

BERING SEA/ALEUTIAN GROUND FISH FMP

SUMMARY

Specific Management Objectives are:

- A. Continue rebuilding the halibut resource.
- B. Rebuild other depleted groundfish stocks.
- C. Provide for U.S. involvement in the BSA groundfish fishery limited only by the OY of individual species and A and B above.
- D. Allow foreign participation in the fishery, consistent with A, B and C above.

This plan and the following management measures applies to the U.S. Fishery Conservation Zone of that portion of the North Pacific Ocean adjacent to the Aleutian Islands west of 170° West and of the entire Bering Sea.

It applies to all foreign and domestic fishing vessels operating in the area described above except U.S. and Canadian fishermen when they are operating under IPHC regulations, those U.S. vessels which are operating legally in any fishery for shellfish and to all stocks of finfish and squid except salmon, steelhead trout, Pacific halibut and herring which are distributed or exploited predominantly in the FCZ.

Management Measures

All U.S. vessels operating in that part of the Bering Sea/Aleutian groundfish fishery which is under Council jurisdiction must have a permit issued by the Secretary of Commerce or, if considered acceptable by the Secretary, a State of Alaska vessel license.

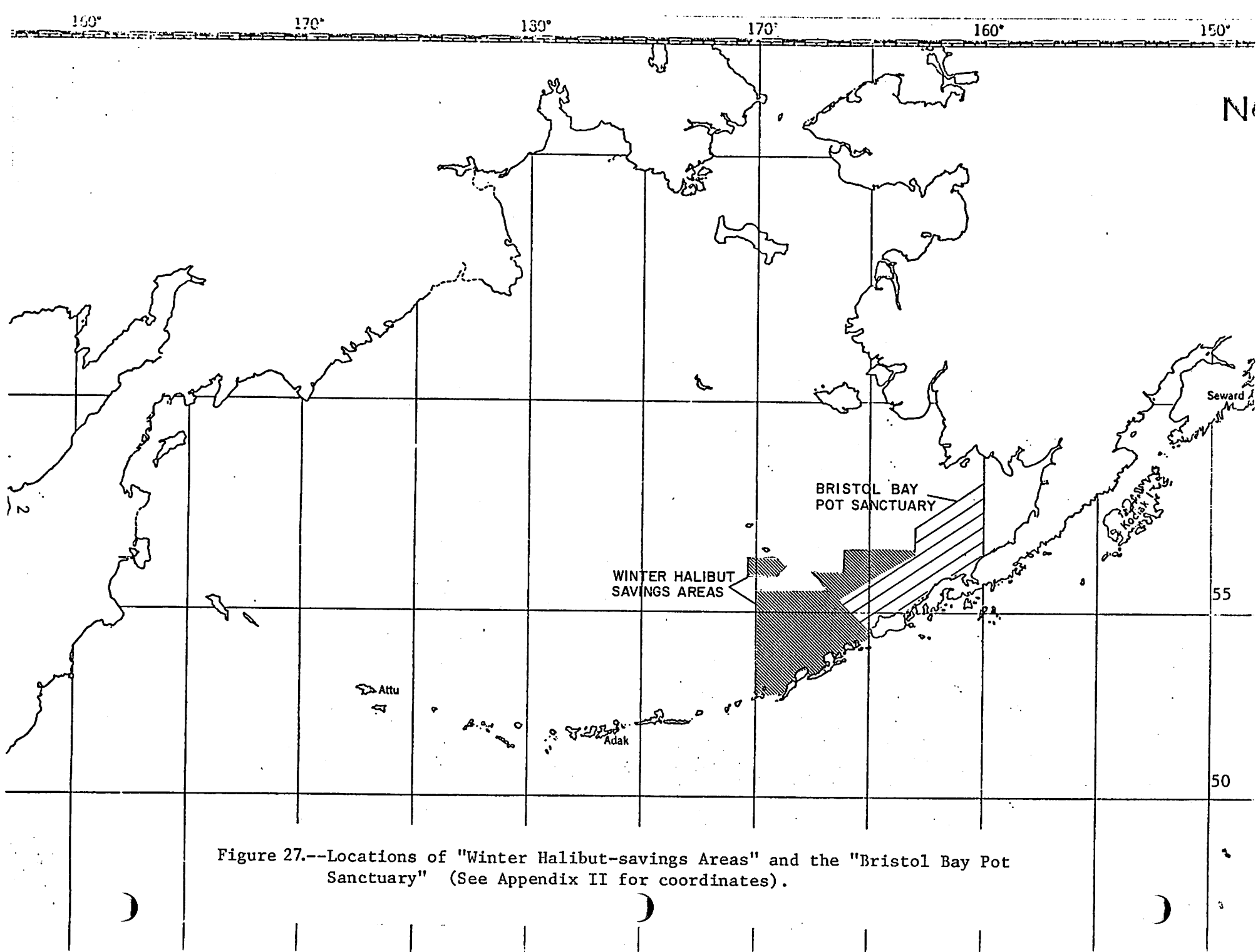


Figure 27.--Locations of "Winter Halibut-savings Areas" and the "Bristol Bay Pot Sanctuary" (See Appendix II for coordinates).

Prohibited Species: are steelhead trout, Pacific halibut, herring and salmon.

Area Closures Domestic Fishermen:

There are no general area closures in this FMP.

There is a no trawling 'pot sanctuary' and a 'winter halibut--savings area' as shown in Figure 27 (attached). Domestic trawling only will be permitted for crab bait and only during open seasons of the U.S. Bering Sea crab fishery inside the pot sanctuary.

From December 1st to May 31st domestic trawling will be permitted in the 'winter halibut--savings area' only until the total U.S. trawl catch from this area exceeds 2,000 metric tons.

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There are no closures from June 1st to November 30th.

These closures are designed to prevent high incidental catches and mortality of juvenile halibut which are known to occur in winter concentrations in the 'pot sanctuary' and the 'winter halibut--savings area' while allowing for some expansion in the traditional crab bait trawl fishery and the initial development of a human consumption fishery.

Domestic longlining in the 'winter halibut--savings area' will be permitted landward of the 500 meter isobath from December 1st to May 31st only until the total U.S. longline catch (excluding halibut) for this area exceeds 2,000 metric tons. From June 1st to November 30th there are no closures. There are no other closures which affect longliners.

There are no gear restrictions in the fishery.

Statistical Reporting Requirements includes an accurately completed State of Alaska fish ticket from the operator of any fishing vessel offering for sale or delivery any species covered by this plan. The area of catch will be reported using the present Alaska Department of Fish and Game shellfish statistical area system. Permit requirements for all foreign vessels operating in this management unit include a permit issued by the Secretary of Commerce. This permit is required by the FCMA. No foreign vessel may retain salmon, steelhead trout, halibut, herring or continental shelf fishery resources. This is to prevent covert targeting on species of special importance to U.S. fishermen.

Area Closures which apply to the foreign fishing effort include no fishing year-round within 12 miles of the baseline used to measure the territorial sea except in certain areas in the western Aleutian Island area.

This management unit or individual sub areas where specific quotas apply will be closed to all fishermen of a nation for the remainder of the calendar year when that nation's allocation of any species of the following is exceeded: pollock, yellowfin sole, turbot, other flatfishes, Pacific cod, Pacific ocean perch, sablefish, Atka mackeral or squid.

In addition, there is no trawling year-round in the Bristol Bay 'pot sanctuary' and no trawling from December 1st to May 31st in the 'winter halibut-savings area.' Foreign longliners are prohibited from longlining landward of the 500 meter isobath in the 'winter halibut-savings area' between December 1st and May 31st. There are no closures in any other area, there are no gear restrictions and statistical reporting requirements are those required by the 1978 foreign fishing regulations.



DAH

The combined 1/ estimate of expected domestic harvest in 1979 of Bering Sea/Aleutian groundfish derived from a survey of all processors in the area is as follows:

Pollock	10,000 mt
Pacific cod	7,000 mt
Rockfishes	1,100 mt (eastern Bering Sea)
	1,100 mt (Aleutian)
Yellowfin sole	1,000 mt
Turbots	1,000 mt
Other flounders	1,000 mt
Sablefish	500 mt (eastern Bering Sea)
	500 mt (Aleutian)
Others	1,400 mt
Total	24,600 mt

No plans for "joint ventures" (i.e. domestic fishing vessels delivering raw product for foreign processing vessels) are known at this time.

1/ Individual company projections are not given because of the proprietary nature of that data.

Annex IV-A. All-nation catches in the Bering Sea/Aleutian Region, by major species groups, for the last 10 years of record (1000's mt)<sup>1/</sup>.

