Chapter 3

The Alaska Regional Report

The Commercial Groundfish Harvesting Sector

Introduction

The domestic groundfish fishery in the U.S. EEZ off Alaska has become an important part of the total U.S. fishing industry. With a total catch of 2.1 million metric tons (t), a retained catch of 1.8 million t, and an ex-vessel value of $414 million in 1993, the domestic Alaska groundfish fishery accounted for 45% of the catch and 12% of the ex-vessel value of the catch off U.S. shores. The value of the resulting fisheries products after primary processing was $1 billion, and the value of the exports from this fishery exceeded $800 million in 1993, about 28% of the value of total U.S. exports of edible fishery products.

Two principal objectives of the Magnuson Fishery Conservation and Management Act of 1976 (MFCMA) were to maintain healthy fishery resources or to rebuild fishery resources to healthy levels and to replace the foreign fishing and processing operations with domestic operations. The domestic Alaska groundfish fishery has met both objectives with great success. Relatively conservative fishery management policies have resulted in the following: maintenance of high levels of productivity for most groundfish species, improvements in the condition of the fishery resources that had been overexploited by foreign fishing fleets, and relatively stable catch levels. At the same time, aggressive development policies resulted in the rapid displacement of the foreign fishery by the domestic fishery.

Unfortunately, the same fishery management process and regimes that were successful in meeting those two objectives not only allowed but encouraged fishermen and processors to make a variety of decisions that substantially increased the difference between the actual and potential values of the Alaska groundfish fishery to the Nation. Specifically, these decisions resulted in excessive investment in harvesting and processing capacity, excessive bycatch of nongroundfish species, excessive discard of groundfish, reduced product quality and value, and more hazardous working conditions. These management successes and failures in the domestic Alaska groundfish fishery are the topics of this chapter.

The Overall Management Regime

The domestic Alaska groundfish fishery is a regulated open-access fishery. The management regime is specified in two Fishery Management Plans (FMP's). The Gulf of Alaska (GOA) FMP and the Bering Sea/Aleutian Islands (BSAI) area FMP, developed by the North Pacific Fishery Management Council (NPFMC), became effective in 1978 and 1982, respectively.

Under each FMP, the total allowable catch (TAC), acceptable biological catch (ABC), and overfishing level are established annually for each species or species group and area. Some TAC's are subdivided by season, area, or user group. There are also bycatch limits for crab, Pacific halibut, and Pacific herring in the BSAI area and for Pacific halibut in the GOA. The bycatch limits or prohibited species catch (PSC) limits are apportioned annually among individual groundfish fisheries as defined by gear type, target species, area, and season.

An extensive program has been established to monitor the attainment of TAC's, ABC's, overfishing levels, and PSC limits. This program includes: 1) at-sea and on-shore observer coverage that varies with the size of the fishing vessel and the level of production of a processor, 2) weekly reports by all groundfish processors, 3) daily reports by processors and observers when necessary, and 4) fish tickets for all fishing vessels that land unprocessed groundfish in Alaska.

Generally, before the TAC for a particular groundfish species is taken, the fishery is closed for the remainder of the year or season. At that point, the species can be taken only as bycatch in other groundfish fisheries. (This region's spotlight

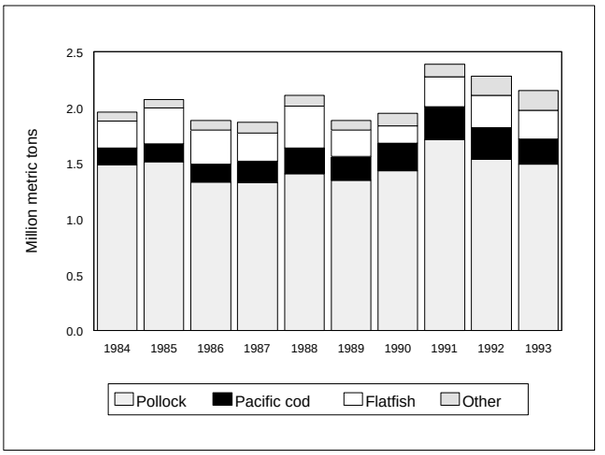


Figure 3-1
Groundfish catch in the commercial fisheries off Alaska by species, 1984-93.

article discusses the economics of bycatch). Once the TAC is taken, the species cannot be retained in any groundfish fishery. Finally, before the ABC and overfishing level are reached for a species, time/area closures or complete closures are imposed on any fishery that is expected to take a significant amount of that species as bycatch. The attainment of a PSC limit within a fishery also closes that fishery for the reminder of the year or season for a specific area or imposes a specific time/area closure.

In both the BSAI area and the GOA, PSC limits for Pacific halibut, have closed some domestic fisheries well before their groundfish quotas have been reached. In some instances, these closures resulted in a redistribution of catch among groundfish fisheries. However, in other cases, the closures have prevented some TAC's from being used fully.

The combination of relatively conservative TAC's, relatively effective catch and bycatch monitoring systems, and closures to enforce the TAC's, ABC's, overfishing levels, and PSC limits has contributed to meeting the goal of maintaining healthy groundfish resources and preventing overfishing.

Management Successes

During the 10-year period of 1984-93, the groundfish resources off Alaska have been generally healthy, total catch has been relatively stable at a high level, and the domestic fishery developed rapidly and completely displaced the foreign fisheries in the U.S. EEZ off Alaska. In terms of these three results, the groundfish fishery off Alaska has been managed successfully.

During 1984-93, total groundfish catch ranged between 1.9 and 2.4 million t, and in 8 of 10 years catch was within about 5% of 2.0 million t (Fig. 3-1). The catch estimates for 1991-93 are based on the method that is used currently to estimate groundfish catch. Had the current method actually been used in 1991 and 1992, several fisheries would have been closed earlier in the year and total catch would have been reduced. Total catch peaked in 1991, in part due to a change in the method used to estimate total catch.

Catch by species group has been less stable than total catch. Walleye or Alaska pollock has been the dominant species in the commercial groundfish catch (Fig. 3-1). For the 1984-93 period, annual pollock catches ranged from 1.3 to 1.7 million t and accounted for 66.3-75.5% of the total groundfish catch, and each year the direction of change in total catch was the same as that of pollock. Pollock, Pacific cod, and flatfishes comprised 92% of the total 1993 catch. Other important species are sablefish, rockfishes, and Atka mackerel. Although the majority of the catch of each of the dominant species is taken by vessels targeting on that species, large amounts of many species are taken as bycatch and discarded. Groundfish discards were estimated to be about 350,000 t in 1993. Estimates of total catch including discards are used to set and monitor TAC's.

