MEMORANDUM

TO: Council, AP and SSC Members

FROM: Clarence G. Pautzke
Executive Director

DATE: November 29, 1989

SUBJECT: Bering Sea/Aleutian Islands Groundfish Fishery Management Plan

ACTION REQUIRED

(a) Review final Stock Assessment and Fishery Evaluation (SAFE) document and set 1990 ABCs.

(b) Set groundfish TACs and apportionments to DAP, JVP, and TALFF, and JVP groundfish PSCs for fully U.S.-utilized species for 1990.

BACKGROUND

The Plan Team met in Seattle during November 13-17 and prepared a revised SAFE document for 1990. An abridged summary of the SAFE document is provided as Item D-3(a-b)(1). The entire document was sent to you on November 21. The revised SAFE incorporates new survey data and analyses available since the September draft. Changes from the draft SAFE include increased ABCs for pollock, Pacific cod, arrowtooth flounder, and sablefish. There was little or no change to the remaining species' recommended ABCs. As a result of the team's revisions, the sum of all recommended ABCs increased to just over 3 million metric tons. The Council needs to establish the final ABCs for each species at this meeting.

Based upon the ABCs and socioeconomic factors, the Council needs to set total allowable catches (TACs), and apportionments to domestic, joint venture, and foreign fisheries for each target species of groundfish in the Bering Sea/Aleutian Islands. The DAP requests from the NMFS survey will be distributed at the meeting; a summary of joint venture requests is provided at Item D-3(a-b)(2). There were no foreign fisheries requests this year.

A computer spreadsheet to be displayed at the Council meeting and the attached worksheet (Item D-3(a-b)(3)) may be useful in keeping track of the numbers discussed during your deliberations. The sum of the Council's final TACs must fall within the OY range of 1.4 to 2.0 million metric tons.

Amendment 12 to the BSAI Groundfish FMP authorizes the Council to establish allowable levels of non-retainable incidental catch of fully U.S.-utilized groundfish species. Previous regulations required joint venture operations to discard such species, but without any limit to the amount of discard. A PSC framework allows for non-retainable amounts of these species to be apportioned

to JVP and TALFF fisheries. Typically, these amounts are to be deducted from the species' ABC prior to establishing TACs, thus assuring that total fishing mortality for any species does not exceed the ABC. When either the JVP or TALFF PSC limit for any species is attained, any respective joint venture or foreign directed fishery expected to encounter more of that species would be closed.

Appendix 2 of the BSAI SAFE document (attached as Item D-3(a-b)(4)) presents the bycatch rates used to anticipate the amount of Greenland turbot, sablefish, Pacific ocean perch, other rockfish and Atka mackerel that would be required as bycatch by joint ventures without constraining those fisheries. Based upon the groundfish TACs and apportionments approved at the September meeting, the PSC limits (in metric tons) would be as follows:

Pollock	BS	43,748	
	AI	0	
Greenland turbot		27	(if no 1990 JVP apportionment)
Sablefish	BS	1	
	AI	0	
Pacific ocean perch	BS	5	
	AI	0	
Other rockfish	BS	2	
	AI	0	
Atka mackerel		4	

If the groundfish TACs and apportionments are revised, the PSCs can be recalculated and brought back for review and approval.

ACCEPTABLE BIOLOGICAL CATCH LEVELS FOR 1990

The estimates of ABC for 1990 are based upon status of stock assessments determined through November 1989 and projected to 1990. Tables 6 and 7 provide summaries of the estimates of MSYs and ABCs.

The sum of individual species MSY's has been estimated to be in excess of 3.46 million t.

The sum of ABC's for the groundfish complex has increased from 2.70 million t in 1989 to 3.08 million t in 1990. This increase of 380,000 t resulted primarily from increases of the ABCs for pollock (+145,700 t), Pacific cod (+46,400 t), yellowfin sole (+37,900 t), arrowtooth flounder (+78,800 t), rock sole (+45,300 t), other flatfish (+32,100 t), sablefish (+7,200 t), and atka mackerel (+3,000 t). Decreases in ABCs from 1989 to 1990 are estimated for Greenland turbot (-13,300 t) and Other Species (-3,500 t). There have been improved conditions for virtually all species, except for Greenland turbot which continues to decline rapidly in abundance.

