MEMORANDUM

TO: Council, AP, and SSC Members

FROM: Clarence G. Pautzke
Executive Director

DATE: September 22, 1989

SUBJECT: Bering Sea/Aleutian Islands Groundfish FMP

ACTION REQUIRED

(a) Review initial Stock Assessment and Fishery Evaluation (SAFE) Report and release to public review.

(b) Approve initial total allowable catches (TACs) and apportionments for 1990 for public review.

(c). Receive status report and provide further direction on Bering Sea bycatch planning for 1990 and 1991.

(d) Receive status report on Alaska Factory Trawlers' voluntary bycatch agreement for 1989.

BACKGROUND

(a) Review Draft Stock Assessment and Fishery Evaluation Report

A copy of the draft Stock Assessment and Fishery Evaluation (SAFE) Report was sent to you on September 12. Item D-5(a) contains a table of estimates of current biomass, recommended ABCs, comments on the abundance and trend of the stocks, and a table showing ABCs and TACs for 1989. A summary of the report is provided as item D-5(b).

(b) Set Initial Total Allowable Catches, Apportionments, and Prohibited Species Catch Limits for 1990

The Council must set preliminary 1990 harvest levels, including DAP and JVP apportionments, at this meeting for public review. A table provided as item D-5(c) summarizes the 1989 numbers and the 1990 Plan Team ABC recommendations for your consideration.

As a starting point, the Council may wish to use 1989 TACs as the basis for initial 1990 harvest levels with the exception of pollock, Pacific cod, Greenland turbot and Bering Sea sablefish, all of which have experienced some decline in estimates of ABC.

Amendment 12 provided the Council with a framework procedure for setting PSC limits of fully U.S.-utilized species. The framework authorizes the Council to set non-retainable amounts of those

species which joint venture or foreign operations may require as bycatch to prosecute other groundfish target fisheries. Groundfish species that will likely be identified as fully U.S.-utilized are Greenland turbot, sablefish, Atka mackerel, Pacific Ocean perch, and other rockfish.

Item D-5(d) presents 1988 joint venture bycatch rates and 1989 JVP apportionments for these species. This information will be included with the draft SAFE document when it is distributed for public review. The public will be able to apply this information to the Council's initial 1990 groundfish specifications to calculate estimated PSC requirements. The final 1990 JVP apportionments are expected to be very different and will be based on the November NOAA Fisheries DAP survey. We expect 1989 JVP bycatch rates to be available by that time for calculation of projected 1990 JVP PSC bycatch demand.

All initial specifications for 1990 will be sent out for public review after this meeting. Final Council action is scheduled for the week of December 4.

(c) Bering Sea Bycatch Planning

NOAA Fisheries will present a report on its implementation of Amendment 12a and its plans for 1990. A letter from the Regional Director outlining their plans is provided as item D-5(e). Staff will also discuss plans for predicting 1990 bycatch for the December Council meeting. The Council may wish to provide further direction at this time.

Amendment 12a will sunset at the end of 1990. NOAA Fisheries, and others, have submitted proposals for a plan amendment to succeed Amendment 12a. Additional proposals may be received prior to the October 2 deadline. The Plan Team had preliminary discussions of proposals to succeed Amendment 12a at its meeting during the week of August 28 and will review all proposals received at its November meeting.

(d) AFTA Voluntary Bycatch Agreement

I have requested Ted Evans of the Alaska Factory Trawlers Association and Harold Sparck of the Yukon/Kuskokwim Fisheries Task Force to report to the Council on the implementation of the AFTA voluntary bycatch agreement for 1989. A copy of my letter requesting this report is at item D-5(f).

Table 7 -- Summary of stock abundance and ABC estimates for groundfish in the eastern Bering Sea (EBS) and Aleutian Islands (AI) for 1990.

Species/Region		Exploitable Biomass (t)	Exploitation Strategy	ABC (t)	Abundance and trend
Pollock	EBS	5,032,000	$F_{0.1}$	1,142,000	Moderately high, declining
	AI	649,700	$F_{0.1}$	149,400	Moderately high, declining
Pacific cod		1,079,600	F_{melsy}	209,200	Very high, declining
Yellowfin sole		1,640,400	$F_{0.1}$	278,900	Very high, stable
Greenland turbot		356,600	--	7,000	Low, declining
Arrowtooth flounder		433,900	F_{max}	134,500	Very high, increasing
Rock sole		1,392,700	F_{msy}	222,500	Very high, increasing
Other flatfishes		1,187,100	F_{msy}	184,000	Very high, stable
Sablefish	EBS	20,700	$F_{0.1}$	2,400	Low, declining
	AI	60,100	$F_{0.1}$	6,600	Average, stable
Pacific Ocean perch					
	EBS	105,400	$F_{0.1}$	6,300	Below average, slow increase
	AI	276,500	$F_{0.1}$	16,600	Below average, slow increase
Other rockfish					
	EBS	8,000	$F_{0.1}$	500	Average, unknown
	AI	18,500	$F_{0.1}$	1,100	Average, unknown
Atka mackerel		--	$F_{0.1}$	24,000	Relatively low, increasing
Squid		--	--	10,000	Unknown
Other species		676,200	$F_{history}$	59,000	High, stable
Groundfish complex				2,454,000	High, stable

Table D-5(c). BERING SEA / ALEUTIAN ISLANDS GROUNDFISH: Current 1989 ABC, TAC, DAP, and JVP and 1990 Plan Team ABC recommendations (in metric tons) 1/

		1989				1990	1990 Recommendations		
Species	Area	ABC	TAC	DAP	JVP	Plan Team ABC	TAC	DAP	JVP
Pollock	BS	1,340,000	1,313,000	1,045,585	267,415	1,142,000 *			
	AI	117,900	11,432	11,432	0	149,400			
Pacific cod		370,600	226,079	158,613	67,466	209,200 *			
Yellowfin sole		241,000	193,952	21,274	172,678	278,900			
Greenland turbot		20,300	6,800	6,600	200	7,000 *			
Arrowtooth flounder		163,700	5,800	5,100	700	134,500 *			
Rock sole		171,000	77,148	42,543	34,605	222,500			
Other flatfish		155,900	63,906	8,906	55,000	184,000			
Sablefish	BS	2,800	2,380	2,380	0	2,400 *			
	AI	3,400	2,890	2,890	0	6,600			
Pacific ocean perch	BS	6,000	4,250	4,250	0	6,300			
	AI	16,600	5,100	5,100	0	16,600			
Other rockfish	BS	400	340	340	0	500			
	AI	1,100	935	935	0	1,100			
Atka mackerel		21,000	20,285	20,285	0	24,000			
Squid		10,000	875	850	25	10,000			
Other species		59,000	15,274	11,274	4,000	59,000			
BS/AI TOTAL		2,700,700	1,950,446	1,348,357	602,089	2,454,000			

1/ Figures as of September 15, 1989. TAC sum is less than 2,000,000 mt due to 49,554 mt remaining nonspecific reserves.
* 1990 Plan Team ABC recommendation less than 1989 ABC.