The combination of relatively stable total catch and rapid development of the domestic fishery was possible only because there was a large foreign fishery that could be replaced. The Alaska groundfish fishery changed from a foreign-dominated fishery in 1984, to a predominantly joint-venture fishery, with domestic fishing vessels delivering catch directly to foreign at-sea processing vessels during 1986-88, and finally to a fully domestic fishery in 1991 (Fig. 3-2). Catch in the domestic fishery increased from 3.2% of the total in 1984 to 100% in 1991.

Trawl, hook and line, pot, and other gear are used in the domestic Alaska groundfish fishery. Annual landings and real ex-vessel values for virtually every gear group and species increased dramatically from 1984 to 1993 (Table 3-1). For the

10-year period as a whole, about 93% of the total landings were taken with trawl gear but only 76% of the real ex-vessel value was accounted for by trawlers because hook and line gear is used more for higher valued species. Most species are harvested predominately by one type of gear, which typically accounts for 90% or more of the landings. The one exception is Pacific cod, where in 1993,57.8% of the catch was taken with trawl gear, 36.4% of the catch was caught with hook and line gear, and over 5% of the catch was captured with pots or traps.

The contribution of the groundfish fishery to the total ex-vessel value of all domestic fisheries off Alaska increased from 5.4% in 1984 to 34% in 1993 compared to 33% for Pacific salmon and 27 % for Shellfish. Groundfish replaced Pacific salmon as the highest valued commercial fishery off Alaska in 1991. The increase in the real ex-vessel value of the domestic fishery in 1992 (Pig. 3-3) was due to an increase in landings and in real ex-vessel prices, which included a 40% increase in the price of pollock. The price increases in 1992 appear to have been caused by an overreaction to increased uncertainty concerning the world supply of surimi. Surimi, the dominant pollock product, is an intermediate fish-paste product that is used to produce simulated shellfish and meat products. The subsequent price corrections and a weaker Japanese economy more than offset most of the price increases that had occurred in 1992.

The domestic fishery is a multispecies fishery in which the fishing vessels differ by size, ownership, gear, and mode of operation. The vessels that participate in this fishery range in length from less than 15 m to more than 150 m and include vessels that only catch fish, vessels that catch and process fish, and vessels that only process fish. Their owners range from independent fishermen who operate their own vessels to corporations that operate multi-vessel fleets.

The development of the domestic fishery would not have been possible without the substantial increases in harvesting capacity that occurred through increases both in the number of vessels participating in the fishery and in the average capacity of the vessels. The latter increases in capacity occurred due to improvements in fishing gear (including electronics), increases in vessel size, and an increase in the percentage of vessels using

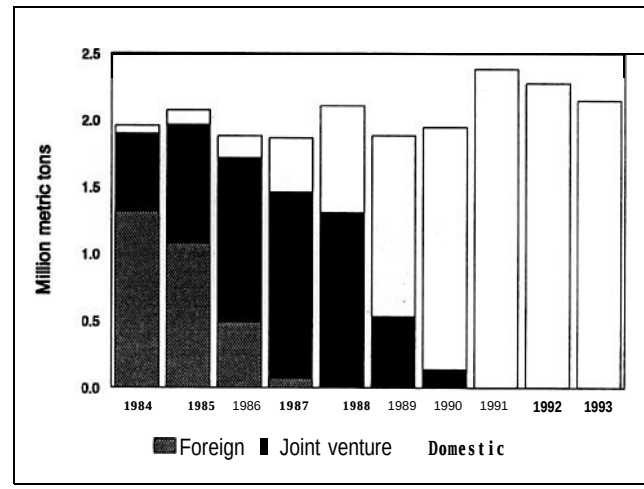
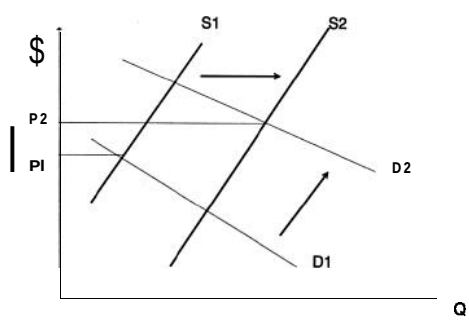


Figure 3-2
Groundfish catch in the commercial fisheries off Alaska by fishery, 1984-93.

Table 3-l
Landings and real ex-vessel values in the domestic Alaska groundfish fishery[1] by area, gear, and species, 1984-93, quantity (round weight) and value.

	Quantity(1,000t round weight)			Value (million dollars)		
	Hook and line	Trawl	All	Hook and line	Trawl	All
1984	9.8	52.6	63.2	8.0	21.8	30.3
1985	13.4	98.3	114.7	18.6	23.8	46.3
1986	23.9	134.2	167.7	29.6	29.0	67.4
1987	42.5	362.4	407.3	51.4	84.3	137.6
1988	41.2	759.8	803.7	69.2	159.6	231.0
1989	50.2	1,301.8	1,352.6	61.3	250.5	312.1
1990	86.8	1,715.2	1,811.2	67.8	323.7	395.1
1991	99.6	1,575.0	1,691.4	84.8	313.2	406.1
1992	146.0	1865.2	2,037.3	97.5	449.5	558.4
1993	105.6	1,721.0	1,838.6	77.5	253.0	335.1

[1]Source: NMFS office of the Pacific Marine Fisheries Commission



Even though groundfish landings were increasing **(S1–>S2),** demand was increasing as well **(D1–>D2),** and the real ex-vessel price increased **(P1–>P2).** If demand had increased more than supply, the price would have increased.

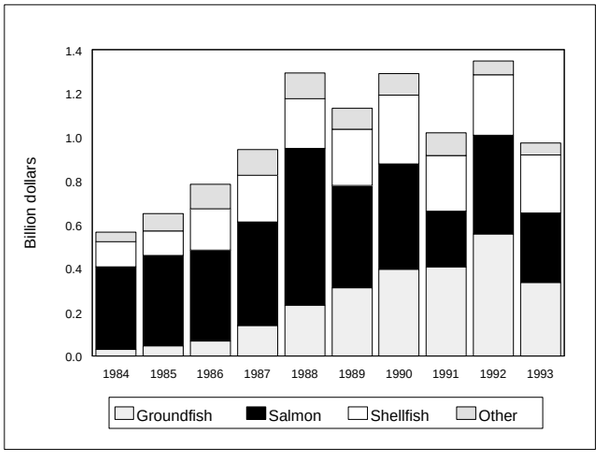


Figure 3-3
Domestic fishery real ex-vessel value of the catch off Alaska by species group, 1984-93.