Descriptions of the status of the stocks follows:

Walleye Pollock:

EBS	1989 ABC = 1,340,000 t	1990 ABC = 1,450,400 t
Aleutians	1989 ABC = 117,900 t	1990 ABC = 153,600 t

EBS	Projected 1990 exploitable biomass = 5,843,800 t
Aleutians	Projected 1990 exploitable biomass = 614,500 t

Pollock abundance in the EBS is above B_{MSY} and 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. Recruitment since 1984 has been below the average level observed since implementation of the MFCMA. ABC for this stock was computed using an $F_{0.1}$ value of 0.31 obtained from the Beverton-Holt yield per recruit model, which corresponds closely to the F_{MSY} value obtained from a surplus production model of Quinn and Collie. Application of this fishing mortality rate gives a 1990 EBS ABC of 1,450,400 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 25% catch/biomass ratio (corresponding to the ratio used in the EBS) results in a 1990 Aleutians ABC of 153,600 t. This estimate is higher than the author's estimate (117,900 t) because the Plan Team estimated a higher biomass than the author (614,500 t versus 471,700 t).

A domestic fishery has also developed in the Bogoslof area. Should distinct Bogoslof and shelf stocks be identified in the future, the Plan Team believes that it would be appropriate to specify a separate TAC for the Bogoslof area. However, the FMP would have

to be amended to permit this. In the meantime, the large catches taken in the donut hole and the possibility of a significant interchange between pollock in the Bogoslof and donut hole areas make it inappropriate to recommend creation of a separate Bogoslof ABC at this time.

The donut hole area has been an important ground for foreign pollock fisheries since the mid-1980s. The 1987 catch of 1.3 million t, for example, exceeded the catch taken in the U.S. EEZ. Although research is underway and data are insufficient to quantify the inter-relationships of pollock resources in the entire Bering Sea-Aleutians region, preliminary data suggest that there is inter-mixing of the fish from various areas and it is conceivable that future pollock ABCs in the U.S. EEZ may need to be adjusted for catches taken elswhere.

Pacific Cod:

1989 ABC = 370,600 t 1990 ABC = 417,000 t
Projected 1990 exploitable biomass = 1,389,500 t

Pacific cod abundance in the EBS is near B_{MSY} and is conjectured to be far above the historic average level. The stock has been relatively stable at this level over the past few years, though may be declining at present. While the 1982-1985 year classes together seem to have been large enough to replace the largely departed 1977 year class, the 1986 year class appears to be exceptionally weak. A record catch of 197,900 t was experienced in 1988. ABC for this stock was calculated using an age-structured model that projects catches corresponding to a number of reference fishing mortality rates, including F_{MSY} (0.18). Given the continued high abundance of the stock, ABC was set at the catch level corresponding to F_{MSY}, yielding a value of 417,000 t.

Yellowfin Sole:

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

Exploitable biomass was calculated from cohort analysis and is high and stable. Abundance is above MSY biomass. Biomass is also estimated from research surveys, but 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. No changes were made from the September preliminary numbers.

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. The only new information since September was the 1989 biomass estimate from the shelf area that shows a continuation of the poor recruitment that has existed for a number of years.

Arrowtooth Flounder:

1989 ABC = 163,700 t 1990 ABC = 242,500 t
Projected 1990 exploitable biomass = 519,200 t

The resource is in excellent condition as the biomass continues to be high and is increasing. This trend has been confirmed from the 1989 and earlier summer trawl surveys.

Given the present high level of abundance and lacking a stock-recruitment relationship for this stock, an $F_{0.1}$ harvest strategy ($F_{0.1}$ = 0.18) was used to set the 1990 ABC at 106,500 t. The lower ABC estimate (as contrasted with both 1989 and the prelimary ABC number from September) is due to (1) updating the biomass as projected from the 1989 survey and (2) proposing an $F_{0.1}$ harvest strategy as opposed to F_{max}. This latter approach would have decreased the exploitable biomass level to less than one-half of the projected 1990 biomass by 1995.

