery in the early 1980s was a statewide phenomenon associated with the offshore relocation of California tuna canneries. While the high level of activity experienced in 1981 (4.8 million pounds, worth \$8.6 million landed at North Coast ports) has not been repeated in subsequent years, the fishery remains active. Since 1982, North Coast landings have ranged from 91,000 to 2.7 million pounds and value has ranged from \$109,000 to \$2.5 million, reflecting the highly variable availability of albacore to the fishery (Figure 19, Table 20). The fishery has declined in recent years relative to the long term in terms of landings, value, boats, trips and prices; the number of buyers, however, remains unchanged between the two periods.

Table 20. Long-term and recent annual average, percent difference, and highs and lows for selected measures of albacore troll activity at North Coast ports, 1981–2007.

	Long-term average 1981–2007	Recent average 2003–2007	Percent difference	High year(s) (amount)	Low year(s) (amount)
Albacore troll					
Landings (lbs)	1,057,484	920,326	-13	1981 (4,765,824)	1991 (91,317)
Ex-vessel value (\$)	1,200,794	821,933	-32	1981 (8,586,611)	1991(109,218)
Boats	77	53	-32	1981 (414)	1991 (15)
Buyers	23	23	0	1997 (42)	1990,1995 (12)
Trips	181	146	-19	1981 (665)	1995 (46)
Price (\$/lb)	1.10	0.97	-12	1981 (1.80)	2003 (0.73)





Albacore troller

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

Rockfish/lingcod hook-and-line landings peaked at 3.0 million pounds and participation peaked at 604 boats in 1989; ex-vessel value peaked a year earlier (1988) at \$4.9 million (Figure 20, Table 21). Prices increased dramatically from less than \$0.70 per pound in the early 1980s to \$1.90–\$2.18 in 1987 and 1988, then fell in the 1990s, only to increase to new highs of \$2.41–\$3.04 since 2000. Despite the high prices in recent years, ex-vessel value has remained low due to the inhibiting effect of regulations on landings. Similarly, whereas prices increased by 60% in recent years relative to the long term, landings, value, boats, buyers and trips all declined over the same periods.

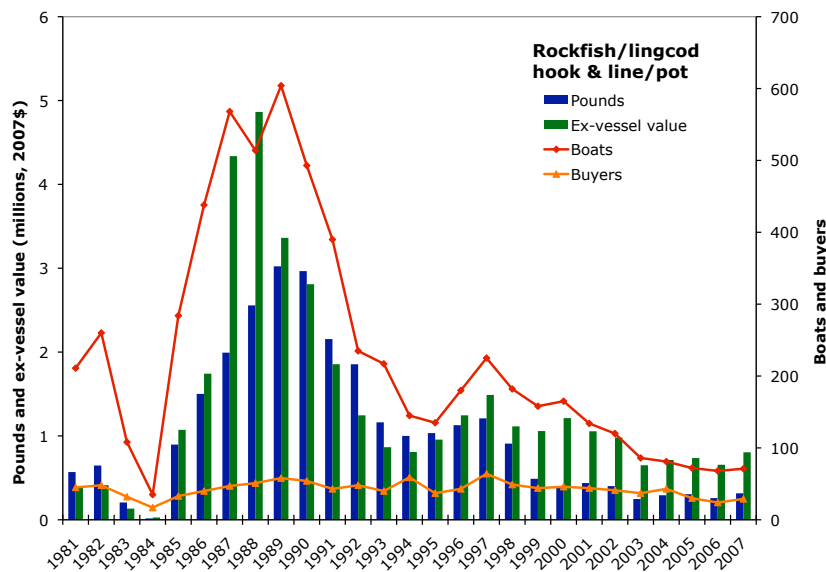


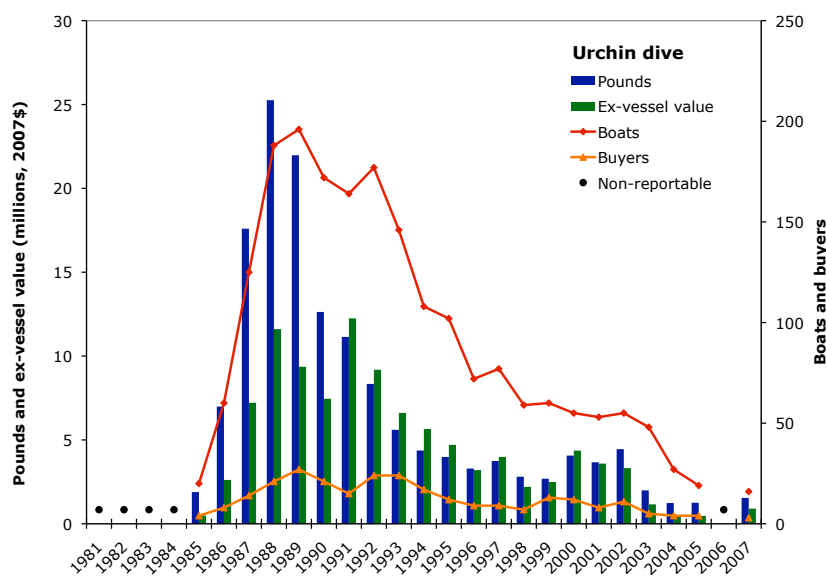
Figure 20. Landings (pounds), ex-vessel value (2007\$), and number of boats and buyers in the North Coast rockfish/lingcod hook-and-line fishery, 1981–2007.

**Table 21. Long-term and recent annual average, percent difference, and highs and lows for selected measures of rockfish/lingcod hook-and-line activity at North Coast ports, 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)	1,036,046	283,760	-73	1989 (3,022,601)	1984 (16,266)
Ex-vessel value (\$)	1,355,495	712,124	-47	1988 (4,864,368)	1984 (27,110)
Boats	229	76	-67	1989 (604)	1984 (35)
Buyers	42	33	-21	1997 (64)	1984 (17)
Trips	2,185	1,167	-47	1990 (4,808)	1984 (98)
Price (\$/lb)	1.57	2.51	+60	2000 (3.04)	1982 (0.64)

### The Urchin Dive Fishery

The urchin fishery, which began in Southern California in the 1970s, developed in Northern California in the mid-1980s. Activity increased rapidly through the remainder of the decade as divers displaced from Southern California’s declining abalone fishery and some local salmon fishermen entered the local urchin fishery. The North Coast fishery declined substantially after 1989 amid a change in the quality of urchin roe and competition from other (international) sources. In recent years, the North Coast fishery is minimal relative to its peak in the late 1980s (Figure 21, Table 22). The decline in recent years relative to the long term is reflected in all measures of activity (landings, value, boats, buyers, trips, price), and is attributed to poor kelp production and market conditions.