22-Sep-89

BSA90.D-5(c)

1988 JVP BYCATCH RATES OF FULLY UTILIZED SPECIES (mt/mt)

Other Fishery (Pollock and Cod)

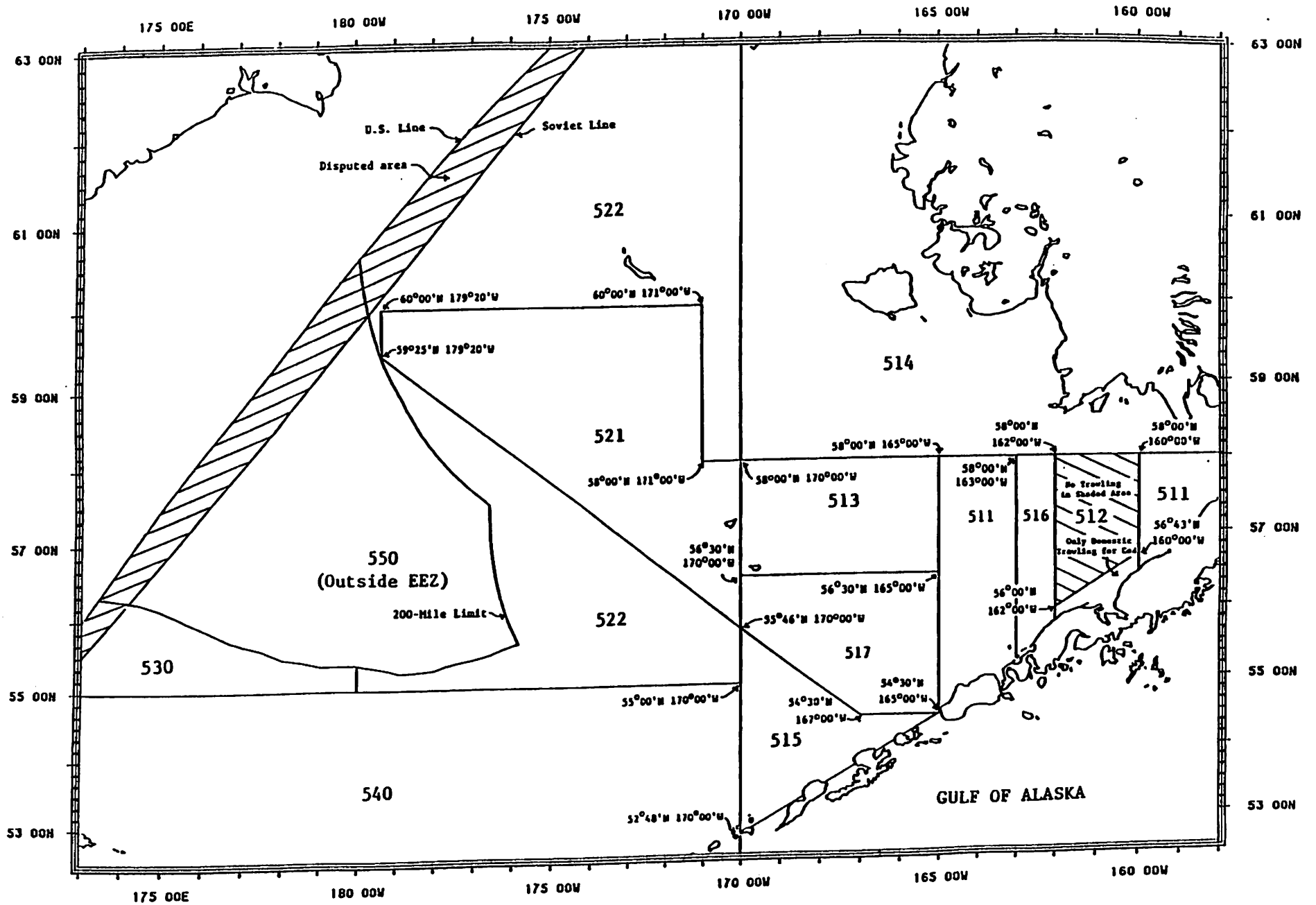
Area	Species				
	Sablefish	Greenland turbot	Pacific Ocean Perch	Other Rockfish	Atka Mackerel
511	0.0000016	0.0001656	0.000001	0.0000023	0.0000001
513	0.0000272	0.0000341	0.0000921	0.0000189	0.0000383
514	0.0	0.0	0.0000056	0.0012305	0.0
515	0.0000025	0.0000230	0.0000436	0.0000243	0.0003318
521	0.0	0.0000473	0.0000574	0.0000272	0.0000018
522	0.0	0.0	0.0003414	0.0	0.0000809
All	0.0000106	0.0000634	0.0000579	0.0000214	0.0000521

Yellowfin Sole Fishery (Yellowfin Sole, Rock Sole, Other Flatfish)

511	0.0000001	0.0001037	0.0	0.0000001	0.0000006
513	0.0	0.0000982	0.0000003	0.0000038	0.000001
514	0.0	0.0000008	0.0000002	0.0	0.0
515	0.0	0.0	0.0	0.0	0.0
521	0.0	0.0000107	0.0	0.0	0.0000064
522	0.0	0.0	0.0	0.0	0.0
All	0.0	0.0000719	0.0000002	0.0000018	0.0000007

1989 JVP APPORTIONMENTS (mt)

Walleye Pollock	267,415
Pacific Cod	67,466
Total Other Fishery	334,881
Yellowfin Sole	172,678
Rock Sole	34,605
Other Flatfish	55,000
Total Flatfish Fishery	262,283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180 00W
175 00W
170 00W
165 00W
160 00W
63 00N
61 00N
59 00N
57 00N
55 00N
53 00N
U.S. Line
Soviet Line
Disputed area
522
60°00'N 179°20'W
60°00'N 171°00'W
59°25'N 179°20'W
514
521
58°00'N 171°00'W
58°00'N 165°00'W
58°00'N 162°00'W
58°00'N 160°00'W
58°00'N 170°00'W
58°00'N 163°00'W
513
511
516
512
No Trawling in Shaded Area
Only Domestic Trawling for Cod
511
56°43'N 160°00'W
550
(Outside EEZ)
56°30'N 170°00'W
56°30'N 165°00'W
56°00'N 162°00'W
200-Mile Limit
55°46'N 170°00'W
522
517
530
54°30'N 165°00'W
55°00'N 170°00'W
54°30'N 167°00'W
515
540
GULF OF ALASKA
52°48'N 170°00'W

Stock Assessment and Fishery Evaluation Document for Groundfish Resources in the Bering Sea/Aleutian Islands Region as Projected for 1990

SUMMARY

This document is compiled by the North Pacific Fishery Management Council's (NPFMC) Plan Team for the groundfish fisheries of the Bering Sea/Aleutian Islands from contributions by various authors from the Alaska Fisheries Science Center, National Marine Fisheries Service. In this document, the biological status of the stocks and economic condition of the fisheries are described. Acceptable biological catches (ABCs) for each of the species are estimated. The ABC values, together with socioeconomic considerations, are to be presented to the NPFMC for determining total allowable catches (TACs) and other management strategies for the 1990 fishery.

Members of the Plan Team are: Loh-Lee Low (chairman), Hal Weeks (team coordinator), Jay Ginter, Dave Carlile, Greg Williams, Grant Thompson, Sam Wright, Rebecca Baldwin, and Jeremy Collie.

MANAGEMENT AREAS AND SPECIES

The Bering Sea/Aleutian Islands management area lies within the 200-mile U.S. Exclusive Economic Zone (EEZ) of the United States (Fig. 1). International North Pacific Fisheries Commission (INPFC) statistical areas 1 and 2 make up the EBS. The Aleutian region is INPFC area 5.

Four categories of finfishes and invertebrates have been designated for management purposes (Table 1). They are (a) prohibited species, (b) target species, (c) other species, and (d) non-specified species. This SAFE document describes the status of the stocks in categories (b) and (c) only. An assessment of Pacific halibut stocks is provided in Appendix 1.