Rock Sole:

1989 ABC = 171,000 t 1990 ABC = 216,300 t
Projected 1990 exploitable biomass = 1,193,900 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 and stable. The resource is in excellent condition and biomass is above the biomass that produces MSY. Because of uncertainties in annual point estimates and

problems in the 1988 survey, the estimated exploitable biomass is the average from 1986, 1987, and 1989. The MSY exploitation rate is applied to calculate ABC. The increase in ABC from 1989 reflects namely the application of a higher fishing mortality rate for 1990 (0.176 vs. 0.13). The modification from the September ABC preliminary number came from the years averaged to produce a projected biomass number (86, 87, 89 vs. 86-88).

Other Flatfish:

1989 ABC = 155,900 t 1990 ABC = 188,000 t
Projected 1990 exploitable biomass = 1,049,900 t

Exploitable biomass is high, stable, 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. The change from the September ABC preliminary number is due to small alterations in the biomass and fishing rate numbers.

Sablefish:

EBS	1989 ABC = 2,800 t	1990 ABC = 3,800 t
Aleutians	1989 ABC = 3,400 t	1990 ABC = 9,600 t

EBS	Projected 1990 exploitable biomass = 32,500 t
Aleutians	Projected 1990 exploitable biomass = 82,200 t

Catches in 1988 were 3,200 t in the EBS and 3,400 t in Aleutians, well below the average 11,700 t harvested from the EBS in the 1960s. 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 also affect relative abundance estimates. Results of the 1990 longline survey indicate modest increases in relative abundance in both the EBS and Aleutians. Absolute biomass was calculated by calibrating the relative abundance trends to trawl survey biomass estimates. Projected 1990 exploitable biomass is 32,000 t for the EBS and 82,000 t for the Aleutians.

No strong year class has been detected since the very-strong 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 MSY estimates are uncertain, ABC was calculated by applying the $F_{0.1}$ mortality rate to the 1990 projected biomass. The resulting ABCs are 2,700 to 3,800 t for the EBS and 3,700 to 9,600 t for the Aleutians. The Plan Team recommends setting the 1990 ABCs at the upper end of these ranges because these represent the best point estimates.

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	1989 ABC = 1,100 t	1990 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. Recruitment in 1982-86 was otherwise low. 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. Due to recruitment of the strong 1984 year class, 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 = 55,500 t
	Projected 1990 exploitable biomass =	696,000 t

In recent years 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. Survey abundance data are not available for squid because they are mainly pelagic over deep water.

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. MSYs are estimated at 10,000 t for squid and 55,500 t for other species. Recent catches have been well below MSYs and therefore ABCs are set equal to MSYs.

CHANGES FROM THE SEPTEMBER 1989 SAFE DOCUMENT

Incorporation of 1989 survey data, where appropriate, have resulted in the following changes from the 1989 September SAFE document:

Pollock:

New information available since September has resulted in changes to the ABC estimates reported in the previous draft SAFE document. The new information on total biomass (on-bottom and off-bottom components combined) for 1988, as derived from the combined hydroacoustic-trawl surveys in the EBS, allowed the EBS pollock cohort analysis model to be re-calibrated with a more recent benchmark than the earlier 1985 biomass benchmark used.

The new calibration resulted in a higher projected 1990 EBS exploitable biomass (5.8 million t) than estimated in September. Using the same harvest strategy ($F_{0.1}$ rate), ABC is calculated to be 1.45 million t, up from the 1.1 - 1.4 milion t range estimated in September.

In addition to the EBS, the ABC for the Aleutian stock is estimated at 153,600 t, up slightly from 149,400 t estimated in September due to a higher projected biomass.

Pacific Cod:

Current exploitable biomass is estimated to be 1,389,500 t, an increase from 1,097,600 t. Recommended ABC is 417,000 t using the F_{msy} harvest strategy. The September recommendation was 209,200 t when the F_{melsy} harvest strategy was used.

While the F_{melsy} harvest strategy is developed to account explicitly for mathematical uncertainties in some of the parameters used in deriving ABCs, the Plan Team points out that this technique has not been applied to all the species in the FMP at this time. Therefore, recommending the F_{melsy} concept of ABC for Pacific cod alone at this time is not appropriate. Until the technique is widely used, the Plan Team believes that the year-to-year Council process of developing SAFE documents and going through the public review process would be sufficient to account for uncertainties in deriving ABCs.