Species/Country	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977 <sup>2/</sup>
Pollock	702	863	1,257	1,744	1,875	1,759	1,588	1,357	1,178	978.3
Pacific cod	63.7	53.3	74.6	50.5	47.0	58.6	67.0	55.1	53.0	35.9
Rockfishes	76.4	53.3	76.8	31.6	38.9	15.5	36.5	25.2	31.2	31.7
Sablefish	20.5	20.4	13.8	18.0	19.0	10.6	7.7	5.0	7.3	4.6
Halibut	7.1	6.3	7.7	8.6	5.9	4.3	2.2	1.6	0.5	0.6
Flounders	149.9	236.2	234.9	323.4	237.7	207.1	196.3	200.4	154.3	121.9
Atka mackerel	<u>3/</u>	<u>3/</u>	1.0	<u>3/</u>	4.7	1.7	1.4	13.3	13.1	21.0
Others	31.5	14.4	25.9	41.5	134.7	62.3	79.9	61.9	27.4	19.0
All species	1,051.1	1,247.1	1,691.7	2,216.6	2,362.9	2,119.1	1,979.0	1,719.5	2,064.8	1,051.1

<sup>1/</sup> Values in this table may differ slightly from those used elsewhere in this document because of differences in apportioning between species not clearly listed in foreign statistical reports or differences in treating estimates based on U.S. surveillance when catches were not reported.

<sup>2/</sup> Preliminary.

<sup>3/</sup> Catch, if any, included under "Others".

ANNEX III -- Derivation of Total Allowable Level of Foreign Fishing (TALFF)--mt

Reference:		Annex I	Annex I	Annex I	Sec. 13.1	Annex II	
Species Group	Sub- area <sup>1/</sup>	MSY	Current EY	ABC (=OY)	Reserve	Initial DAH	Initial TALFF
Pollock	--	1,100,000- 1,600,000	1,000,000	1,000,000	50,000	10,000	940,000
Yellowfin sole	--	70,000- 270,000	125,000	125,000	6,250	1,000	117,750
Turbots	--	91,000	91,000	91,000	4,550	1,000	85,450
Other flatfishes	--	48,000	48,000	48,000	2,400	1,000	44,600
Pacific cod	--	58,000- 85,000	58,000	58,000	2,900	7,000	48,100
Pac. ocean perch	EBS } AL }	110,000	21,500	6,500 15,000	325 750	1,100 1,100	5,075 13,150
Sablefish	EBS } AL }	10,000- 20,000	8,000- 10,000	3,500 1,500	350 150	500 500	2,650 850
Atka mackerel	--	33,000	27,280	27,280	1,364	0	25,916
Squid	--	>10,000	>10,000	10,000	500	0	9,500
Others	--	49,000- 82,000	69,289	69,289	3,464	1,400	64,425
Total				1,455,069	73,003	24,600	1,357,466

<sup>1/</sup> EBS = Eastern Bering Sea, statistical areas I, II, III combined.  
AL = Aleutians, statistical area IV

LIMITED ENTRY:

No program of limited entry is presently necessary for this fishery. As indicated in the plan, the domestic catch for human consumption and crab bait is not large compared to the foreign harvest. In the event the domestic fishery develops further, no program of limited entry should be implemented until all foreign fishing has been terminated.

4.0 INTRODUCTION

This draft of the Bering Sea/Aleutian Island Area Fishery Management Plan was developed by a multi-agency Plan Development Team composed of the following:

H.A. Larkins (Team Leader)	NMFS
Richard Bakkala	NMFS
Steven Hoag	IPHC
Phillip Rigby	ADFG
Dr. Robert Stokes	UW/IMS

Review and advisory services were provided by Mr. Miles Alton (NMFS), Dr. Sam Bledsoe (US/NORFISH), Dr. Loh-Lee Low (NMFS), Mr. Ron Naab (NMFS) and Mr. Robert Simon (CFEC).

The team was appointed by the NPFMC, provided with a format and instructed to develop a management plan for Bering SEa/Aleutian Island Area groundfish in Council waters according to Public Law 94-265, the extended jurisdiction legislation.

This plan is the fourth management plan to be sent out or public review. After public review through hearings, and comments from all interested parties, it will be revised by the Council and sent to the SEcretary of Commerce as the recommendation and official Council position for the management of groundfish in the Bering SEa/Aleutian Island area.

Following adoption by the Secretary of Commerce, the plan will govern that fishing.

The plan is designed to promote conservation of the ocean fishery resource while allowing proper utilization of the stocks for food.

## 5.0 DESCRIPTION OF THE FISHERY

### AREA

The Bering Sea/Aleutian Island region, with respect to U.S. extended jurisdiction, is defined as those waters lying south of the Bering Strait, east of the U.S.-U.S.S.R. Convention Line of 1867 and extending south of the Aleutian Islands for 200 miles between the Convention Line and 170 degrees West. Waters lying south of the lines joining headlands in the eastern Aleutian Islands, east of 170 degrees West are considered a part of the Gulf of Alaska management area. The continental shelf in the eastern and northern portion of the Bering Sea constitutes about 80 percent of the total shelf area and is one of the world's largest. The Bering Sea is influenced mainly by sub-Arctic climate and lies in a region of moderate to strong atmospheric pressure gradients and is subject to numerous storms. Pack ice covers most of the continental shelf in the eastern and northern sections of the sea in winter and spring.



## STOCKS

The Bering Sea supports about 300 species of fishes, among them important groups such as the salmon, herring, smelts, and capelin. Fish of primary importance in this management plan include the flounders, rockfish, sablefish, cod, pollock and Atka mackerel. Squids are also included in the plan.

In terms of total numbers, the bottomfish community in the Bering Sea is much larger than its counterparts in other areas of the Northeastern Pacific. Commercial production by all nations from the eastern Bering Sea/Aleutians has ranged from 1.6 to 2.3 million metric tons during the 5 year period of 1971-1975. This represents as much as 86 percent of the groundfish catch for the entire region from the Bering Sea to California.

## EXPLOITATION

The earliest fisheries for groundfish in the eastern Bering Sea and Aleutian Islands were the native subsistence fisheries. Although an important part of the life of native people, these fisheries were always small scale and have continued to the present time.

A single schooner fishing for Pacific cod in 1864 was the first commercial venture for bottomfish. The cod fishery did not commence on a regular annual basis until 1882. This fishery continued until 1950. The fishery reached its peak during World War I with the numbers of vessels in the fishery declining after 1920 until the fishery was terminated in 1950 due to a decreased demand for codfish and the influence of other economic conditions.



### Domestic

Halibut were reported in the Bering Sea as early as the 1800's but did not reach North American markets until 1928. Small and infrequent landings of halibut were made between 1928 and 1950 but catches were not landed every year until 1952. Halibut catches increased sharply between 1958 and 1963 and then declined steadily until 1972. Since 1972 the catch has remained stable at a relatively low level. The decline was a result of reduced abundance which led in turn to severe restrictions on the fleet. (The International Pacific Halibut Commission is responsible for the management of halibut in North American, but account must be taken in this plan of the potential impact of a groundfish fishery on halibut.)

In the Aleutians exploitation by the North American setline fishery is relatively low. There was no fishing before 1960 and since then catches have been less than 100 metric tons.

In general, fishing effort in the Bering Sea was meager before 1958, increased sharply during the late 1950's and early 1960's and then declined steadily until the early 1970's. The low effort during the 1970's is the result of reduced abundance and restrictions on the North American fleet.

Present participation by North American nationals in commercial fisheries for bottomfish in the Bering Sea and Aleutian Islands is confined mostly to the relatively small longline fishery for halibut by United States and Canada fishermen. The domestic cod fishery was carried out by sailing schooners which set out dories operated by a single fishermen using hand lines.

Halibut fishing boats are schooners or seine type vessels over 30 net tons which land a catch in major ports. Smaller vessels account for



less than 10 percent of total landings. The vessels use setline gear consisting of a longline with gangions each with a hook attached at regular intervals. A unit of setline gear is called a skate, it is about 550 meters in length and is left on the bottom for periods from 4 to 30 hours. This fishing is usually conducted at depths between 90 and 225 meters.

Vessels and gear used in the Aleutians are similar to those in the Bering Sea although the amount of effort is much less.

#### Foreign

Fishermen from six foreign countries have fished in the Eastern Bering Sea and Aleutian Islands for groundfish. Of all the foreign fisheries, Japan has had the longest history of exploitation and has mounted the greatest effort over the years. Their large scale modern day fishery had its origin in 1954. Russia commenced fishing that area in 1959 and has the second largest catch of groundfish in the region.

