

STOCK ASSESSMENT AND FISHERY EVALUATION REPORT
FOR THE GROUND FISH FISHERIES OF THE GULF OF ALASKA AND BERING
SEA/ALEUTIAN ISLAND AREA:

ECONOMIC STATUS OF THE GROUND FISH FISHERIES OFF ALASKA, 1998

by

Terry Hiatt and Joe Terry

Socioeconomic Assessments Program
Resource Ecology and Fisheries Management Division
Alaska Fisheries Science Center
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
7600 Sand Point Way N.E., BIN C15700
Seattle, Washington 98115-0070

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ABSTRACT

This report presents data which summarize various aspects of the economic performance of the groundfish fishery off Alaska. Generally, data are presented for the domestic groundfish fishery for 1994 through 1998. However, because 1998 ex-vessel and product price data for Alaska groundfish are not available, those prices and associated values are only reported through 1997. Limited catch and ex-vessel value data are reported for earlier years in order to depict the rapid development of the domestic groundfish fishery in the 1980s and to provide a more complete historical perspective on catch. Pacific halibut (*Hippoglossus stenolepis*) is not included in this report because for management purposes halibut is not part of the groundfish complex.

All but a small part of the commercial groundfish catch off Alaska occurs in the groundfish fisheries managed under the Fishery Management Plans (FMP) for the Gulf of Alaska (GOA) and the Bering Sea/Aleutian Islands area (BSAI). In 1997, other fisheries accounted for only 6,100 t and \$13 million, respectively, of the catch and ex-vessel value of the Alaska groundfish fisheries. With the exceptions of Tables 1 - 3 and Figures 1 - 4, the catch, ex-vessel value, and vessel data presented in this report are for those two FMP fisheries.

In addition to data from the groundfish fisheries, this report contains data on some of the external factors which, in part, determine the economic status of the fisheries. Such factors include foreign exchange rates, the prices and price indexes of products that compete with products from these fisheries, cold storage holdings, domestic per capita consumption of seafood products, and fishery imports.

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INTRODUCTION

The domestic groundfish fishery off Alaska has become an important segment of the U.S. fishing industry. With a total catch of 1.9 million metric tons (t), a retained catch of 1.7 million t, and an ex-vessel value of \$385 million in 1998, it accounted for 41% of the weight and 12% of the ex-vessel value of total U.S. domestic landings as reported in Fisheries of the United States, 1998. The value of the 1998 catch after primary processing was approximately \$1 billion.

All but a small part of the commercial groundfish catch off Alaska occurs in the groundfish fisheries managed under the Fishery Management Plans (FMP) for the Gulf of Alaska (GOA) and the Bering Sea/Aleutian Islands area (BSAI). In 1998, other fisheries accounted for only 5,200 t of the catch reported above. With the exceptions of Tables 1 - 3 and Figures 1 - 4, the catch, ex-vessel value, and vessel data presented in this report are for those two FMP fisheries.

The fishery management and development policies for the Bering Sea/Aleutian Islands area and Gulf of Alaska groundfish fisheries have resulted in high levels of catch, ex-vessel value, processed product value, exports, employment, and other measures of economic activity. The cost data required to estimate the success of these policies with respect to net benefits to either the participants in these fisheries or the Nation are not available. However, the use of the race for fish as a principal mechanism for allocating the groundfish quotas and prohibited species catch limits among competing fishing operations probably has decreased the overall benefit to the Nation of these fisheries.

This report presents the economic status of groundfish fisheries off Alaska in terms of economic activity and outputs using estimates of catch, bycatch, ex-vessel prices and value, the size and level of activity of the groundfish fleet, and the weight and value of processed products. The catch, ex-vessel value, and fleet size and activity data are for the fishing industry activities that are reflected in Weekly Production Reports, Observer Reports, fish tickets, and the annual survey of groundfish processors. All catch data reported for 1991-98 are based on the blend estimates of total catch which are used by the National Marine Fisheries Service (NMFS) to monitor groundfish and prohibited species catch (PSC) quotas during each fishing year.

A variety of external factors influence the economic status of the fisheries. Information concerning the following external factors are included in this report: foreign exchange rates, the prices and price indexes of products that compete with products from these fisheries, U.S. cold storage holdings, and fishery imports. This report updates last year's report (Greig et al. 1998) and is intended to serve as a reference document for those involved in making decisions with respect to conservation, management, and use of these fishery resources.

The qualifications made in both the overview of the fisheries and the footnotes to the tables are critical to understanding the information contained in this report.

OVERVIEW

The commercial groundfish catch off Alaska totaled 1.9 million t in 1998, compared to 2.1 million t in 1997 (Fig. 1 and Table 1). Based on a preliminary estimate for 1998 that may not be consistent with the estimates for previous years, the ex-vessel value of the catch, excluding the value added by at-sea processing, decreased from \$583 million in 1997 to \$385 million in 1998 (Fig. 3 and Table 3). The value of the 1998 catch after primary processing was approximately \$1 billion. The final estimates of ex-vessel value and product value will be made after summaries of the groundfish fish ticket and Commercial Operators Annual Report data are provided to the Pacific Fisheries Information Network (PacFIN) and NMFS, respectively. The groundfish fisheries accounted for the largest share of the ex-vessel value of all commercial fisheries off Alaska in 1998 (40%), while the Pacific salmon (*Oncorhynchus* spp.) fishery was second with \$243 million or 26% of the total Alaska ex-vessel value (Fig. 4 and Table 3). The value of the shellfish catch amounted to \$219 million or 23% of the total for Alaska.

During the last 15 years, estimated total catch in the commercial groundfish fisheries off Alaska (including foreign and joint venture fisheries as well as the domestic fishery) varied between 1.9 and 2.4 million t (Fig. 1 and Table 1). The rapid displacement of the foreign fishery by the joint venture fishery and then of the joint venture fishery by the domestic fishery between 1981 and 1991 is documented by the data in Table 2.

The peak catch occurred in 1991, in part, because blend estimates of catch and bycatch were not yet used to monitor most quotas. If they had been, several fisheries would have been closed earlier in the year. There are three reasons why the catch estimates for 1988 through 1990 have a significant downward bias compared to the estimates for the other years. First, the domestic fishery accounted for a large part of total catch in 1988 through 1990. Second, discards were not included in the reported estimates of domestic catch prior to 1991. Based on estimates of the discard rates for 1992 through 1995, discards would have been about 16% of total catch. Finally, the blend estimates of catch, excluding at-sea discards, tend to exceed the estimates based solely on industry reports and prior to 1991 only industry reports were used to estimate retained catch in the domestic fishery. Variations in the catch estimates also reflect changes in the total allowable catch (TAC), area closures, and bycatch restrictions.