Yellowfin Sole:

No substantive change. New survey biomass data indicate that biomass for yellowfin sole has not changed appreciably in recent years.

Greenland Turbot:

No change in ABC recommendation from September which considered that ABC should be set to allow for bycatch only due to progressively poor recruitment. New information confirms that recruitment continues to be poor.

Arrowtooth Flounder:

Abundance continues to increase substantially. Total exploitable biomass is estimated to be 519,200 t, an increase from 433,900 t. Recommended ABC is increased to 242,500 t from 134,500 t as excellent stock conditions justify application of the F_{max} harvest strategy.

Rock Sole:

Abundance continues to increase. The best estimate of exploitable biomass, taken as the mean of the 1986, 1987, and 1989 biomass estimates is 1,193,900 mt. The good condition of the stock justify application of the F_{msy} harvest strategy; resulting in a recommended ABC of 210,126 t, a minor adjustment from the estimate (222,500 t) in September.

Other Flatfish:

Abundance of the stocks continues to remain high or increasing. The estimated exploitable biomass is 1,049,900 t and the recommended ABC, based upon the F_{msy} rate for rock sole, is 188,000 t (up from 184,000 t estimated in September).

Sablefish:

New data from the 1989 U.S.-Japan longline survey were incorporated to estimate the current exploitable biomass of sablefish. The analysis indicates that the 1990 exploitable biomass would increase to 32,500 t (from 20,700 t) in the EBS and to 82,200 t (from 60,100 t) in the Aleutians. It also indicates that current biomass is above B_{msy}. The author of the sablefish section calculated that ABCs would be 2,700-3,800 t in the EBS and 3,700-9,600 t in the Aleutians. The Plan Team determined that the best estimates of ABCs are the upper end of the ranges because the biomass scaler assumptions used to derive the ABC limits are more logical for the upper limits. Specifically, the ABC calculations utilizes the $F_{0.1}$ harvest strategy to the best estimate of biomass (which is scaled to the combined trawl surveys from the EBS, Aleutians, and Gulf of Alaska). This results in recommended ABCs of 3,800 t for the EBS and 9,600 t for the Aleutians (an increase from the September recommendations of 2,400 t and 6,600 t, respectively).

Pacific Ocean Perch:

No change. No new data available.

Other Rockfish:

No change. No new data available.

Atka Mackerel:

No change. No new data available.

Squid and Other Species:

Current exploitable biomass of Other Species is estimated to be relatively stable and is calculated as the average of the biomass estimates from three surveys (1986, 1987, and 1989 surveys). The recommended ABC is the estimate of MSY or 55,500 t, down slightly from the 59,000 t estimated in September.

MARINE MAMMAL CONSIDERATIONS

At their November, 1989 meeting, the Bering Sea/Aleutian Islands and Gulf of Alaska plan teams received a briefing from Dick Merrick of the National Marine Mammal Laboratory, NOAA, Seattle. Population levels and trends of cetaceans and pinnipeds were reviewed, with emphasis given to northern sea lions and Pacific harbor seals. Both of these species have experienced significant

declines in the last decade, and scientists currently cannot attribute the declines to any specific reason. However, there are indications that prey availability to these species may be an important factor influencing the population declines. Given the importance of pollock in sea lion and seal diets, the teams note reason for concern and offer assistance to any NMFS working group charged with examining this issue. For example, the teams may be able to provide appropriate data and/or analyses which may support efforts by laboratory scientists to examine correlations or causative relationships between marine mammal population declines and groundfish stock dynamics.

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 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. The 1990 estimates were made in September 1989 and updated in November 1989.