A 1966 fishing exploration by the Republic of Korea was followed in 1967 by their commercial operation, but that effort is much smaller than that by Japan and the U.S.S.R. The Republic of China (Taiwan) has also had a fishery in the eastern Bering Sea since late 1974. This involves only one or two trawlers.

#### Poland--

Polish vessels fished briefly in the eastern Bering Sea in 1973, but have not fished there or in the Aleutian Island area since.



Japan--

The Japanese post-war fishery developed into several components. The four principal ones being the mother ship fishery, the North Pacific trawl fishery, the North Pacific longline gillnet fishery and the landbased trawl fishery.

The mothership fishery at first was relatively small and operated for only about one month between August and October between the salmon driftnet and Antarctic whaling seasons. Fishing was off Bristol Bay and the catch, consisting of flounders was frozen.

In its second period, the mothership fishery expanded throughout the Bering Sea and diversified its fishing methods and target species.

Another mothership operation, beginning in the 1958-63 period was the longline/gillnet fishery. These vessels fish for halibut and blackcod for freezing along the continental slope off Cape Navarin.

In the third period, 1964 to the present, the pollock fishery was developed. Fish meal and frozen products became a by-product of these operations. Pollock has dominated Japanese catches since 1962 and from 1971 to 1976 formed over 80 percent of the total Japanese groundfish catch in the Eastern Bering Sea and Aleutian Islands area.

The second major type of Japanese fishery is the North Pacific trawl fishery. Factory trawlers larger than 500 tons that both fish and process their own catch is the major characteristic of this fishery. Their products are transhipped to Japan by refrigerated transport. The main effort by the independent trawlers is in the Eastern Bering Sea where year-round operations are conducted for pollock. In the Aleutian Islands the trawlers target on Pacific ocean perch and take lesser amounts of pollock and various other groundfish. The maximum effort is in summer or early fall.



Herring and blackcod are the principal species taken by the North Pacific longline/gillnet fishery. The vessels operate independently and when loaded return to Japan. Fishing by these 200 to 500 gross ton vessels has mainly been in the Northeastern Pacific Ocean where the catch was almost exclusively blackcod. The vessels operate year-round and normally stay on the grounds for two to four months until their hold capacity of about 400 metric tons is reached.

A landbased trawl fishery conducted by independent trawlers of 100 to 350 tons is prohibited by regulation from transshipping their catch in offshore waters. Their catches are chiefly flounders, Pacific ocean perch and blackcod. Major fishing grounds are along the continental slope from Cape Olyutorskii to Cape Navarin and off the Pribilof Islands.

USSR--

The first commercial scale work by the U.S.S.R. off Alaska was a fishery for flounders in the eastern Bering Sea starting in 1969. There have been three major groundfish fisheries in the eastern Bering Sea and Aleutian Islands: A flounder fishery in the southeastern Bering Sea, a rockfish fishery primarily in the Aleutian Islands and a pollock fishery along the outer continental shelf from Unimak Pass to northwest of the Pribilof Islands.

The flounder fishery was a winter operation throughout its history, usually from November to April. In the peak years of 1966 to 1968, the flounder fishery represented the largest effort by the Soviets in Alaskan waters. The flounder fishery declined starting in 1969 and failed to develop in 1973. The Soviets have not resumed this fishery to the present time.

The Soviet Pacific ocean perch fishery began in 1960. Effort was continuous through 1965, but effort in 1966 was sporadic. This lasted



for two years and in 1969 there was a further reduction in effort. By 1973 the fishery was an extremely low level with catches of about 3,000 metric tons in 1973. Catches in 1975 and 1976 were somewhat higher, approaching 7,000 metric tons.

The Soviet pollock fishery eventually developed from the blackcod and flounder fishery in the region immediately north of the eastern Aleutian Islands. Pollock is the predominant species in the catch at the present time. Peak catches occurred in 1974 when almost 310,000 metric tons was taken. Atka mackerel has become a target species of this fishery at periods during the year. Catches reached 20,000 metric tons in 1976, exceeding by a wide margin the Soviet catch of any other species in the Aleutians of that year.

#### Korea--

Fisheries by the Republic of Korea in the eastern Bering Sea and Aleutian Islands are much smaller than those of Japan and the U.S.S.R. A commercial operation was started in 1967. That operation was plagued by bad weather and tragedy. Two ships and crew were lost in route to the fishing grounds in a storm south of the Aleutian Islands.

In later years the ROK fleet was enlarged to include factory ships and additional pair trawlers and independent stern trawlers and eventually longliners and a Danish seiner.

An ROK longline fleet, which has mainly fished blackcod in the Gulf of Alaska, began fishing blackcod for brief periods in the Aleutian Islands in 1974. The effort by longliners in Aleutian waters has apparently increased in recent years.



Taiwan--

The Taiwanese fishery which began in December of 1974 has involved only one or two independent stern trawlers. The vessels are believed to have targeted on pollock and flounders.

Vessels and gear

Japan--

The Japanese used two types of operations in their groundfish fishery, fleet operations involving a factory mothership and catcher boats and vessels that operate independently and process their own catch.

Type of mothership fleets and the range and size of motherships are as follows:

<u>Type of Fleet</u>	<u>Size of Motherships</u>
Flounder freezing fleets	7,000 to 9,000 gross tons
General freezing fleets	5,000 to 10,000 gross tons
Minced fish and fish meal fleets	9,000 to 14,000 gross tons
Longline gillnet fleets	500 to 2,500 gross tons

Motherships are equipped to process catches into such products as frozen fish for human consumption, minced fish (surimi), meal and oil.

Catcher boats are of five major types: longline-gillnetters, side trawlers, pair trawlers, Danish seiners and stern trawlers. Side trawlers have been phased out of the fishery and the number of Danish seiners have declined. Pair trawlers have become the principle vessel type in the freezing and minced fish and fish meal fleet.

USSR--

The U.S.S.R. fishery also employed catch boats that deliver catches to factory ships, or to processing and freezing transport vessels. Russia has utilized the flotila concept of fishing operations to a greater degree than any other nation. This concept allows fishing vessels to operate at sea for long periods, they are closely supported by numerous other types of vessels, including base ships that carry fleet administrators and staff and provide logistic support. Factory ships for processing catches, refrigerator transports to replenish stored on the catcher vessels and to receive freeze and transport their catches to home ports and oil tankers, passenger ships, tugs, patrol vessels, and occasionally even hospital ships. A refrigerated transport is the mainstay of the support operation. The Soviets employ two basic kinds of fishing vessels, side trawlers and factory stern trawlers.

Korea and Taiwan--

Taiwanese and Korean methods of operation are similar to those of the Japanese and Soviets.

Initially the Koreans used pair trawlers and processed their catches aboard small processing vessels. Their fleet has subsequently been modernized.

The Taiwanese have used one or two independent stern trawlers in their small scale fishery in the eastern Bering Sea.

#### Catch trends

Complete catch statistics for groundfish taken by foreign fisheries in the eastern Bering Sea and Aleutian Island regions have not been available throughout the history of the fishery. Japan has provided the



longest and most detailed series of catch data. The U.S.S.R. began to report catch statistics to the United States through bilateral agreement in 1967. The ROK did not report their catch statistics in detail until 1976. Prior to the reporting of statistics by Russ and the ROK, their catches had been estimated through U.S. surveillance.

Statistics for primary target species such as pollock, yellowfin sole, rockfish and blackcod are assumed to be relatively accurate. Since 1970 the catch data for most other commercial import and species has probably improved. Recent catch history is shown in Table A.

#### 6.0 HISTORY OF MANAGEMENT

Prior to Alaskan statehood in 1958, the Bureau of Commercial Fisheries was responsible for both research and management of domestic fisheries in Alaska. In 1959 the State of Alaska assumed that responsibility.

The State of Alaska requires all commercial fishermen landing any species of fish or shellfish in Alaska to possess a commercial fishing license and the Captain or owner of all fishing vessels is required to license the vessel and the fishing gear employed. Buyers are required to keep records of each purchase and show the number and name of the vessel, State license number, date of landing, pounds purchased of each species, the statistical area in which the fish was caught and the kind of gear used in taking the fish. Special halibut regulations are in force by the IPHC. Regulatory measures affecting groundfish fisheries on the part of foreign fishermen, have been implemented through public laws and international agreements. Prior to enactment of the U.S. Fishery Conservation and Management Act of 1976 initial regulatory measures originated from the International Convention from the High Seas Fisheries of the North Pacific Ocean involving Canada, Japan and the United States and that was brought into force in 1953.