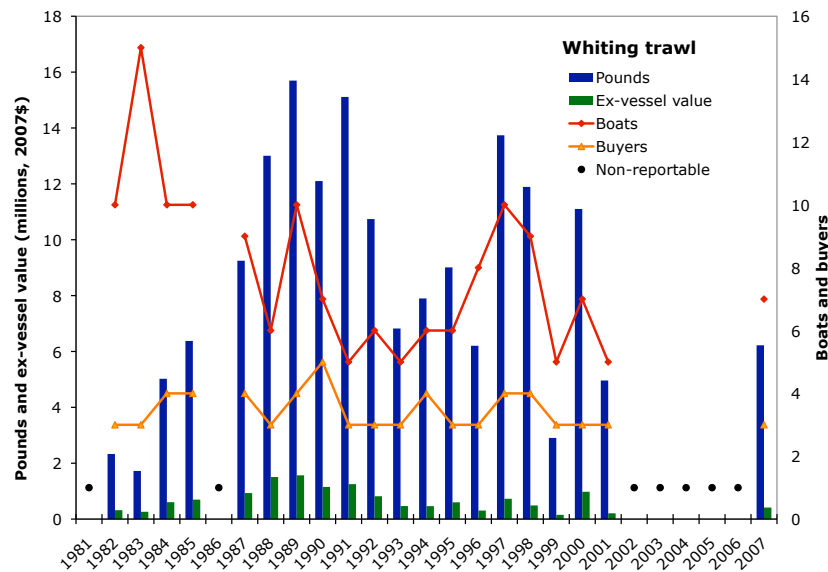
**Figure 21. Landings (pounds), ex-vessel value (2007\$), and number of boats and buyers in the North Coast urchin dive fishery, 1981–2007. Note: Activity cannot be reported for 1981–1984 and 2006, when more than zero but fewer than three boats or buyers participated.**

**Table 22. Long-term and recent annual average, percent difference, and highs and lows for selected measures of urchin dive activity at North Coast ports, 1981–2007. Note: Years when fewer than three boats or buyers participated are included in averages, but excluded from highs and lows.**

Urchin dive	Long-term average 1981–2007	Recent average 2003–2007	Percent difference	High year(s) (amount)	Low year(s) (amount)
Landings (lbs)	5,624,704	1,414,518	-75	1988 (25,259,807)	2006 (1,048,097)
Ex-vessel value (\$)	3,849,468	695,653	-82	1991 (12,247,189)	2006 (424,996)
Boats	75	25	-67	1989 (196)	2006 (15)
Buyers	10	4	-60	1989 (27)	2007 (3)
Trips	2,838	808	-72	1989 (8,245)	1985 (497)
Price (\$/lb)	0.89	0.47	-47	1994 (1.29)	1985 (0.26)

### The Whiting Trawl Fishery

The whiting trawl fishery is a high-volume, low-value fishery. Whiting prices have declined from \$0.14 to \$0.16 per pound from 1981 through 1983 to \$0.08–\$0.12 from 1984 through 1992 to \$0.04–\$0.07 since 1993 (with the exception of 2000, when the price averaged \$0.09 per pound). Although annual landings and value cannot be reported for 2002–2006 due to the small number of boats and buyers involved, whiting remains an active fishery on the North Coast (Figure 22, Table 23).



**Figure 22. Landings (pounds), ex-vessel value (2007\$), and number of boats and buyers in the North Coast whiting trawl fishery, 1981–2007. Note: Activity cannot be reported for 1981, 1986, and 2002–2006, when more than zero but fewer than three boats or buyers participated.**

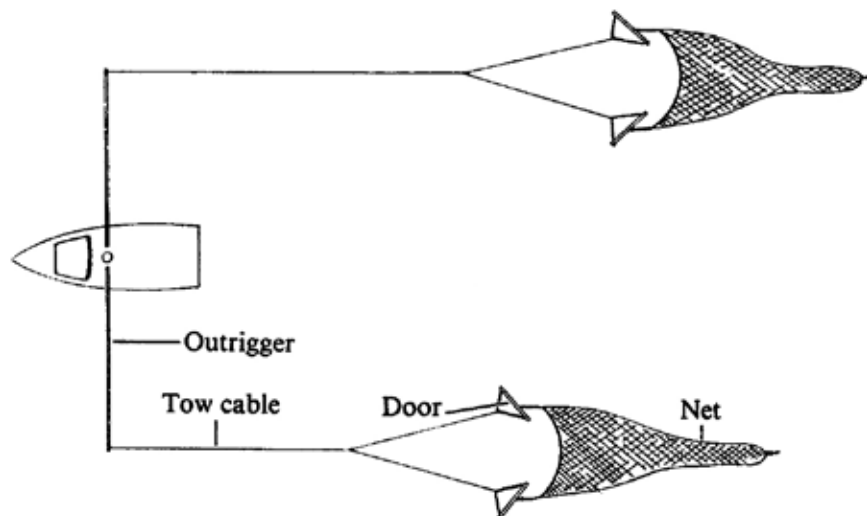
**Table 23. Long-term and recent annual average, percent difference, and highs and lows for selected measures of whiting trawl activity at North Coast ports, 1981–2007. Note: Years when fewer than three boats or buyers participated are included in averages, but excluded from highs and lows.**

Whiting trawl	Long-term average 1981–2007	Recent average 2003–2007	Percent difference	High year(s) (amount)	Low year(s) (amount)
Landings (lbs)	8,102,850	7,847,403	-3	1989 (15,695,972)	1983 (1,723,147)
Ex-vessel value (\$)	630,964	480,504	-24	1989 (1,566,861)	1999 (152,013)
Boats	7	4	-43	1983 (15)	2002,2003,2005 (3) 1982-1983,1988,1991- 1993,1995-1996, 1999–2001,2007(3)
Buyers	3	2	-33	1990 (5)	1999–2001,2007(3)
Trips	97	73	-25	1989 (195)	1999 (22)
Price (\$/lb)	0.08	0.06	-25	1981 (0.16)	1998, 2001 (0.04)

Whiting landings declined a modest 3% in recent years relative to the long term, while all other measures of activity (value, boats, buyers, trips, prices) have shown more marked declines (24%–43%). The fishery is highly variable, with landings ranging from 1.7 million to 15.7 million pounds and value from \$152,000 to \$1.6 million over the reportable years.

### **The Shrimp Trawl Fishery**

The shrimp trawl fishery, which began operating on the North Coast in the 1950s, expanded in the 1970s largely due to technological changes in fishing (i.e., double-rig trawl nets) and processing (i.e., shrimp peeling machines; Frimodig et al. 2009). Landings and value on the North Coast peaked in 1992 at 18.8 million pounds and \$8.7 million, respectively, but declined markedly in subsequent years (Figure 23, Table 24). Vessel participation ranged from 33 to 106 boats during most of the 1981–2002 period (the exceptions being 16 boats in 1983 during the 1982–1983 El Niño and 24 boats in 2002). Annual activity cannot be reported for most years since 2003 due to the small number of buyers involved.



Double-rig trawl net

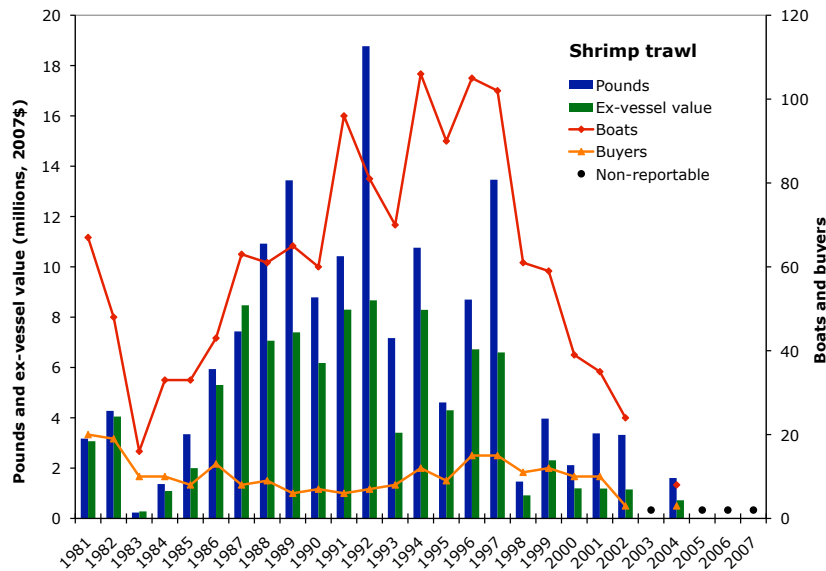


Figure 23. Landings (pounds), ex-vessel value (2007\$), and number of boats and buyers in the North Coast shrimp trawl fishery, 1981–2007. Note: Activity cannot be reported for 2003 and 2005–2007, when more than zero but fewer than three boats or buyers participated.