Species/Region	MSY (t)	ACCEPTABLE BIOLOGICAL CATCH (t)		
		1989	1990 (September Estimate)	1990 (November Estimate)
Pollock				
EBS	2,300,000	1,340,000	1,142,000	1,450,000
Aleutians	245,000	117,900	149,400	153,600
Pacific cod	323,300	370,600	209,200	417,000
Yellowfin sole	150,000	241,000	278,900	278,900
Greenland turbot	24,700	20,300	7,000	7,000
Arrowtooth flounder	43,400	163,700	134,500	242,500
Rock sole	112,500	171,000	222,500	216,300
Other flatfish	123,300	155,900	184,000	188,000
Sablefish				
EBS	4,200	2,800	2,400	3,800
Aleutians	9,600	3,400	6,600	9,600
Pacific ocean perch				
EBS	7,200	6,000	6,300	6,300
Aleutians	18,900	16,600	16,600	16,600
Other rockfish				
EBS	600	400	500	500
Aleutians	1,300	1,100	1,100	1,100
Atka mackerel	38,800	21,000	24,000	24,000
Squid	> 10,000	10,000	10,000	10,000
Other species	55,500	59,000	59,000	55,500
Groundfish Complex	> 3,468,300	2,700,700	2,454,000	3,080,700

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	5,843,800	$F_{0.1}$	1,450,000	Moderately high, declining
	AI	614,500	$F_{0.1}$	153,600	Moderately high, declining
Pacific cod		1,389,500	F_{msy}	417,000	Very high, declining
Yellowfin sole		1,640,400	$F_{0.1}$	278,900	High, stable
Greenland turbot		356,600	--	7,000	Low, declining
Arrowtooth flounder		519,200	F_{max}	242,500	Very high, rapid increase
Rock sole		1,193,900	F_{msy}	216,300	Very high, increasing
Other flatfishes		1,049,900	F_{msy}	188,000	Very high, stable
Sablefish	EBS	32,500	$F_{0.1}$	3,800	Low, slight decline
	AI	82,200	$F_{0.1}$	9,600	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, slight increase
Squid		--	--	10,000	Unknown
Other species		696,000	$F_{history}$	55,500	High, stable
Groundfish complex				3,080,700	High, stable

SELECTION OF EXPLOITATION RATES FOR ESTIMATING ABC

Except in those cases where data limitations dictate otherwise, ABC is defined in this document as the catch that results from harvesting the stock at a target exploitation rate. The default exploitation rate adopted by the Council is the MSY exploitation rate. However, another exploitation rate may be used if it can be justified. The Plan Team has adopted the following guidelines for selecting the appropriate exploitation rate:

Case A: Estimates of life history parameters, B_{MSY}, and F_{MSY} are all available

A1. When the condition of the stock is excellent (e.g., when it is far above B_{MSY}), the exploitation rate corresponding to F_{MAX} is used.

A2. When the condition of the stock is good (e.g, when it is near B_{MSY} and stable or increasing), the exploitation rate corresponding to F_{MSY} is used.

A3. When the condition of the stock is fair (e.g., when it is near B_{MSY} and decreasing), the exploitation rate corresponding to the minimum of F_{MSY} and $F_{0.1}$ is used.

A4. When the condition of the stock is poor (e.g., when it is far below B_{MSY}), an exploitation rate sufficient to allow only for bycatch is used.

Case B: Estimates of life history parameters are available, but estimates of B_{MSY} and F_{MSY} are unavailable

B1. When the stock is far above the historic average level, the exploitation rate corresponding to F_{MAX} is used.

B2. When the stock is near or below the historic average level, the exploitation rate corresponding to $F_{0.1}$ is used.

Case C: Estimates of life history parameters are unavailable

C1. When a biomass estimate is available, the historic average exploitation rate is used.

C2. When a biomass estimate is unavailable, no exploitation rate is defined, and ABC is set at the historic average catch level.

TABLE 2
Joint Venture Requests (mt) by Country for 1990

Country	Pollock	Pacific cod	Atka Mackerel	Yellowfin Sole	Flatfish	Other	Total
ROK	324,900	40,100	21,500	108,100	23,700	7,980	526,280
USSR		30,000		60,000			90,000
Poland	40,000		14,000	5,000			59,000
China		5,000		25,000	20,000		50,000
Iceland	1,000	30,000	1,700	1,800	____	____	34,500
TOTAL	365,900	105,100	37,200	199,900	43,700	7,980	759,780

AGENDA D-3(a-b)(2)
DECEMBER 1989

Current 1989 ABC, TAC (1), DAP and JVP Apportionments and Preliminary 1990 Recommendations for ABC, TAC, DAP, JVP and Reserves (all in metric tons)