Table A. All-nation catches in the Bering Sea/Aleutian Region, by major species groups, for the last 10 years of record (1000's mt)<sup>1/</sup>.

Species/Country	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977 <sup>2/</sup>
Pollock	702	863	1,257	1,744	1,875	1,759	1,588	1,357	1,178	978.3
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Atka mackerel	<u>3/</u>	<u>3/</u>	1.0	<u>3/</u>	4.7	1.7	1.4	13.3	13.1	21.0
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<sup>2/</sup> Preliminary.

<sup>3/</sup> Catch, if any, included under "Others".



U.S. Public Law 88-308, 1964, made it unlawful for foreign vessels to fish within the three mile territorial waters of the United States or to fish for designated fishery resources of the adjacent U.S. continental shelf. In October, 1966 this was extended to a 9-mile contiguous fishery zone adjacent to the U.S. 3-mile territorial sea. Catch quotas are included in the terms of bilateral agreements. Most of the regulatory measures pertaining to foreign groundfish fisheries in the eastern Bering Sea and Aleutian Islands were implemented for conservation of halibut stocks and to prevent gear conflicts between foreign trawlers and domestic fixed gear.

#### 7.0 HISTORY OF RESEARCH

The first major study of the demersal fishery resources of any consequence occurred in 1890 when the U.S. Fish Commission's steamer Albatross was directed into the southeastern Bering Sea to determine the locations and characteristics of important cod-fishing grounds

The first extensive and systematic survey of demersal fishery resources of the eastern Bering Sea was conducted in 1941 by the U.S. Fish and Wildlife Service. Bottom trawling was conducted in the southeastern Bering Sea north to St. Lawrence Island, and in Norton Sound. Although the primary purpose of the survey was to locate areas of king crab abundance, information was also collected on the quantities and types of demersal fish encountered.

Continued interest in the commercial potential of crab and groundfish of the eastern Bering Sea resulted in further investigations after World War II. There were cooperative U.S. Government-industry ventures in the northeastern Bering Sea in 1947 and in 1948.

The IPHC resumed exploratory setline fishing and tagging of halibut in the eastern Bering Sea in the 1950's.



With the development and intensification of fisheries in the eastern Bering Sea in the 1950's and 1960's, U.S. and IPHC research surveys began to be conducted in a more systematic and standardized manner. These investigations initially sought improved information on changes in abundance and recruitment of king crab and halibut, but other species were also later included. The U.S. Bureau of Commercial Fisheries (now the National Marine Fisheries Service) began systematic annual bottom trawl surveys in the southeastern Bering Sea in 1955 to obtain information on the distribution, abundance, biology, and recruitment of king crab. These surveys were interrupted for the period 1962-1965, but were continued in 1966. In 1968, Tanner crab was included in these surveys and received special study, and in 1971 biological studies of important groundfish species were also added. These annual crab-groundfish surveys are a continuing activity by the NMFS.

Beginning in 1963 and annually since 1965, the IPHC has been systematically monitoring by means of bottom trawl surveys the distribution and abundance of young halibut in the eastern Bering Sea (Best 1969a and b;

Japanese research investigations in the eastern Bering Sea began in the mid-1950's, although there had been some experimental trawl fishing on bottomfish by Japanese commercial interests in this region in the early 1930's.

In 1956 the Oshoro Maru engaged in limited exploratory trawl fishing in the eastern Bering Sea. The Oshoro Maru has continued investigations from the 1950's to present time.

Other limited trawling investigations were conducted in 1961 through 1964

Extensive and systematic surveys of eastern Bering Sea groundfish by the Japanese were begun in 1963 by the Japan Fishery Agency, and have continued annually with the exception of 1972.

These surveys have covered broad areas of the continental shelf, and in some years the shelf edge and upper continental slope. Included in the Japanese investigations have been tagging studies on halibut, sablefish, pollock, and yellowfin sole.

The Japanese have been collecting catch and effort statistics and biological information from their groundfish fisheries since 1964, and providing these data to the U.S. through the International North Pacific Fisheries Commission.

Although the Soviet Union conducted limited exploratory surveys in the eastern Bering Sea in the early 1930's and early 1950's,

their first extensive investigations of demersal fish and shellfish resources in the eastern Bering Sea were during 1957-63. The main purpose of these surveys was the determination of the extent and potential uses of resources prior to commercial exploitation by the Soviet fleet.



## 8.0 SOCIO-ECONOMIC CHARACTERISTICS

### COMMERCIAL FISHING INDUSTRY

In 1977 less than 100,000 pounds of groundfish was landed and sold for human consumption. The number of vessels operating in the fishery has been so small that specific information cannot be disclosed without violating the confidentiality of individual reports. There is a slightly larger groundfish fishery for bait for use by crab boats operating in the area, although fish tickets are not made out systematically when the groundfish are caught or sold. Alaska Department of Fish and Game biologists, extrapolating from a similar bait fishery operating in the Gulf of Alaska, and considering the size of the crab fishery and number of boats known to be catching groundfish for bait in the Bering Sea area, have estimated the harvest for this purpose at about 450 mt in 1977, and as high as 1,300 mt in 1978.

In all, the total domestic commercial groundfish catch in the Bering Sea/Aleutian region (excluding halibut) is believed to have been no more than 1,500 mt in any recent year.

Although substantial freezing and transshipping facilities are located at Dutch Harbor, with the exception of very small amounts of groundfish frozen for crab bait no groundfish processing (except halibut) has occurred in this region in recent years.

The viability of a domestic Bering Sea groundfish fishery will ultimately depend on the ability of U.S. industry to market products at prices which cover their production costs. An understanding of these market conditions will be important for the accurate determination of DAI. Although the U.S. and world groundfish market is poorly understood,



It is at least theoretically possible that the determination of OY could influence markets and prices. For any commodity a reduction in supply from one source, such as foreign groundfish landings, may improve market opportunities for other suppliers, such as U.S. fishermen. At present there is no information on whether this relationship is significant for Bering Sea stocks, or whether it might be sufficient to overcome costs of U.S. operations.

In 1975 the Northeast Pacific produced 20% of the world's pollock, 16% of the world's flounders, and 3% of the world's cod. For these groundfish species the likelihood of influencing world price through manipulation of OY is low due to the relatively small share of world production coming from the northeastern Pacific. For example, if the pollock OY for the eastern Bering Sea was to be set 30 percent below ABC in an attempt to increase the world price for that species, world pollock supply would be reduced by something less than 6 percent ( $30\% \times 20\% = 6\%$ ). However, for particular markets (e.g., the Japanese market for "surimi", it might be possible for reductions in foreign allocations to have an influence on either price offered for U.S. products or the willingness of customers to consider buying such specific products from U.S. processors.

If it were found that such a relationship did exist, its exploitation would present an additional set of tradeoffs between the management objectives of domestic industry development, consumer interest and price, full utilization of the resource and U.S. foreign policy interests. No such relationship has yet been identified; therefore, no adjustments to OY for this purpose have been made.



### Recreational Fishery

Historically, there was no recreational fishing in the Bering Sea/Aleutian area; presently, the effort is small, if indeed it exists, and is conducted in inshore waters.

### Subsistence Fishery

Subsistence fishing activities of Native Alaskans in the Bering Sea/Aleutian area pre-date history. To what extent the subsistence effort was conducted in offshore waters can be based only on scant historical reference and oral tradition. The vast majority of these efforts were concentrated on salmon, anadromous char and river herring, taken for the most part by various methods in inshore waters.

Additional efforts were conducted offshore on halibut and cod. One example of the cod fishery is that of the village of Mekoryuk, on Nunivak Island, where fishing activity offshore was conducted until the late 1940s, when, for reasons unknown, the cod failed to appear in their accustomed waters. As a consequence, that fishery does not exist at the present time. The bulk of the subsistence effort offshore was directed against otter, seal, sea lion, walrus, polar bear and birds and eggs inhabiting islands and rocks.

### Indian Treaty Fishery

No Indian (Native Aleut-Indian-Eskimo) treaty fishing rights are reserved in the Fishery Conservation Zone.

## INTERACTION BETWEEN USER GROUPS

### Trawl vs. halibut

The effects of current domestic operations on both the halibut fishery and resource are less than those of foreign fisheries. Gear conflicts are minimal, and the annual incidental catch of halibut by domestic trawlers is probably less than 100 mt (however, domestic king crab and shrimp fisheries may take incidentally up to 1,000 mt of halibut). A greater impact on the halibut fishery could occur if domestic effort toward groundfish increases.

