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Status Report on the North Pacific Groundfish Industry, 1986

by Lewis E. Queirolo, Richard K. Kinoshita, and Janet E. Smoker

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## STATUS REPORT ON THE NORTH PACIFIC GROUNDFISH INDUSTRY, 1986

by

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### ABSTRACT

The North Pacific groundfish fishery in the U.S. Exclusive Economic Zone (EEZ) shifted from an almost exclusively foreign harvested fishery before 1980 to one where the domestic fleet in 1986 harvested nearly 74% of the total catch. Joint ventures, where the domestic fleet delivers their catch directly to foreign processors, began in 1978 and increased dramatically to over 1.2 million metric tons (t) in 1986. The domestic catch delivered to U.S. processors also increased and amounted to 167,346 t in 1986. The foreign catch dropped from 97% of the total in 1980 to 26% in 1986.

This report presents the catch, ex-vessel value, products, and markets for North Pacific groundfish. The U.S. groundfish fleet in the North Pacific in 1986 is summarized by type of fishery, gear utilized, size, and ex-vessel value. The trends in consumption and imports of groundfish products are reviewed, and the recently developed surimi market is discussed. CONTENTS

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#### INTRODUCTION

The groundfish fishery, excluding Pacific halibut (<u>Hippoglossus</u> <u>stenolepis</u>), in the Northeast Pacific has historically been dominated by foreign distant-water fishing fleets. Prior to 1981, virtually all of the groundfish harvested from this region were taken by Japan, with the Republic of Korea, and the U.S.S.R. far behind in second and third place (Table 1).

With the enactment of the Magnuson Fishery Conservation and Management Act of 1976 (MFCMA), the exploitation and management of the fisheries resources of the Northeast Pacific began to change; slowly at first, but with ever increasing speed. Between 1981 and 1986 the total groundfish harvest from the U.S. fishery conservation zone (FCZ, subsequently redefined as the Exclusive Economic Zone or EEZ) off Alaska ranged from approximately 1.6 million metric tons (t) to just over 2 million t per year, or 3.4 to 4.6 billion pounds (lb) annually. In 1981, the total foreign groundfish catch was 1.5 million t (92.9%) and the catch by U.S. vessels was about 0.1 million t, or 7% of the total groundfish catch (Table 2). By 1986, the catch by U.S. vessels (domestic and joint venture combined) topped 1.39 million t and accounted for 73.9% of total groundfish catch from these areas (Fig. 1).

This dramatic change is, to a large extent, a reflection of the regulatory environment developed as a result of the MFCMA. Since the advent of the Magnuson Act, U.S. policy has been to encourage domestic users to take the fullest possible economic advantage of the fisheries resources within the U.S. EEZ.

The movement towards full U.S. utilization of the groundfish resource, or "Americanization" as it is popularly characterized, has been most pronounced in the fisheries of the Gulf of Alaska (GOA), where in 1986 there was, for the first time since establishment of the EEZ, no foreign trawl groundfish fishery

		- • •						
Year	Domestic	venture	Japan	U.S.S.R.	ROK	Other	Total	Total
1977	2		1,210	182	86	2	1,480	1,482
1978	4	*	1,151	284	103	4	1,542	1,546
1979	7	1	1,086	182	127	50	1,445	1,453
1980	9	34	1,157	58	208	73	1,496	1,539
1981	19	96	1,148		243	114	1,505	1,620
1982	33	183	1,074		243	23	1,340	1,556
1983	56	353	969		278	24	1,271	1,680
1984	63	577	937	23	276	79	1,315	1,955
1985	115	884	806	11	225	32	1,074	2,073
1986	167	1,222	385		97	9	491	1,880

Table 1.--Annual groundfish harvest in the U.S. Exclusive Economic Zone, domestic, joint venture, and foreign, 1977-86 (in thousand metric tons).

\* Less than 50 metric tons. ROK - Republic of Korea.