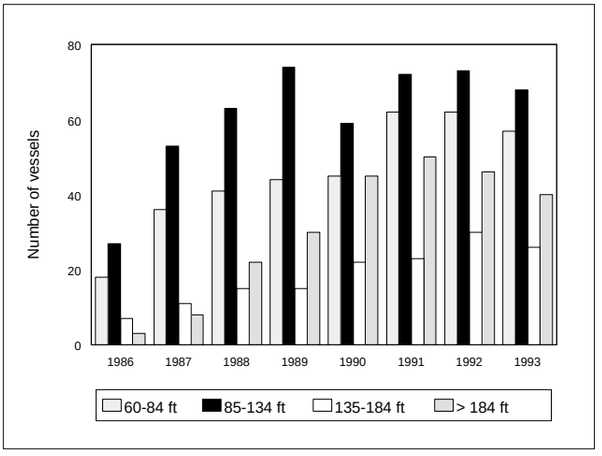


Figure 3-4
Number of trawl vessels in the domestic groundfish fishery by length class, 1986-93.

trawl gear. Estimates of the number of fishing vessels by length class are presented in Figures 3-4 and 3-5 for trawlers and for hook and line vessels, respectively. Both graphs reveal the peak in numbers of fishing vessels in all length classes in 1991-92 (except for 85–134 ft trawl vessels, which peaked in number in 1989, and >184 ft hook-and-line vessels which peaked in 1990).

Excess Harvest Demand and Associated Problems

Fishery management and development programs were successful in increasing the amount of fish allocated to domestic fishermen and processors. Increases in the domestic demand to harvest and process Alaska groundfish enabled the domestic fishery to displace the foreign and joint venture fisheries rapidly. This displacement provided increased employment and income opportunities for those involved in harvesting, processing, and marketing Alaska groundfish and for those in support sectors and communities. The estimates of the ex-vessel, processed product, and export values for the domestic fishery as presented in this chapter provide measures of the magnitudes of these opportunities. However, when the increased domestic demand to harvest fish could not be met by reductions in the quotas for the foreign and joint venture fisheries, there was excess domestic demand to harvest fish. That is, the domestic groundfish fishery had developed the ability and desire to use more fish of some species than was permitted by the catch quotas.

Excess demand and the associated problems occurred before the domestic groundfish fishery was able to use fully many of the groundfish TAC's. By the mid-1980's, there was excess demand for sablefish as a target species and for halibut and crab as bycatch species. There are several reasons why sablefish was the first groundfish species for which there was excess domestic demand. Sablefish was a relatively high-priced species, the larger vessels in the halibut fleet could enter the sablefish fishery at a relatively low cost, decreases in the length of the halibut fishing season provided an added incentive for those vessels to become more active in the sablefish fishery, sablefish had some of the smallest TAC's, and in addition to the hook and line gear similar to that used in the halibut fishery, pot gear could be used to harvest sablefish very effectively. The excess demand for the bycatch species occurred because the domestic fisheries for crab and Pacific halibut were developed fully which meant that crab and halibut bycatch in the groundfish fishery decreased catch in the domestic crab and halibut fisheries.

To address the problem of excess demand for sablefish, the NPFMC apportioned the sablefish TAC's by gear type first in the GOA and then in

the BSAI area. This response did not prevent subsequent increases in the excess demand for sablefish. To address the excess demand for crab and Pacific halibut, the NPFMC imposed halibut bycatch limits in the GOA and later established halibut and crab bycatch limits for the BSAI groundfish fishery. This response partitioned the quotas for Pacific halibut and crab between groundfish fishermen and crab and halibut fishermen, but it did not eliminate the excess demand for crab and halibut as bycatch in the groundfish fishery.

As domestic harvesting and processing capacity continued to increase, excess demand increased and became a more serious problem for some species and a new problem for other species. In the absence of an efficient mechanism either for eliminating the excess demand or for allocating the TAC's among competing fishermen, there have been a number of undesirable effects. These effects include: 1) increased incentives to expand harvesting and processing capacity because fishermen raced against each other to catch fish before the quotas were taken and the fisheries were closed for the year, 2) reduced season lengths, 3) increased harvesting and processing costs, 4) decreased product quality and value, 5) increased NPFMC efforts were focussed on allocation issues as opposed to setting TAC's, 6) increased cost and complexity of fishery management, and 7) decreased stability for the industry and dependent communities.

The utilization rate for at-sea processors provides one measure of excess harvesting and processing capacity. The at-sea processors include catcher-processors and motherships; the latter are vessels that only process fish caught by catcher vessels. The weekly utilization rates depicted in Figure 3-6 are defined as the number of at-sea processors operating during a week as a percentage of the number of at-sea processors that participated in the fishery that year. In 1988 and 1989, there was substantially less seasonality in the weekly utilization rates and both the minimum and maximum rates were higher than in the more recent years. Annual utilization rates, defined as the number of at-sea processor weeks during a year as a percentage of the maximum possible number of processor weeks, were calculated for 1988 through 1993. Consistent estimates were not possible prior to 1988 because there were less inclusive reporting requirements before 1988. The annual utilization rates are as follows: 1988, 50.4; 1989, 61.2; 1990, 57.2; 1991, 53.2; 1992, 48.7; 1993, 44.3.

It is not clear what utilization rate would constitute full utilization of the available at-sea processor fleet because some time is required to off-load processed products, rotate crews, resupply vessels, and conduct periodic maintenance. However,

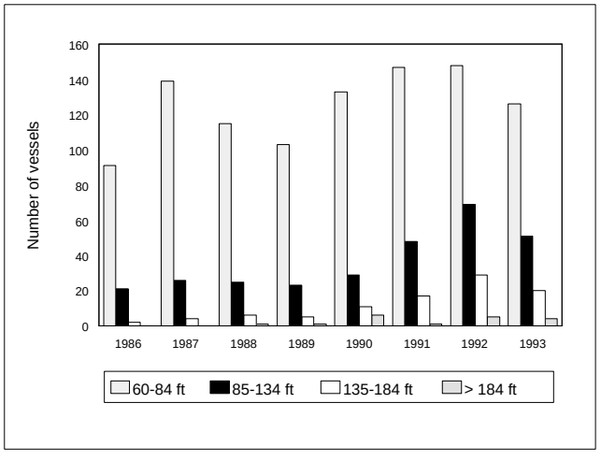


Figure 3-5
Number of hook and line vessels in the domestic Alaska groundfish fishery by length class, 1986-93.