HISTORICAL CATCH STATISTICS

Catch statistics since 1954 are shown for the eastern Bering Sea (EBS) subarea in Table 2. The initial target species was yellowfin sole. During the early period of these fisheries, total catches of groundfish reached a peak of 674,000 metric tons (t) in 1961. Following a decline in abundance of yellowfin sole, other species were targeted upon, principally pollock, and total catches rose to 2.2 million t in 1972. Catches have since varied from 1.2 to 1.9 million t as catch restrictions and other management measures were placed on the fishery.

Catches in the Aleutian region have always been much smaller than those in the EBS and target species have been different (Table 3). Pacific ocean perch (POP) was the initial target species and during the early years of exploitation overall catches of groundfish reached a peak of 112,000 t in 1965. With a decline in abundance of POP, the fishery diversified to other species. Total catches in recent years have been about 100,000 t annually.

RECENT TOTAL ALLOWABLE CATCH

Amendment #1 to the Bering Sea/Aleutian Islands groundfish FMP provides the framework to manage the groundfish resources as a complex. The MSY of this complex was originally estimated at 1.8 to 2.4 million t. The optimum yield (OY) was set at 85% of the MSY range, or 1.4 to 2.0 million t.

Total allowable catches (TAC) established by the NPFMC since implementation of extended jurisdiction under the Magnuson Fishery Conservation and Management Act in 1977 are given in Table 4. The sum of TACs equals OY for the groundfish complex, which is currently constrained to a range of 1.4 to 2.0 million t by its Fishery Management Plan (FMP). Optimum yield for all species combined has increased steadily from 1.4 million t in 1977 to 2.0 million t in 1984-89.

ACCEPTABLE BIOLOGICAL CATCH LEVELS FOR 1990

The estimates of ABC for 1990 are based upon status of stock assessments made in 1989 and projections through 1990. Tables 6 and 7 provide summaries of the estimates of MSY and ABC.

The sum of individual species MSY's has been estimated to be in excess of 3.47 million t. The sum of ABC's for the groundfish complex has declined from 2.70 million t in 1989 to 2.45 million t in 1990. This decrease of 250,00 t results primarily from (1) a decrease of the EBS pollock ABC (by 198,00 t) due to uncertainties concerning the impacts of pollock harvest in the "donut hole" area on stocks in the U.S. EEZ; and (2) a decrease in Pacific cod ABC (by 161,400 t) due to a change in exploitation strategy. There has been improved conditions for yellowfin sole, rock sole, and other flatfish.

Walleye Pollock:

EBS	1989 ABC = 1,340,000 t	1990 ABC = 1,142,000 t
Aleutians	1989 ABC = 117,900 t	1990 ABC = 149,400 t

EBS	Projected 1990 exploitable biomass = 5,032,000 t
Aleutians	Projected 1990 exploitable biomass = 649,700 t

Pollock abundance in the EBS is higher than the average level observed since implementation of the MFCMA, but model projections

indicate that biomass is declining and will decline further in the near future. Depending on the model used, harvesting at an $F_{0.1}$ exploitation rate results in a 1990 EBS ABC of 1.142 to 1.466 million t. Because of concern over possible impacts of catches in the donut hole, the Plan Team recommends that the 1990 EBS ABC be set at the lower end of the range (1,142,000 t).

Less is known about the dynamics of the stock in the Aleutian Islands region, but the best information available suggests that abundance is declining at a moderate rate from the high point observed in 1983. Harvesting at a 23% catch/biomass ratio results in a 1990 Aleutians ABC of 149,400 t. This estimate is higher than the author's estimate (117,900 t) because the Plan Team estimated a higher biomass than the author (649,700 t versus 471,700 t).

A domestic fishery has also developed in the Bogoslof area. Last year, the Plan Team recommended a separate ABC of 250,000 mt for this area. However, because of the large catches taken in the donut hole and the possibility of a significant interchange between pollock in the Bogoslof and donut hole areas, the Plan Team no longer recommends creation of a separate Bogoslof ABC.

The donut hole area has been an important ground for foreign pollock fisheries since the mid-1980s. The 1987 catch of 1.3 million mt, for example, exceeded the catch taken in the U.S. EEZ. Information on the biology of the pollock stock(s) in this area continues to be limited, however. Because of concern over possible linkages between pollock in the donut hole and U.S. EEZ, the Plan Team will review its ABC recommendations before December.

Pacific Cod:

1989 ABC = 370,600 t 1990 ABC = 209,200 t
Projected 1990 exploitable biomass = 1,097,600 t

Total catches of cod reached a historic high of 197,900 t in 1988 with the great majority of the total (192,700 t) originating from the eastern Bering Sea. Catch per unit effort and demersal trawl survey indices of abundance both indicate that biomass increased steadily from 1978 to 1983. Since 1983, estimated biomass has remained steady at about 1 million t. Age-frequency analysis indicates that the increase in biomass was fueled by exceptionally strong 1976 and 1977 year classes. While these dominant year classes have now disappeared from the fishery, high biomass levels are currently sustained by the moderately strong 1982 to 1985 year classes. A numbers-at-age model was applied to ages 3 to 8 of Pacific cod. Fishing mortality was assumed to be a separable product of year-specific fishing effort and gear-specific vulnerability; recruitment was modeled with the Beverton-Holt stock-recruitment relationship. According to this model, MSY under current environmental conditions is 323,300 t of which 275,500 mt applies to the eastern Bering Sea. F_{msly}, a value which seeks to maximize the expected value of the logarithm of sustainable yield, was used to calculate the recommended ABC. The model was also used

to calculate a number of reference fishing mortality rates including F=M, F_{max}, $F_{0.1}$, and F_{msy}. Taking into consideration the uncertainty of the estimated MSY and the variability in recruitment, a 1990 ABC of 209,200 t is recommended for the eastern Bering Sea and Aleutian Islands combined.

Yellowfin Sole:

1989 ABC = 241,000 t 1990 ABC = 278,900 t
Projected 1990 exploitable biomass = 1,640,000 t

Exploitable biomass is calculated to have increased from 1988 to 1989, but is generally stable. Abundance is above MSY biomass. Biomass is estimated from research surveys, and has been variable since 1982 because of changes in trawl gear and net calibration. ABC was calculated using an $F_{0.1}$ exploitation rate. The ABC increased slightly in 1990 from 1989 because of a change to $F_{0.1}$ exploitation from a yield per recruit model of exploitation used last year.

Greenland Turbot:

1989 ABC = 20,300 t 1990 ABC = 7,000 t
Projected 1990 exploitable biomass = 356,600 t

Continuous poor recruitment has been observed throughout the 1980s which indicates that biomass of the adult population is expected to decline well into the 1990s. Forecasts for a number of conservative fishing strategies, including no fishing, all show projected declines in biomass through at least 1993. No threshold level has been determined for this species. We are unable to develop any justification for a major directed fishery on Greenland turbot at this time. The ABC should be set at a level approximating its low actual catch levels in recent years. This will allow any incidental catches to be retained and thus prevent wastage. It will also preclude development of any new effort directed at this resource in its currently depressed state. An ABC estimated from the $F_{0.1}$ exploitation strategy was considered and reduced because of concerns for continually low levels of recruitment.

Arrowtooth Flounder:

1989 ABC = 163,700 t 1990 ABC = 134,500 t
Projected 1990 exploitable biomass = 433,900 t (same as 1989)

The resource is in excellent condition as the biomass continues to be high and stable. This trend has been confirmed from the 1988 and earlier summer trawl surveys. The 1988 survey indicated that the exploitable biomass was 433,900 t.

Given the present high level of abundance and lacking a stock-recruitment relationship for this stock, an F_{max} harvest strategy (F_{max} = 0.31) was used to set the 1990 ABC at 134,500 t. The lower

ABC estimate (as contrasted with 1989) is due to correction of the biomass derived from the 1988 survey.