Sources: 1977-80--1) J. D. Berger, J. E. Smoker, and K. A. King. 1986. Foreign and joint venture catches and allocations in the Pacific Northwest and Alaska fishing area under the Magnuson Fishery Conservation and Management Act, 1977-84. U.S. Dep. Commer., NOAA Tech. Memo. NMFS F/NWC-99. 2) Alaska Catch and Production. Commercial Fisheries Statistics Stat. Leaf. No. 38, Alaska Dep. Fish and Game, P.O. Box 3-2000, Juneau, AK 99802.

<sup>1981-86--</sup>Natl. Mar. Fish. Serv., Pacific Marine Fisheries Commission, Pacific Fishery Information Network, 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070.

Table	2Groundfish catch in U.S. Exclusive Economic Zone off Alaska by
	fleet and area, 1981-86 (in metric tons, round weight, and in percentages).

		Joint		
Year	Domestic	Venture	Foreign	Total
Overstites				
Quantity				
Gulf of Alas	aka			
1981	4,505	16,965	232.544	259.015
1982	8,023	74.450	153 735	236 207
1983	9,056	142 984	147 471	200,207
1984	14 779	219 621	123 705	359 105
1985	33 176	213,021	123,705	330,103
1986	60,896	65,287	15,546	141,730
Bering Sea a	and Aleutian Is	lands		
1981	14,398	78,536	1,272,894	1,365,829
1982	25,242	108,349	1,186,200	1,319,791
1983	46,485	210,042	1,123,834	1,380,362
1984	48,378	357,546	1,191,236	1,597,160
1985	81,481	636,363	1,033,409	1,751,253
1986	106,413	1,156,449	475,181	1,738,042
Total				
1981	18,903	95,501	1,505,439	1,619,843
1982	33,265	182,798	1,339,935	1,555,998
1983	55.541	353.026	1,271,305	1,679,872
1984	63,157	577,167	1,314,941	1 955 265
1985	114 658	883 567	1 074 409	2 072 624
1986	167,346*	1,221,735	490,728	1,879,809
Percentage				
Gulf of Alas	ka			
1001	1.0	6.7		100.0
1981	3.4	21 5	91.5	100.0
1093	3.4	47.0	40.2	100.0
1984	J.U	47.0	49.2	100.0
1005	10.3	76.0	12 0	100.0
1986	42.9	46.1	11.0	100.0
Bering Sea a	and Aleutian Is	lands		
1981	1.1	5.7	93.2	100.0
1982	1.9	8.2	89.9	100.0
1983	3.4	15.2	81.4	100.0
1984	3.0	22.4	74.6	100.0
1985	4.7	36.3	59.0	100.0
1986	6.1	66.5	27.4	100.0
Total				
1981	1.2	5.9	92.9	100.0
1982	2.1	11.8	86.1	100.0
1983	3.3	21.0	75.7	100.0
1984	3.2	29.5	67.3	100.0
1985	5.5	42.6	51.9	100.0
1986	8.9	65.0	26.1	100.0
		0.0	2001	100.0

\* Includes catch from unknown areas.

Source: Natl. Mar. Fish. Serv., Pacific Marine Fisheries Commission, Pacific Fishery Information Network, 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070.



and the foreign longline fishery was limited to 15,546 t, which was 11% of total GOA groundfish harvest. Over 46% (65,287 t) of the 1986 groundfish harvest in the GOA was taken by joint venture operations which consist of U.S. fishing vessels delivering their catch to foreign processing vessels, and 42.9% (60,896 t) of the 141,730 t harvest was taken for U.S. processors.

For the 1986 Bering Sea/Aleutian Islands (BS/AI) area groundfish fisheries, joint venture catch totaled 1,156,449 t, foreign catch was 475,181 t, and the domestic fishery landed 106,413 t. Therefore, although the joint venture and domestic fishery harvests were substantially larger in the BS/AI area than in the Gulf of Alaska, together these two fisheries account for 72.6% of the total harvest compared to 89% for the Gulf of Alaska.

## DESCRIPTION OF PRODUCT FORMS

The domestic groundfish fisheries in the Gulf of Alaska and eastern Bering Sea are responsible for a wide variety of products bound for both U.S. and foreign markets. Product form is highly variable, depending upon the level of primary or secondary processing undertaken and the intended market. In general, most of the output of the domestic groundfish fishery in the mid-1980s remains in frozen product form, that is, blocks, fillets, and headed and gutted fish. However, there was an expanding fresh market for some flatfishes and rockfishes, and initial domestic production of surimi made from walleye pollock (Theragra chalcogramma) began in 1986.