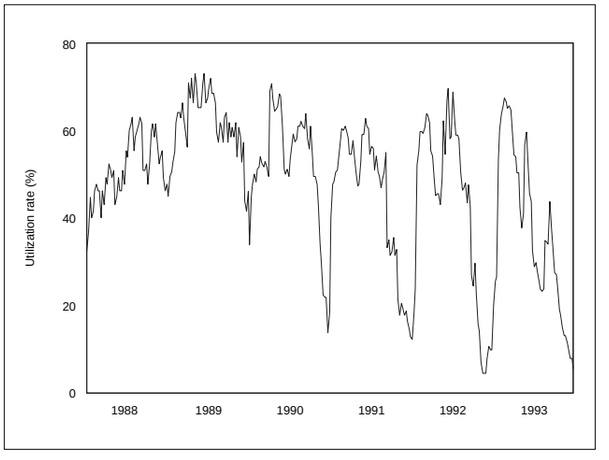


Figure 3-6
Weekly utilization rate for at-sea processors in the domestic Alaska groundfish fishery, 1988-93.

the annual decline in the utilization rate from 1989 through 1993 suggests that excess capacity was increasing during that period. A comparable statistic was not used for on-shore processors because they are more likely to be involved in other fisheries when they are not processing groundfish.

Another measure of excess capacity is the percent of weeks that catch was less than 25% of the maximum weekly catch each year. The values for this measure of excess capacity are as follows:

	Pollock	Other groundfish	All groundfish
1990	15.4	17.3	15.4
1991	53.8	23.1	50.0
1992	53.2	23.1	40.4
1993	65.4	28.8	61.5

A higher value indicates less stable weekly levels of catch during a year or increased excess capacity. The largest increase in excess capacity occurred in 1991 but a significant increase also occurred in 1993.

A measure both of the increase in excess capacity and of its effects is provided by the decreases in season lengths. In 1988, most of the BSAI area fisheries were open to the domestic fishery for 12 months. However, by 1993, few fisheries were open more than 6 months, and some of the largest fisheries were open for a much shorter period. For example, the open-access BSAI pollock fishery in 1993 lasted only 68 days for at-sea processors and only 100 days for trawlers delivering to on-shore processors. The Community Development Quota pollock fishery in the BSAI area lengthened the season for the few vessels that participated in that fishery. The Pacific cod fishery was open to trawlers and fixed-gear vessels 97 days and 130 days, respectively, in 1993. In the GOA, many of the area and season-specific apportionments of the TAC's were taken in less than 30 days in 1993.

There is general agreement that the race for fish has increased costs significantly, but estimates of the increases are not available. When fishermen race against each other to harvest fish before the fishery is closed by a quota for a target or bycatch species, harvesting and processing costs increase for the following reasons: increases in variable costs for fishermen and processors, increases in bycatch and discards, and decreased safety.

The race for fish also tends to decrease product value due to: 1) decreases in catch quotas, 2) decreases in the utilization of catch, 3) decreases in product quality due to handling, 4) decreases in the ability to take advantage of seasonal or random changes in consumption patterns and prices, 5) decreases in the ability to take advantage of seasonal differences in product quality, and 6) decreases in the ability to produce consistent quantity and quality throughout the year for products that do not have a highly seasonal demand. Catch utilization and product quality are reduced because less time is available to use the catch fully, to use fishing methods that increase the percentage of usable catch, or to maintain product quality. There is general agreement that the race for fish has decreased product quality and value, but estimates of the reductions are not available.

Typically, the NPFMC has five 5-day meetings each year. Setting TAC's has been a principal topic for only two meetings each year. It is estimated that the NPFMC spent only six of its 25 meeting days per year, or about 24% of its time, setting TAC's. The remainder of the time generally was spent on allocation issues. The NPFMC has submitted more than 60 amendments for the BSAI area and GOA FMP's combined. Many of the amendments address allocation issues. These amendments include: bycatch management measures including the PSC limits discussed above, direct apportionments of TAC's among gear groups or between vessels fishing for on-shore and at-sea processors, controls on the utilization of groundfish catch, the apportionment of part of some TAC's to groups of Native coastal communities in Western Alaska (Community Development Quotas (CDQ's)), and ITQ's for the fixed-gear sablefish and halibut fisheries.

The annual budgets and number of employees in terms of full-time equivalents (FTE's) for the Fishery Management Division of the NMFS Alaska Regional Office provide measures of the increases in the complexity and cost of managing the Alaska groundfish fishery. The Management Division is principally but not exclusively involved with groundfish management, and there are management costs beyond those of that division, such as: the Alaska Fisheries Science Center's observer program and biological and economic analysis programs, Enforcement, General Counsel, and the NPFMC. Therefore, the Management Division budget and the number of FTE's

provide useful but not complete measures of management costs. The following are the Fishery Management Division budgets in real (1987) dollars and FTE's by fiscal year.

Year	Budget	FTE
1990	$1,028,700	9.8
1991	$1,318,800	13.3
1992	$1,541,200	18.8
1993	$1,916,600	22.3
1994	$1,613,300	25.0

As the excess demand to harvest and process fish increases, the potential is increased that the planned participation in the groundfish fishery by a fisherman, fishing company, processor, or community will be preempted by participation by others. The inability to plan with any certainty the level and timing of participation in the groundfish fishery imposes costs on all participants. Estimates of these costs are not available.

Conclusions

The fishery management and development regimes for the groundfish fisheries off Alaska have been successful in that the groundfish resources are generally healthy, total catch has been relatively stable, and the domestic fishery has displaced the foreign and joint venture fisheries. These two regimes have been substantially less successful in terms of attaining the potential value of the domestic Alaska groundfish fishery to the Nation. This mixture of successes and failures demonstrates clearly that healthy fishery resources and high and stable levels of catch are not sufficient to ensure an economically healthy and productive fishery.

The failures have been due in part both to inadequate responses to the problems that are characteristic of a regulated open-access fishery and to a fishery development regime which exacerbated these problems. The development regime did that by continuing to provide a variety of incentives to invest in harvesting and processing capacity even after there was evidence of excess capacity. The management regime encourages over-investment in harvesting and processing capacity because the regime relies on an ineffective mechanism (the race for fish) to allocate fishery resources. In addition to encouraging over-investment which increases costs directly, the allocation mechanism provides fishermen with incentives to make decisions that are not in the best interest of either the fishermen as a group or the Nation, indirectly increasing costs and decreasing benefits. As excess capacity increases, the following also increase: conflicts among fishermen, conflicts between fishermen and other interest groups, the magnitude of the adverse effects of the collectively incorrect decisions made by individual fishermen, and the complexity, intrusiveness, and cost of fishery management.