Rock Sole:

1989 ABC = 171,000 t 1990 ABC = 222,500 t
Projected 1990 exploitable biomass = 1,392,700 t

Rock sole was separated from "other flatfish" in 1987 for management purposes. Trawl survey results indicate that the biomass of rock sole is high. The resource is in excellent condition and biomass is above the biomass that produces MSY. Because of uncertainties in annual point estimates, the estimated exploitable biomass is the average from 1986-88. The MSY exploitation rate is applied to calculate ABC. The increase in ABC from 1989 reflects actual biomass increase, higher biomass estimates caused by a trawl net measurement different from that used in 1989, and application of higher fishing mortality rate for 1990 (0.155 vs. 0.13).

Other Flatfish:

1989 ABC = 155,900 t 1990 ABC = 184,000 t
Projected 1990 exploitable biomass = 1,187,100 t

Exploitable biomass of other flatfish has not been calculated for 1989, but is expected to increase above 1988 abundance because of a new trawl net measurement and increasing recruitment. Exploitable biomass is high, increasing, and above the value that produces MSY. Fishing mortality rates have not been calculated for other flatfish, so the rock sole rate is used. The rate used increased in 1990, as discussed under rock sole.

Sablefish:

EBS	1989 ABC = 2,800 t	1990 ABC = 2,400 t
Aleutians	1989 ABC = 3,400 t	1990 ABC = 6,600 t

EBS Projected 1990 exploitable biomass = 20,700 t
Aleutians Projected 1990 exploitable biomass = 60,100 t

Catches in 1988 were 3,200 t in the EBS and 3,400 t in Aleutians, well below the average harvest of 11,700 t in the 1960s. Since 1977 catches have been restricted due to low stock abundance. Longline survey indices indicate fairly steady abundance in the Aleutians but a sharp decrease in relative abundance in the EBS in 1987. However, abundance in the EBS may be significantly underestimated because of killer whale predation on the survey catch. Migration may affect relative abundance estimates. The best estimates of absolute biomass, derived from 1986 trawl surveys are 56,500 t for the EBS and 96,300 t for the Aleutians. Exploitable biomass in 1990, projected from the 1986 biomass estimates and more recent relative abundance indices, is 20,700 t in the EBS and 60,100 t in the Aleutians. No strong year class

has been detected since the above-average 1977 year class. Age composition data are not available for all years and age-structured assessment methods were not used. Initial MSY estimates from the delay-difference model were obtained at stock sizes lower than those that have been historically observed. Because recruitment at such low stock sizes is uncertain, the MSY estimates were truncated to the yields predicted at the lowest historically observed biomass levels (1979 to 1980). MSY was estimated to be in the range 3,800 to 4,200 t for the EBS and 4,600 to 9,600 t for the Aleutians. Acceptable biological catch was calculated by applying the $F_{0.1}$ mortality rate to the 1990 projected biomass. The resulting ABCs are 1,700 to 2,400 t for the EBS and 2,500 t to 6,600 t for the Aleutians. The Plan Team recommends setting the 1990 ABCs at the upper end of these ranges based on the application of the most appropriate model.

Pacific Ocean Perch:

EBS	1989 ABC = 6,000 t	1990 ABC = 6,300 t
Aleutians	1989 ABC = 16,600 t	1990 ABC = 16,600 t

EBS	Projected 1990 exploitable biomass = 105,400 t
Aleutians	Projected 1990 exploitable biomass = 276,500 t

Pacific ocean perch stocks continue to remain substantially lower than the virgin biomass levels of the early 1960s. However, the stock is increasing and has been determined to be at levels slightly below the biomass level that would produce MSY. ABC is calculated using the $F_{0.1}$ exploitation strategy. This strategy resulted in a fishing mortality rate of 0.06, which is expected to provide for some rebuilding of the POP complex of stocks.

Other Rockfishes:

EBS	1989 ABC = 400 t	1990 ABC = 500 t
Aleutians	1988 ABC = 1,100 t	1989 ABC = 1,100 t

EBS	Projected 1990 exploitable biomass = 8,000 t
Aleutians	Projected 1990 exploitable biomass = 18,500 t

Catch of "other rockfish" have declined from the high catches of the late 1970s. Recent catches are primarily incidental. Few data are available on recruitment strengths or biological parameters, precluding direct estimates of MSY and ABC. Abundance appear to be relatively stable from trawl surveys. A fishing mortality rate derived from the $F_{0.1}$ exploitation strategy for POP ($F_{0.1}$ = 0.06) is used to estimate ABC for this species group.

Atka Mackerel:

1989 ABC = 21,000 t 1990 ABC = 24,000 t
Projected 1990 exploitable biomass = unknown

The status of Atka mackerel is difficult to assess for three reasons: (1) the stock tends to occur in localized concentrations, making survey estimates less reliable than usual; (2) surveys that cover the stock's range in the Aleutian region are conducted only once every three years; and (3) two of the last three surveys were unable to sample shallow waters successfully. While absolute abundance is difficult to estimate, it appears that relative abundance is low but increasing due to the recruitment of a strong year class spawned in 1984. Since estimates of absolute abundance are unavailable, ABC was set equal to the sustainable yield associated with $F_{0.1}$, which was calculated under an assumption of constant low recruitment. For 1989, ABC was set at the average of three values generated under different assumptions regarding the natural mortality rate. Because of the recruitment of the strong 1984 year class, however, ABC for 1990 was set at the upper end of the (19,000-24,000 t) range.

Squid and Other Species:

Squid	1989 ABC = 10,000 t	1990 ABC = 10,000 t
	Projected 1990 exploitable biomass =	unknown
Other Species	1989 ABC = 59,000 t	1990 ABC = 59,000 t
	Projected 1990 exploitable biomass =	676,200 t

Squid are generally taken incidentally in fisheries targeting on groundfish but have been the target of Japanese and Korean trawlers in the past. Catches of squid peaked at 9,000 t in 1978 and have steadily declined to only a few hundred tons in 1987-88. Survey abundance data are not available for squid because of their mainly pelagic drift over deep water.

In recent years reported catches of squid and Other Species have represented 1% or less of the total catch of all groundfish. Biomass estimates for Other Species were derived from demersal trawl surveys. The survey data suggest that sculpins and skates constitute most of the other species biomass but it is recognized that the abundance of pelagic species of smelts and sharks may be substantially underestimated by demersal trawls. Estimated biomass of Other Species peaked at 713,000 t in 1988.

Because of the paucity of data, MSY is unknown for squid and Other Species. It is assumed that past harvesting has been insufficient to reduce the biomass of these species below the level that would maximize yield. MSY is set at levels approximating the highest catches obtained in the past: 10,000 t for squid and 59,000 t for other species. Recent catches of squid and Other Species have been well below MSY and therefore ABC was set equal to MSY.

ECONOMIC HEALTH OF THE FISHERIES

In 1989, for the first time, commercial groundfish catch by domestic operations will exceed harvest levels of the joint venture (JV) fleet in the Bering Sea and Aleutian Islands (BS/AI). As of August 25, 1989, domestic harvest levels were reported at 667,000 t, while joint venture operations had harvested 247,700 t. In 1988, domestic and joint venture harvests were 680,500 t and 1,301,100 t, respectively. This shift toward increasing harvest by domestic operations is expected to continue into 1990, primarily due to apportionment of the TACs.

The majority of groundfish catch in the BS/AI domestic fishery is by trawl gear. Trawl accounted for 670,800 t (98.6%) of the 1988 domestic harvest and 658,200 t or 98.7% of the year-to-date 1989 domestic harvest.

