

# NOAA Technical Memorandum NMFS



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## **ECONOMIC STATUS OF THE CALIFORNIA GROUND FISH FISHERY IN 1983**

Charles S. Korson

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U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Southwest Region

## NOAA Technical Memorandum NMFS

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ECONOMIC STATUS  
OF THE  
CALIFORNIA GROUND FISH FISHERY IN 1983

I. HIGHLIGHTS

The California groundfish fishery made significantly lower landings in 1983, following a precipitous rise in shoreside landings from 1981-1982. Groundfish landings also declined substantially along the entire Pacific coast. In California total groundfish landings were an estimated 39,500 mt. in 1983, down 25 percent from 1982 landings (52,600 mt.) and 3.8 percent below the 1978-1982 annual average (41,100 mt.). The ex-vessel value of California groundfish landings was approximately \$22.0 million compared to \$27.9 million in 1982. A sharp drop in landings with trawl gear was responsible for the decline in total production. California's portion of the WOC total groundfish shoreside catch was 40 percent, compared to the historical high of 44 percent which occurred in 1982.

Total Washington, Oregon and California (WOC) shoreside groundfish landings from U.S. Fishery Conservation Zone (FCZ) waters fell from a record high of 119,000 metric tons (mt.) in 1982 to an estimated 97,600 mt. in 1983, a decrease of 18 percent (Table 1). The WOC groundfish landings, however, were still 3.6 percent above the 1978-1982 three-state average of 94,230 mt. The ex-vessel value of WOC groundfish landings was \$52.2 million in 1983, down 13.5 percent from the 1982 ex-vessel value. Pacific whiting joint-venture landings helped compensate for the decrease in WOC shoreside landings; at-sea deliveries by domestic trawl vessels grew to 72,100 mt. compared to 67,500 mt. in 1982.

## II. Description of the Fishery

The California groundfish catch consists of several different species. The important species of groundfish landed in California include numerous rockfish (Sebastes spp.), Dover sole (Microstomus pacificus), sablefish (Anoplopoma fimbria), and other flatfishes and roundfishes. The status of most commercially important groundfish stocks found off California remained healthy in 1983. However, the Pacific Fishery Management Council (PFMC) determined that widow rockfish stocks (Sebastes entomelas) in some areas of the WOC coast were biologically stressed resulting from high exploitation rates in 1981 and 1982. Widow rockfish produced high volume catches off the Farallon Islands and Bodega Bay in early 1983, but catch rates dropped substantially in these areas later in the year. Also some rockfish species found primarily in the Vancouver and Columbia INPFC areas off Washington and Oregon were determined to be stressed by the PFMC.

Groundfish species landed in California are harvested commercially with a variety of gears, including otter trawls, pots and traps, longlines, set nets (gill and trammel), jigs, and hook-and-line. While deliveries to shore are the major source of earnings for commercial vessels, several otter trawl vessels also deliver at sea to foreign vessels in joint-ventures for Pacific whiting (Merluccius productus) to augment annual shoreside deliveries. The trawl fleet is the major gear group in the fishery, accounting for an average of over 83 percent of California's total shoreside production from 1978-1982. This percentage dropped to 76 percent in 1983 due to the substantial decline in trawl landings. Landings by the gillnet fishery operating off of northern California continued to increase in 1983, as an influx of Vietnamese immigrants entered the groundfish fishery.

The California groundfish fishery was impacted by several restrictive harvest regulations which were adopted by the Pacific Fishery Management Council in 1983. Because of concern for coastal widow rockfish populations, the PFMC lowered the coastwide optimum yield (OY) for widow rockfish from 26,000 mt. in 1982 to 10,500 mt. in 1983, and coastwide trip limits were set at 30,000 pounds to prevent attainment of the OY and closure of the fishery before the end of the calendar fishing year. To control the overexploitation of certain rockfish stocks (yellowtail and canary rockfish) in the Columbia and Vancouver INPFC areas and limit the risk of large-scale effort shifts, a 40,000 pound coastwide trip limit was imposed on all other rockfish species (Sebastes spp.); however, this Sebastes poundage limit had little effect on California landings since rockfish deliveries (other than widow rockfish) rarely exceed 40,000 pounds. As in 1982, the PFMC implemented a 22-inch size limit on sablefish north of Point Conception, California, to discourage a repeat of the target fishing on immature sablefish stocks that occurred frequently in 1982.