Table 24. Long-term and recent annual average, percent difference, and highs and lows for selected measures of shrimp trawl activity at North Coast ports, 1981–2007. Note: Years when fewer than three boats or buyers participated are included in averages, but excluded from highs and lows.

Shrimp trawl	Long-term average 1981–2007	Recent average 2003–2007	Percent difference	High year(s) (amount)	Low year(s) (amount)
Landings (lbs)	5,634,002	1,012,551	-82	1992 (18,769,592)	1983 (232,966)
Ex-vessel value (\$)	3,708,869	437,957	-88	1992 (8,668,566)	1983 (279,520)
Boats	52	7	-87	1994 (106)	2004 (8)
Buyers	9	2	-78	1981 (20)	2002, 2004 (3)
Trips	573	36	-94	1992 (1,251)	2004 (57)
Price (\$/lb)	0.66	0.42	-36	1983 (1.20)	2003 (0.32)

The shrimp fishery is highly variable, with landings ranging from 233,000 to 18.8 million pounds and value from \$280,000 to \$8.7 million over the reportable years. Shrimp trawl landings, value, boats, buyers and trips declined markedly in recent years (by 78% to 94%) relative to the long term. Prices also declined by a lesser but still notable amount (36%).

## Commercial Fishing Activity by County

The figures presented in this section compare county trends in landings, ex-vessel value, boats, trips and buyers for all fisheries combined. The tables provide additional detail regarding fishery-specific activity in each county, and also describe North Coast fishing activity relative to statewide activity, by fishery.

### Landings

Landings (for all fisheries combined) have generally been higher in Humboldt and Del Norte counties than Mendocino County (Figure 24). Humboldt accounted for a particularly notable share of North Coast landings from 1981 through 1985 (43%–51%) and 2002 through 2007 (46–56%). Del Norte County accounted for a notable share from 1991 through 2000 (40%–51%).

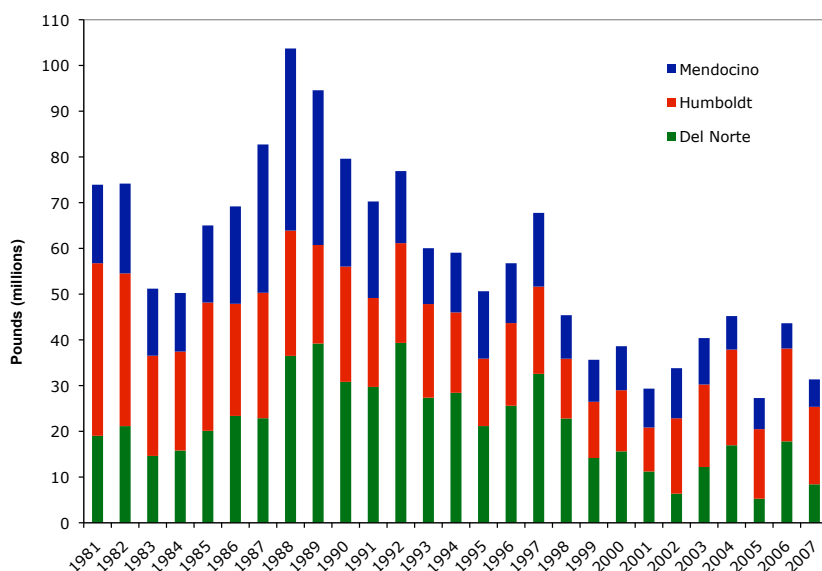


Figure 24. Landings (millions of pounds) by county, 1981–2007.

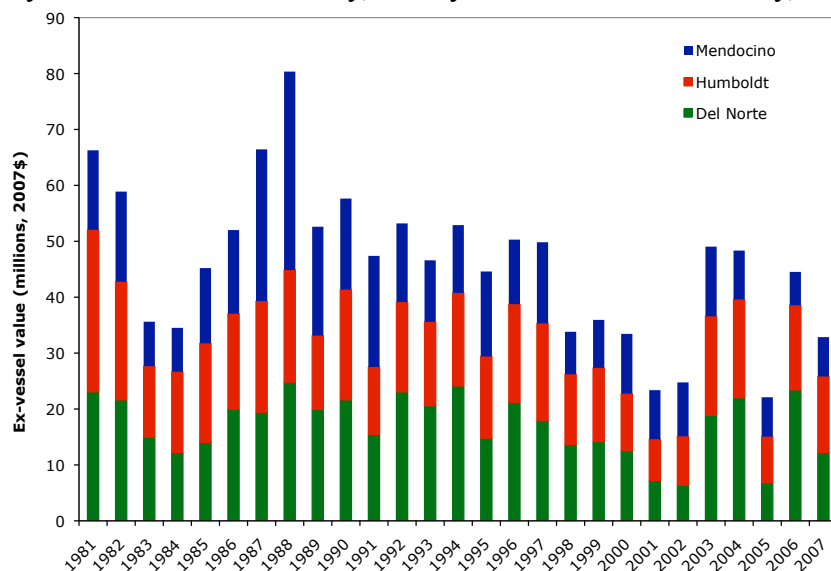
Not surprisingly, landings are dominated by fisheries characterized by high-volume harvest operations (e.g., crab, urchin, trawl fisheries for various species; Table 25). Fisheries accounting for at least 10% of landings from 1981 through 2007 and/or 2003 through 2007 (on an average annual basis) include groundfish trawl (all counties), crab pot and whiting trawl (Humboldt and Del Norte counties), urchin dive and salmon troll (Mendocino County), and shrimp trawl (Del Norte County). A majority of statewide crab, groundfish trawl, sablefish, whiting and shrimp trawl landings from 2003 through 2007 occurred on the North Coast.

**Table 25. Long-term (1981–2007) and recent (2003–2007) average annual landings in Mendocino, Humboldt and Del Norte counties (thousands of pounds), and tri-county contribution to total California landings, by fishery. Notes: Bold, italicized numbers denote fisheries that comprised at least 10% of total landings in that county and period. Blanks denote periods when more than zero but fewer than three boats or buyers participated.**

Fishery	Mendocino County		Humboldt County		Del Norte County		Tri-County Total		Tri-County as % of CA	
	1981–2007	2003–2007	1981–2007	2003–2007	1981–2007	2003–2007	1981–2007	2003–2007	1981–2007	2003–2007
	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
Crab pot	395	676	<b>3,004</b>	<b>5,262</b>	<b>4,697</b>	<b>8,136</b>	<b>8,095</b>	<b>14,074</b>	70	70
Groundfish trawl	<b>7,337</b>	<b>2,959</b>	<b>12,319</b>	<b>4,653</b>	<b>5,077</b>	<b>1,375</b>	<b>24,733</b>	<b>8,988</b>	56	65
Salmon troll	983	<b>1,437</b>	253	110	149	90	1,385	1,637	26	37
Sablefish H&L	518	534	298	291	190	156	1,007	981	33	53
Albacore troll	100	39	730	644	227	238	1,058	920	19	47
Rockfish H&L	343	61	264	28	429	194	1,036	284	23	20
Urchin dive	<b>5,577</b>	<b>1,413</b>	12		36		<b>5,625</b>	1,415	24	13
Whiting trawl		0.0	<b>2,533</b>		5,569		8,103	7,847	100	100
Shrimp trawl	215		822		4,598		<b>5,634</b>	1,013	83	60
All else	149	41.1	370	271	443	63	962	376	0	0
<b>Total</b>	<b>15,619</b>	<b>7,161</b>	<b>20,604</b>	<b>18,282</b>	<b>21,414</b>	<b>12,090</b>	<b>57,637</b>	<b>37,533</b>	<b>14</b>	<b>12</b>