There are a number of related reasons why there has been inadequate response to the problems associated with regulated open-access fishery management. First, the severity of the problems has not been recognized fully or in a timely manner by those who influence or establish fishery management measures. Second, there has been a tendency to use a piecemeal approach to implementing traditional management measures. This approach addresses individual symptoms of the problem and has prevented more complete consideration of management measures that address the source of the problem. Third, the expected change in the distribution of the net economic benefits from the fishery was often considered to be more important than the expected change in the magnitude of net economic benefits to the Nation. Finally, uncertainty concerning the biological, ecological, economic, and social effects of alternative management actions, including no action, has decreased the scientific basis for any decision.

The lack of a full and timely recognition of the severity of the problems is explained in part by the diversity of the problems and a tendency to focus attention on the most recent severe and obvious problem. The problems of the moment have included: the bycatch of crab, Pacific halibut, Pacific herring, and Pacific salmon; the allocation of groundfish TAC's among competing user groups; and the utilization of groundfish catch. Examples of competing user groups are: groundfish fishermen and other fishermen; the trawl, longline, and pot fleets; catcher vessels and catcher processor vessels; small and large vessels; mobile and less mobile vessels; owner-operated vessels and vessels owned by corporations; at-sea and on-shore processors; small and large processors or coastal communities; Alaska and non-Alaska participants in the fisheries; traditional participants and new or expectant participants; and fishermen, processors,

and the rest of society. The distribution of catch between such user groups can be measured, and it is usually quite obvious to a group when its share of the catch has either decreased or not increased enough. Unfortunately, it is much more difficult to measure the distribution of catch between fishermen who generate substantial net economic benefits from their catch and those who do not. Therefore, the loss to society of not having the former fishermen harvest a larger share of the TAC's often is ignored even though this is potentially a major source of foregone net economic benefits from the domestic Alaska groundfish fishery. That is, the differences in performance among individual fishermen or fishing operations and the importance of allocating fishery resources to the fishing operations that can use them most productively, hence maximizing net economic benefits, have not been adequately recognized.

The tendency to use traditional management measures in a piecemeal manner to address the symptoms of the problem exists for several reasons. First, fishery managers and fishermen are more familiar with traditional command-and-control management measures than with market-oriented measures. Second, the separate symptoms of the basic underlying problem often have been recognized and focused on independently; therefore, the search for a solution has been limited to the solutions that appear to address the most immediate symptom of a more pervasive problem. Third, with the Regional Fishery Management Council process, it is difficult to make large or once-and-for-all decisions that are required to establish a market mechanism to allocate the use of fishery resources. This difficulty exists in part because the MFCMA prevents the government from either selling the use rights associated with market-oriented measures or collecting fees from those who are given such use rights. Finally, concerns about the effectiveness and cost of enforcing market-oriented management measures have put into question the expected net economic benefits of such measures.

The magnitude and distribution of net economic benefits of a fishery determine its value to the Nation. However, there is no scientific or objective basis on which to determine, for example, whether a management measure that decreases net economic benefits but has a beneficial distribution effect would increase the value of the fishery to the Nation. In fact, there is neither a scientific nor objective basis for determining whether a specific change in the distribution of benefits by itself is beneficial. Unfortunately, the ability to consider alternative measures to meet the distribution objectives of the dominant interest groups, but at a lower cost to other groups or the Nation, was decreased when interest groups lost sight of their distribution objectives and became wedded to a particular solution.

Uncertainty concerning the biological, ecological, economic, and social effects of alternative management actions, including no action, has decreased the scientific basis for any decision. Due to this uncertainty, arguments of convenience can be used to support or oppose almost any management measure regardless of the actual objectives of the proponents or opponents of the measure. An additional effect of the uncertainty has been an increased reluctance to use nontraditional management measures such as market-oriented instruments.

A careful evaluation of the tradeoffs between traditional and market-oriented management measures is required to identify the appropriate mix of management measures for a particular fishery. In making such an evaluation, it should be recognized that many management problems have a common source and, therefore, reducing one problem could simultaneously reduce several other management problems. When problems are looked at individually, the synergy among solutions and benefits is ignored, and the evaluation of the tradeoffs tends to be biased in favor of traditional management measures.

An inability to respond more effectively to a range of fishery management problems is expected to continue to increase the costs and decrease the benefits of the fishery and, therefore, reduce the value of the fishery to the Nation. Economic analyses of the management issues addressed by the NPFMC have clarified and broadened the objectives for fishery management, improved the estimates of the magnitudes and distributions of net economic benefits for alternative management actions, and resulted in an increased understanding of the nature and sources of the management problems. However, such analyses are just one of the critical requirements for improving management of the domestic Alaska groundfish fishery.

THE GROUNDFISH PROCESSING SECTOR

The development of the domestic fishery required substantial increases in domestic processing capacity. Much of the increase in at-sea and on-shore processing capacity was financed by foreign investment. It was the increase in domestic processing capacity that resulted in the displacement of the joint venture fishery. A consistent time series of processing data is not available for 1984-93. However, landings data for at-sea and on-shore processors provide an indication of the rates of growth of these two components of the processing sector. Landings for both modes of operation increased significantly between 1986 and 1993. During that period, landings for on-shore processing ranged from 24.3 % to 4 1.2 % of the total landings and increased from 61,500 t to 599,600 t, while landings for at-sea processing increased from 106,200 t to 1,239,000 t (Fig. 3-7).

Consistent groundfish processing data have been available since 1990. By 1990, the groundfish fishery off Alaska was almost exclusively a domestic fishery; therefore, the expansion of the domestic fishery was basically complete, and total processing output was relatively constant, varying only between about 545,000 t and 568,000 t for 1990 through 1993. There was significantly more variability in the value of the groundfish processed products. The real value of these products increased from about $945 million in 1990 to almost $1.2 billion in 1991 and then decreased to $827 million in 1993. The 36.4% increase in product value between 1990 and 1991 and the subsequent decreases were the result principally of market adjustments for pollock surimi. Uncertainty concerning the total world supply of surimi in late 1991 and early 1992 appears to have caused pollock surimi price increases that could not be sustained beyond 1992.