Regarding foreign fisheries, halibut fishermen occasionally report instances of gear destruction or preemption of grounds. The most important effect of foreign fishing is that of incidental catches. Foreign vessels target on species other than halibut but halibut are taken incidentally in substantial numbers; although regulations require that halibut be released, most die from injuries received during capture.

Hoag and French (1976) used data collected by observers on Japanese trawlers to examine the incidental catch of halibut. The average incidence and size during 1969-1974 is shown by area and month in Table 19. The incidence was highest in the southeastern Bering Sea in the winter and spring. The majority of the halibut were 3 to 7 years old and less than 5 kg. More recent data from observers (Hoag and French, ms.) show



a similar seasonal picture, although the rate of incidence is lower because critical areas have been closed to trawling. In February and March 1978, observers were, for the first time, aboard two Japanese longline vessels fishing the southeastern Bering Sea. Their data show that when the longliners fished in shallow water (220-320 m) for Pacific cod the incidence of halibut became extremely high (30 halibut per mt of catch; about 14% by weight). The incidence was much lower (1.5 halibut per mt) when the vessels fished in deeper water (500-620 meters) and the target species were Greenland turbot and sablefish. The average weight of halibut was about 5 kg and the observers reported that most of the halibut were released alive.

Hoag and French (1976) estimated the annual incidental catch of halibut by the Japanese and Soviet trawl fisheries from 1954 to 1974. Their estimates show that the total incidental catch in the Bering Sea peaked in 1971 at 11,500 mt but then dropped to about 5,800 mt in 1974. However, about one-third to one-half of this catch occurs in the western Bering Sea and may have only limited effect on the North American fishery. Since 1974, foreign trawling has been prohibited in specific areas of the southeastern Bering Sea during the winter and spring to reduce the incidental catch of halibut. These closures along with a reduction in fishing effort have sharply reduced the incidental catch. Preliminary projections indicate that the incidental trawl catch in the eastern Bering Sea has declined from about 7,000 mt in 1971 to less than 2,000 mt in 1976.

The incidental catch of halibut in the Aleutians is much less than in the Bering Sea, probably around 500 mt.



Hoag (1976) used estimates of the incidental halibut catch and assessed the effect of trawling on the North American setline fishery. The results showed that trawling reduced the survival of juvenile halibut and, therefore, recruitment to the setline fishery. Because the incidental catch consists of juvenile halibut, the yield loss to the setline fishery occurs for many years after a given incidental catch, i.e. over the projected lifetime of the fish in the setline fishery. Also, the magnitude of the eventual loss is about 20 percent greater than the magnitude of the incidental trawl catch itself because growth exceeds natural mortality at young ages. In the eastern Bering Sea, the estimated annual yield loss in recent years has been about 5,000 mt and represents over 95% of the total potential catch (i.e. of the total potential production, setlines take less than 5 percent). The recent reductions in the incidental catch will not significantly benefit the setline fishery for several years.

In 1977, the average incidence rate for halibut in all foreign trawl fisheries is estimated to have been 0.267 individuals per metric ton of total groundfish catch; average weight of incidentally caught halibut was 8.99 kg.

Trawl vs. crabs

Observer data indicates the following incidental crab catches by foreign trawlers in 1977 (nos. of crabs):

<u>Country</u>	<u>King Crab</u>	<u>Tanner crab</u>
Japan	583,400	17,446,000
USSR	1,200	3,500
ROK	11,200	54,000
Total	595,800	17,503,500

Between 65 and 70 percent of the incidental Tanner crab catch was C. opilio. Incidence rates for both king and Tanner crabs were highest in the Japanese landbased dragnet fleet.

In 1977, the average incidence rate for king crabs in all foreign trawl fisheries is estimated to have been 0.481 individuals per metric ton of total groundfish catch; average weight of incidentally caught king crabs was 1.15 kg. Comparable values for Tanner crabs are estimated to have been 12.970 individuals/mt and 0.33 kg average weight.

Trawl vs. salmon

Using the same sampling methods as for halibut and crabs, data collected by U.S. observers produced the following estimates of incidental salmon catches in 1977:

<u>Country</u>	<u>Total number of salmon</u>
Japan	23,890
ROK	23,798
USSR	42
Total	47,730

Of this total, 91 percent were chinook salmon (O. tshawytscha) and 9 percent chum salmon (O. keta).



In 1977, the average incidence rate for salmon in all foreign trawl fisheries is estimated to have been 0.030 individuals per metric ton of total groundfish catch; average weight of incidentally caught salmon was 4.0 kg.

#### Trawl vs. sablefish longlines and pots

Japanese longline fishermen report that the trawl fishery has expanded geographically and bathymetrically to the point where traditional sablefish longline grounds have been pre-empted. If the condition of sablefish stocks in this region improve to the point where they could support a viable domestic fishery (see Section 9.6.6), the stated interest of U.S. fishermen for developing a longline and pot fishery for that species could be thwarted by the risk of gear conflicts with trawlers unless gear separation measures are affected.

#### Foreign vs. domestic trawling

With the exception of a very small crab bait fishery, no domestic trawling has taken place in the region. Many U.S. fishing interests perceive the presence of fleets of large foreign trawlers as a de facto impediment to the development of a domestic groundfish trawl fishery in the Bering Sea because of the possibility of: (1) preemption of favored grounds by concentrations of foreign vessels that are 2-3 times the size of the largest U.S. trawlers, and (2) competition for fish by foreign vessels that can apparently operate successfully at levels of abundance and average fish sizes that are less than that required for economic operation of domestic trawlers.



## 9.0 BIOLOGICAL CHARACTERISTICS

Key life history features of the principal groundfish species in the Bering Sea/Aleutian Region are shown in Table B. Annex II describes the derivation of MSY, EY, and ABC for each species category; a summary of those values is presented in Table C.

## 10.0 OTHER CONSIDERATIONS

### INTERNATIONAL PACIFIC HALIBUT COMMISSION (IPHC)

The fishery for Pacific halibut, a species that is part of this region's groundfish community, remains under the jurisdiction of IPHC and is, therefore, exempt from the provisions of this Plan. The predominant share of the fishing mortality on this species--caused by incidental trawl catches--is, however, beyond IPHC control. As long as Council and IPHC objectives concerning halibut utilization remain identical, coordination between the two organizations is easily affected. Should halibut management philosophies diverge--for example, because the broader-based Council constituency objects to constraints on trawl fishery development caused by overriding halibut-saving measures--a major social, political, and, perhaps, diplomatic (because of Canadian involvement in IPHC and in the halibut fishery) confrontation could be precipitated. Furthermore, management actions taken in the Bering Sea that adversely affect halibut are likely to have a significant impact on the Gulf of Alaska halibut stock and fishery because of the interchange of halibut between the two regions.



Table B. —Life history characteristics of principal groundfish species in the eastern Bering Sea and Aleutians.

Life history characteristics	SPECIES											
	Pollock	Cod	Sablefish	Ocean perch	Halibut	Arrowtooth flounder	Greenland turbot	Flathead sole	Rock sole	Yellowfin sole	Alaska plaice	Atka mackerel
Bottom depths of common occurrence (fath.)	30-200	10-150	50-430 <sup>5</sup>	50-250	10-250	30-300	50-350	30-200	10-100	10-300	20-90	coastal & open sea
Depths of high availability by season (fath.)	100-200 (winter)	50-150 (winter)	200-400 (winter)	150-250 (winter)	50-225 (winter)	150-300 (winter)	300-500 (winter)	100-200 (winter)	20-100 (winter)	50-150 (winter)	50-70 (winter)	offshore (winter)
	50-150 (summer)	less than 100 (summer)	100-450 (summer)	80-150 (summer)	10-100 (summer)	80-200 (summer)	80-400 (summer)	50-150 (summer)	20-50 (summer)	20-50 (summer)	20-50 (summer)	inshore (summer)
Spawning period	March to July	Jan. to May	Dec. to April	March to June	Nov. to March	Dec. to Feb.	Oct.-Dec.	March to June	March to June	June to August	May-June	June to Sept.
Maximum age	17 years	12 years	20 years	30 years	42 years	22 years	25 years	21 years	16 years	21 years	19 years	7
Average age at maturity (female)	3 years	4 years	7 years	7 years	12 years	9-11 years	13-14 years	6 years	4-5 years	9 years	8 years	3-4 years
Average size at maturity (female)	30 cm	73 cm	71 cm	27 cm	125 cm	55 cm	70 cm	29 cm	32 cm	26 cm	30 cm	33-35 cm
Instantaneous natural mortality rate, M	0.43	0.30-0.45	0.22	0.27	0.17	0.2	?	0.2	0.26	0.25	0.2	?
Growth completion rate, K (female)	0.28	0.30	0.14 <sup>2/</sup>	0.11	0.10	0.10	0.10	0.15 <sup>1/</sup>	0.15	0.11-0.13	0.1	?
Fecundity at average size at maturity	100,000	1,000,000 to 2,000,000	400,000	10,000	700,000	?	25,000	50,000	200,000	800,000	100,000	9,000

<sup>1/</sup> Values and time periods given to this table are approximations.  
<sup>2/</sup> Sexes combined.