### Ex-Vessel Value

The ex-vessel value of landings has generally been highest in Del Norte and lowest in Mendocino County (Figure 25). From 1981 through 2007, landed value equaled or exceeded \$20 million in 11 years in Del Norte County, three years in Humboldt County, and two years



**Figure 25. Ex-vessel value of landings (2007\$) by county, 1981–2007.**

in Mendocino County. Mendocino County's average annual share of landed value was 21% in recent years (2003–2007) and 29% over the long term (1981–2007). Humboldt County's recent and long-term shares were 37% and 34%, while Del Norte County's shares were 42% and 38%.

Most of the same fisheries that dominate landings also accounted for at least 10% of landed value (on an annual average basis) from 1981 through 2007 and/or 2003 through 2007 (Table 26). Fisheries meeting this criterion in one or both of these periods included groundfish trawl and crab pot (all counties), salmon troll and urchin dive (Mendocino County), and shrimp trawl (Del Norte County). A majority of the landed value of crab, groundfish trawl, sablefish, and whiting in California from 2003 through 2007 are attributable to North Coast landings.

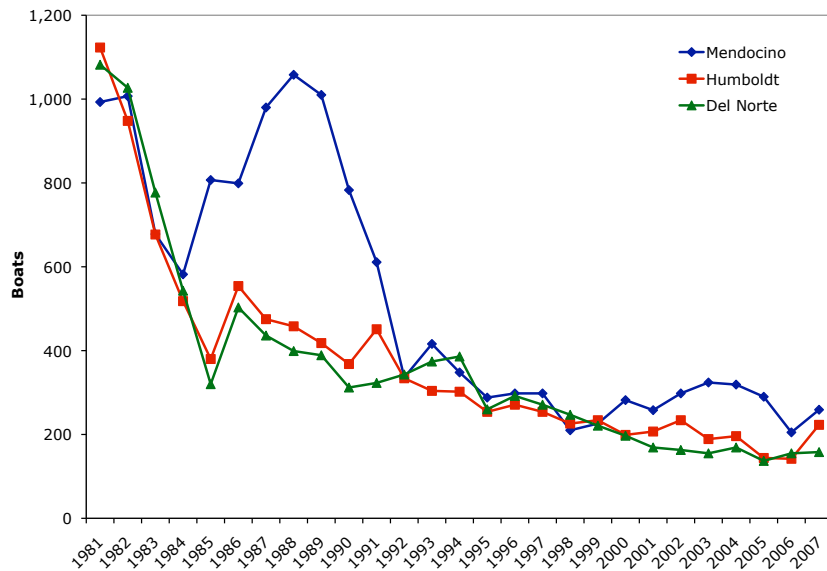
**Table 26. Long-term (1981–2007) and recent (2003–2007) average annual ex-vessel value (\$1000s, 2007\$) of landings in Mendocino, Humboldt and Del Norte counties, and tri-county contribution to total California value, by fishery. Notes: Bold, italicized numbers denote fisheries that comprised at least 10% of total value in that county and period. To protect confidentiality, blanks denote periods when more than zero and fewer than three boats or buyers participated.**

Fishery	Mendocino County		Humboldt County		Del Norte County		Tri-County Total		Tri-County as % of CA	
	1981–2007 Avg	2003–2007 Avg	1981–2007 Avg	2003–2007 Avg	1981–2007 Avg	2003–2007 Avg	1981–2007 Avg	2003–2007 Avg	1981–2007 Avg	2003–2007 Avg
Crab pot	848	<b>1,250</b>	<b>5,880</b>	<b>9,459</b>	<b>8,999</b>	<b>14,305</b>	<b>15,727</b>	<b>25,014</b>	69	68
Groundfish trawl	<b>3,761</b>	<b>1,727</b>	<b>6,341</b>	<b>2,741</b>	<b>2,711</b>	821	<b>12,812</b>	<b>5,289</b>	55	57
Salmon troll	3,011	<b>3,482</b>	852	322	524	270	<b>4,387</b>	<b>4,074</b>	28	34
Sablefish hook-and-line	634	795	393	486	195	243	1,222	1,523	39	54
Albacore troll	133	48	830	569	237	205	1,201	822	19	47
Rockfish hook-and-line	674	229	272	46	410	437	1,356	712	19	16
Urchin dive	<b>3,816</b>	695	10		24		3,850	696	20	10
Whiting trawl		0	223		408		631	481	100	100
Shrimp trawl	176		460		3,073		3,709	438	58	34
All else	201	20	249	106	677	198	1,126	324	1	1
<b>Total</b>	<b>13,254</b>	<b>8,246</b>	<b>15,509</b>	<b>14,471</b>	<b>17,257</b>	<b>16,656</b>	<b>46,019</b>	<b>39,373</b>	<b>21</b>	<b>30</b>

### **Vessel Participation**

The decline in vessel participation in Humboldt and Del Norte counties in the early 1980s was largely precipitated by the implementation of stringent salmon troll regulations in California's KMZ (Figure 26). By contrast, salmon troll participation increased in Mendocino County to a peak of 815 boats in 1988. However, through the early 1990s and beyond, vessel participation steadily declined in all three counties, reflecting reduced opportunities in multiple fisheries.





**Figure 26. Number of commercial fishing boats, by county, 1981–2007. Note: Numbers are not additive across counties, as some boats fish in multiple counties.**

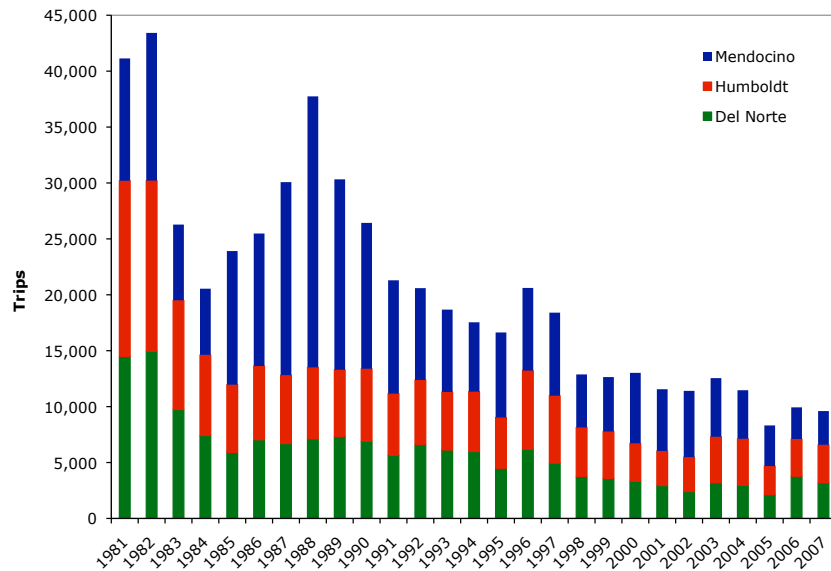
While the downward trend in vessel participation is dominated by traditionally high-effort fisheries (most notably salmon troll, crab pot, and rockfish/lingcod hook-and-line), participation in almost all North Coast fisheries has been considerably lower in recent years (2003–2007) relative to the long term (Table 27). Fisheries involving at least 10% of the boats making landings in a county for the period 1981–2007 and/or 2003–2007 (on an average annual basis) included crab pot, salmon troll and rockfish hook-and-line (all counties), albacore troll (Humboldt and Del Norte counties), sablefish hook-and-line (Mendocino and Humboldt counties), groundfish trawl (Humboldt County), urchin dive (Mendocino County), and shrimp trawl (Del Norte County). From 2003 through 2007, the only fishery for which a majority of boats operated on the North Coast was whiting trawl, although crab pot, groundfish trawl and sablefish hook-and-line participation also was substantial.