Because of its large share of the total harvest, trawl operations also accounted for 91.7% of the 1988 exvessel value of $145.1 million and 94.8% of the estimated $139.5 million exvessel value of the 1989 year-to-date domestic fishery.

Overall, the economic health of the domestic fisheries of the Bering Sea and Aleutian Islands is fairly high due to relatively high exvessel prices, good stock conditions, and quotas that are sufficiently high to permit year round domestic fisheries for several important species. The high exvessel prices are, in part, explained by a favorable dollar/yen ratio and reduced catches of Atlantic cod.

The return to the domestic fleet overall in 1990 could be impacted by fluctuations in exchange or interest rates, changes in TACs, and the imposition of additional costs associated with the domestic observer program. Returns to any one segment of the fleet will also be impacted by the entry of additional effort into the fisheries or by allocational shifts between shore-side and at-sea processors.

Table 1 -- Species categories established for management of Bering Sea/Aleutian Islands groundfish fishery.

Prohibited species(a)	Target species(b)	Other species(c,d)
FINFISHES		
Salmonids	Walleye pollock	Sculpin
Pacific halibut	Pacific cod	Shark
Pacific herring	Yellowfin sole	Skate
	Greenland turbot	Smelt
	Arrowtooth flounder	
	Rock sole	
	Other flatfish	
	Sablefish	
	Pacific ocean perch	
	Other rockfish	
	Atka mackerel	
INVERTEBRATES		
King crab	Squid	Octopus
Snow (Tanner) crab		

(a) Species when caught must be returned to the sea.
(b) Total allowable catch established for each species.
(c) Aggregate total allowable catch established for the group as a whole.
(d) A nonspecified species category is also established to cover all other species not listed in categories (a)-(c).

Table 2 -- Groundfish and squid catches (metric tons) in the eastern Bering Sea, 1954-1988.

Year	Pollock	Pacific cod	Sablefish	Pacific ocean perch	Other rock-fish	Yellow-fin sole	Green-land turbot
1954						12,562	
1955						14,690	
1956						24,697	
1957						24,145	
1958	6,924	171	6			44,153	
1959	32,793	2,864	289			185,321	
1960			1,861	6,100		456,103	36,843
1961			15,627	47,000		553,742	57,348
1962			25,989	19,900		420,703	58,226
1963			13,706	24,500		85,810	31,565
1964	174,792	13,408	3,545	25,900		111,177	33,729
1965	230,551	14,719	4,838	16,800		53,810	9,747
1966	261,678	18,200	9,505	20,200		102,353	13,042
967	550,362	32,064	11,698	19,600		162,228	23,869
968	702,181	57,902	14,374	31,500		84,189	35,232
1969	862,789	50,351	16,009	14,500		167,134	36,029
1970	1,256,565	70,094	11,737	9,900		133,079	19,691
1971	1,743,763	43,054	15,106	9,800		160,399	40,464
1972	1,874,534	42,905	12,758	5,700		47,856	64,510
1973	1,758,919	53,386	5,957	3,700		78,240	55,280
1974	1,588,390	62,462	4,258	14,000		42,235	69,654
1975	1,356,736	51,551	2,766	8,600		64,690	64,819
1976	1,177,822	50,481	2,923	14,900		56,221	60,523
1977	978,370	33,335	2,718	2,806	311	58,373	27,708
1978	979,431	42,543	1,192	2,230	2,614	138,433	37,423
1979	913,881	33,761	1,376	1,723	2,018	99,017	34,998
1980	958,279	45,861	2,206	959	459	87,391	48,856
1981	973,505	51,996	2,604	1,186	331	97,301	52,921
1982	955,964	55,040	3,184	654	273	95,712	45,805
1983	982,363	83,212	2,695	440	220	108,385	43,443
1984	1,098,783	110,944	2,329	1,760	143	159,526	21,317
1985	1,179,759	132,736	2,348	821	81	227,107	14,698
1986	1,188,449	130,555	3,518	838	17	208,597	7,710
1987	1,237,597	144,539	4,178	1,392	474	181,429	6,533
988	1,228,000	192,726	3,193	1,542	341	223,156	6,064

Table 2 -- continued.

Year	Arrow-tooth flounder	Other flatfish	Atka mackerel	Squid	Other species	Total all Species
1954						12,562
1955						14,690
1956						24,697
1957						24,145
1958					147	51,401
1959					380	222,647
1960	a					500,907
1961	a					673,717
1962	a					524,818
1963	a	35,643				191,224
1964	a	30,604			736	393,891
1965	a	11,686			2,218	344,369
1966	a	24,864			2,239	452,081
1967	a	32,109			4,378	836,308
1968	a	29,647			22,058	977,083
1969	a	34,749			10,459	1,192,020
1970	12,598	64,690			15,295	1,593,649
1971	18,792	92,452			13,496	2,157,326
1972	13,123	76,813			110,893	2,249,092
1973	9,217	43,919			55,826	2,064,444
1974	21,473	37,357			60,263	1,900,092
1975	20,832	20,393			54,845	1,645,232
1976	17,806	21,746			26,143	1,428,565
1977	9,454	14,393		4,926	35,902	1,168,296
1978	8,358	21,040	832	6,886	61,537	1,302,519
1979	7,921	19,724	1,985	4,286	38,767	1,159,457
1980	13,761	20,406	4,955	4,040	34,633	1,221,506
1981	13,473	23,428	3,028	4,182	35,651	1,259,606
1982	9,103	23,809	328	3,837	18,200	1,211,909
1983	10,216	30,454	141	3,470	15,465	1,280,503
1984	7,980	44,286	41	2,824	8,508	1,458,455
1985	7,288	71,179	5	1,611	11,503	1,649,135
1986	6,761	76,464	12	848	10,471	1,634,240
1987	4,380	50,771	118	12	8,569	1,639,988
1988	5,477	74,200	428	414	12,206	1,747,747

a. Mixed in Greenland turbot category.

Table 3 -- Groundfish and squid catches (metric tons) in the Aleutian Islands region, 1962-1988.

Year	Pollock	Pacific cod	Sable-fish	Pacific ocean perch	Other rock-fish	Green-land turbot
1962				200		
1963			664	20,800		7
1964		241	1,541	90,300		504
1965		451	1,249	109,100		300
1966		154	1,341	85,900		63
1967		293	1,652	55,900		394
1968		289	1,673	44,900		213
1969		220	1,673	38,800		228
1970		283	1,248	66,900		285
1971		2,078	2,936	21,800		1,750
1972		435	3,531	33,200		12,874
1973		977	2,902	11,800		8,666
1974		1,379	2,477	22,400		8,788
1975		2,838	1,747	16,600		2,970
1976		4,19(	1,659	14,000		2,067
1977	7,625	3,262	1,897	8,010	3,043	2,453
1978	6,282	3,295	821	5,286	921	4,766
1979	9,504	5,593	782	5,486	4,517	6,411
1980	58,156	5,788	274	4,011	420	3,697
1981	55,516	10,462	533	3,668	328	4,400
1982	57,978	11,526	955	1,741	2,114	6,317
1983	59,026	9,955	673	667	1,046	4,115
1984	81,834	22,216	999	826	65	1,803
1985	58,730	12,690	1,448	509	62	33
1986	46,641	10,332	3,028	341	20	2,154
1987	28,720	13,207	3,834	1,482	148	3,066
1988	43,000	5,165	3,415	2,238	278	1,044

Table 3 -- continued.