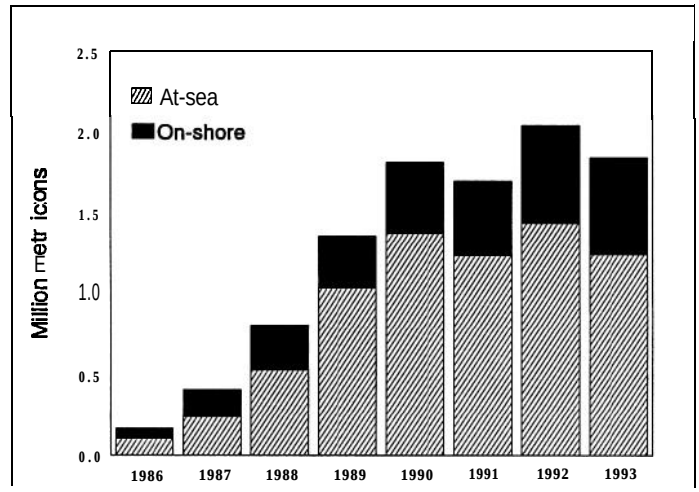
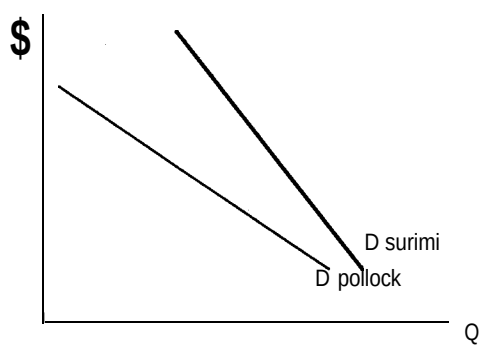


Figure3-7
Landings in the domestic Alaska groundfish fishery for on-shore and at-sea processing, 1986-93.

All the estimates of processed product values presented above are for primary processing. Subsequent domestic processing, which occurs principally outside of Alaska, results in substantial increases in product value. An important example is using pollock surimi to produce simulated crab, scallop, and shrimp meat. This secondary processing of surimi has contributed significantly to processing employment, income, and output. The importance of surimi analog products is discussed more fully in the West Coast Regional Report.

Because many of the domestic catcher vessels that delivered fish to foreign processing vessels in the joint venture fishery were not well suited for making deliveries to on-shore processors, they were displaced by factory trawlers, at least temporarily. The displacement of catcher vessels by larger factory trawlers and the competition between the at-sea processor fleet and on-shore processors resulted in substantial animosity toward that fleet and a regulatory action that allocated the BSAI pollock TAC's and the GOA pollock and



The demand for pollock is a "derived demand, derived from the wholesale demand for surimi. Because there are economics of scale in surimi production, the marketing margin would decrease with the quantity processed.

Pacific cod TAC's between at-sea and on-shore processors. That regulatory action helps to explain the reductions in the total catch and share of total catch taken for at-sea processing in 1993.

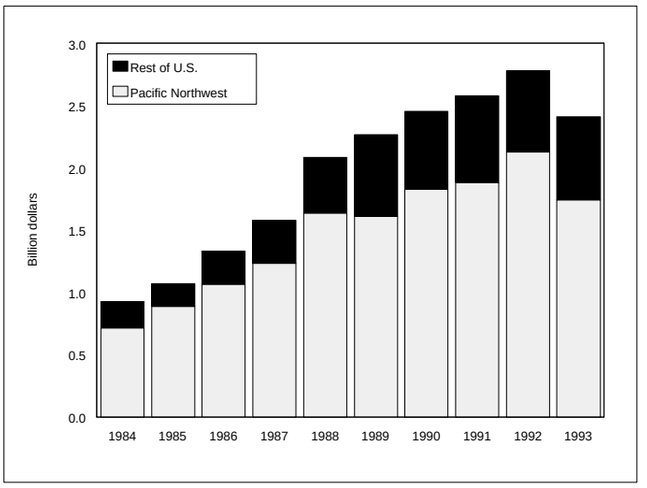


Figure 3-8
Pacific Northwest and total real value of U.S. exports of edible fishery products, 1984-93.

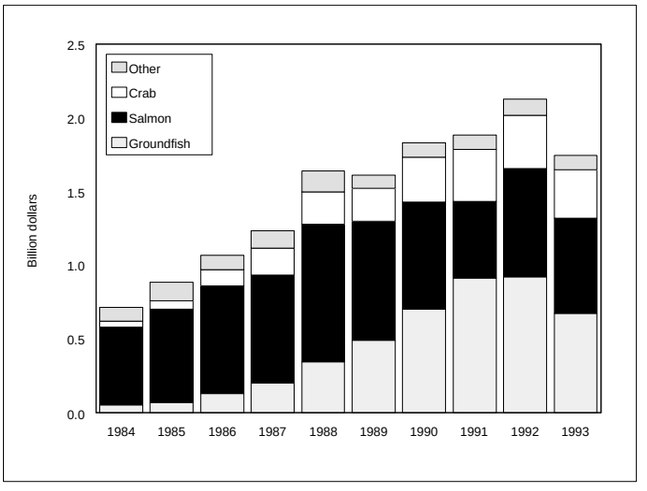


Figure 3-9
Pacific Northwest real value of exports of edible fishery products by major product groups, 1984-93.

THE PACIFIC NORTHWEST TRADE SECTOR

In the absence of consistent production data, export data are used to describe the growth of the processing sector for this fishery because a high percentage of the processed products from this fishery is exported. Historically, a significant portion of the groundfish and other species harvested off Alaska has been shipped to Washington or Oregon prior to being exported, and these fish accounted for a significant portion of the fishery exports from Washington and Oregon. Therefore, the Pacific Northwest export data presented in this chapter are for the Oregon, Washington, and Alaska customs districts (consequently, the West Coast Regional Report does not contain a separate section on the trade sector).

The real value of Pacific Northwest exports of edible fishery products increased annually from $712 million in 1984 to almost $2.1 billion in 1992 and then decreased to $1.7 billion in 1993 (Fig. 3-8). The sharp decrease in exports from 1992 to 1993 primarily reflected the weaker economy in Japan and lower prices for surimi, pollock roe, sablefish, and salmon. On average, between 1984 and 1993, Pacific Northwest exports accounted for over 76% of the total U.S. exports of edible fishery products.