**Table 27. Long-term (1981–2007) and recent (2003–2007) average annual number of boats in Mendocino, Humboldt and Del Norte counties, and tri-county sum relative to total California boats, by fishery. Notes: Bold, italicized numbers denote fisheries involving at least 10% of total boats participating in that county and period. Total number of boats in each county and period is less than sum of boats participating in each fishery, as some boats participate in multiple fisheries; tri-county totals are less than sum of boats fishing in each county, as some boats fish in multiple counties. Blanks denote counties and periods when more than zero and fewer than three boats or buyers participated.**

Fishery	Mendocino County		Humboldt County		Del Norte County		Tri-County Total		Tri-County as % of CA	
	1981–2007	2003–2007	1981–2007	2003–2007	1981–2007	2003–2007	1981–2007	2003–2007	1981–2007	2003–2007
	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
Crab pot	42	<b>43</b>	<b>156</b>	<b>103</b>	<b>189</b>	<b>125</b>	<b>366</b>	<b>254</b>	54	48
Groundfish trawl	21	11	36	18	28	8	74	33	42	39
Salmon troll	<b>357</b>	<b>195</b>	<b>183</b>	<b>57</b>	<b>134</b>	<b>29</b>	<b>575</b>	<b>230</b>	36	37
Sablefish H&L	26	<b>37</b>	18	<b>25</b>	9	9	49	<b>70</b>	42	41
Albacore troll	18	9	39	<b>26</b>	26	<b>20</b>	77	<b>53</b>	24	33
Rockfish H&L	<b>111</b>	<b>35</b>	<b>62</b>	15	<b>76</b>	<b>28</b>	<b>229</b>	<b>76</b>	22	19
Urchin dive	<b>74</b>	25	1		2		75	25	26	17
Whiting trawl		0	5		3		7	4	98	96
Shrimp trawl	5		15		41		52	7	49	20
<b>Total</b>	<b>517</b>	<b>279</b>	<b>373</b>	<b>179</b>	<b>363</b>	<b>155</b>	<b>1,056</b>	<b>512</b>	<b>28</b>	<b>26</b>

### **Fishing Trips**

The general trend in fishing trips (Figure 27) – bimodal peaks in the early and late 1980s, followed by a steady decline – closely parallels the trend in vessel participation (see Figure 26). From 1985 through 2005, more trips were made in Mendocino County than in either of the other two counties. One major reason for this is that regulation of the high-effort salmon fishery have generally been less stringent in Mendocino than in the KMZ (Humboldt and Del Norte counties) since the mid-1980s. Mendocino County lost its dominance with regard to trips for the period 2006–2007, due largely to declines in salmon opportunities (which affected that county more than the other two counties) and a surge in the crab fishery (which benefited Humboldt and Del Norte counties more than Mendocino County).



**Figure 27. Number of commercial fishing trips, by county, 1981–2007.**

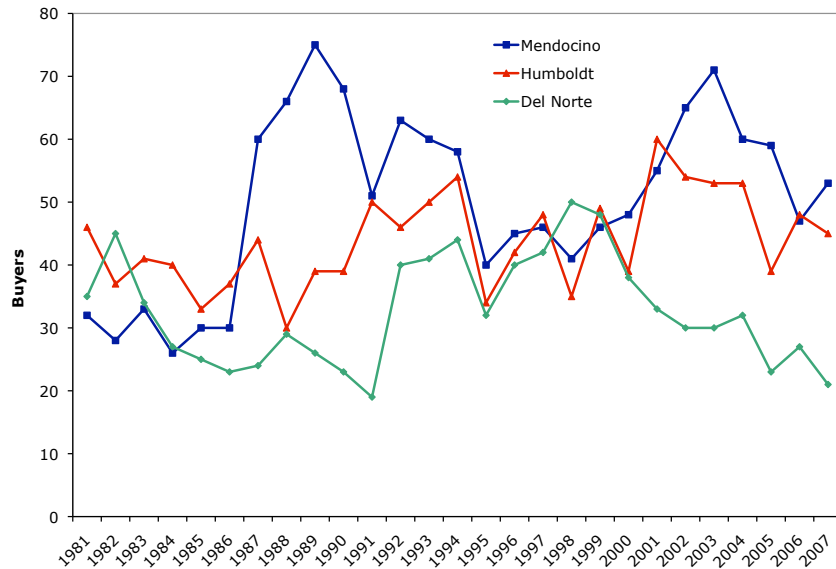
For almost all fisheries, the number of trips has been lower in recent years relative to the long term (Table 28). Fisheries involving at least 10% of trips in a county during the 1981–2007 and/or 2003–2007 period (on an average annual basis) included crab pot and salmon troll (all counties), rockfish hook-and-line (Mendocino and Del Norte counties), sablefish hook-and-line and urchin dive (Mendocino County), and groundfish trawl (Humboldt County). The North Coast was the site of all whiting trawl trips, and about half of all crab trips for both periods .

**Table 28. Long-term (1981–2007) and recent (2003–2007) average annual number of fishing trips in Mendocino, Humboldt and Del Norte counties, and tri-county contribution to total California trips, by fishery. Notes: Bold, italicized numbers denote fisheries that comprised at least 10% of total trips in that county and period. To protect confidentiality, blanks denote periods when more than zero and fewer than three boats or buyers participated.**

Fishery	Mendocino County		Humboldt County		Del Norte County		Tri-County Total		Tri-County as % of CA	
	1981–2007 Avg	2003–2007 Avg	1981–2007 Avg	2003–2007 Avg	1981–2007 Avg	2003–2007 Avg	1981–2007 Avg	2003–2007 Avg	1981–2007 Avg	2003–2007 Avg
Crab pot	340	411	2,866	2,393	2,417	2,109	5,623	4,913	51	47
Groundfish trawl	524	165	908	271	478	102	1,910	538	41	28
Salmon troll	3,649	1,352	1,208	312	866	66	5,723	1,731	29	25
Sablefish H&L	509	581	217	162	69	51	795	793	40	38
Albacore troll	37	29	86	76	58	41	181	146	21	34
Rockfish H&L	617	453	364	152	1,204	562	2,185	1,167	21	20
Urchin dive	2,818	807	4		15		2,838	808	24	12
Whiting trawl		0	38		59		97	73	100	100
Shrimp trawl	23		65		485		573	36	25	3
All else	111	19	193	56	233	93	537	168	2	1
<b>Total</b>	<b>8,629</b>	<b>3,816</b>	<b>5,949</b>	<b>3,510</b>	<b>5,883</b>	<b>3,047</b>	<b>20,462</b>	<b>10,373</b>	<b>23</b>	<b>18</b>

## Buyers

The average annual proportion of North Coast buyers receiving fish in Mendocino County was 54% from 2003 through 2007 and 49% from 1981 through 2007. By comparison, these proportions were 44% and 43% respectively for Humboldt County, and 25% and 32% for Del Norte County. The tendency for fewer buyers to operate in Del Norte County has been particularly noticeable since 2000 (Figure 28).