Eureka was again the leading groundfish port in 1983, accounting for 19 percent of the value (\$4,130,000) and 22 percent of the volume (8,800 mt.) of groundfish landed in the state. The volume and value of groundfish landed in Eureka were below 1982 levels by 32 percent and 30 percent respectively. Other major ports, ranked in order of dollar value of groundfish landings, include Fort Bragg (\$3.1 million), Monterey (\$2.7 million), Los Angeles (\$2.5 million), San Francisco (\$2.4 million), Crescent City (\$2.25 million), Bodega Bay (\$1.96 million), and Morro Bay (\$1.4 million). Fort Bragg replaced San Francisco as the second leading port in terms of value in 1983. Because of

lower volume, ex-vessel values were lower in all ports, except Bodega Bay. The majority of California groundfish landings were made in ports from San Francisco northward.

### III. Status of Harvesting Sector

#### A. Otter Trawl Fleet

California landings by otter trawl gear (bottom trawls, roller trawls, and mid-water trawls) were an estimated 30,000 mt. in 1983. This was 31 percent under the 43,500 mt. of groundfish they landed in 1982 and was approximately 12.5 percent lower than the 1978-1982 average (Table 2). The decrease in otter trawl production resulted primarily from a sharp drop in rockfish catches, which went from 21,800 mt. in 1982 to an estimated 13,800 mt. in 1983. Within the rockfish category, widow rockfish accounted for virtually the entire reduction by falling 67 percent to 3,419 mt. (Table 3), while landings of other rockfish slipped about 10 percent. Trawl landings of flatfish declined from 13,800 mt. in 1982 to approximately 11,300 mt. in 1983, due to lower landings for all individual flatfish species (Dover, petrale, and English sole). Similarly, following a 20 percent increase in landings in 1982, landings of sablefish caught by otter trawls were off by 43 percent in 1983. Other species (miscellaneous flatfish and groundfish) comprised the remaining 2,400 mt., down slightly from the 2,800 mt. taken in 1982.

The ex-vessel value of the 1983 trawl catch is estimated to be \$14.9 million, down 24 percent from the 1982 record ex-vessel value of \$19.5 million and 5 percent below the 1978-1982 average (Table 2). Flatfish and rockfish accounted for about 89 percent of the ex-vessel value of groundfish landed with trawl gear in 1983, nearly the same as in 1982. The ex-vessel value of rockfish and the major flatfish species decreased by 21 percent and 22 percent

respectively (Table 3). The value of sablefish landings fell almost 40 percent because of the lower volume of landings (Table 3). Other groundfish species (lingcod, miscellaneous flatfish, Pacific whiting, other roundfish) had lower ex-vessel values as well, but only account for a small proportion of the total value of trawl landings.

Ex-vessel prices for flatfish averaged \$0.27 per pound compared to \$0.28 per pound in 1982. Dover and English sole prices were down, but petrale sole prices increased by 13 percent. Ex-vessel prices for rockfish continued to recover from the depressed levels occurring in 1981-1982. Average prices received for widow rockfish landed by trawls increased 39 percent to almost \$0.20 per pound in 1983. Other rockfish ex-vessel prices rose from \$0.20 per pound to \$0.22 per pound, reflecting the upward movement in prices induced by the lower volume of rockfish flowing to processors and markets. Trawl caught sablefish ex-vessel prices were estimated to be \$0.16 per pound compared to \$0.15 per pound in 1982. The average annual ex-vessel prices for some important groundfish species are shown in Table 4.

After adjusting for inflation, the value of the trawl landed catch was 27 percent lower than the inflation adjusted value of trawl landings in 1982 and 21 percent below the 1978-1982 average (Table 2). The adjusted value of the flatfish group was off 24 percent due to the combination of lower landings and a drop in the price of the dominant species, Dover sole. Rockfish ex-vessel prices were higher, but the reduced volume of landings was responsible for the adjusted rockfish value falling 24 percent. The decrease in sablefish trawl landings together with a lower average ex-vessel price sent the adjusted value of trawl sablefish landings down by 42 percent in 1983.