Walleye (Alaska) pollock (*Theragra chalcogramma*) has been the dominant species in the commercial groundfish catch off Alaska. The 1998 pollock catch of 1.25 million t accounted for 67% of the total groundfish catch of 1.87 million t (Table 1). The pollock catch was up less than 1% from 1997. The next major species, Pacific cod (*Gadus macrocephalus*), accounted for 257,900 t or almost 14% of the total 1998 groundfish catch. The Pacific cod catch was down about 21% from a year earlier. The 1998 catch of flatfish, which includes yellowfin sole (*Pleuronectes asper*), rock sole (*Pleuronectes bilineatus*), and arrowtooth flounder (*Atheresthes*

stomias) was 223,100 t in 1998, down almost 35% from 1997. Pollock, Pacific cod, and flatfish comprised almost 93% of the total 1998 catch. Other important species are sablefish (*Anoplopoma fimbria*), rockfish (*Sebastes and Sebastolobus* spp.), and Atka mackerel (*Pleurogrammus monoptygius*). The contributions of the major groundfish species or species groups to the total catch in the domestic groundfish fisheries off Alaska are depicted in Fig. 2.

Trawl, hook and line (including longline and jigs), and pot gear account for virtually all the catch in the BSAI and GOA groundfish fisheries. There are catcher vessels and catcher processor vessels for each of these three gear groups. Table 4 presents catch data by area, gear, vessel type, and species. The catch data in Table 4 and the catch, ex-vessel value, and vessel information in the tables of the rest of this report are for the BSAI and GOA FMP fisheries.

In the last 5 years, the trawl catch averaged about 91% of the total catch, while the catch with hook and line gear accounted for 7.5%. Most species are harvested predominately by one type of gear, which typically accounts for 90% or more of the catch. The one exception is Pacific cod, where in 1998, 48% (123,000 t) was taken by trawls, 43% (110,000 t) by hook and line gear, and 9% (24,000 t) by pots. In the last five years for the BSAI and GOA as a whole, catcher vessels took 41% of the catch and catcher processor vessels took the other 59%. In 1998, catcher vessels took almost 43% of the total. The distribution of catch between catcher vessels and catcher processor vessels differed substantial by species and area.

The discards of groundfish in the groundfish fishery have received increased attention in recent years by NMFS, the Council, Congress, and the public at large. Table 5 presents the blend estimates of the discarded groundfish catch and discard rates by gear, area, and species. The discard rate is the percent of total catch that is discarded. For the BSAI and GOA fisheries as a whole, the annual discard rate for groundfish decreased from 15.1% in 1994 to 8.2% in 1998 with the vast majority of the reduction occurring in 1998. The 43% reduction in the overall discard rate in 1998 is the result of prohibiting pollock and Pacific cod discards in all BSAI and GOA groundfish fisheries beginning in 1998. Total discards decreased by almost 49% in 1998 with the aid of a 9.5% reduction in total catch. The prohibition was so effective in decreasing the overall discard rate because the discards of these two species had accounted for 43% of the overall discards in 1997. The benefits and costs of the reduction in discards in 1998 have not been determined. In 1998, the overall discard rates were, 9.1% and 8.1%, respectively, for the GOA and the BSAI compared to 16.2% and 14.3% in 1997.

Although the fixed gear fisheries accounted for a small part of either total catch or total discards, the 1998 overall discard rate was substantially higher for fixed gear (13.9%) than for trawl gear (7.6%). Previously, the overall discard rates had been similar for these two gear groups. This change occurred because the prohibition on pollock and Pacific cod discards had a much larger effect on trawl discards than on fixed gear discards. In the BSAI, the 1998 discard rates were 15% and 7.4% for fixed and trawl gear, respectively. However, in the GOA, the corresponding discard rates were 9.5% and 9%. One explanation for the relatively low discard rates for the BSAI trawl fishery is the dominance of the pollock fishery with very low discard rates. The mortality rates of groundfish that are discarded are thought to differ by gear or species; however,

estimates of groundfish discard mortality are not available.

Tables 6 and 7, 8 and 9, and 10 and 11, respectively, provide estimates of total catch, discarded catch, and discard rates by species, area, gear, and target fishery. Within each area or gear type, there are substantial differences in discard rates among target fisheries. Similarly, within a target fishery, there are often substantial differences in discard rates by species. Typically, in each target fishery the discard rates are very high except for the target species. The regulatory exceptions to the prohibition on pollock and Pacific cod discards explain, in part, why there are still high discard rates for these two species in some fisheries.

The bycatch of Pacific halibut, crab, Pacific salmon, and Pacific herring (*Clupea pallasii*) has been an important management issues for more than twenty years. The retention of these species was prohibited first in the foreign groundfish fisheries. This was done to ensure that groundfish fishermen had no incentive to target these species. Estimates of the bycatch of these prohibited species for 1995-98 are summarized by area and gear in Table 12. More detailed estimates of prohibited species bycatch and of bycatch rates for 1997 and 1998 are in Tables 13 - 16. The estimates for halibut are in terms of bycatch mortality because the bycatch limits for halibut are set and monitored using estimated discard mortality rates. The estimates for the other prohibited species are of total bycatch, this is in part due to the lack of well established discard mortality rates for these species. The discard mortality rates probably approach 100% for salmon and herring in the groundfish fishery as a whole; however, the discard mortality rates for crab may be substantially lower.

Residents of Alaska and of other states, particularly Washington and Oregon, are active participants in the BSAI and GOA groundfish fisheries. Catch data by residency of vessel owners are presented in Table 17. These data were extracted from the NMFS blend catch database and from the State of Alaska groundfish fish ticket database and vessel registration file which includes the stated residency of each vessel owner. For the domestic groundfish fishery as a whole, 92% of the 1998 catch was made by vessels with owners who indicated that they were not residents of Alaska. The catches of the two vessel residence groups were much closer to being equal in the Gulf where Alaskan vessels accounted for the majority of the Pacific cod and sablefish catch.

Table 18 contains the estimated ex-vessel prices that were used with estimates of retained catch to calculate ex-vessel values. The estimates of ex-vessel value by area, gear, type of vessel, and species are in Table 19. PacFIN has not received the data required to estimate ex-vessel prices and values for 1998; therefore, price and value tables have not been updated. The ex-vessel value of the domestic landings in the FMP fisheries, excluding the value added by at-sea processing, increased from \$425 million in 1993 to \$585 million in 1995, decreased in 1996 to \$531 million, and increased to \$570 in 1997. The distribution of ex-vessel value by type of vessel differed by area, gear and species. In 1997, catcher vessels accounted for 44% of the ex-vessel value of the groundfish landings compared to 42% of the total catch because catcher vessels take larger percentages of higher priced species such as sablefish which was \$2.25 per pound in 1997. Similarly, trawl gear accounted for only 67% of the total ex-vessel value compared to 90% of the catch because much of the trawl catch is of low priced species such as pollock which was about

\$0.10 per pound in 1997.

Table 20 summarizes the ex-vessel value of catch delivered to inshore processors by vessel size class, gear, and area. The relative dominance of each of the three vessel size classes differs by area and by gear.