The Japanese market has emerged as the principal outlet for domesticcaught sablefish (<u>Anoplopoma fimbria</u>), while Pacific cod (<u>Gadus macrocephalus</u>) and walleye pollock are delivered to both domestic and international markets. Domestic landings of Pacific cod have begun to make inroads into the highly competitive world whitefish fillet market. With continued emphasis on

producing a high quality product, and lower catches of Atlantic cod (<u>Gadus</u> <u>morhua</u>), 1,948,991 t in 1985--down from 2,255,741 t in 1982, from traditional sources (Canada, Denmark, Iceland, and Norway), prospects for sustained growth by Pacific cod in the world codfish market appear good (Terry and Queirolo 1988, and Food and Agriculture Organization 1987).

Domestic production of walleye pollock has also shown a strong growth potential. The catch increased from only 8,350 t in 1984 to 79,233 t in 1986. Output is primarily composed of fillets, blocks, and "formed" products. Surimi-based crab, lobster, scallop, and shrimp analog products have attracted considerable recent attention with consumption of seafood analog at an estimated 119 million 1b in 1986 compared to 18.5 million 1b in 1982 (Parker 1986). A large percent of the surimi was imported, but U.S. production of surimi should begin to increase as a second surimi plant started operations in March 1986 and a third plant began in late 1986. The domestic groundfish catch from the GOA and BS/AI is also used in the "industrial" products areaspecifically as a source of bait for various line and pot fisheries. Information on species composition and quantity is not readily available. However, total volumes are assumed to be relatively small when compared to the food fish harvest.

## MARKETS

World markets for groundfish products are, in general, well developed and highly integrated, that is, there are large companies that have processed and marketed groundfish blocks and fillets for several decades. Because these markets have historically been dependent, to a large extent, on Atlantic groundfish stocks and the distant-water fleets of Europe and Asia (particularly Japan) for product supplies, U.S. producers from the North

Pacific have found it hard to compete in these markets. Instead, those marketing groundfish products have shipped some fresh or frozen fillets, but mostly frozen headed and gutted fish (Pacific Seafood Processors Association 1985). In the last several years, there has been limited success in selling high quality cod and pollock fillets in competition with Canadian and European products. As control over the groundfish resources in the U.S. EEZ is consolidated in domestic hands, changes in trade flows can be expected.

## DOMESTIC GROUNDFISH SUPPLY AND CONSUMPTION

Based upon National Marine Fisheries data<sup>3</sup>, 1986 U.S. civilian consumption of commercial fish and shellfish exceeded 3.5 billion lb (1.6 million t), up from the 1985 total of 3.4 billion lb (1.5 million t). These figures represent the amount of edible meat consumed from domestically caught and imported fish and shellfish supplies, and do not include recreational or subsistence fish consumption. On a per capita basis, Americans consumed 14.7 lb of commercially supplied edible fish and shellfish in 1986, up from 14.4 lb in 1985. With respect to commercially supplied fish fillets and steaks, and sticks and portions, the per capita U.S. consumption was estimated to be 3.24 lb and 1.79 lb, respectively in 1986 compared to 3.25 lb and 1.76 lb per capita in 1985 (Table 3).

Data on U.S. supplies of groundfish fillets and steaks suggest that domestic production accounted for approximately 24.4% of the available supply of product in 1986, with imports making up the remaining 75.6%. Total volume of groundfish products was 379.8 million lb (172,289 t), of which 287 million lb (130,227 t) were imported and 92.7 million lb (42,062 t) were

<sup>&</sup>lt;sup>3</sup>Natl. Mar. Fish. Serv., Fisheries of the United States, 1986, Current Fish. Stat. No. 8385, April 1987, 119p.