**Figure 28. Number of commercial fish buyers, by county, 1981–2007. Note: Numbers are not additive across counties, as some buyers may receive fish in multiple counties.**

The number of buyers tends to be higher in line and pot fisheries and lower in trawl fisheries (Table 29). For eight of the nine major North Coast fisheries, a modest proportion of all California buyers receive landings at North Coast ports, the notable exception being whiting.

**Table 29. Long-term (1981–2007) and recent (2003–2007) average annual number of buyers in Mendocino, Humboldt and Del Norte counties, and tri-county sum relative to total California buyers, by fishery. Notes: Bold, italicized numbers denote fisheries involving at least 10% of total buyers participating in that county and period. Total number of buyers in each county and period is less than sum of buyers participating in each fishery, as some buyers participate in multiple fisheries; tri-county totals are less than sum of buyers receiving fish in each county, as some buyers receive fish in multiple counties. Blanks denote counties and periods when more than zero and fewer than three boats or buyers participated.**

Fishery	Mendocino County		Humboldt County		Del Norte County		Tri-County Total		Tri-County as % of CA	
	1981–2007	2003–2007	1981–2007	2003–2007	1981–2007	2003–2007	1981–2007	2003–2007	1981–2007	2003–2007
	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
Crab pot	15	21	25	<b>29</b>	<b>20</b>	<b>21</b>	<b>49</b>	<b>58</b>	23	21
Groundfish trawl	<b>6</b>	3	5	2	7	2	<b>14</b>	4	16	7
Salmon troll	<b>24</b>	<b>39</b>	<b>15</b>	<b>14</b>	7	<b>4</b>	<b>39</b>	<b>48</b>	18	23
Sablefish H&L	<b>5</b>	5	<b>6</b>	3	<b>5</b>	<b>4</b>	<b>12</b>	9	21	16
Albacore troll	7	7	<b>10</b>	<b>11</b>	<b>9</b>	<b>9</b>	<b>23</b>	<b>23</b>	23	26
Rockfish H&L	19	15	18	<b>14</b>	<b>14</b>	<b>8</b>	<b>42</b>	<b>33</b>	15	16
Urchin dive	<b>10</b>	4	1		1		<b>10</b>	4	18	7
Whiting trawl		0	1		1		3	2	82	63
Shrimp trawl	2		4		6		9	2	13	5
Total	50	58	44	48	33	27	103	108	14	15

## NORTH COAST RECREATIONAL FISHERIES

Ocean recreational fisheries along the North Coast include salmon, groundfish, albacore, halibut, abalone and crab. Salmon and groundfish, which were traditionally the major target species, have become much less available for harvest over the past few decades. Until recently, Klamath River fall Chinook was the constraining stock in the ocean salmon fishery, prompting much more restrictive regulations in the KMZ (Humboldt and Del Norte counties) than in Mendocino County. Since 2007, however, conservation concerns regarding Sacramento River fall Chinook have prompted unprecedented recreational season reductions and closures statewide. Over the past decade, fishery managers have implemented substantial reductions in groundfish bag limits, seasons and areas that have constrained harvest opportunities throughout the North Coast (as elsewhere in the state).

Effort estimates from the California Recreational Fisheries Survey (CRFS) are available at the ‘district’ level. Estimates for two of these districts – Wine (which covers Mendocino County) and Redwood (which covers Humboldt and Del Norte counties) – together characterize North Coast recreational fishing activity.<sup>24</sup>

From 2005 through 2007, an annual average of 216,000 recreational angler trips were made on the North Coast (Table 30). The distribution of these trips across modes was 26% manmade, 29% beach/bank, 9% commercial passenger fishing vessel (CPFV, or charter), and 36% private/rental boat. About 66% of North Coast trips occur in Humboldt and Del Norte counties (Redwood District), with the Redwood share varying by mode: 86% for manmade, 73% for beach/bank, 21% for CPFV, and 57% for private/rental boat.

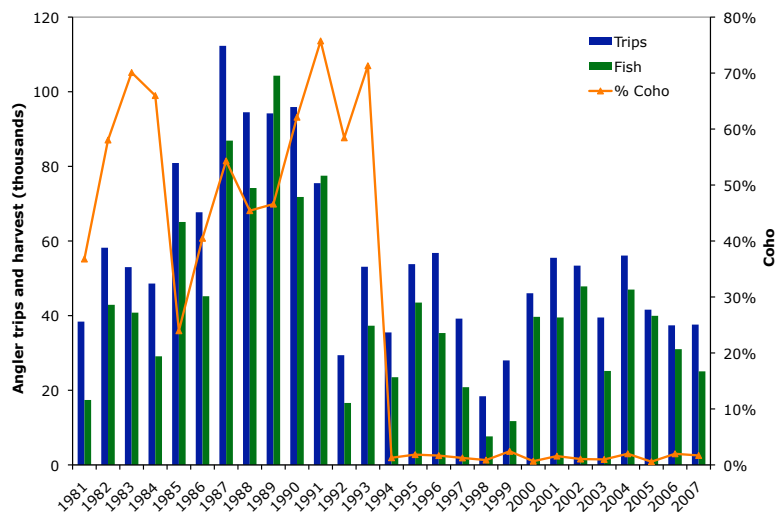
**Table 30. Number of ocean recreational angler trips (in thousands) on the North Coast, by district and fishing mode, 2005–2007 (Recreational Fisheries Information Network (RecFIN) website).<sup>25</sup>**

Wine (Mendocino County)					
	Manmade	Beach/bank	CPFV	Private/rental	Total
2005	7	14	35	42	98
2006	5	13	4	29	51
2007	13	23	6	27	69
Average	8	17	15	33	73
Redwood (Humboldt, Del Norte counties)					
	Manmade	Beach/bank	CPFV	Private/rental	Total
2005	53	43	3	42	141
2006	52	58	5	46	161
2007	43	36	5	44	128
Average	49	46	4	44	143
Total North Coast					
	Manmade	Beach/bank	CPFV	Private/rental	Total
2005	60	57	38	84	239
2006	57	71	9	75	212
2007	56	59	11	71	197
Average	57	63	19	77	216

While the CRFS provides a comprehensive overview of North Coast recreational fisheries, it is a fairly new survey and thus does not provide a lengthy time series of fishing activity. Three additional data sources were used to obtain insights into long-term recreational trends: (1) salmon recreational data (for CPFV and private boat modes) collected by CDFG and published by the PFMC; (2) CPFV (commercial passenger fishing vessel, or charter) logbook data; and (3) field data collected for this project. While the salmon and CPFV data provide an incomplete view of the recreational fishery, they are nevertheless informative regarding the sectors they cover.

### *The Salmon Fishery*

Recreational salmon effort and harvest on the North Coast peaked in the late 1980s and early 1990s (Figure 29), then declined to levels that have generally persisted through 2007. Effort and harvest, which averaged 74,500 trips and 59,600 fish from 1981 through 1991, fell to 42,600 trips and 30,700 fish from 1992 through 2007. Several events in the early 1990s contributing to this decline include: (1) PFMC designation of Klamath fall Chinook as overfished in 1993 (PFMC 1994); (2) 1993 re-allocation of Klamath-Trinity River salmon from previous 30/70 tribal/nontribal allocation to new 50/50 allocation; (3) stringent restrictions on coho retention beginning in 1994, due to conservation concerns regarding Oregon Coastal Natural coho.