Table 21 provides estimates of ex-vessel value by residency of vessel owners, area, and species. For the BSAI and GOA combined, 82.5% of the 1997 ex-vessel value was accounted for by vessels with owners who indicated that they were not residents of Alaska. Vessels with owners who indicated that they were residents of Alaska accounted for 15.5% of the total and the remaining 2.0% was taken by vessels for which the residence of the owner was not known. The vessels owned by residents of Alaska accounted for a much larger share of the ex-vessel value than of catch (15.5% compared to 8.5%) because these vessels accounted for relatively large shares of the higher priced species such as sablefish.

Groundfish are landed at a number of ports in Alaska. Table 22 presents estimates of ex-vessel value by port for catch delivered to inshore processors.

Product value data, through primary processing, are summarized by category of processor and by area in Table 23. by catcher processor size class, gear, and area in Table 24, and by port in Table 25. NMFS has not received the data required to estimate product prices and values for 1998; therefore, price and value tables have not been updated.

Estimates of the numbers and net registered tonnage of vessels in the groundfish fisheries are presented by area and gear in Table 26 and estimates of the numbers of vessels that landed groundfish are depicted in Fig. 5 by gear type.

For the purposes of the Regulatory Flexibility Act, an independent fishing vessel is considered a small entity if its annual earnings from all activities are less than \$3 million. Table 26.1 presents estimates of the number of catcher vessels and catcher processors with Alaska groundfish ex-vessel value and product value, respectively, greater than \$3 million. These estimates understate the number of fishing vessels that are large entities or are part of large entities for the following reasons: 1) a vessels' earnings from other fisheries and activities were not included; 2) a vessel owner's earnings from other sources (i.e., another vessel) were not included; 3) the ex-vessel value of a delivery by a catcher vessel to an at-sea processor was included only when a fish ticket with value data was submitted for the delivery; and 4) vessel-specific fish ticket landings weight and value data are used to estimate ex-vessel value for catcher vessels but such data are not available for all deliveries to inshore processors.

More detailed information on the BSAI and GOA groundfish vessels by type of vessel, vessel size class, catch amount classes, and residency of vessel owners is in Tables 27 - 31. Estimates of the number of vessels by month, gear, and area are in Table 32. Table 33 provides estimates of the number of catcher vessel weeks by size class, area, gear, and target fishery. Table 34 contains similar information for catcher processor vessels.

The Weekly Production Reports include employment data for at-sea processors but not inshore processors. Those data are summarized in Table 35 by month and area. The data indicate that in 1998, the crew weeks totaled 106,365 with the majority of them (101,064) occurring in the BSAI groundfish fishery. In 1998, the maximum monthly employment (18,864) occurred in October. Much of this was accounted for by the BSAI pollock fishery.

Estimates of weight and value of the processed products made with BSAI and GOA groundfish catch are presented by species, product form, area, and type of processor in Tables 36 - 38.

There are a variety of at least partially external factors that affect the economic performance of the BSAI and GOA groundfish fisheries. They include landing market prices in Japan, wholesale prices in Japan, U.S. imports of groundfish products, U.S. per capita consumption of seafood, U.S. consumer and producer price indexes, foreign exchange rates, and U.S. cold storage holdings of groundfish. Such data are included in Tables 39 - 49.

Exchange rates and world supplies of fishery products play a major role in international trade. Exchange rates change rapidly and can significantly affect the economic status of the groundfish fisheries. There is also considerable uncertainty concerning the future conditions of stocks, the resulting quotas, and future changes to the fishery management regimes for the BSAI and GOA groundfish fisheries. The management actions taken to allocate the catch between various user groups can significantly affect the economic health of either the domestic fishery as a whole or segments of the fishery. Changes in fishery management measures are expected as the result of continued concerns with: 1) the bycatch of prohibited species; 2) the discard and utilization of groundfish catch; 3) the effects of the groundfish fisheries on marine mammals and sea birds; 4) other effects of the groundfish fisheries on the ecosystem and habitat; 5) excess harvesting and processing capacity; and 6) the allocations of groundfish quotas among user groups.

The implementation of the American Fisheries Act, related regulatory changes, and the full implementation of the Multi-species CDQ Program have the potential to address a number of these concerns and to improve substantially the economic performance of the BSAI and GOA groundfish fisheries. They can do this by eliminating the race for fish which has given fishermen incentives to take actions that have decreased the overall benefits to the Nation from the BSAI and GOA groundfish fisheries.

CITATIONS

Greig, Angie, Dan Holland, Todd Lee, and Joe Terry. Stock assessment and fishery evaluation report for the groundfish fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island area: economic status of the groundfish fisheries off Alaska, NPFMC, November 1998.

National Marine Fisheries Service. 1999. Fisheries of the United States, 1998. U.S. Dep. Commer., Current Fish. Stat. No. 9700, September, 1998, 156 p. Available Sup. Doc., U.S. Gov. Print. Off., Washington, DC 20402.



Figure 1.--Groundfish catch in the commercial fisheries off Alaska by species, 1984-1998.