Several new vessels entered the trawl fleet in 1983, continuing the expansionary trend that started in 1981 (Table 2). A total of 217 otter trawl vessels made landings in California, up 2 percent from the 212 trawl vessels landing in California in 1982. Of this total, 21 were out-of-state vessels that landed primarily widow rockfish during the first quarter of the year. Another 11 vessels that were out-of-state in 1982 landed exclusively in California, while an additional 15 vessels that did not land groundfish in 1982 entered the trawl fleet. Thus, the California-based active trawl fleet grew to 196 vessels in 1983, compared to 183 vessels in 1982. The 1983 home fleet consisted of 170 vessels that made landings in 1982, plus 26 new entries. The continued entry of new vessels was due to the large influx of shrimp trawlers because of a second year of poor shrimp abundance and a shift of trawl vessels from north to south because of restrictions limiting the harvest of the Sebastes complex in the Columbia and Vancouver INPFC areas.

The majority of the California based trawl fleet now fishes with bottom trawls. The mid-water trawl fishery for widow rockfish was essentially eliminated when trip limits were reduced to 30,000 pounds.

The estimated average gross revenue per trawl vessel landing groundfish in California was \$69,000. This represents a 26 percent decrease from the approximately \$93,000 earned per vessel in 1982 (Table 2). After adjusting for inflation, gross income from groundfish was 29 percent lower for the average vessel in the trawl fleet in 1983. Using average gross revenue as a rough indicator of economic performance, the trawl fleet experienced poor fishing in 1983, after enjoying an apparent recovery in gross revenues in 1982. Data limitations preclude an analysis of changes in net revenues and income.

To augment income from groundfish, California based trawlers frequently participate in shrimp, crab, salmon, and albacore fisheries; land groundfish in other states, participate in joint-ventures for Pacific whiting or; generate income in ancillary business activities such as charter services. Because of the unproductive shrimp, crab and salmon fisheries in 1983, it is unlikely that trawl vessels were able to generate much additional revenue to offset the decline in groundfish earnings. The 1983 Pacific whiting joint-venture fishery generated additional revenue for only five of the larger California based trawl vessels, thus most of the trawl fleet cannot rely on this alternative as a dependable source of income.

The economic problems confronting the groundfish trawl fleet are reflected in the number of outstanding NMFS Fishing Vessel Obligation Guarantee (FVOG) program loans that are delinquent. In 1983 the NMFS Southwest Regional Office FVOG program had 7 of 23 loans for trawl vessels in default, while 4 of 15 loans in the Northwest Regional Office defaulted. Industry sources have estimated that 20-30 percent of the trawl fleet had loans in arrears or faced repossession (Pacific Fishing, 1984).

A larger trawl fleet indicates that employment in the groundfish harvesting sector was higher in 1983. Assuming an average crew size of 3.5 per trawl vessel, it is estimated that about 750-800 people were employed in 1983. Total income shared by crew undoubtedly decreased as ex-vessel revenues earnings fell.

The 1983 groundfish regulations impacted the trawl fleet by cutting widow rockfish landings in California over 50 percent. The regulations adopted by the PFMC early in 1984 further reduced the OY for widow rockfish (9,300 mt.), maintains the trip and time frequency controls on the northern Sebastes complex, and retains the coastwide minimum size limit restriction on sablefish

landings. Thus, trawl landings in California are unlikely to be higher in 1984, even without catch restrictions on rockfish south of the Columbia INPFC area and on the flatfish group. If the California based trawl fleet continues to expand, its economic condition could be worse than in 1983. However, the prospects for significantly more trawl vessels entering the 1984 groundfish fleet appear to be small since the shrimp and Dungeness crab fisheries are unlikely to become much worse than in 1983.

#### B. Pot Fleet

Groundfish landings with pots and fish traps were an estimated 2,600 mt. valued at about \$1.9 million in 1983 (Table 5). Production and ex-vessel revenues declined by 24 and 33 percent respectively from 1982 levels. After adjusting for inflation, the value of groundfish pot landings was almost 36 percent lower than in 1982.

The pot catch consists almost entirely of sablefish. The reduced volume of sablefish landings may have been precipitated by the drop in the ex-vessel price in the pot fishery, which averaged \$0.32 per pound in 1983 compared to \$0.65 per pound in 1982. According to industry sources, the Japanese discontinued purchasing all size classes of sablefish in 1983. Apparently the Japanese demand for imported sablefish falls in years when the chum salmon harvest is high. The fall chum salmon catch in Japan has surpassed a record 20 million fish from 1981-83.