**Figure 29. Effort (angler trips) and harvest (number of fish) in the North Coast recreational salmon fishery, and percent of harvest consisting of coho, 1981–2007 (PFMC).**

The decline in recreational salmon opportunities experienced since the early 1990s was largely felt in California’s KMZ (Humboldt and Del Norte counties). Salmon statistics for the Eureka and Crescent City areas, which closely correspond to those two counties, indicate much lower effort since 1992 (Figure 30). This is particularly true for the Crescent City area, which is more geographically isolated than Eureka. By contrast, the Fort Bragg area, which is south of the KMZ (Mendocino County) and much less constrained than the KMZ fishery, experienced generally higher levels of effort after 1992 – at least until 2008. In 2008, major concerns regarding the status of Sacramento River fall Chinook resulted in a dramatic and unprecedented shortening of recreational seasons statewide. The recreational season in California’s KMZ was zero days in 2008 and ten days in 2009. The Fort

Bragg recreational season was 45 days in 2008 (significantly reduced from its normal eight to nine months) and zero days in 2009. While such severe restrictions were not new for the KMZ, they were unprecedented for the Fort Bragg area.

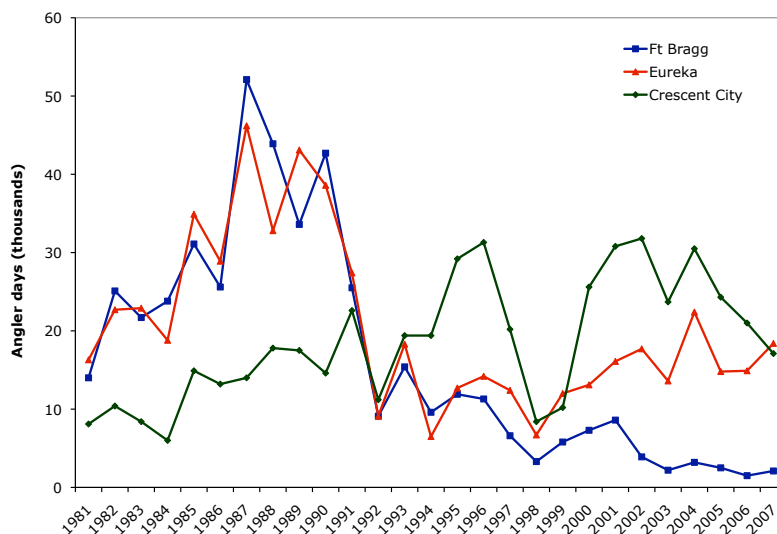


Figure 30. Salmon angler days, by area, 1981–2007 (PFMC).

The proportion of North Coast salmon angler trips made from CPFVs ranged from 6% to 11% from 1980 through 1997, then increased to 10%–24% from 1998 through 2007. The CPFV contribution to salmon effort is consistently lowest in the Crescent City area and highest in the Fort Bragg area (Figure 31). The overall increase in CPFV activity since the late 1990s is driven largely by the growing influence of Fort Bragg on North Coast recreational activity.

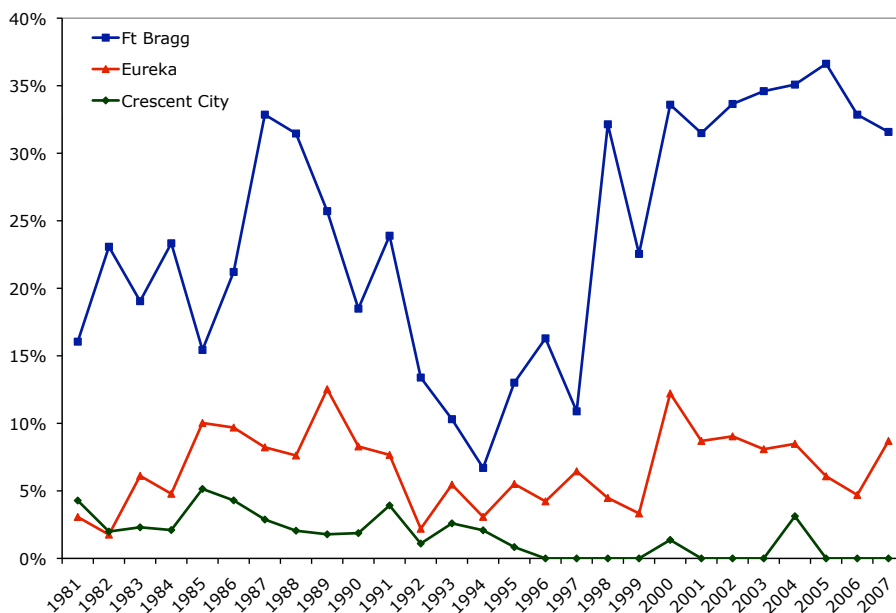


Figure 31. Percent of salmon angler trips in CPFV mode, by area, 1981–2007 (PFMC).



## The CPFV Fishery

According to the CRFS (see Table 30), CPFV activity on the North Coast is quite modest relative to activity in other modes. A small but increasing fraction of recreational boat-based salmon activity on the North Coast (averaging 22% since 2000) occurs from CPFVs. To get a better sense of overall CPFV activity on the North Coast (nonsalmon as well as salmon), CPFV logbook data were summarized back to 1980. The trends described here must be viewed with caution, as compliance of CPFV operators with the logbook requirement has not necessarily been consistent across years.

According to logbook data, CPFV activity on the North Coast increased to a peak of almost 16,000 angler days in 1989, declined through the 1990s, but then resumed its upward climb to a new peak of almost 17,000 in 2004 (Figure 32). While the number of angler days increased markedly through the 2000s, the number of CPFVs did not, indicating an increase in angler days per vessel.

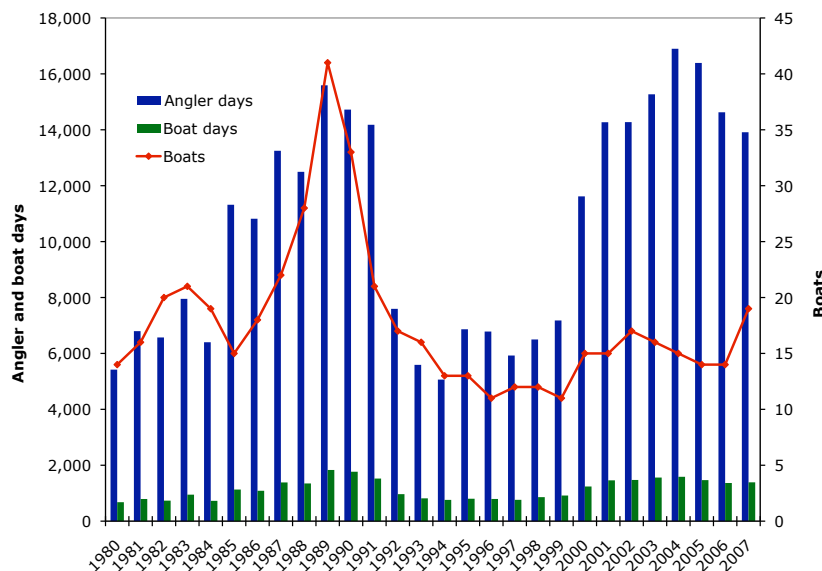


Figure 32. Angler days, boat days and number of CPFVs in North Coast counties, 1980–2007 (CPFV logbook data).