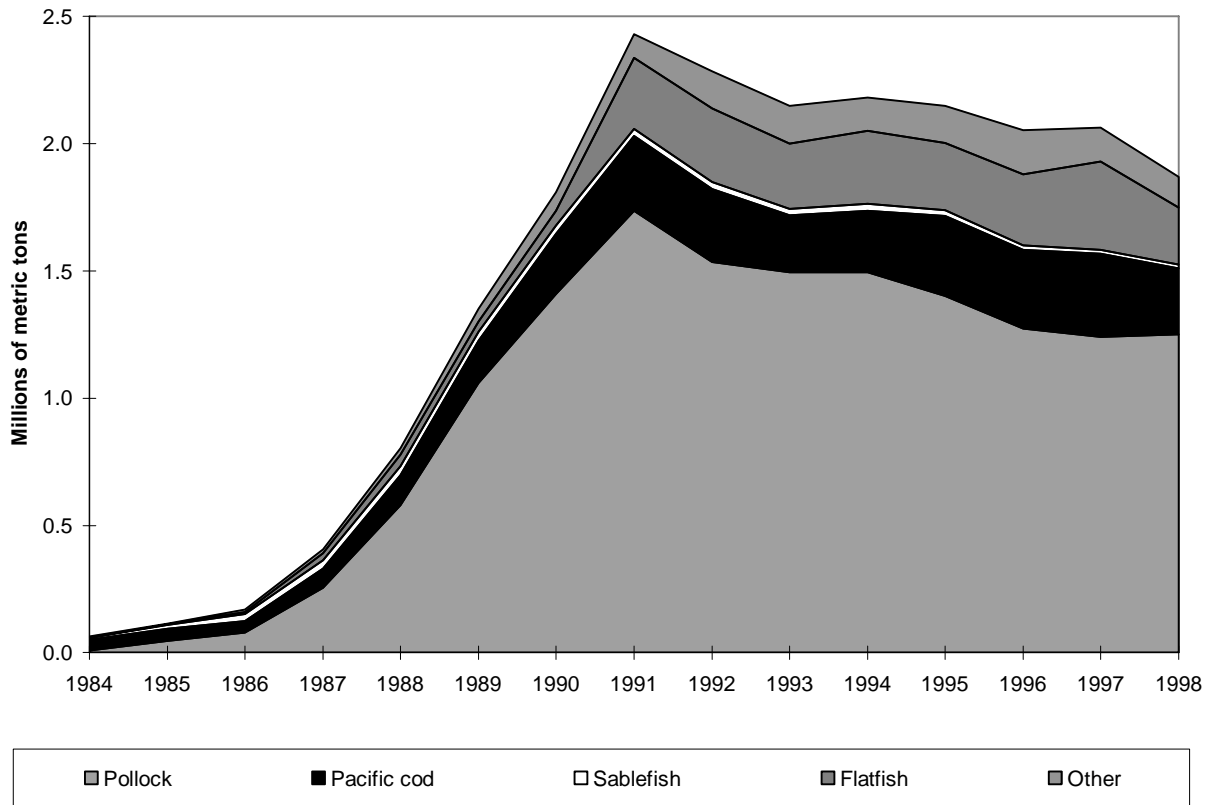


Figure 2.--Domestic groundfish catch in the commercial fisheries off Alaska by species, 1984-1998.

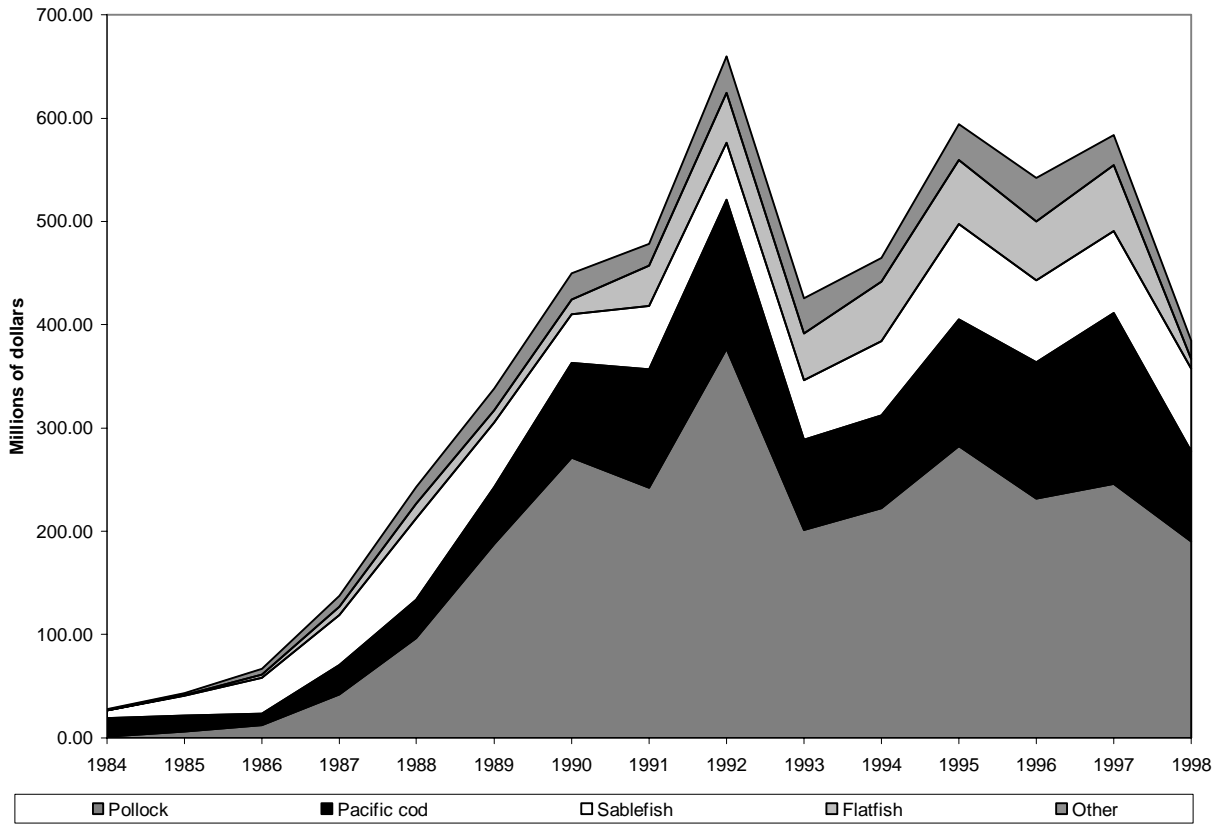


Figure 3.--Ex-vessel value of the domestic groundfish catch off Alaska by species, 1984-1998.