The pot fleet in 1983 totaled 32 vessels, down from the 52 pot vessels making landings in 1982. The fleet size in 1983 represents the number of vessels that applied for permits to fish with pot gear; however, available statistics indicate that only nine of these vessels submitted logbooks, and it is not known how many vessels were active in 1983. Assuming that all 32

vessels fished, the average gross revenue per vessel was approximately \$58,000. For the 52 vessels in 1982, the average vessel earned \$53,000 in gross revenues.

#### C. Other Gears

Other gears (longline, set nets, troll, jig and poles) accounted for approximately 6,900 mt. of groundfish valued at about \$5.2 million in 1983. Production was up by 21 percent while the ex-vessel value of the landings was about the same as in 1982 (\$5.3 million). Adjusted for inflation, the value of the 1983 other gear catch was off by 5 percent.

Within the other gear group, longline landings fell by 80 percent, set net catches increased 5 percent, and miscellaneous gears rose almost 80 percent (Table 5). Fluctuations in the market demand for large sablefish in Japan may be responsible for the sharp decline in the longline fishery<sup>1/</sup>. The set net fishery continued to grow in 1983, as gillnet fishing spread northward to the Farallon Islands. The northern set net fleet is largely made up of Vietnamese immigrants. Fish supplied from set nets and other fixed gear are entering the expanding markets for the fresh retail and restaurant trade.

#### D. Joint-Venture

Joint-ventures for pacific whiting continued to expand in 1983. A total of 72,100 mt. of Pacific whiting, estimated to have an ex-vessel value of \$10.2 million, was harvested in joint-ventures with the Soviet Union. This compares to a 67,500 mt joint-venture harvest worth \$10.4 million in 1982. The lower value per ton of whiting delivered in 1983 reflects a larger

<sup>1/</sup> As indicated, the 1983 preliminary PacFIN California gear report showed a large increase in landings for the "other" gear category and a sharp decline for longline (Table 5). Imperfections in the reporting system may have caused some longline landings data to be lumped into "other" gear landings. Thus, these numbers should be treated with caution as should any assertions about cause and effect.

percentage of fish converted to meal. The 1983 joint venture fishery provided employment for nineteen mid-water trawl vessels, five of which were California based trawlers. Only two California based trawlers operated in the 1982 joint venture fishery for Pacific whiting.

#### E. Sportfishing Fleet

Statistics on the sportfishing fleet that targets on groundfish are unavailable. Groundfish constitute a large proportion of the sport catch from commercial passenger carrying vessels (CPFV), particularly in southern California where the bulk of the recreational groundfish are caught by anglers. The annual gross returns of CPFV vessels will be influenced by the number of passengers taking groundfish trips on an annual basis.

#### IV. CALIFORNIA GROUND FISH PROCESSORS

California groundfish processors handled less groundfish than in 1982, which was a record year in terms of processed volume. There are currently no data to determine the quantity, value, and species composition of groundfish processed in California plants. Most of the processed groundfish were sold in the fresh fillet market in 1983. Because of the increased demand for high quality fresh fish, very little groundfish was frozen. No data are available on the proportion of fresh and frozen groundfish sold by California processors.

Processors received generally higher wholesale prices for rockfish. Rockfish wholesale prices have stabilized partly due to regulations that were intended to spread the supply of rockfish delivered to processors over the year. Urner Barry Seafood Price Current Statistics (1983) show rockcod prices for fresh fillets averaging about \$1.40 per pound, compared to an estimate of

\$1.00-1.15 per pound in 1982. Wholesale prices for rockcod fillets had fallen to as low as \$0.85 per pound in 1981. However, this average price does not reflect the price volatility that occurred over the year.

During the first half of 1983, rockfish wholesale prices fell to approximately 1.10-1.20 FOB plant and then slowly rebounded to \$1.80-1.90 per pound wholesale by December. Similarly, the wholesale price of Dover sole fresh fillets fluctuated significantly, from about \$1.65 and up in January-February, to as low as \$1.35 per pound in May, and then stabilizing at \$1.55-1.60 in late fall (Pacific Fishing, 1984). The 1983 average wholesale price for Dover sole fillets was around \$1.65 per pound, the same as in 1982 (Seafood Price Current, 1982 and 1983).