Year	Arrow-tooth flounder	Atka mack-erel	Squid	Other species	Total all species
1962					200
1963	a				21,471
1964	a			66	92,652
1965	a			768	111,868
1966	a			131	87,589
1967	a			8,542	66,781
1968	a			8,948	56,023
1969	a			3.088	44,009
1970	274	949		10,671	80,610
1971	581			2,973	32,118
1972	1,323	5,907		22,447	79,717
1973	3,705	1,712		4,244	34,006
1974	3,195	1,377		9,724	49,340
1975	784	13,326		8,288	46,553
1976	1,370	13,126		7,053	43,465
1977	2,035	20,975	1,808	16,170	67,278
1978	1,782	23,418	2,085	12,436	61,092
1979	6,436	21,279	2,252	12,934	75,194
1980	4,603	15,533	2,332	13,028	107,842
1981	3,640	16,661	1,762	7,274	104,244
1982	2,415	19,546	1,201	5,167	108,960
1983	3,753	11,585	510	3,675	95,005
1984	1,472	35,998	343	1,670	147,226
1985	87	37,856	9	2,050	113,474
1986	142	31,978	20	1,509	96,165
1987	159	30,068	24	1,155	81,863
1988	406	21,656	417	437	78,056

a. Mixed in Greenland turbot category.

Table 4 -- Total allowable catches (t) for groundfish of the eastern Bering Sea and Aleutian Islands region 1977-1989.

	1977	1978	1979	1980	1981	1982	1983
Eastern Bering Sea [a]							
Walleye pollock	950,000	950,000	950,000	1,000,000	1,000,000	1,000,000	1,000,000
Yellowfin sole	106,000	126,000	126,000	117,000	117,000	117,000	117,000
Greenland turbots	-	-	-	90,000	90,000	90,000	90,000
Arrowtooth flounders [b]	-	-	-	-	-	-	-
Other flatfish [c]	100,000	159,000	159,000	61,000	61,000	61,000	61,000
Pacific cod	58,000	70,500	70,500	70,700	78,700	78,700	120,000
Sablefish	5,000	3,000	3,000	3,500	3,500	3,500	3,500
Pacific ocean perch	6,500	6,500	6,500	3,250	3,250	3,250	3,250
Other rockfish	-	-	-	7,727	7,727	7,727	7,727
Squid	10,000	10,800	10,000	10,000	10,000	10,000	10,000
Other species	59,600	66,600	66,600	74,249	74,249	74,249	77,314
Aleutians [a]							
Walleye pollock	-	-	-	100,000	100,000	100,000	100,000
Sablefish	2,400	1,500	1,500	1,500	1,500	1,500	1,500
Pacific ocean perch	15,000	15,000	15,000	7,500	7,500	7,500	7,500
Other rockfish	-	-	-	-	-	-	-
Atka mackerel	-	24,800	24,800	24,800	24,800	24,800	24,800
Other species	34,000	34,000	34,000	-	-	-	-
Optimum yield [d]	1,346,500	1,467,700	1,466,900	1,571,226	1,579,226	1,579,226	1,623,591

a. Total allowable catches are for the eastern Bering Sea and Aleutian Islands areas combined for pollock in 1977-79 other rockfish in 1980-83, other species in 1980-85, and in all years for yellowfin sole, turbot, other flounders Pacific cod and squid.
b. Combined with Greenland turbot until 1986.
c. Excludes halibut but includes turbot until 1980.
d. Optimum yield = sum of total allowable catches.

Table 4 -- continued.

	1984	1985	1986	1987	1988	1989 [e]
Eastern Bering Sea [a]						
Walleye pollock	1,200,000	1,200,000	1,200,000	1,200,000	1,300,000	1,313,000
Yellowfin sole	230,000	226,900	209,500	187,000	254,000	193,952
Greenland turbots	59,610	42,000	33,000	20,000	11,200	6,800
Arrowtooth flounders [b]	-	-	20,000	9,795	5,531	5,800
Other flatfish [c]	111,490	109,900	124,200	148,300	131,369	63,906
Pacific cod	210,000	220,000	229,000	280,000	200,000	226,079
Sablefish	3,740	2,625	2,250	3,700	3,400	2,380
Pacific ocean perch	1,780	1,000	825	2,850	5,000	4,250
Other rockfish	1,550	1,120	825	450	400	340
Squid	8,900	10,000	5,000	500	1,000	875
Other species	40,000	37,580	27,800	15,000	10,000	15,274
Aleutians [a]						
Walleye pollock	100,000	100,000	100,000	88,000	45,000	11,432
Sablefish	1,600	1,875	4,200	4,000	5,000	2,890
Pacific ocean perch	2,700	3,800	6,800	8,175	6,000	5,100
Other rockfish	5,500	5,500	5,800	1,430	1,100	935
Atka mackerel	23,130	37,700	30,800	30,800	21,000	17,242
Other species	-	-	-	-	-	
Optimum yield [d]	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000

a. Total allowable catches are for the eastern Bering Sea and Aleutian Islands areas combined for pollock in 1977-79 other rockfish in 1980-83, other species in 1980-85, and in all years for yellowfin sole, turbot, other flounders Pacific cod and squid.
b. Combined with Greenland turbot until 1986.
c. Excludes halibut but includes turbot until 1980.
d. Optimum yield = sum of total allowable catches.
e. Through August 1989, includes 52,597 unallocated reserve.

Table 5 -- Bering Sea/Aleutian Islands groundfish apportionments and foreign allocations in metric tons, 1986-89.

	1986	1987	1988	Through August 1989
ABC	2,199,000	2,245,780	2,876,100	2,700,700
TAC	2,000,000	2,000,000	2,000,000	2,000,000
DAP	243,849	336,723	708,520	1,345,314
JVP	1,155,863	1,484,110	1,282,784	602,089
Reserve	10,121	46,471	8,696	52,597
TALFF	590,167	132,696	0	0
Japan	455,439	101,446	0	0
ROK	112,177	29,900	0	0
West Germany	0	0	0	0
Portugal	0	0	0	0
Poland	8,043	0	0	0
USSR	0	0	0	0
China	4,920	1,350	0	0
Unallocated	9,545	0	0	0

Table 6 -- Estimates of maximum sustainable yields (MSYs) and comparisons of acceptable biological catches (ABCs) for 1989 and 1990 for groundfish in the eastern Bering Sea (EBS) and Aleutian Islands (AI).

Species/Region	MSY (t)	ABC (t)	
		1989	1990
Pollock			
EBS	2,300,000	1,340,000	1,142,000
AI	245,000	117,900	149,400
Pacific cod	323,300	370,600	209,200
Yellowfin sole	150,000	241,000	278,900
Greenland turbot	24,700	20,300	7,000
Arrowtooth flounder	43,400	163,700	134,500
Rock sole	112,500	171,000	222,500
Other flatfish	123,300	155,900	184,000
Sablefish			
EBS	4,200	2,800	2,400
AI	9,600	3,400	6,600
Pacific ocean perch			
EBS	7,200	6,000	6,300
AI	18,900	16,600	16,600
Other rockfish			
EBS	600	400	500
AI	1,300	1,100	1,100
Atka mackerel	38,800	21,000	24,000
Squid	> 10,000	10,000	10,000
Other species	59,000	59,000	59,000
Groundfish Complex	> 3,471,800	2,700,700	2,454,000

Table 7 -- Summary of stock abundance and ABC estimates for groundfish in the eastern Bering Sea (EBS) and Aleutian Islands (AI) for 1990.