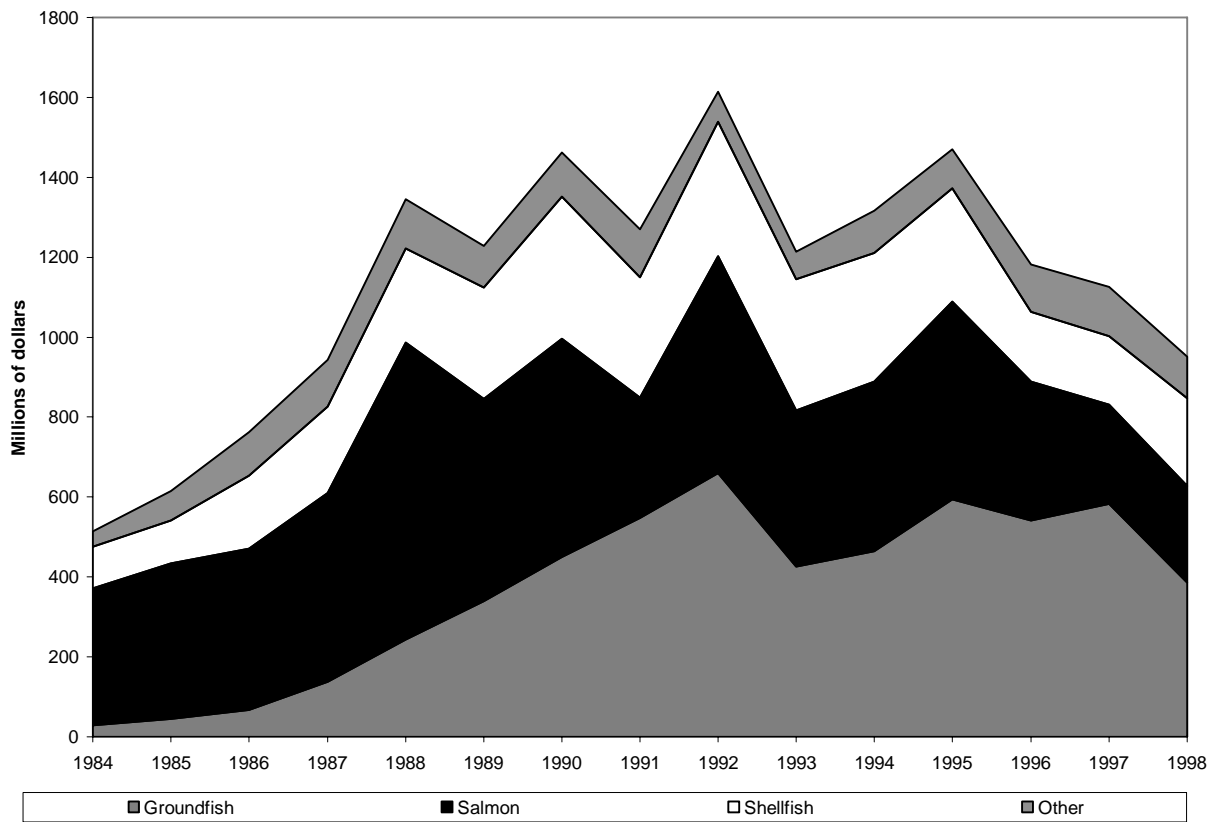


Figure 4.--Ex-vessel value of the domestic fish and shellfish catch off Alaska, 1984-1998.

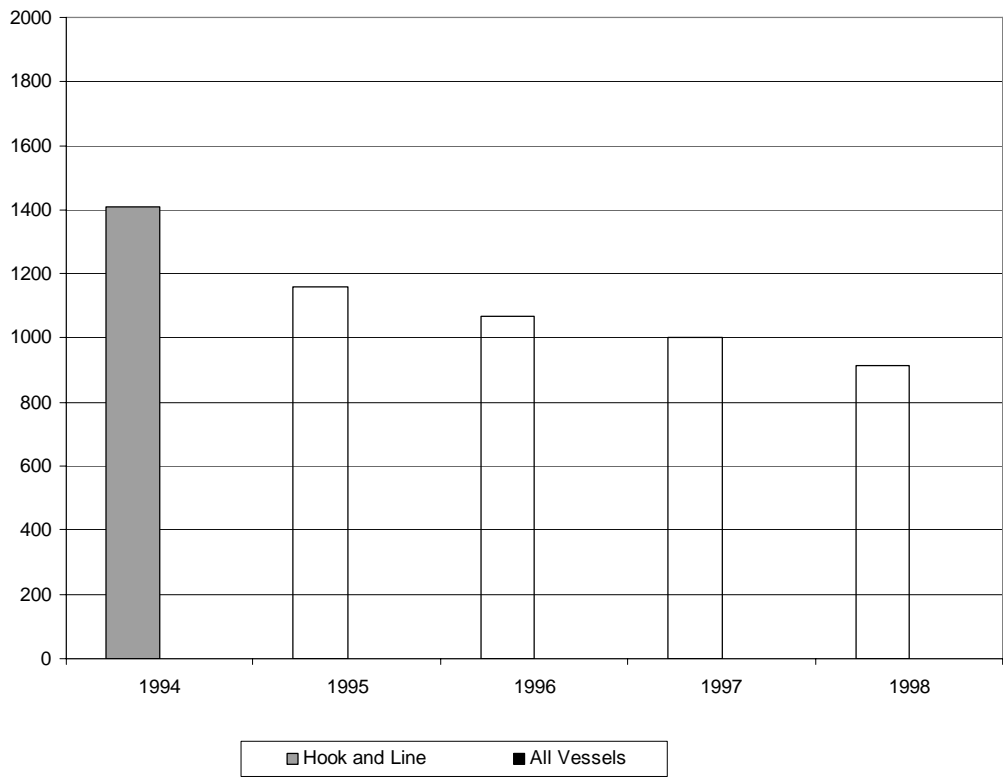
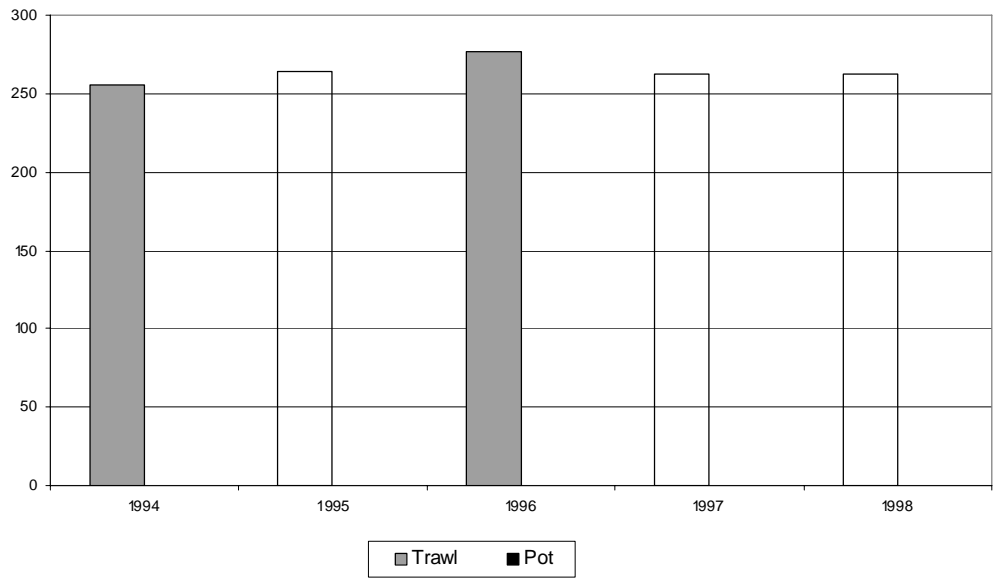


Figure 5.--Number of vessels in the domestic groundfish fishery off Alaska by gear type, 1993-1998.

Figur

Table 1.--Groundfish catch in the commercial fisheries off Alaska by area and species, 1985-98 (1,000 metric tons, round weight).