	F and	'illets steaks <sup>a</sup>	Fish sticks and portions <sup>a</sup>		
Year	Total	Per capita <sup>b</sup>	Total	Per capita <sup>b</sup>	
1980	545,347	2.40	442,892	1.95	
1981	564,844	2.46	414,149	1.80	
1982	582,630	2.51	400,455	1.73	
1983	649,828	2.77	413,858	1.77	
1984	713,159	3.02	430,895	1.82	
1985	776,093	3.25	419,547	1.76	
1986	780,201	3.24	431,266	1.79	

Table 3.--U.S. consumption of all fillets and steaks, and fish sticks and portions, total in thousand pounds and per capita in pounds, 1980-86.

a Product weight.

<sup>b</sup> Total divided by total U.S. resident population.

Source: Computed from data from U.S. Dep. Commer., Bureau of the Census; and Natl. Mar. Fish. Serv., Fisheries of the United States, various issues. domestically produced. These data exclude many west coast species, such as all flatfishes, rockfishes, walleye pollock, and sablefish. Another data series on consumption of all fillets and steaks includes all fresh- and saltwater species. It is estimated that this series is composed of 75% to 80% groundfish. These data suggest that, while U.S. per capita consumption of fillets and steaks increased by 35% from 2.40 lb to 3.24 lb between 1980 and 1986, per capita consumption of sticks and portions actually declined from 1.95 lb to 1.79 lb, down 8% over the same period.

The trend in consumption of fillets and steaks, and sticks and portions in the 1980s is consistent with the generally held opinion that the U.S. consumer is becoming more quality conscious with respect to seafood in general, and more discriminating with respect to the specific product forms demanded. This is a tendency which, if confirmed, could work to the advantage of the domestic groundfish fishery, considering that in 1986, U.S. supplies of regular and minced blocks (the raw material from which sticks and portions are produced) were composed of 98.9% imported product and only 1.1% U.S. product. In fact, between 1975 and 1986, U.S. domestic production of regular and minced block never represented more than a fraction over 1% of the total U.S. supply of this commodity.

It should be emphasized that there will likely remain a substantial market for groundfish blocks in this country for the foreseeable future, given that more than 368 million lb (166,840 t) of this product were supplied to the U.S. market in 1986. This does not include the rapidly growing market for surimi, which would seem to represent an excellent development opportunity for the domestic groundfish industry. The increase in seafood analog consumption suggest that this area of the domestic groundfish market bears watching in the coming years.

Commercial landings by U.S. fishermen at ports in the 50 States were reported at 6 billion lb (2.7 million t) in 1986, reflecting a decrease of 227 million lb from 1985 levels, although landings of walleye pollock, halibut, and sablefish actually increased. The domestic groundfish catch off Alaska in 1986 amounted to 369 million lb (167,346 t) or 6.1% of total, and was up 46% from 1985. Joint venture catches by U.S. fishermen delivering to foreign processing vessels increased by 44% over 1985 levels, reaching 2.89 billion lb (1.3 million t). The major species were flounders, Pacific cod, and walleye pollock. The combined catch, both foreign and domestic, from the U.S. EEZ in 1986 was estimated to be 3.0 million t. This reflects a 6% increase over 1985 catches, with the U.S. share rising by 21% to 80% of the total harvest (Footnote 3).

## IMPORT SUPPLIES

It has been speculated that imports of groundfish blocks and fillets will not be sufficient to meet U.S. consumption needs in the future. Fishing restrictions and catch quotas imposed on some of the major fishing nations have reduced inventories available for export. Increases in worldwide demand for groundfish products, as for example the increases observed in the Northern European countries, have reduced the supplies offered to U.S. buyers. As discussed earlier, imports of blocks and fillets to the United States have traditionally come from Canada, Iceland, Dermark, and Norway with other nations such as the Republic of Korea, Japan, Poland, and several South American countries contributing a measurable share to the U.S. market (Tables 4 and 5). Since 1976, imports of groundfish blocks have declined by about 1% per year, while imports of groundfish fillets have increased by about 1.2% per year. The increase of whole or dressed fish from Canada has been

	Fille and ste	Fillets and steaks		Blocks		Total	
Year	Quantity	Value	Quantity	Value	Quantity	Value	
1976	337	273	379	211	716	484	
1977	321	305	385	292	706	597	
1978	333	341	406	325	739	666	
1979	340	385	408	337	748	722	
1980	297	341	336	289	633	630	
1981	346	415	344	301	690	716	
1982	371	458	319	274	690	732	
1983	355	449	384	339	739	788	
1984	373	459	316	263	689	722	
1985	388	500	334	275	722	775	
1986	366	542	364	380	730	922	

Table 4.--U.S. imports of groundfish fillets, steaks, and blocks, 1976-86 (quantity in million pounds, product weight and value in million dollars).