Unusually bad winter weather limited the supply of fish processors could sell to markets during the first half of 1983. Those processors unable to sell adequate quantities of fresh fish during the important Lenten season (especially widow rockfish) reported losing eastern markets developed over the past two years. When weather improved, more boats than usual fished bottom trawls for dover sole and glutted processors with large quantities of sole. This resulted in processor imposed limits on deliveries of flatfish earlier than usual. Dover sole prices reportedly fell by the summer because of high supplies and an influx of foreign imports into domestic markets (Pacific Fishing, 1984).

#### V. MARKETS FOR CALIFORNIA GROUND FISH

California groundfish products compete with groundfish landed and distributed from Oregon and Washington, the east coast, and products imported from such countries as Canada, Iceland, and New Zealand. The fresh-fillet

groundfish market continued to dominate production of west coast groundfish. Because consumers are demanding more fresh fish, small amounts of west coast groundfish products were marketed in frozen form in 1983.

Movement of fresh groundfish from the west coast was particularly depressed during the first few months of 1983 because of bad winter weather. As a result of the limited supplies, foreign imports of rockfish from British Columbia filled markets previously occupied by widow rockfish in the first quarter of the fishing year (Pacific Fishing, 1984). Gray sole from the east coast and yellow sole from Newfoundland also competed in traditional flatfish markets. Another source of competition in west coast markets was frozen orange roughy fillets imported from New Zealand. This fish product first entered west coast groundfish fillet markets in late 1981 and continued to gain in importance in 1982. Imports of orange roughy fillets into California exceeded 2.3 million pounds in 1982 and by 1983 had increased to almost 4 million pounds (Table 6). While orange roughy reportedly was less expensive than petrale sole in 1982 and comparable in taste, this product became an added source of competition in rockfish markets in 1983 when rockfish supplies fell early in the year (Pacific Fishing, 1984).

Contributing to the generally unfavorable markets for fresh rockfish and flatfish was the reduced success in marketing sablefish products to Japan in 1983. Exports of sablefish to Japan decreased from 2.97 million pounds in 1982 to about 1.2 million pounds in 1983 (Table 6). The value of these exports of chilled, fresh, or frozen sablefish was \$968,000, down by 71 percent from the 1982 exported value. The quantity of sablefish supplied to domestic markets as fresh "butterfish" fillets also decreased as total landings in California fell by over 6.5 million pounds.

Table 1 - California, Oregon, and Washington Commercial Groundfish Landings From U.S. FCZ Waters (Metric Tons) and Ex-vessel Values (Thousands of Dollars) from 1977-1983.

Year	California		Oregon		Washington		Total Coast	
	mt	\$	mt	\$	mt	\$	mt	\$
1977	32,082	12,184.5	10,172	4,150.3	12,712	4,361.7	54,966	20,697
1978	36,805	18,456.7	16,469	7,871.4	19,285	8,213.0	72,559	34,541
1979	36,392	19,565.9	28,935	17,264.0	22,508	11,111.7	87,835	47,942
1980	36,862	16,551.4	28,515	11,424.6	22,514	9,119.3	87,891	37,095
1981	42,698	21,460.4	37,487	14,711.1	23,683	10,652.5	103,868	46,824
1982	52,608	27,794.9	41,021	20,443.7	25,474	12,100.4	119,002	60,339
1978-82 Average	41,073	20,765.9	30,485	14,343.0	25,215	10,239.4	94,231	45,348
1983	39,498	21,983.9	35,205	18,430.1	22,923	11,802.5	97,626	52,216

Source: 1977-1980 preliminary data from State Fishery Agencies;  
1981-1983 preliminary data from PacFIN reports.

Table 2 - California Groundfish Landings, Ex-vessel Values, Fleet Size, and Average Vessel Earnings for the Otter Trawl Fishery 1977-1983.