Much of the growth in Pacific Northwest exports of edible fishery products since 1984 is due to the development of the domestic Alaska groundfish fishery. For 1984-93, the exports of groundfish, including Pacific halibut, increased from $52 to $674 million and the share of total Pacific Northwest edible fishery exports accounted for by Alaska groundfish increased from 7.2% to 38.7% (Fig. 3-9). Pacific salmon, which had been the dominant fisheries export for many years, accounted for 74% of the Pacific Northwest fisheries exports in 1984 and only 27.6% in 1991, when groundfish accounted for 48.4% of the exports. Groundfish accounted for 60% of the $1.0 billion dollar real increase in exports between 1984 and 1993; salmon accounted for only 11.5% of the increase.

Japan had been a major participant in the foreign groundfish fishery off Alaska, and the Japanese fishery off Alaska was an important source for its domestic markets. As Japan's allocations of groundfish in the U.S. EEZ off Alaska were reduced, catch by Japanese vessels fishing off

Alaska was replaced to a great extent by imports from the Pacific Northwest. Japan is now the dominant importer of Pacific Northwest groundfish, accounting for 77% of the groundfish exports between 1984 and 1993. The real value of groundfish exports to Japan increased annually from $55 million in 1984 to $739 million in 1992, before decreasing to $536 million in 1993 (Fig. 3-10). The decrease in exports from 1992 to 1993 again reflects the weaker economy in Japan and the decreases in prices for surimi, pollock roe, and sablefish. The magnitude of the Japanese domestic market is underreported by these statistics because a significant part of the Pacific Northwest groundfish exported to Korea is reexported to Japan.

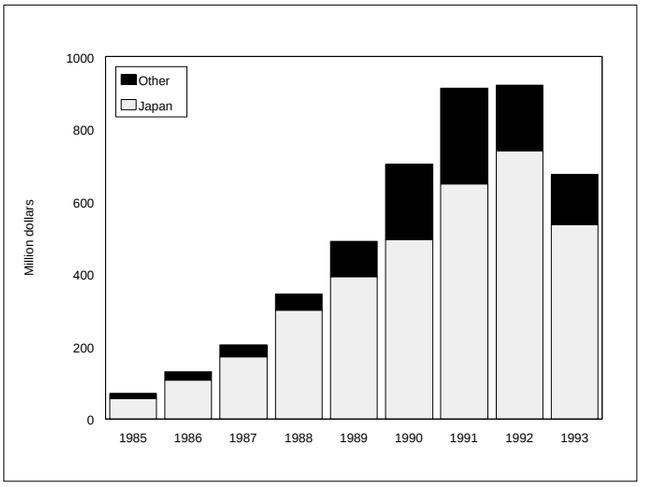


Figure 3-10
Pacific Northwest real value of groundfish exports by major country of destination, 1985-93.

THE RECREATIONAL HARVEST SECTOR

Summary Statistics

Alaska's 6,640 miles of coastline offer many and varied sportfishing opportunities. This section focuses on marine finfishing, and it therefore provides only a partial picture of the entire recreational fishery, since about 70% of total angler trips and 64% of total recreational finfish harvest (Mills, 1984-94) are made from fresh rather than marine waters.

During 1990-93, the number of marine anglers and the number of trips they made were relatively stable. Nonresidents comprised 45-48% of the total angling population and took 29-39% of all trips. They averaged 1.5-1.9 trips per year, compared with 2.8-3.3 trips per year for resident anglers. About 265,278 anglers made 635,783 trips in 1993 (Fig. 3-11, 3-12). Although out-of-state anglers averaged fewer trips, the sheer distance traveled to reach those fishing sites, and the associated costs of getting there, are indications of the importance of recreational fishing in Alaska.

Although finfishing activity was relatively stable during 1990-93, it increased significantly over the longer term period 1984-93 (Fig. 3-13). Factors contributing to this trend include increased demand for fishing, particularly by nonresident anglers, and the burgeoning charter boat industry. The number of shore trips increased from 42,500 in 1984 to 107,500 in 1993. Boat trips increased from 211,532 in 1984 to 491,497 in 1993. Between 1984 and 1993, total trips were split about 20-80% between shore and boat modes, respectively.

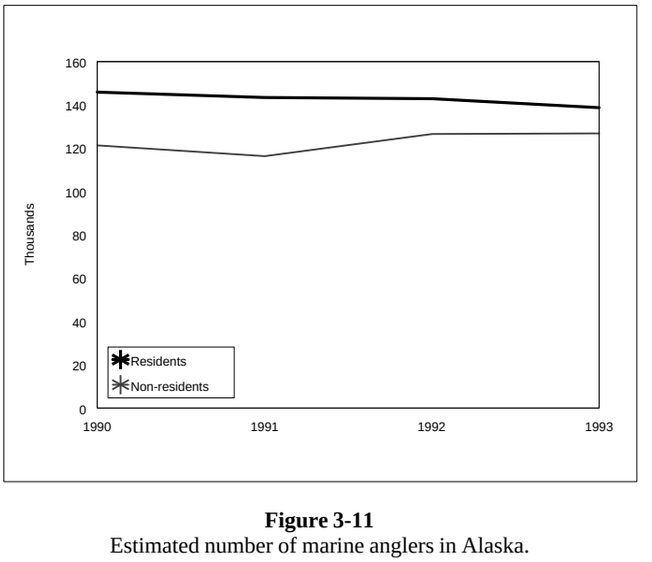


Figure 3-11
Estimated number of marine anglers in Alaska.

Harvest has not increased commensurately with the number of trips. For instance, from 1984 to 1993, boat trips increased by 132%, while boat-based harvest increased by only 81%. Over this same period, shore trips increased by 153%, while shore-based harvest actually declined by 38% (Fig. 3-13, 3-14). These changes reflect significant decreases in harvest per trip over time. The statistics pertain to fish harvested (i.e., caught and

Table 3-2
Estimated average distribution of 1983-93 marine finfish harvest in Alaska, by species group and fishing mode[1].

Species group	Shore %	Boat %	All modes %
Coho	13.3	17.1	16.0
Pink	25.5	10.6	13.5
Other salmon[2]	8.4	10.1	9.5
Total salmon	47.2	37.8	39.0
Halibut	3.2	34.0	27.2
Rockfish	3.4	15.3	12.5
Smelt	24.9	2.2	8.2
Trout	10.9	2.5	4.4
Other finfish	10.3	8.1	8.7

[1]Source: Mills, 1984-94.
[2]Chinook, sockeye, and chum salmon.

Table 3-3
Estimated consumer surplus and annual expenditures associated with marine fishing in Alaska in thousands of dollars (base year=1987)[1].