Sources: U.S. Dep. Commer., Bureau of the Census, Washington, D.C. 20233; and Natl. Mar. Fish. Serv. data base, available from Northwest and Alaska Fish. Cent., 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070.

Country	1981	1982	1983	1984	1985	1986
Canada Iceland	323,243 136,626	321,823 136,940	313,964 152,788	311,698 141,556	306,697 152,468	327,617 126,357
Denmark	38,186	53,604	84,969	86,683	81,669	69,281
Rep. of Korea	43,122	43,571	61,072	56,579	59,341	66,432
Japan	33,651	33,193	25,763	19,372	27,655	31,157
Norway	39,692	37,254	38,449	30,748	21,818	29,509
Poland	16,339	11,891	2,119	2,104	18,427	18,843
Argentina	10,762	12,945	12,996	5,346	10,749	14,621
Uruguay	13,839	10,614	11,607	9,300	13,578	10,917
United Kingdom	538	1,946	6,806	5,140	6,362	7,807
Netherlands	1,052	1,827	2,550	5,408	9,252	7,930
Other	33,107	24,789	26,178	15,661	13,838	19,267
Total	690 <b>,</b> 156	690,397	739,261	689,595	721,854	729,738

Table 5.--U.S. imports of groundfish fillets, steaks, and blocks by country of origin, 1981-86 (in thousand pounds, product weight).

Sources: U.S. Dep. Commer., Bureau of the Census, Washington, D.C. 20233; and Natl. Mar. Fish. Serv. data base, available from Northwest and Alaska Fish. Cent., 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070. substantial from 16.4 million lb or 7,440 t in 1980 to just under 100 million lb or 45,142 t in 1986 (Table 6).

Although considerable amounts of fish harvested by foreign fleets in the U.S. EEZ are exported back to the United States, a substantial share of the products are also sold in their country or to third countries. The Japanese produce pollock surimi for their domestic market. However, the Republic of Korea does sell considerable quantities back to the United States in the form of blocks and fillets, and Poland exports blocks from pollock taken off Alaska (Alverson 1985).

## IMPACT ON DOMESTIC GROUNDFISH FISHERY DEVELOPMENT

All of these sources of groundfish supply, extracted from the U.S. EEZ, have an effect upon the availability and price of fishery products for U.S. consumers. These sources of groundfish also influence, in a potentially significant way, the economic development and performance of the U.S. domestic groundfish industry. As noted above, imports of fish block and whitefish fillet products from Canada, Iceland, and Northern European countries will most probably remain below historic levels for sometime. Because U.S. consumers depend so heavily upon imports for their supplies of these groundfish products, the U.S. domestic market is vulnerable to shortages of some commodities. Indications are that shortages of traditional groundfish products, such as Atlantic cod fillets and blocks, have begun to appear in the major world groundfish markets, with accompanying upward pressure on prices (Figs. 2 and 3). This situation presents U.S. producers with potentially new marketing opportunities, for both traditional and non-traditional species and product forms. It will, however, simultaneously open U.S. market opportunities to foreign groundfish suppliers who have not historically sold into the

	Canad	la	Othe	er	Tota	Total	
Year	Quantity	Value	Quantity	Value	Quantity	Value	
1976	13,935	4,932	4,526	6,216	18,461	11,148	
1977	11,701	4,330	4,294	5,598	15,995	9,928	
1978	10,659	4,115	4,248	5,838	14,907	9,953	
1979	15,682	6,175	5,965	8,902	21,647	15,077	
1980	16,402	6,617	2,668	5,243	19,070	11,860	
1981	28,908	12,090	3,577	7,107	32,485	19,197	
1982	38,342	14,215	3,487	7,006	41,829	21,221	
1983	48,941	18,117	4,183	7,072	53,124	25,189	
1984	80,882	30,029	4,773	7,334	85,655	37,363	
1985	99,174	37,538	5,214	8,793	104,388	46,331	
1986	99,521	47,703	7,886	12,499	107,407	60,202	

Table 6.--U.S. imports of whole or dressed groundfish, 1976-86 (quantity in thousand pounds, round weight and value in thousand dollars).