	Pollock	Sablefish	Pacific cod	Flatfish	Rockfish	Atka mackerel	Total

Gulf of Alaska							
1985	284.8	11.6	14.3	3.1	3.1	1.8	321.4
1986	84.0	21.9	24.6	2.5	8.0	.0	141.7
1987	62.7	26.5	31.4	9.9	12.8	.0	143.8
1988	55.9	31.0	32.6	8.8	18.4	.1	147.7
1989	66.6	29.8	41.7	5.2	23.4	.2	167.4
1990	77.8	27.3	74.6	15.4	21.1	.1	219.8
1991	107.5	23.1	77.0	40.1	21.2	1.4	276.1
1992	90.9	23.6	80.7	41.9	24.9	6.4	280.7
1993	108.9	24.8	56.5	39.5	19.7	5.1	261.4
1994	107.3	22.5	47.5	36.0	16.1	3.5	235.8
1995	72.6	20.8	69.0	32.3	19.3	.7	218.1
1996	51.3	18.2	68.3	43.1	18.2	1.6	205.2
1997	90.1	15.7	68.5	33.6	19.8	.3	233.5
1998	125.1	15.2	62.1	23.3	19.5	.3	249.3
Bering Sea and Aleutian Islands							
1985	1,228.6	3.8	144.3	320.5	1.5	37.9	1,751.3
1986	1,245.8	6.6	139.3	301.4	1.6	32.0	1,739.4
1987	1,263.6	7.9	157.6	247.3	3.6	30.2	1,719.9
1988	1,349.0	6.6	197.1	369.5	4.7	21.6	1,960.7
1989	1,281.5	4.5	168.4	230.8	7.3	18.3	1,715.9
1990	1,352.9	4.5	171.0	141.8	25.2	22.2	1,723.9
1991	1,629.1	3.4	218.1	240.3	10.6	26.7	2,155.8
1992	1,442.9	2.2	207.3	248.9	17.9	48.5	2,003.0
1993	1,384.6	2.7	167.4	216.9	24.7	66.0	1,887.2
1994	1,388.6	2.4	193.8	253.4	18.7	65.4	1,947.2
1995	1,329.5	2.0	245.0	232.2	16.8	81.6	1,929.8
1996	1,222.3	1.4	240.7	233.7	24.0	103.9	1,848.6
1997	1,150.5	1.3	257.8	311.9	17.0	65.8	1,831.1
1998	1,125.1	1.2	195.8	199.8	15.5	57.1	1,620.9
All Alaska							
1985	1,513.4	15.4	158.6	323.6	4.6	39.7	2,072.7
1986	1,329.8	28.5	163.9	303.9	9.6	32.0	1,881.1
1987	1,326.3	34.4	189.0	257.2	16.4	30.2	1,863.7
1988	1,404.9	37.6	229.7	378.3	23.1	21.7	2,108.4
1989	1,348.1	34.3	210.1	236.0	30.7	18.5	1,883.3
1990	1,430.7	31.8	245.6	157.2	46.3	22.3	1,943.7
1991	1,736.6	26.6	295.1	280.4	31.8	28.1	2,431.9
1992	1,533.8	25.7	288.0	290.8	42.8	54.9	2,283.7
1993	1,493.5	27.5	223.9	256.4	44.4	71.2	2,148.6
1994	1,495.9	24.9	241.3	289.4	34.8	68.9	2,183.0
1995	1,402.1	22.9	314.0	264.4	36.1	82.3	2,147.9
1996	1,273.6	19.6	309.0	276.8	42.2	105.5	2,053.8
1997	1,240.7	17.1	326.2	345.6	36.9	66.2	2,064.6
1998	1,250.2	16.4	257.9	223.1	34.9	57.4	1,870.2

Notes: Totals may include additional categories.

Source: Blend estimates for 1991-98. Processor reports and fish tickets for 1988-90. National Marine Fisheries Service, 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070.

Table 2--Groundfish catch in the commercial fisheries off Alaska by area and fishery, 1981-91 (1,000 metric tons, round weight).

Gulf of Alaska

Year	Domestic	Joint venture	Foreign	Total
1981	4.5	17.0	232.5	254.0
1982	8.0	74.4	153.7	236.2
1983	9.1	143.0	147.5	299.5
1984	14.8	219.6	123.7	358.1
1985	33.2	247.2	41.0	321.4
1986	61.0	65.3	15.5	141.8
1987	111.4	32.5	0.0	143.9
1988	143.8	3.8	0.0	147.6
1989	167.4	0.0	0.0	167.4
1990	219.8	0.0	0.0	219.8
1991	276.1	0.0	0.0	276.1

Bering Sea/Aleutians

Year	Domestic	Joint venture	Foreign	Total
1981	14.4	78.5	1,272.9	1,365.8
1982	25.2	108.6	1,186.2	1,320.0
1983	46.5	210.0	1,123.8	1,380.4
1984	48.4	357.5	1,191.2	1,597.1
1985	81.5	636.4	1,033.4	1,751.3
1986	107.7	1,156.4	475.2	1,739.3
1987	295.9	1,355.4	68.6	1,719.9
1988	659.7	1,300.9	0.0	1,960.6
1989	1,184.9	530.9	0.0	1,715.9
1990	1,590.5	133.3	0.0	1,723.8
1991	2,155.8	0.0	0.0	2,155.8

All Alaska

Year	Domestic	Joint venture	Foreign	Total
1981	18.9	95.5	1,505.4	1,619.8
1982	33.2	183.0	1,339.9	1,556.2
1983	55.5	353.0	1,271.3	1,679.9
1984	63.2	577.2	1,314.9	1,955.3
1985	114.7	883.6	1,074.4	2,072.7
1986	166.4	1,221.7	490.7	1,881.8
1987	407.3	1,387.9	68.6	1,863.9
1988	803.5	1,304.7	0.0	2,108.2
1989	1,352.4	530.9	0.0	1,883.3
1990	1,810.8	133.3	0.0	1,944.1
1991	2,431.9	0.0	0.0	2,431.9

Notes: Domestic catch statistics from 1981-90 reflect only the amounts that were landed but in 1991 domestic catch includes discards. Joint venture and foreign catch includes discarded catch.

Source: 1981-90, National Marine Fisheries Service office of the Pacific Marine Fisheries Commission, Pacific Fisheries Information Network, 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070; and 1991-97, National Marine Fisheries Service, Alaska Region, blend estimates.

Table 3.--Ex-vessel value of the catch in the domestic commercial fisheries off Alaska by species group, 1984-98 (\$ millions).

Year	Shellfish	Salmon	Herring	Halibut	Groundfish	Total
Value (\$ millions)						
1984	103.4	343.0	20.4	19.6	27.9	514.3
1985	106.9	389.6	36.9	37.5	43.4	614.3
1986	183.0	404.1	38.4	70.1	66.6	762.2
1987	215.2	473.0	41.7	76.3	137.1	943.3
1988	235.6	744.9	56.0	66.1	242.2	1,344.8
1989	279.2	506.7	18.7	84.4	338.3	1,227.3
1990	355.1	546.7	24.0	86.9	449.5	1,462.2
1991	301.1	300.1	28.6	91.6	548.3	1,269.7
1992	335.1	544.5	27.0	48.0	659.7	1,614.3
1993	328.5	391.1	14.1	53.6	425.8	1,213.1
1994	321.2	424.4	21.6	84.7	464.9	1,316.8
1995	282.9	495.9	39.1	59.5	593.8	1,471.2
1996	175.2	346.5	44.8	74.2	541.9	1,182.6
1997	172.1	247.8	15.9	106.5	583.1	1,125.4
1998	218.7	242.7	10.8	94.1	384.9	951.2

Note: The value added by at-sea processing is not included in these estimates of ex-vessel value.

Source: National Marine Fisheries Service, Alaska Region; National Marine Fisheries Service Office of the Pacific Marine Fisheries Commission, Pacific Fisheries Information Network, 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070.