	Consumer surplus			Fishing expenditures			
	Resident	Nonres.	Total	Resident	Nonres.	Total	Total WTP
1990	$93,235	$40,430	$133,670	$61,557	$80,926	$142,504	$276,174
1991	$89,846	$31,958	$121,804	$59,338	$63,961	$123,300	$245,105
1992	$103,333	$32,676	$136,010	$68,246	$65,398	$133,645	$269,665
1993	$84,841	$42,345	$127,186	$56,033	$84,749	$140,782	$267,968
Avg.	$92,814	$36,853	$129,668	$61,299	$73,759	$135,058	$264,726

[1]Source: Jones and Stokes Associates, Inc., 1987, 1991; Mills, 1985-94.

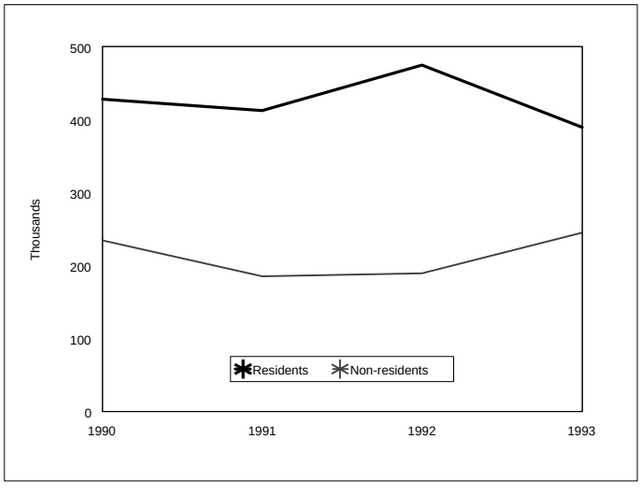


Figure 3-12
Estimated number of recreational fishing trips taken in Alaska.

kept). A significant proportion of total finfish catch—45% during 1990-93 (Mills, 1991-94)—is not kept.

For shore-based trips, the average number of fish harvested per trip declined from about 4.1 fish in 1984 to 1.6 fish during 1985-89 and to 1.1 fish during 1990-93. For boat-based trips, average harvest per trip was about 2.2 fish in 1984 and 1.4 fish during 1985-93 (Fig. 3-13, 3-14). Factors contributing to the declining trend in harvest per trip include increased popularity of catch-and-release, particularly by nonresident anglers, and decreased availability of some species in some geographic areas.

The species composition of harvest varies significantly by fishing mode (Table 3-2). During 1983-93, shore-based harvest consisted largely of pink salmon, smelt, coho salmon, and trout. The boat-based harvest consisted largely of halibut, coho salmon, rockfish, and pink salmon.

Angler consumer surplus for recreational fisheries in Alaska have been estimated to be $129.7 million (Table 3-3). Recreational fishing expenditures are about $135.1 million. Additional benefits are also generated to the state economy in terms of employment.

Regulation and Management Issues

The State of Alaska imposes licensing requirements on resident and nonresident anglers 16 years of age and older, and also requires a tag for chinook salmon fishing. Gear restrictions are placed on sport fishing in general, as well as on specific activities like ice fishing, freshwater fishing, and fly fishing. Area closures are utilized, as are seasonal closures for selected species. Bag, possession, and/or size limits are imposed on salmon, trout, halibut, grayling, rockfish and various species of shellfish (ADFG, 1993).

The major management issues relevant to the sport fishery pertain to allocation of fishery resources. At the international level, an ongoing issue in Alaska has been the share of the chinook salmon quota that the state receives under the U.S.-Canada treaty. A number of local salmon allocation issues have also arisen involving sport vs. commercial interests and charter vs. private boat interests. Similar allocation issues have arisen in the context of the halibut fishery. The State Board of Fisheries, which is responsible for resolving such issues, sometimes finds its authority chal-

lenged when the State Legislature is asked to intercede on behalf of dissatisfied interest groups.

The Native Land Claims Settlement Act is a Federal law requiring that a subsistence priority for all fish be given to rural residents of Alaska when the harvestable surplus is insufficient to meet the needs of all users. This prioritization is not consistent with the Alaska Constitution, which prohibits discrimination on the basis of residence. The Federal government is now threatening to assume management of subsistence fisheries on Federal lands, the outcome of which would be disjointed management on the basis of political jurisdiction.

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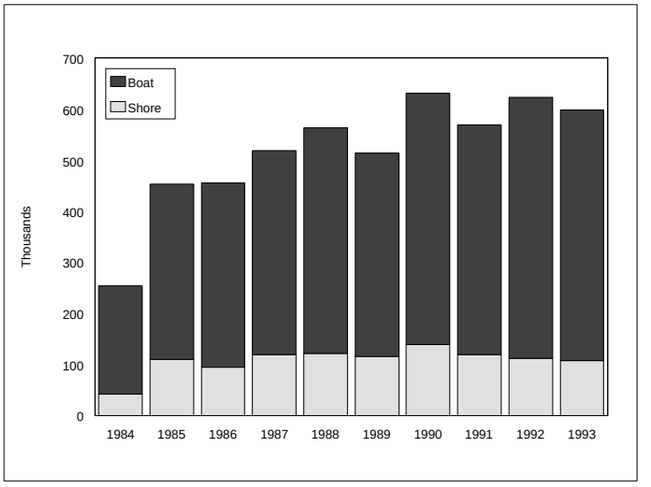

Figure 3-13
Estimated number of recreational fishing trips taken in Alaska, by mode.

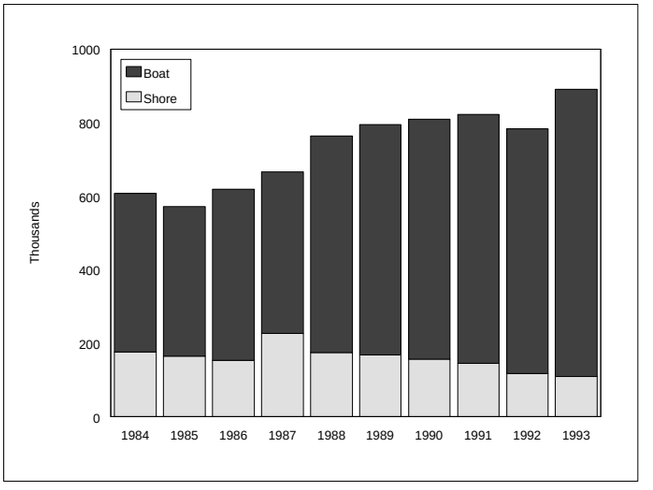

Figure 3-14
Estimated number of marine finfish harvested in Alaska, by mode.