Table C -- Preliminary Values for 1979 ABC's (1000's mt)

Species	MSY	Current Equilibrium Yield	Condition	1979 ABC	(1978 TAC)
Pollock	1,100-1,600	1,000	Healthy	1,000	950
Pacific cod	58-85	58	Healthy	58	58
Yellowfin sole	70-270	106-147	Healthy	125	106
Turbots	91	91	Healthy	91	139
Other flatfishes	48	48	Healthy	48	
POP and other rockfishes	110		Depleted	21.5 <sup>1/</sup>	21.5
Sablefish	10-20	8-10	Depleted	5 <sup>2/</sup>	4.5
Atka mackerel	33	≥24.8	Healthy	27.3	24.8
Squid	≥10	≥10	Healthy	10	10
Others	49-82	66.4	Healthy	69.3	93.6
Total				1,455.1	1,344.9

<sup>1/</sup> 6.5 in eastern Bering area 15.0 from Aleutian area

<sup>2/</sup> 3.5 in eastern Bering area 1.5 from Aleutian area



## MARINE MAMMAL PROTECTION ACT

As currently administered, this Act has three major implications vis-a-vis the Bering Sea/Aleutian groundfish fishery. First, the restrictions on killing or harassing seals and sea lions results in an unknown but probably significant economic loss to setline fishermen when those animals mutilate or remove part of the catch before it can be taken aboard. Second, large numbers of these animals often congregate around trawlers and have been observed attacking halibut, salmon, and crabs which, as a conservation measure, are required to be returned to the sea.

Third, and of greatest import, the maintenance of large populations of marine mammals--seals, sea lions, porpoises, and whales--has a profound impact on the abundance of commercial fish species. This impact is both direct, through predation on commercial species, and indirect, through grazing on the same food organisms utilized by commercial fish species.

## OFFSHORE PETROLEUM PRODUCTION

Large areas of the eastern Bering Sea Continental Shelf have been identified as proposed sites for the production of oil and gas.

Once drilling and production begin, there will arise a potential for oil pollution and physical hazards to fishing, such as sea-floor well heads and tanker traffic.

## BIO-ECONOMIC FACTORS

U.S. fishery interests have suggested that development of a domestic groundfish fishery in the Bering Sea will be based on the production of fillets and that the size of fish necessary to economically produce fillets is greater than that needed for such products as fish sausage and meal which form a large part of the output of the foreign fisheries.

The average size of pollock caught in the Bering Sea has decreased through the history of the fishery. During the early years (1964-69), the average size of fish taken by Japan varied between 42 and 44 cm (16.5 and 17.3 inches). Subsequently, average size decreased to 40 cm (15.7 inches) in 1972 and as low as 31 cm (12.2 inches) in 1975 before recovering to 33 cm (13 inches) in 1976. Current average size may be too small for efficient machine filleting.

A pollock cohort reaches its maximum biomass at age 4 (13 inches) so that achievement of greater average size will be at the expense of total production:

Age	Biomass (% of maximum)	Average length (inches)	Average weight (lbs)
4	100	13.0	0.6
5	96	14.8	0.8
6	82	16.3	1.1
7	66	17.4	1.3
8	50	18.3	1.5
9	37	19.1	1.7
10	26	19.7	1.9



## CRAB-BAIT TRAWL FISHERY

The only domestic trawl fishery which occurs in the Bering Sea/Aleutian region at present is a relatively small effort for crab bait. This activity is pursued by a few crab vessels, using very small (as required by State of Alaska regulation) trawl nets and by 1-3 otter trawlers which sell their catches directly to crab vessels on the grounds. Total trawl catches for bait are estimated to have been about 450 mt in 1977 and 900 mt in 1978. Although a groundfish fishery, this trawl operation is more properly considered as an adjunct of the U.S. Bering Sea king and Tanner crab fishery. Because of this close relationship, the potential for gear conflicts--which is high when mobile (trawl) and fixed (crab pot) gear is used on the same grounds--is negligible in this unique situation.

### 11.0 OPTIMUM YIELD

With the expectation over the near term of only a modest domestic involvement in this fishery (see Section 12.0, below), and having identified no social or economic reasons for reducing the yield of stocks in this fishery below ABC, Optimum Yield for all species will be considered equal to ABC, as shown in Annex I.

It should be noted, especially by foreign participants in the fishery, that such economic factors as higher catch rates or greater average size than can be expected when production is at the level of ABC, or limited seasonal availability to this fishery by domestic fishing vessels could be introduced as OY considerations if they are considered necessary for U.S. fishery development and can be shown to not have an unreasonable impact on the U.S. consumer.

## 12.0 DOMESTIC CAPACITY

An assessment of the Alaskan fishery capacity for taking and processing groundfish indicates a current, annual processing potential of 54,350 mt and a catching potential of 156,500 mt.

In order to forecast the U.S. harvest in the near future, processors were queried as to their production plans. Their combined estimate of production, which is considered equal to DAH, is as follows:

Pollock	10,000 mt
Pacific cod	7,000 mt
Rockfishes	1,100 mt (eastern Bering Sea)
	1,100 mt (Aleutian)
Yellowfin sole	1,000 mt
Turbots	1,000 mt
Other flounders	1,000 mt
Sablefish	500 mt (eastern Bering Sea)
	500 mt (Aleutian)
Others	1,400 mt
Total	24,600 mt

No plans for "joint ventures" (i.e. domestic fishing vessels delivering raw product to foreign processing vessels) are known at this time.



### 13.0 ALLOCATION BETWEEN FOREIGN AND DOMESTIC FISHERMEN

#### RESERVE

U.S. participation in the fishery in the near future is expected to consist of a relatively modest catch for crab bait and limited pilot efforts for foodfish production.

In order to prevent OY's from being exceeded without preventing unexpected domestic fishery development, 500 mt. or 5 percent of the OY (whichever is the greater) of each species will be held in reserve for allocation late in the year on the basis of domestic need. Specific reserve amounts are shown in Table D.

#### TALFF

The initial TALFF for each species shall be determined by the equation:

$$\text{TALFF} = \text{OY} - \text{DAH} - \text{Reserve}$$

TALFF may increase during the year as reserves are apportioned between domestic and foreign fishermen. Initial TALFF's are shown in Table D.

Table P -- Derivation of Total Allowable Level of Foreign Fishing (TALFF)--mt

Reference:		Annex I	Annex I	Annex I	Sec. 13.1	Annex II	
Species Group	Sub- area <sup>1/</sup>	MSY	Current EY	ABC (=OY)	Reserve	Initial DAH	Initial TALFF
Pollock	--	1,100,000- 1,600,000	1,000,000	1,000,000	50,000	10,000	940,000
Yellowfin sole	--	70,000- 270,000	125,000	125,000	6,250	1,000	117,750
Turbots	--	91,000	91,000	91,000	4,550	1,000	85,450
Other flatfishes	--	48,000	48,000	48,000	2,400	1,000	44,600
Pacific cod	--	58,000- 85,000	58,000	58,000	2,900	7,000	48,100
Pac. ocean perch	EBS AL	110,000	21,500	6,500 15,000	325 750	1,100 1,100	5,075 13,150
Sablefish	EBS AL	10,000- 20,000	8,000- 10,000	3,500 1,500	350 150	500 500	2,650 850
Atka mackerel	--	33,000	27,280	27,280	1,364	0	25,916
Squid	--	>10,000	>10,000	10,000	500	0	9,500
Others	--	49,000- 82,000	69,289	69,289	3,464	1,400	64,425
Total				1,455,069	73,003	24,600	1,357,466

<sup>1/</sup> EBS = Eastern Bering Sea, statistical areas I, II, III combined.  
AL = Aleutians, statistical area IV



## 14.0 PROPOSED MANAGEMENT REGIME

### SPECIFIC MANAGEMENT OBJECTIVES

- A. Continue rebuilding the halibut resource so that a viable halibut setline fishery is again available to American fishermen.
- B. Rebuild depleted groundfish stocks to, and maintain healthy groundfish stocks at levels of abundance that will produce MSY.
- C. Provide an opportunity for U.S. involvement in the Bering Sea/Aleutian groundfish fishery, limited only by the OY of individual species and objectives A and B above.
- D. Allow foreign participation in the fishery, consistent with objectives A, B, and C above.