Species/Region		Exploitable Biomass (t)	Exploitation Strategy	ABC (t)	Abundance and trend
Pollock	EBS	5,032,000	$F_{0.1}$	1,142,000	Moderately high, declining
	AI	649,700	$F_{0.1}$	149,400	Moderately high, declining
Pacific cod		1,079,600	F_{melsy}	209,200	Very high, declining
Yellowfin sole		1,640,400	$F_{0.1}$	278,900	Very high, stable
Greenland turbot		356,600	--	7,000	Low, declining
Arrowtooth flounder		433,900	F_{max}	134,500	Very high, increasing
Rock sole		1,392,700	F_{msy}	222,500	Very high, increasing
Other flatfishes		1,187,100	F_{msy}	184,000	Very high, stable
Sablefish	EBS	20,700	$F_{0.1}$	2,400	Low, declining
	AI	60,100	$F_{0.1}$	6,600	Average, stable
Pacific Ocean perch					
	EBS	105,400	$F_{0.1}$	6,300	Below average, slow increase
	AI	276,500	$F_{0.1}$	16,600	Below average, slow increase
Other rockfish					
	EBS	8,000	$F_{0.1}$	500	Average, unknown
	AI	18,500	$F_{0.1}$	1,100	Average, unknown
Atka mackerel		--	$F_{0.1}$	24,000	Relatively low, increasing
Squid		--	--	10,000	Unknown
Other species		676,200	$F_{history}$	59,000	High, stable
Groundfish complex				2,454,000	High, stable

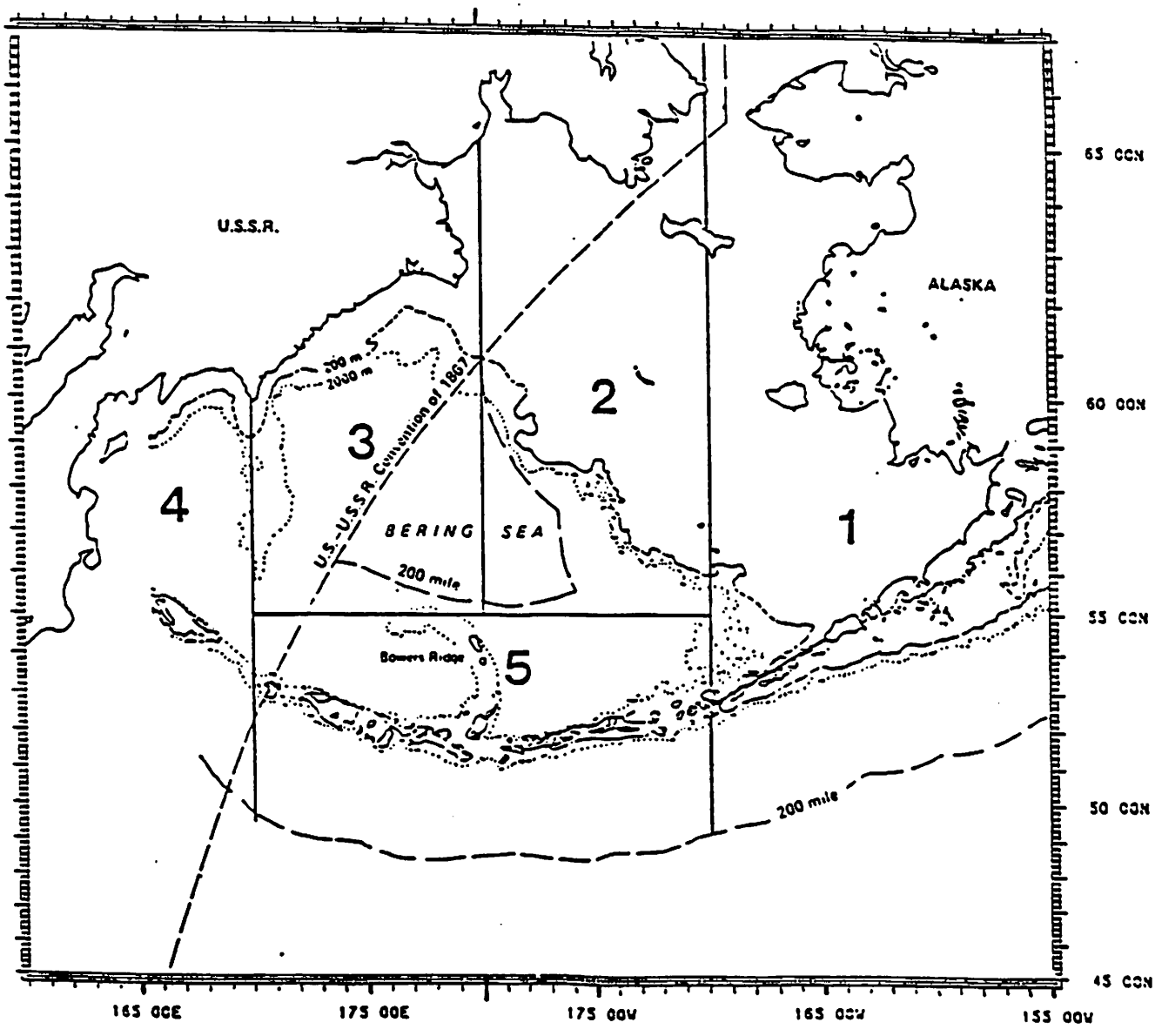

Figure 1. Bering Sea and Aleutian Islands region showing U.S. 200-mile fishery conservation zone and International North Pacific Fisheries Commission statistical areas 1-5.

UNITED STATES DEPARTMENT OF C(
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

September 15, 1989

Clarence G. Pautzke, Executive Director
North Pacific Fishery Management Council
605 West 4th Avenue
Anchorage, Alaska 99501

RE: Status report on bycatch planning

Dear Clarence:

Over the past year, the Council has received five separate incentive proposals for prohibited species bycatch management: (1) a summary of the Council's Bycatch Committee's proposal for Bering Sea groundfish fisheries submitted at the September, 1988 Council meeting; (2) the Bycatch Committee's proposal for the Gulf of Alaska, dated December, 1988; (3) an International Pacific Halibut Commission staff proposal for halibut bycatch management dated June 12, 1989; (4) the NMFS, Alaska Region proposal for alternative Bering Sea/Aleutian Islands bycatch management schemes, submitted at the June 1989 Council meeting; and (5) a Bering Sea bycatch management proposal developed by a Seattle-based industry work group and also presented to the Council at its June meeting.

Many of these proposals reflect a desire for future bycatch management schemes that include incentives to voluntarily reduce prohibited species bycatch rates. Incentive programs could be accomplished in numerous ways, but the proposals received to date would necessitate the monitoring of individual vessels or operations with up to 100 percent observer coverage. This level of monitoring would be required to provide NMFS with the information necessary to reward those vessels or operations which, through modifications of gear or fishing technique, have reduced prohibited species catch (PSC) rates, and sanction those operations with unacceptable rates. Such monitoring on a broad basis may present logistical, legal, and industry relations problems.

The development of a long term incentive program for PSC management should be sufficiently comprehensive to address the Gulf of Alaska and Bering Sea groundfish fisheries. Council development of such a program will need to address a number of fundamental issues, not the least of which are (1) whether sufficient domestic observer information exists on which to base an incentive approach to domestic bycatch management; and (2) whether the number of available observers, or the physical limitations of vessels to take observers, creates an inequitable situation if those vessels are preempted from access to the groundfish resource.