<u>Year</u>	<u>Metric Tons</u>	<u>Nominal Ex-vessel Value(\$)</u>	<u>Real Ex-vessel Value /</u>	<u>Number Vessels</u>	<u>Estimated Gross Revenues (\$) Per Vessel from Groundfish Trawls</u>
1977	28,350	9,915,000	7,072,000	126	78,700
1978	29,040	13,376,000	9,033,000	135	100,600
1979	30,300	14,633,000	8,955,000	166	88,200
1980	32,950	14,528,000	8,134,000	160	90,800
1981	35,524	15,976,000	9,172,000	186	85,900
1982	43,500	19,688,000	9,502,000	212	92,900
1978-82 average	34,300	15,680,000	8,759,000	-	-
1983	30,032	14,922,000	6,921,000	217	68,800

<sup>1</sup>/ Adjusted for inflation using the GNP implicit price deflator (1972=100).

Table 3 - California Landings (Metric Tons) and Ex-vessel Value of Various Groundfish Species by Trawl Gear in 1982 and 1983.

Species	1982		1983		% Change	
	mt	\$	mt	\$	mt	\$
Lingcod	1,199	637,800	656	358,000	-45.3	-43.9
Sablefish	5,446	1,788,000	3,100	1,083,600	-43.1	-39.4
Widow Rockfish	10,274	3,192,700	3,419	1,476,000	-66.7	-53.8
Other Rockfish	11,518	5,163,600	10,427	5,093,000	-9.5	-1.4
Dover Sole	10,049	5,208,300	8,345	4,049,300	-17.0	-22.2
English Sole	1,456	1,041,000	1,150	826,100	-21.0	-20.6
Petrale Sole	787	1,019,700	556	815,500	-29.3	-20.0
Other Flatfish	1,549	1,208,700	1,224	974,500	-21.0	-19.4
Other Groundfish	<u>1,218</u>	<u>274,500</u>	<u>1,155</u>	<u>245,800</u>	<u>-5.2</u>	<u>-10.5</u>
TOTAL	43,496	19,534,300	30,032	14,921,700	-30.9	-23.6

Source: Preliminary data from PacFIN reports.

Table 4 - Average Annual Weighted Ex-vessel Prices for Selected Groundfish Species Caught and Landed in California with Otter Trawls in 1982 and 1983.

Species	1982		1983	
	<u>Nominal</u>	<u>Real<sup>1</sup></u>	<u>Nominal</u>	<u>Real<sup>1</sup></u>
All Flatfish	.278	.134	.268	.124
Dover Sole	.235	.113	.220	.102
English Sole	.324	.156	.326	.151
Petrale Sole	.588	.284	.665	.308
Widow Rockfish	.141	.068	.196	.091
Other Rockfish	.203	.098	.222	.103
Sablefish	.149	.069	.159	.074

<sup>1</sup> Adjusted for inflation using the GNP implicit price deflator (1972=100).

Source: PacFIN preliminary estimated prices per pound, Report #83.

Table 5 - California Landings, Ex-vessel Value, and Fleet Size for the Pot, Longline, and Set Net Fisheries in 1982 and 1983.

	1982			1983		
	<u>mt</u>	<u>\$</u>	<u># Vessels</u>	<u>mt</u>	<u>\$</u>	<u># Vessels</u>
Pot	3,443	2,771,300	52	2,621	1,857,200	32
Longline	1,235	1,131,400	125	245	242,600	115
Set Net (gill, trammel)	1,809	1,504,700	N/A	1,905	1,497,000	N/A
Other Gear (trolls, jigs, poles, shrimp trawl, other nets)	2,624	2,655,800	N/A	4,700	3,465,700	N/A

Table 6 - Imports and exports of Selected Groundfish Products Important to West Coast Markets in 1982 and 1983.

<u>Species</u>	<u>Origin</u>	<u>Destination</u>	1982		1983	
			<u>lbs</u>	<u>\$</u>	<u>lbs</u>	<u>\$</u>
Orange Roughy	New Zealand	California and Arizona	2,319,000 <sup>1/</sup>	N/A	3,977,000 <sup>1/</sup>	N/A
Sablefish (whole or eviscerated; fresh, chilled, frozen)	U.S.	Japan	2,974,000	3,340,000	1,186,000	968,500

<sup>1/</sup> Total does not include all imports, since some orange roughy was delivered to the east coast and the northwest in 1983.

Source: U.S. Department of Commerce, Bureau of Census; U.S. Department of Commerce, NMFS, Southwest Region, Statistics and Market News.

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