Table 4.--Groundfish catch off Alaska by area, catcher category, gear and species, 1994-98, (1,000 metric tons, round weight).

	Gulf of Alaska			Bering Sea and Aleutian			All Alaska		
	Catcher vessels	Catcher process ors	Total	Catcher vessels	Catcher process ors	Total	Catcher vessels	Catcher process ors	Total
All gear									
All groundfish									
1994	183	50	233	663	1,284	1,947	846	1,334	2,180
1995	159	52	212	715	1,214	1,930	875	1,267	2,141
1996	145	57	201	710	1,138	1,849	855	1,195	2,050
1997	189	39	228	669	1,162	1,831	858	1,201	2,059
1998	207	36	244	592	1,029	1,621	799	1,066	1,865
Hook and line									
Sablefish									
1994	16	3	19	0	1	2	16	4	21
1995	14	2	16	1	1	2	15	3	18
1996	12	2	14	1	1	1	13	2	15
1997	10	2	12	1	1	1	11	2	13
1998	10	2	12	1	0	1	11	2	13
Pacific cod									
1994	2	4	7	1	85	86	4	89	93
1995	5	6	11	3	101	103	7	107	114
1996	5	5	10	0	94	95	5	100	105
1997	7	4	11	0	124	124	7	128	135
1998	6	3	10	0	100	100	7	103	110
Flatfish									
1994	1	0	1	2	4	6	3	4	7
1995	1	0	2	1	5	7	3	6	8
1996	0	0	1	1	7	8	2	7	9
1997	0	0	1	2	8	10	2	8	11
1998	1	0	1	1	9	11	2	10	11
Rockfish									
1994	2	0	2	0	0	0	2	1	3
1995	2	0	2	0	0	0	2	1	2
1996	2	0	2	0	0	0	2	1	2
1997	1	0	2	0	0	0	1	1	2
1998	1	0	2	0	1	1	1	1	2
All groundfish									
1994	21	8	29	4	104	108	25	112	137
1995	23	9	32	5	122	127	28	131	158
1996	20	7	27	3	114	116	22	121	144
1997	19	6	25	3	151	154	22	157	180
1998	19	5	25	2	128	130	22	133	155
Pot									
Pacific cod									
1994	-	-	-	6	2	8	-	-	-
1995	15	0	16	16	5	20	31	5	36
1996	12	-	12	24	8	33	36	8	45
1997	9	-	9	17	5	22	26	5	31
1998	-	-	-	10	4	14	-	-	-

Table 4.--Continued.

	Gulf of Alaska			Bering Sea and Aleutian			All Alaska		
	Catcher vessels	Catcher process ors	Total	Catcher vessels	Catcher process ors	Total	Catcher vessels	Catcher process ors	Total
Trawl									
Pollock									
1994	105	2	107	587	798	1,385	692	800	1,492
1995	67	2	70	609	718	1,326	676	720	1,396
1996	48	2	50	597	623	1,219	645	625	1,270
1997	87	1	88	548	597	1,146	635	599	1,234
1998	123	0	123	529	592	1,122	652	593	1,245
Sablefish									
1994	1	2	2	0	0	1	1	2	3
1995	1	2	2	0	0	0	1	2	3
1996	1	1	2	0	0	0	1	1	2
1997	1	1	2	0	0	0	1	1	2
1998	1	1	1	0	0	0	1	1	1
Pacific cod									
1994	30	2	31	43	56	99	73	58	131
1995	38	4	42	52	69	122	90	74	163
1996	40	6	46	61	52	113	101	58	159
1997	46	2	48	63	48	111	109	50	160
1998	36	5	41	40	42	82	76	47	123
Flatfish									
1994	15	20	35	21	227	247	36	247	282
1995	13	18	30	31	194	225	44	212	256
1996	17	25	42	22	204	225	39	229	268
1997	19	14	33	34	268	302	53	282	335
1998	10	12	22	7	182	189	17	194	211
Rockfish									
1994	1	13	14	0	18	18	1	31	32
1995	1	16	17	0	16	16	1	32	34
1996	4	12	16	0	23	23	5	35	40
1997	5	13	18	0	16	17	5	29	34
1998	5	12	17	1	14	15	6	26	32
Atka mackerel									
1994	0	4	4	0	65	65	0	69	69
1995	0	0	1	0	81	81	0	82	82
1996	0	1	2	0	104	104	0	105	105
1997	0	0	0	0	66	66	0	66	66
1998	0	0	0	0	57	57	0	57	57
All groundfish									
1994	153	42	195	653	1,177	1,829	806	1,219	2,025
1995	121	43	164	694	1,088	1,782	815	1,131	1,946
1996	113	49	162	683	1,016	1,699	796	1,065	1,860
1997	161	33	193	648	1,005	1,654	809	1,038	1,847
1998	177	31	208	579	897	1,476	756	929	1,685

Note: All groundfish includes additional species categories. Includes only catches counted against Federal TACs.

Source: Blend estimates, National Marine Fisheries Service, 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070.

Table 5.--Discards and discard rate for groundfish catch off Alaska by area, gear, and species, 1994-98, (1,000 metric tons, round weight).

Area/Species/Year	Fixed		Trawl		All gear	
	Total Discards	Discard Rate	Total Discards	Discard Rate	Total Discards	Discard Rate
Gulf of Alaska						
All groundfish						
1994	3.2	8.1%	40.3	20.6%	43.5	18.6%
1995	4.2	8.6%	34.9	20.9%	39.1	18.1%
1996	2.7	6.7%	38.3	23.7%	41.0	20.3%
1997	3.1	8.7%	34.4	17.6%	37.5	16.2%
1998	3.5	9.5%	18.8	9.0%	22.3	9.1%
Pollock						
1994	.0	97.6%	6.3	5.8%	6.3	5.9%
1995	.0	40.1%	7.8	10.8%	7.9	10.8%
1996	.0	71.3%	5.1	10.1%	5.1	10.2%
1997	.0	42.5%	7.2	8.0%	7.2	8.0%
1998	.0	10.7%	1.0	.8%	1.0	.8%
Sablefish						
1994	.2	1.1%	.5	22.3%	.7	3.5%
1995	.4	2.2%	.7	33.7%	1.1	5.9%
1996	.3	2.2%	.5	26.1%	.8	5.2%
1997	.5	4.2%	.5	30.7%	1.0	7.3%
1998	.5	4.7%	.3	23.7%	.9	6.7%
Pacific cod						
1994	.5	2.9%	2.7	8.5%	3.1	6.6%
1995	.6	2.2%	2.9	7.0%	3.5	5.1%
1996	.5	2.0%	7.1	15.4%	7.6	11.1%
1997	.7	3.5%	4.1	8.5%	4.8	7.0%
1998	.4	1.8%	1.4	3.3%	1.7	2.8%
Flatfish						
1994	.9	92.9%	24.7	70.3%	25.5	70.9%
1995	1.7	92.6%	17.6	57.7%	19.3	59.7%
1996	.7	96.8%	19.4	45.6%	20.0	46.4%
1997	.7	98.9%	15.9	48.5%	16.6	49.5%
1998	.8	90.2%	11.4	50.8%	12.2	52.2%
Rockfish						
1994	.9	37.3%	3.9	28.8%	4.8	30.2%
1995	.4	20.6%	3.6	20.8%	4.0	20.8%
1996	.3	15.3%	3.3	20.4%	3.6	19.8%
1997	.3	15.2%	3.5	19.6%	3.8	19.2%
1998	.5	24.8%	2.7	15.7%	3.2	16.6%
Atka mackerel						
1994	.0	100.0%	.3	7.8%	.3	7.8%
1995	.0	100.0%	.2	28.2%	.2	28.4%
1996	.0	100.0%	.3	21.1%	.3	21.1%
1997	.0	96.9%	.1	16.2%	.1	16.6%
1998	.0	100.0%	.2	51.9%	.2	51.9%

Table 5.--Continued.