Sources: U.S. Dep. Commer., Bureau of the Census, Washington, D.C. 20233; and Natl. Mar. Fish. Serv. data base, available from Northwest and Alaska Fish. Cent., 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070.









U.S. market, as well as potentially expand access by other traditional suppliers. The resulting direct competition between these foreign suppliers and the developing U.S. domestic groundfish fishing industry, particularly in the North Pacific and Bering Sea, will be a challenging obstacle to overcome in route to full domestic utilization of the groundfish resource in the EEZ.

## DOMESTIC FLEET CHARACTERISTICS

The domestic groundfish fleet can be segmented into two major groupings, that is, wholly domestic operations and joint venture operations. As noted above and as demonstrated by the data summarized in the previously mentioned Figure 1 and Table 2, the catches in the joint venture and domestic fisheries increased rapidly through 1986 and allocations to the foreign fishery were decreased. The estimated ex-vessel value of the catch taken by U.S. vessels and data describing the U.S. groundfish fleet are presented in this section.

The estimated total ex-vessel value of the annual joint venture harvest (JVP) increased from \$25 million in 1982 to \$144 million in 1986 (Table 7 and Fig. 4). Walleye pollock dominated the value of the 1986 catch with 66% of the total followed by flatfish (20%) and Pacific cod was third with 10% (Fig. 5). In 1986, there were partnerships between twenty U.S. companies and 32 foreign companies: fourteen Korean, eleven Japanese, three Chinese, three Polish, and one Soviet. The joint venture fishery was predominately a trawl fishery. However, in 1986 a second attempt was made at a longline joint venture. Unlike 1985's venture, where several U.S. longliners delivered Greenland turbot (<u>Reinhardtius hippoglossoides</u>) to a Taiwanese processor in the Bering Sea, the 1986 operation involved six boats delivering Pacific cod to a Japanese processor in the Gulf of Alaska.

Species	1982	1983	1984	1985	1986
		1.4			
		Qua	antity		
Atka mackerel	27.5	24.9	80.5	88.0	70.5
Pacific cod	30.1	36.9	84.9	80.2	145.5
Flatfish	58.8	81.5	119.9	396.1	475.9
Pollock	284.1	624.1	979.4	1,354.4	1,993.2
Other	3.2	6.2	7.8	1.1	2.1
Total	403.7	773.6	1,272.5	1,919.8	2,687.2
		V	alue		
Atka mackerel	1.9	1.5	5.6	6.1	4.8
Pacific cod	3.0	3.5	8.5	7.8	14.4
Flatfish	4.0	5.3	7.6	24.8	28.8
Pollock	15.9	26.1	41.6	59.7	95.3
Other	0.2	0.8	1.3	0.2	0.4
Total	25.0	37.2	64.6	98.6	143.7

Table 7.--Alaska joint venture catch (million pounds) and value (million dollars) by species, 1982-86.

Source: Natl. Mar. Fish. Serv., Fisheries of the United States, 1986, Current Fishery Statistics No. 8385, April 1987.







The 1986 joint venture trawl fleet was a heterogeneous group of 108 vessels, ranging from 58 to 135 feet: 25 were 120 feet or over, 35 were between 100-119 feet, 40 were between 80-99 feet, and eight below 80 feet. Many of these trawlers have fished for several years with only one or two foreign partners, and operated in groups of 4 to 30, rotating with their sister ships throughout the season (which began in late January and ended in the last week of December, with peak activity occurring in mid August). Seventeen of the trawlers and all 6 of the longliners fished in their first Alaskan joint venture in 1986. Nine trawlers which participated in 1985 joint ventures did not return in 1986.