I believe that future bycatch management should strive towards the development of incentive programs that reduce bycatch of all species to the minimum amount necessary to harvest the total allowable catch of groundfish. Domestic bycatch data collected during 1990 in the as yet "untested" comprehensive observer program may not provide the information necessary for the development and implementation of a comprehensive vessel incentive program by 1991. The Council may have to pursue more short term management strategies to address bycatch issues for 1990 and 1991 in the Gulf of Alaska and the Bering Sea until information from the proposed domestic observer program provides an adequate data base on which to gauge the need for and practicality of various vessel incentive programs.

Bycatch management considered by the Council for 1990 or 1991 should, however, strive to compliment long term bycatch management goals by (1) providing more management flexibility to adjust PSC limits and/or time-area closures and (2) allowing for the development of small-scale "pilot incentive programs" from which information may be gathered on the practicality of possible long term solutions to bycatch problems.

Gulf of Alaska

The Gulf of Alaska was closed to bottom trawling for groundfish effective September 2, 1989, on the basis that the 2,000 metric tons of Pacific halibut mortality PSC was reached on that date. Some fishery participants voluntarily carried observers in anticipation that they could demonstrate their avoidance of halibut and therefore be allowed further access to the groundfish resource once estimated bycatch levels reached the 2,000 mt limit. Current regulations at §672.20(f)(2)(iv) make provisions for certain vessels to continue fishing beyond the halibut PSC limit, but a specific plan on which to base a decision to allow certain participants who demonstrated an ability to avoid or limit halibut bycatch to continue bottom trawling was not in place at the beginning of the year and available to all vessels. Although current regulations would enable us to develop such a plan to exceed PSC limits for 1990, the proposed rule for Amendment 18 would not.

Amendment 18 reflects the Council's June 1989 decision to adopt an industry request to amend the Gulf FMP and implementing regulations for 1990 by temporarily suspending the flexibility in halibut PSC management in favor of specific halibut PSC amounts for trawl gear (2,000 mt) and longline gear (750 mt). Implementation of Amendment 18 would preclude options for allowing certain participants to continue fishing once halibut PSC limits are reached in 1990.

If the Council desires more flexibility in the management of halibut bycatch in the Gulf during 1990, it must recall that part

of Amendment 18 which addresses halibut management in the Gulf of Alaska. This action would continue halibut PSC management as provided in existing regulations. The Council could then reaffirm its decision to establish separate annual trawl and longline halibut PSC limits at its September meeting and reaffirm the 1990 halibut PSC limits proposed under Amendment 18 at its December meeting. These changes could be implemented by regulatory amendment in time for the 1990 fishing year or soon thereafter.

Further, a notice of proposed management standards and criteria for qualification for continued fishing by some participants when specified PSC limits have been reached would have to be published in the FEDERAL REGISTER at the beginning of the 1990 fishing year. Council guidance on the development of such standards and criteria should be received at the Council's September meeting to allow for Regional development and publication of participation standards by the beginning of the 1990 fishing year. The notice should, at a minimum, state what bycatch rates and levels of observer coverage would be considered adequate for the Regional Director to determine whether certain vessels ought to be allowed to resume fishing after PSC limits have been reached.

Bering Sea and Aleutian Islands Area

Amendment 12a to the Bering Sea groundfish FMP became effective September 3, 1989. At that time, the total incidental take of red king crab in the joint venture and domestic fisheries necessitated the closure of Zone 1 to those directed bottom trawl fisheries determined under the amendment to have a significant bycatch of crabs. Amendment 12a will expire at the end of 1990. The Council, therefore, will need to consider bycatch management regimes during the upcoming Council amendment cycle to succeed Amendment 12a.

Improved observer data will begin to provide the Council with the information it needs to develop a comprehensive, long term approach to bycatch management that provides incentives to individual vessels to minimize prohibited species bycatch in the domestic groundfish fisheries. An interim approach to bycatch management is needed, however, during the period adequate domestic observer information is being collected and we consider various methodologies for implementing broad incentive programs, including the frameworking of applicable rates or limits.

A feasible short term option for Bering Sea bycatch management would be Council adoption of a modified version of Amendment 12a through 1991. Examples of modifications to PSC management under Amendment 12a that could be considered consistent with the goal of developing a longer term approach to bycatch management include (1) basing of bycatch zone closures on

gear types, rather than directed fisheries, which would facilitate enforcement; (2) allowing certain gear types in closed areas provided the vessels have 100 percent observer coverage and fish at acceptable bycatch rates; (3) including the longline fisheries in bycatch accountability and closure actions; (4) frameworking the annual establishment of PSC amounts by basing them on a specified percentage of stock abundance; (5) frameworking the designation of time/area closures to reflect changes in prohibited species distribution; and (6) testing incentive programs on a limited area or time specific basis.

Sincerely,

James H. Branka

for Steven, Pennoyer
Director, Alaska Region

North Pacific Fishery Management Council

John G. Peterson, Chairman
Clarence G. Pautzke, Executive Director

605 West 4th Avenue
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Telephone: (907) 271-2809
FAX (907) 271-2817

September 8, 1989

Ted Evans
Alaska Factory Trawlers Assn.
4039 21st Avenue W., Suite 400
Seattle, Washington 98199

Dear Ted:

At our June Council meeting, the Council appreciated the status report you gave concerning your agreement with Harold Sparck for AFTA vessels to control and report their bycatches in the Port Moller and Bogoslof fisheries. I'd like to ask you to give us another update for the September meeting under agenda item D-5(d). By copy of this letter to Harold Sparck, I'm also asking for his comments on how the agreement has been working. These reports will help keep the Council informed and aid them in their consideration of bycatch issues for the 1990 and 1991 fisheries.

Thanks for your help. If I can provide any supporting materials, please let me know.

Sincerely,

Clarence G. Pautzke
Executive Director

cc Harold Sparck

STATE OF ALASKA

STEVE COWPER, GOVERNOR

DEPARTMENT OF FISH AND GAME

DIVISION OF COMMERCIAL FISHERIES

P.O. BOX 3-2000
JUNEAU, ALASKA 99802-2000
PHONE: (907) 465-4210

September 22, 1989

Mr. Larry Cotter, Chairman
Ad Hoc Herring Bycatch Committee
North Pacific Fishery Management Council
119 Seward #9
Juneau, AK 99801

Dear Larry:

The Alaska Department of Fish and Game is now analyzing herring scales collected this past summer and spring as part of the Bering Sea herring stock identification project. The department collected scales from over 18,000 herring this spring from spawning populations in Norton Sound, Cape Romanzoff, Nelson Island, Nunivak Island, Cape Avinof, Goodnews Bay, Security Cove, Togiak and Port Moller to use as reference standards for the project. Ageing of these scales is approximately one third completed.

Scales from over 5,000 herring of unknown origin were collected in fisheries along the Alaska Peninsula and Aleutian Islands in July and August. National Marine Fisheries Service (NMFS) observers provided scales from 2,400 herring collected from vessels participating in the Port Moller trawl fishery. The NMFS observers devoted a substantial amount of effort to collecting herring scales when herring occurred in tows, often sampling under difficult and adverse conditions. NMFS observers and ADF&G shore-based port samplers collected scales from another 1,100 herring from the Unimak pass area pollock fishery. In addition, ADF&G samplers collected 1,740 scales from the Dutch Harbor directed herring food/bait seine fishery.

We expect to have the ageing of all 23,000 scales completed by mid-November and will then begin the scale digitizing process. Analysis will continue through the fall and winter with the final report for the stock identification project available for review in February, 1990.

If you have any further questions concerning this project I suggest that you contact Mr. Fritz Funk, our statewide herring biometrician, at (907) 465-4210.

Sincerely,

Ken Parker

cc: Bill Aron, NMFS
Senator Johne Binkley
Clarence Pautzke, NPFMC
Steve Pennoyer, NMFS