Objective A will be accomplished by winter restrictions on fishing in areas where juvenile halibut are known to concentrate. Objective B, as it pertains to Pacific ocean perch and sablefish, will be accomplished by setting OY below current equilibrium yield (see Section 9.8.2 and Annex I) so that abundance can rebuild to the level necessary to produce MSY. Objectives C and D will be accomplished as provided for under Sections 12.2, 13.1, and 13.2.

### AREA, FISHERIES, AND STOCKS INVOLVED

This Fishery Management Plan and its Management Regime applies:

- A. To the U.S. Fishery Conservation Zone of that portion of the North Pacific Ocean adjacent to the Aleutian Islands which is west of 170°W, and of the entire Bering Sea (see Figure I).
- B. To all foreign and domestic fishing vessels operating in the area described in A., above, except:



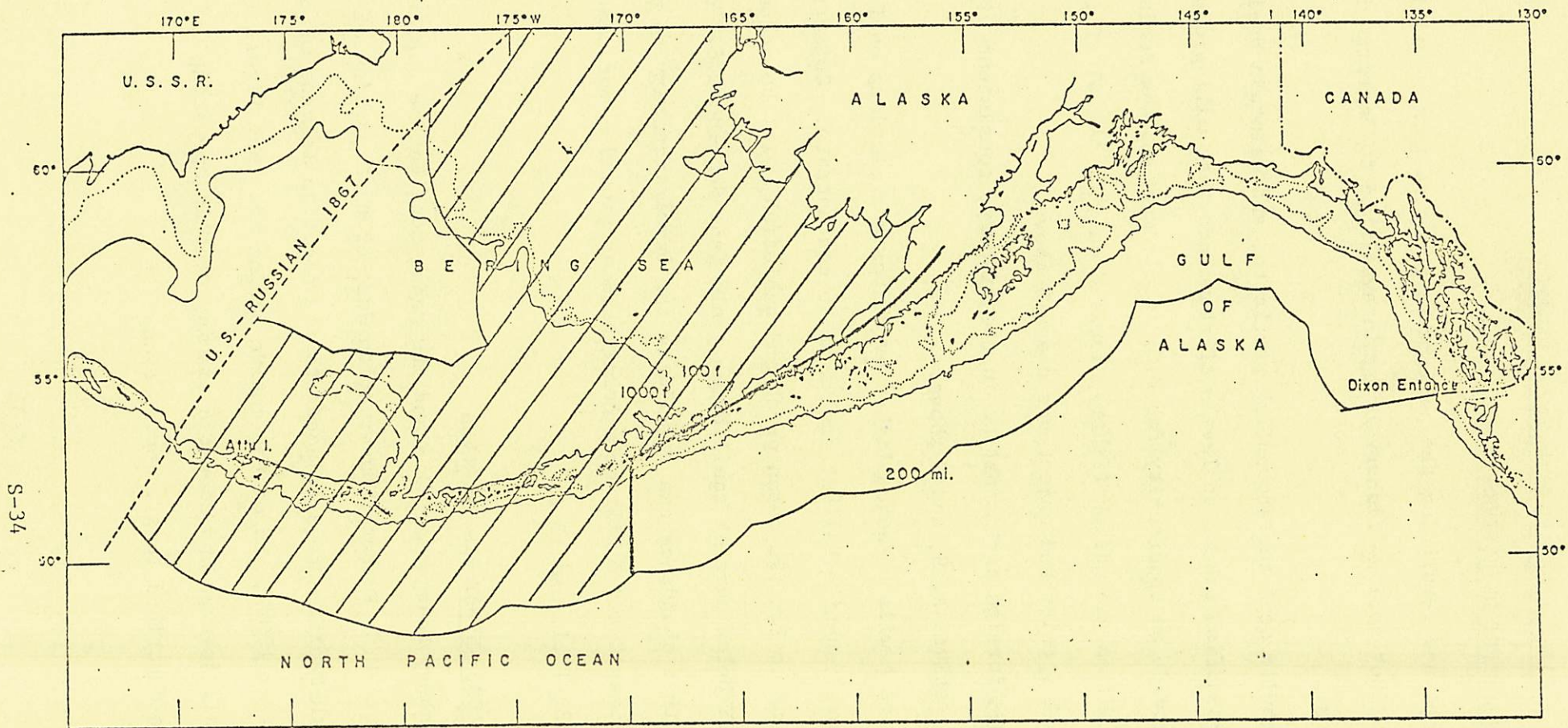


Figure I.--Area (diagonal lines) over which this Fishery Management Plan applies.



1. U.S. and Canadian fishermen when they are operating under IPHC regulations;
  2. Those U.S. vessels which are operating legally in any fishery for shellfish.
- C. To all stocks of finfish and squid except salmon, steelhead trout, Pacific halibut, and herring which are distributed or are exploited predominantly in the area described in A, above.

## MANAGEMENT MEASURES AND THEIR RATIONALE

### Domestic

#### Permit requirements--

All U.S. vessels operating in that part of the Bering Sea/Aleutian groundfish fishery which is under Council jurisdiction must have on board a permit issued by the Secretary of Commerce or, if considered acceptable by the Secretary, a State of Alaska vessel license.

#### Prohibited species--

In accordance with existing state and federal statutes.

#### Area closures--

##### A. General

None

##### B. Trawl

1. "Bristol Bay Pot Sanctuary" (as described in Appendix III and Figure II)--domestic trawling will only be permitted for crab bait and only during open seasons of the U.S. Bering Sea crab fishery.
2. "Winter Halibut-savings Areas" (as described in Appendix III and Figure II):
  - (i) December 1 - May 31--domestic trawling will be permitted only until the total U.S. trawl catch from this area exceeds (2,000) mt;
  - (ii) June 1 - November 30--no closures.
3. Other areas--no closures

*To prevent high incidental catches and mortality of juvenile halibut which are known to occur in winter concentrations in*