Of the 114 participants, 35 indicated a home port in Alaska (an increase from 26 in 1985); 6 were from California, 13 from Oregon, and 60 from Washington, with the greatest number (53) listing Seattle as home port.

The wholly domestic fishery has also grown rapidly. The estimated exvessel value of the annual catch in the domestic fishery increased from \$13.7 million in 1982 to \$65 million in 1986 (Table 8 and Fig. 4). Sablefish comprised 53% of the total ex-vessel value followed by walleye pollock with nearly 20% and Pacific cod was third with 16% (Fig. 5). Note that these estimates exclude both halibut and the value added by at-sea processing. When the value of joint ventures are added to the purely domestic fishery, the fishery in 1986 was valued at \$208.8 million, up 46% from 1985 (Table 9).

Alaska Department of Fish and Game fish ticket data indicate that approximately 1,500 vessels participated in the 1986 domestic groundfish fishery. This fleet included 962 vessels which used longline gear, 24 vessels which used pot gear, 84 vessels which used trawl gear.<sup>4</sup> The fleet includes

<sup>4</sup>Simons, David. Alaska Dep. Fish Game, P.O. Box 3-2000, Juneau, AK 99802. Pers. commun., 1987.

	1985			1986		
Species	Gulf	BS/AI	Total	Gulf	BS/AI	Total
Sablefish	15,646	3,738	19,384	28,031	6,471	34,556
Pac. cod	832	14,797	15,629	2,360	8,050	10,410
Pollock	2,669	3,609	6,278	2,633	10,102	12,735
Rockfish	1,535	301	1,836	3,715	404	4,119
Flatfish	137	52	189	487	2,173	2,660
Other	167	225	392	348	277	626
Total	20,986	22,722	43,708	37,574	27,477	65,106

Table 8.--Ex-vessel value of domestic fisheries off Alaska excluding joint ventures by species and area, 1985-86 in thousand dollars.\*

\* Value based on unprocessed fish and does not include value added by at-sea processing.

Source: Natl. Mar. Fish. Serv., Pacific Marine Fisheries Commission, Pacific Fishery Information Network, 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070.

Table 9.--Ex-vessel value of domestic harvest of groundfish off Alaska including joint ventures by species, 1984-86 in million dollars.\*

Species	1984	1985	1986
Atka mackerel	5.6	6.1	4.8
Pacific cod	26.1	23.4	24.8
Flatfish	7.8	25.0	31.5
Pollock	43.0	66.0	108.0
Rockfish	2.1	1.9	4.3
Sablefish	7.4	19.4	34.6
Other	0.2	0.5	.8
Total	92.2	142.3	208.8

\*Value based on unprocessed fish and does not include value added by at-sea processing.

Sources: Natl. Mar. Fish. Serv., Fisheries of the United States, 1986, Current Fishery Statistics No. 8385, April 1987; Natl. Mar. Fish. Serv., Alaska Region, Unpubl. data, 709 W. Ninth St., P.O. Box 21668, Juneau, AK 99802-1668; and Pac. Mar. Fish. Com., Pac. Fish. Info. Network, 7600 Sand Point Way N.E., BIN C15700, Seattle, WA 98115-0070. catcher/processors and motherships which accounted for more than 40% of the domestic catch and vessels that delivered to shore-based processing plants. Part of this fleet also participated in the joint venture fishery.

## CONCLUSIONS

The North Pacific groundfish fishery in the U.S. EEZ off Alaska has changed from a foreign dominated fishery in 1981 to one where the domestic fleet in 1986 harvested nearly 74% of the total catch. The major increase has been the joint venture fishery. Joint venture catches have increased from 95,500 t in 1981 to 1.2 million t in 1986 or 65% of the total catch, however, some quantities of the joint venture catch are exported back to the United States in the form of fillets and blocks. Although only 8.9% or 167,346 t of the catch is utilized by domestic processors, the domestic catch has increased by 785% since 1981. A number of vessels are being built or renovated, and others are being planned. A major increase in the catch of walleye pollock is expected as the domestic production of surimi is expanded. The major challenge in the next few years will be the production and marketing of the vast quantities now processed by foreign processors and being competitive in domestic and world groundfish markets.

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