According to the logbooks, CPFV activity on the North Coast tends to be highest in Mendocino County and lowest in Del Norte County (Table 31). This pattern is consistent with previously described information on the recreational salmon fishery.

**Table 31. Annual average number of CPFV boats, boat days and angler days in Mendocino, Humboldt and Del Norte counties, 1980–2007 and 2003–2007, by county and overall.**

	<b>Mendocino County</b>	<b>Humboldt County</b>	<b>Del Norte County</b>	<b>Total</b>
Boats				
1980–2007 Avg	9	7	2	18
2003–2007Avg	8	7	1	16
Boat days				
1980–2007 Avg	677	365	108	1,149
2003–2007Avg	1,028	422	24	1,474
Angler days				
1980–2007 Avg	7,255	2,361	895	10,510
2003–2007Avg	12,919	2,271	230	15,419

### ***Private Boat Fishing Activity***

Private boats are the dominant mode of recreational fishing on the North Coast. Private boat anglers target a diversity of species including salmon and groundfish, and to a lesser extent halibut, albacore, abalone and crab. When salmon availability is low, 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. The long-term effects of such changes on private boat activity are difficult to quantify, as consistent long-term data on private boat effort and catch are not available (except for salmon).

## **SUMMARY**

North Coast commercial and recreational fisheries have changed markedly over the past three decades. Expansion through the 1970s and early 1980s was followed by contraction as regulatory, economic and other factors played out during the 1990s and into the 2000s. Reduced fishing opportunities have increased economic stress and uncertainty for fishery participants, support businesses and the larger community. Communities are now faced with the challenge of maintaining the viability of their fisheries in the face of such constraints. Decisions and plans are being made at the community level regarding infrastructure and other issues to help address this challenge. These adaptations, which are specific to each community, are discussed in the individual port profiles.

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## ENDNOTES

- <sup>1</sup> See [http://www.dfg.ca.gov/marine/status/ca\\_comm\\_fishing\\_gear.pdf](http://www.dfg.ca.gov/marine/status/ca_comm_fishing_gear.pdf) (accessed 7/30/10) and <http://montereybay.noaa.gov/research/techreports/fisherytrends.pdf> (pp.15–17, accessed 7/30/10) for descriptions of these fisheries and gear.
- <sup>2</sup> The percentage of boats and buyers participating in each fishery sum to greater than 100%, as some boats and buyers participate in multiple fisheries.
- <sup>3</sup> Tribal and recreational shore-based, inland and river fisheries, clamming and other marine resource collecting, and aquaculture also are important to the region and its communities, but are beyond the scope of this project.
- <sup>4</sup> See <http://ceo.ucsd.edu/fishbull/>, accessed 10/28/09.
- <sup>5</sup> See Appendix C for methodological detail related to the CBP data series.
- <sup>6</sup> For California as a whole, the industries accounting for at least 10% of business activity on the basis of at least one of the four measures are: manufacturing, retail trade, finance and insurance, professional/scientific/technical services, health care/social assistance, and accommodation/food services.
- <sup>7</sup> See Appendix C for methodological detail related to Nonemployer Statistics.
- <sup>8</sup> The series includes the agriculture, forestry, fishing and hunting industry, with the exception of crop and animal production.
- <sup>9</sup> Earnings by place of work is defined as “the sum of wage and salary disbursements, supplements to wages and salaries, and proprietors’ income” ([http://faq.bea.gov/cgi-bin/bean/cfg/php/enduser/std\\_adp.php?p\\_faaid=460&p\\_created=1199992274](http://faq.bea.gov/cgi-bin/bean/cfg/php/enduser/std_adp.php?p_faaid=460&p_created=1199992274)).
- <sup>10</sup> Regulations have generally been more restrictive in the California KMZ than the Oregon KMZ, reflecting somewhat different state policies regarding how much fishing opportunity to forego in the KMZ to maintain opportunity in other areas.
- <sup>11</sup> In Oregon (and Washington), the coho nonretention policy was replaced in 1998 by a coho mark-selective fishery, which allowed the retention of hatchery coho (which were marked), and prohibited the retention of wild (unmarked) coho.
- <sup>12</sup> The tribal allocation was upheld in *Parravano v. Babbitt*, 70 F.3d 539 (9th Cir. 1995), cert. denied, 518 US. 1016 (1996).
- <sup>13</sup> The need for such measures was reinforced by provisions of the 1996 reauthorization of the MSA (also known as the Sustainable Fisheries Act) that prohibited harvests from exceeding MSY, required the use of specific thresholds for determining whether a stock is overfished, and required rebuilding plans for overfished stocks.
- <sup>14</sup> 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>15</sup> Large footropes are used to attach large rollers to bottom trawl gear to facilitate their use in rocky areas. Restrictions on use of large footropes increase the likelihood of damage to trawl gear in rocky areas inhabited by overfished rockfishes and thus discourage trawlers from operating in those areas.
- <sup>16</sup> The boundaries of the RCAs vary by gear type (trawl, nontrawl) and among years and seasons. These variations are intended to minimize bycatch of overfished species while also providing opportunities to take healthier stocks that may become available to the fishery in certain areas and seasons.
- <sup>17</sup> Under permit stacking, groundfish vessels with permits that were ‘endorsed’ to harvest sablefish were assigned to one of three tiers (based on their historical landings) that determined the vessel’s share of the total sablefish quota during the year. These vessels were allowed to transfer their permits (and the sablefish harvest share allowed under the permit) to another eligible vessel, up to a limit of three permits per boat. Permit stacking gave vessels some flexibility to adjust their harvest share and to time their harvest to weather and market conditions. Prior to permit stacking, open competition among vessels for the limited quota resulted in short seasons and unsafe conditions at sea, with vessels taking safety risks to maximize their share of the overall quota before it was exhausted.
- <sup>18</sup> The groundfish trawl buyback also retired participating vessels’ shrimp trawl and crab permits.
- <sup>19</sup> Implementation of the trawl individual quota program in 2011 will require 100% observer coverage for that sector.
- <sup>20</sup> The number of nearshore permits issued by the California Department of Fish and Game (CDFG) for the North Coast and North-Central Coast regions combined, which extends from the Oregon border to Pigeon Point, declined from 65 in 2003 to 35 in 2010 ([http://www.dfg.ca.gov/licensing/pdffiles/cf\\_items\\_10yr.pdf](http://www.dfg.ca.gov/licensing/pdffiles/cf_items_10yr.pdf), accessed 6/1/10).
- <sup>21</sup> The 1981 start date for this analysis is based on the availability of data from the Pacific States Marine Fisheries Commission’s (PSMFC) PacFIN database, which integrates Washington, Oregon and California commercial fishery landings data to provide a consistent coastwide electronic record of landings from 1981 forward. The PacFIN data for California are based on the CMASTR data provided by CDFG to the PacFIN program.
- <sup>22</sup> For species like salmon, which are gutted at sea, landed weights were converted to round weights to provide comparability with other species.
- <sup>23</sup> Because the crab season straddles the calendar year (December through July) and most landings occur within the first to two months of the season (Hackett et al. 2003), the activity as reported for a given year does not correspond to that of a season. 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>24</sup> Initiated by the state in 2004, 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.)
- <sup>25</sup> <http://www.recfin.org>, accessed 7/30/10.