Area/Species/Year	Fixed		Trawl		All gear	
	Total Discards	Discard Rate	Total Discards	Discard Rate	Total Discards	Discard Rate
Bering Sea and Aleutian Islands						
All groundfish						
1994	20.0	17.13%	266.2	14.55%	286.2	14.70%
1995	23.4	15.85%	250.7	14.07%	274.1	14.20%
1996	19.5	12.99%	224.0	13.19%	243.5	13.17%
1997	25.1	14.23%	235.8	14.26%	261.0	14.26%
1998	21.7	14.98%	109.4	7.41%	131.0	8.08%
Pollock						
1994	2.4	89.01%	103.0	7.44%	105.5	7.60%
1995	2.7	86.66%	96.2	7.25%	98.9	7.44%
1996	2.6	90.17%	74.6	6.11%	77.2	6.32%
1997	3.8	82.14%	90.5	7.90%	94.2	8.19%
1998	.7	21.69%	16.2	1.44%	16.9	1.50%
Sablefish						
1994	.0	1.90%	.1	15.73%	.1	4.95%
1995	.2	9.41%	.0	10.00%	.2	9.53%
1996	.1	10.02%	.0	17.59%	.2	10.90%
1997	.1	11.22%	.0	16.83%	.2	11.52%
1998	.1	11.42%	.0	11.01%	.1	11.36%
Pacific cod						
1994	3.3	3.50%	29.5	29.75%	32.9	16.95%
1995	5.6	4.56%	37.6	30.90%	43.2	17.63%
1996	3.9	3.03%	24.9	22.05%	28.8	11.97%
1997	4.0	2.71%	18.0	16.16%	21.9	8.52%
1998	3.1	2.76%	1.1	1.35%	4.2	2.17%
Flatfish						
1994	4.4	71.91%	104.9	42.40%	109.2	43.10%
1995	4.3	61.48%	87.0	38.64%	91.3	39.32%
1996	4.6	54.72%	87.1	38.64%	91.7	39.21%
1997	5.0	50.54%	104.7	34.68%	109.8	35.19%
1998	3.7	34.59%	71.0	37.54%	74.7	37.38%
Rockfish						
1994	.1	26.26%	6.0	33.16%	6.2	32.97%
1995	.1	33.54%	5.0	30.56%	5.1	30.63%
1996	.2	45.12%	8.0	34.30%	8.3	34.52%
1997	.2	47.04%	4.4	26.41%	4.6	26.91%
1998	.4	57.62%	4.7	32.10%	5.1	33.23%
Atka mackerel						
1994	.1	97.87%	9.2	14.10%	9.3	14.25%
1995	.1	98.69%	14.8	18.13%	14.9	18.27%
1996	.1	98.18%	17.1	16.43%	17.2	16.50%
1997	.1	97.60%	6.5	9.88%	6.6	10.00%
1998	.1	95.31%	5.6	9.76%	5.7	9.93%

Table 5.--Continued.

Area/Species/Year	Fixed		Trawl		All gear	
	Total Discards	Discard Rate	Total Discards	Discard Rate	Total Discards	Discard Rate
All Alaska						
All groundfish						
1994	23.1	14.88%	306.5	15.14%	329.7	15.11%
1995	27.6	14.04%	285.6	14.65%	313.2	14.60%
1996	22.2	11.66%	262.3	14.10%	284.5	13.87%
1997	28.2	13.30%	270.2	14.61%	298.4	14.48%
1998	25.1	13.88%	128.2	7.61%	153.4	8.22%
Pollock						
1994	2.5	89.15%	109.3	7.33%	111.8	7.48%
1995	2.7	85.39%	104.0	7.43%	106.7	7.61%
1996	2.7	89.74%	79.6	6.27%	82.3	6.47%
1997	3.8	81.38%	97.7	7.90%	101.5	8.18%
1998	.7	21.45%	17.2	1.38%	17.9	1.43%
Sablefish						
1994	.2	1.14%	.6	21.09%	.9	3.63%
1995	.5	2.86%	.8	30.01%	1.3	6.29%
1996	.4	2.83%	.6	25.42%	1.0	5.67%
1997	.6	4.87%	.5	30.05%	1.1	7.68%
1998	.7	5.28%	.3	22.39%	1.0	7.09%
Pacific cod						
1994	3.8	3.41%	32.2	24.63%	36.0	14.91%
1995	6.2	4.14%	40.5	24.78%	46.7	14.88%
1996	4.3	2.88%	32.0	20.14%	36.4	11.77%
1997	4.7	2.80%	22.1	13.84%	26.8	8.21%
1998	3.5	2.61%	2.5	2.00%	6.0	2.32%
Flatfish						
1994	5.2	74.77%	129.5	45.86%	134.8	46.56%
1995	5.9	67.89%	104.6	40.92%	110.6	41.81%
1996	5.2	57.90%	106.5	39.75%	111.7	40.34%
1997	5.7	53.72%	120.7	36.04%	126.4	36.58%
1998	4.5	38.74%	82.3	38.94%	86.8	38.93%
Rockfish						
1994	1.1	35.49%	9.9	31.30%	11.0	31.67%
1995	.6	22.86%	8.6	25.54%	9.1	25.36%
1996	.5	20.88%	11.3	28.64%	11.9	28.16%
1997	.5	20.95%	7.9	22.90%	8.4	22.78%
1998	.9	33.41%	7.4	23.26%	8.3	24.03%
Atka mackerel						
1994	.1	97.87%	9.5	13.77%	9.6	13.92%
1995	.1	98.71%	15.0	18.22%	15.1	18.36%
1996	.1	98.18%	17.4	16.50%	17.5	16.57%
1997	.1	97.58%	6.5	9.91%	6.6	10.03%
1998	.1	95.31%	5.7	9.99%	5.8	10.16%

Notes: All groundfish and all gear may include additional categories.
Includes only catch counted against Federal TACs.

Source: Blend estimates, National Marine Fisheries Service,
7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070.