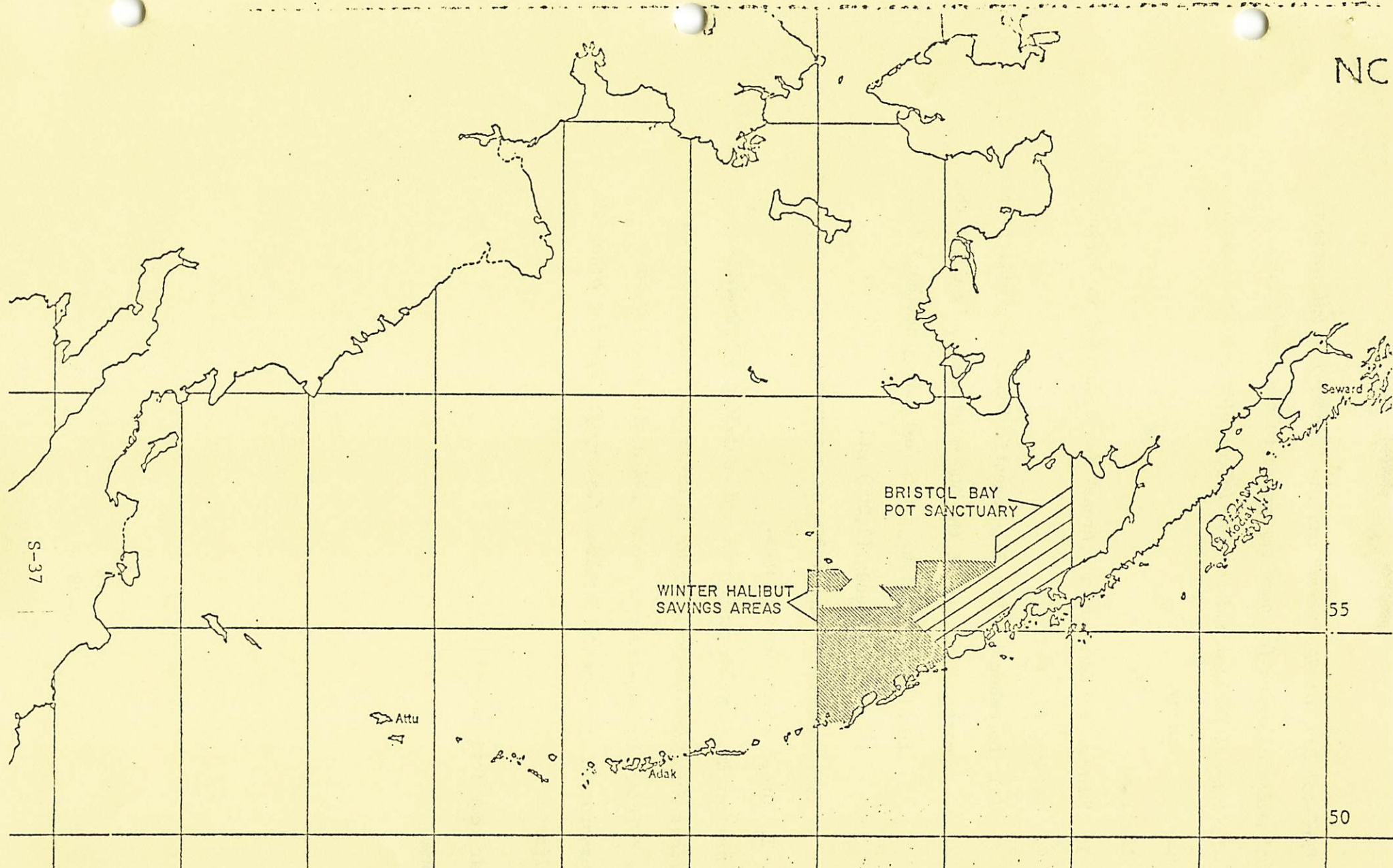


Figure II.--Locations of "Winter Halibut-savings Areas" and the "Bristol Bay Pot Sanctuary" (See Appendix II for coordinates).

the "Bristol Bay Pot Sanctuary" and the "Winter Halibut-savings Areas" while allowing for some expansion in the traditional crab-bait trawl fishery and the initial development of a human consumption fishery.

C. Longline

1. "Winter Halibut-savings Areas" (as described in Appendix III and Figure II):

(i) December 1 - May 31--domestic longlining will be permitted landward of the 500 m isobath only until the total U.S. longline catch (excluding halibut) from this area exceeds (2,000) mt.

(ii) June 1 - November 30--no closures.

2. Other areas--no closures.

*To prevent high incidental catch and mortality of juvenile halibut which are known to occur in winter concentrations in the "Winter Halibut-savings Areas" while allowing for some expansion in the domestic setline fishery for species other than halibut.*

Gear restrictions --

None.



Statistical reporting requirements --

The operator of any fishing vessel shall for each sale or delivery of any species covered by this plan, submit an accurately completed State of Alaska fish ticket. Fishery statistics including value of the catch, shall be reported within seven days of the date of landing in a format that is at least as comprehensive as Level 2 of the Coast-wide Data System, and compiled by months. In addition to elements identified in Level 2 reporting, fishing effort (e.g., days out of port, days on the grounds, or number of drags/pots/skates) should also be reported.

The area of catch will be reported using the present Alaska Department of Fish and Game shellfish statistical area system.

With regard to the timeliness of reporting, all elements of the above format should be available to the Council, in summary form (e.g. catch by species, by vessel class and gear type, by major statistical area, and by month) no later than three months after the end of the month of record. Annual summary reports of final fishery statistics and computer tapes, cards, or disks containing the basic fishery data of Level 2 reporting in accordance with applicable State and Federal statutes regarding confidentiality of data should be available to the council by July of the following year.

Limited entry --

No program of limited entry is presently necessary for this fishery. As indicated in section 8.1, the domestic catch for human consumption and crab bait is not large compared to the foreign harvest.

In the event that the domestic fishery develops further, no program of limited entry should be implemented until all foreign fishing has been terminated. As long as there is such foreign fishing, there is a portion of the optimum yield that is not being utilized by the domestic fleet. Entry limitation under such conditions is contrary to the purposes of the Fishery Conservation and Management Act of 1976 in Sec. 2(b)(6) by failing to "encourage the development of fisheries which are currently underutilized or not utilized by United States fishermen, including bottom-fish off Alaska."

Whether within state jurisdiction or within the fishery conservation zone, a limited entry program cannot be considered for the groundfish fishery without reference to the shellfish fisheries. Today, the groundfish fishery for bait is supported by the demand of the competitive crab fishery and is believed to be carried out largely by vessels which are otherwise used in the shellfish fisheries; in the future, many of the vessels and much of the capital and expertise necessary to exploit a major groundfish fishery for human consumption may come from existing shellfish fisheries.



Foreign

Permit requirements --

All foreign vessels operating in this Management Unit must have on board a permit issued by the Secretary of Commerce. *Required by FCMA.*

Prohibited species --

No retention of salmon, steelhead trout, halibut, or Continental Shelf Fishery Resources *to prevent covert targetting on species of special importance to U.S. fishermen.*

Area closures --

A. General

- (i) No fishing year-round within 12 miles of the baseline used to measure the Territorial Sea, except in the western Aleutian Islands as described in Appendix III *to prevent conflicts with U.S. fixed gear and small, inshore fishery vessels; to prevent catch of localized inshore species important to U.S. fishermen and natives.*
- (ii) This management unit (or individual sub-areas where specific quotas apply) will be closed to all fishermen of a nation for the remainder of the calendar year when that nation's allocation of any species or species group listed in Annex III is exceeded *to discourage foreign fleets from covertly targetting on depleted species/stocks and to prevent damaging by-catches after the allowed catch has been taken; this provision places the burden of responsibility on the foreign fleets to avoid taking such species/*

*stocks and to develop fishing gear and fishing practices which will minimize or eliminate their incidental capture.*

B. Trawl

- (i) No trawling year-round in the "Bristol Bay Pot Sanctuary", (as described in Appendix III and Figure II) *to prevent conflicts between foreign mobile gear and concentrations of U.S. crab pots; to prevent incidental catch of juvenile halibut which are known to concentrate in this area.*
- (ii) No trawling from December 1 to May 31 in the "Winter Halibut-savings Areas"(as described in Appendix II and Figure II) *to protect winter concentrations of juvenile halibut, to protect spawning concentrations of pollock and flounders:*

C. Longline

- 1. "Winter Halibut-savings Areas" (as described in Appendix III and Figure II):
  - (i) December 1 - May 31--no longlining landward of the 500 m isobath.
  - (ii) June 1 - November 30--no closures
- 2. Other areas--no closures.

*To prevent high incidental catch and mortality of juvenile halibut which are known to occur in winter concentrations in the "Winter Halibut-savings Areas".*

Gear restrictions --

None

Statistical reporting requirements --

As required by 1978 Foreign Fishing Regulations.



## 16.0 RESEARCH NEEDS

Research will be required to (1) find means of improving the accuracy of commercial catch statistics, (2) refine estimates of abundance and biological characteristics of stocks through research resource surveys, (3) improve the capability for predicting changes in resource abundance, composition, and availability, (4) develop means of reducing the incidental catch of non-target species, and (5) identify subpopulations.

The paucity of specific information concerning sablefish, Pacific ocean perch, Atka mackerel, arrowtooth flounder, and Greenland turbot has required an empirical approach to management. Although some information on these species has recently been gathered by U.S. observers aboard foreign fishing vessels and from foreign fisheries statistics, direct assessment of abundance and stock condition has not been accomplished. In the past, surveys have essentially been restricted to the Continental Shelf of the eastern Bering Sea with very little effort directed to the Continental Slope where these and other species are known to concentrate. No assessment surveys have been conducted in the Aleutian region where important stocks of Pacific ocean perch, sablefish, and Atka mackerel occur. Geographic and bathymetric extensions of research surveys to these areas should be considered.

Finally, but in the long run most importantly, the complex ecosystem will have to be accurately modelled so that bio-environmental processes can be understood and inter-species--including birds and marine mammals--relationships can be quantified and relied upon in determining optimum yields.



17.0 STATEMENT OF COUNCIL INTENTIONS TO REVIEW THE PLAN

The North Pacific Fishery Management Council will, after approval and implementation of this plan by the Secretary, maintain a continuing review of the fisheries managed under this plan through the following methods:

1. Maintain close liaison with the management agencies involved, usually the Alaska Department of Fish and Game and the National Marine Fisheries Service, to monitor the development of the fisheries and the activity in the fisheries.

2. Promote research to increase their knowledge of the fishery and the resource, either through Council funding or by recommending research projects to other agencies.

3. Conduct public hearings at appropriate times and in appropriate locations, usually at the close of a fishing season and in those areas where a fishery is concentrated, to hear testimony on the effectiveness of the management plans and requests for changes.

4. Consideration of all information gained from the above activities and development if necessary, of amendments to the management plan. The Council will also hold public hearings on proposed amendments prior to forwarding them to the Secretary for possible adoption.