Species	Area	1989 ABC	1989 TAC	1989 DAP	1989 JVP	1990 Preliminary Recommendations ABC	1990 TAC	1990 Reserve 15%	1990 DAP	1990 JVP
			(through November 9, 1989)							
Pollock	BS	1,340,000	1,315,500	1,045,585	269,915	1,140,000-1,470,000	1,154,433	173,165	981,268	0
	AI	117,900	11,432	6,932	4,500	149,400	11,432	1,715	9,717	0
Pacific Cod		370,600	226,079	158,613	67,466	209,200 - 345,399	309,200	46,380	184,500	78,320
Yellowfin sole		241,000	193,952	21,274	172,678	278,900	243,952	36,593	22,809	184,550
Greenland turbot		20,300	8,000	7,800	200	7,000 - 20,300	6,800	1,020	5,612	168
Arrowtooth flounder		163,700	7,800	5,100	2,700	65,100 - 134,500	5,800	870	4,333	597
Rock sole		171,000	77,148	42,543	34,605	222,500 - 320,000	102,148	15,322	47,841	38,985
Other flatfish		155,900	63,906	8,906	55,000	184,000 - 262,300	113,906	17,086	13,458	83,362
Sablefish	BS	2,800	2,800	2,800	0	1,700 - 2,400	2,380	357	2,023	0
	AI	3,400	3,400	3,400	0	2,500 - 6,600	2,890	434	2,456	0
Pacific Ocean perch	BS	6,000	4,250	4,250	0	6,300	4,250	637	3,613	0
	AI	16,600	5,100	5,100	0	16,600	5,100	765	4,335	0
Other rockfish	BS	400	340	340	0	500	340	51	289	0
	AI	1,100	935	935	0	1,100	935	140	795	0
Atka mackerel		21,000	20,285	20,285	0	24,000	20,285	3,043	17,242	0
Squid		10,000	925	850	75	10,000	875	131	722	22
Other species		59,000	15,774	11,274	4,500	59,000	15,274	2,291	9,581	3,402
TOTALS		2,700,700	1,957,626	1,345,987	611,639	2,377,900 - 3,107,399	2,000,000	300,000	1,310,594	389,406

(1) TAC total is less than 2,000,000 due to 42,374 mt nonspecific reserves.

BSAI1989/Sept90.hw

Bering Sea/Aleutian Islands Groundfish
1990 Recommended ABCs (Plan Team and SSC) and 1990 AP Recommended TAC and DAP and JVP Apportionments

Species	Area	ABC			AP Recommendations			
		Plan Team (Nov '89)	SSC (Dec '89)	Council (Dec '89)	TAC	Reserve	DAP	JVP
Pollock	BS	1,450,000						
	AI	153,600						
Pacific Cod		417,000						
Yellowfin sole		278,900						
Greenland turbot		7,000						
Arrowtooth flounder		242,500						
Rock sole		216,300						
Other flatfish		188,000						
Sablefish	BS	3,800						
	AI	9,600						
Pacific Ocean perch		6,300						
	AI	16,600						
Other rockfis	BS	500						
	AI	1,100						
Atka mackerel		24,000						
Squid		10,000						
Other species		55,500						
TOTALS		3,080,700						

APPENDIX 2

BYCATCH OF FULLY-UTILIZED AND PROHIBITED SPECIES

Fully-Utilized Groundfish Species

Amendment 12 to the Bering Sea and Aleutian Islands groundfish FMP authorizes the Council to establish allowable levels of incidental catch (bycatch) of groundfish species that are fully-utilized by domestic fishermen. Previous regulations required joint venture operations to discard such species, but without any limit to the amount of discard.

A PSC framework for fully-utilized groundfish species allows for non-retainable amounts of these species to be apportioned to JVP and TALFF fisheries. Typically, these PSC amounts are to be deducted from the species ABC prior to establishing TACs, thus assuring that retainable and non-retainable catches do not exceed the ABC. However, the Council may choose to establish the sum of TACs and PSCs at a level greater than a species' ABC. In any case, when either the JVP or TALFF PSC limit for any species of groundfish is attained, any respective JVP or TALFF fishery expected to encounter more of that species would be closed.

For 1990, joint venture fisheries are expected to require some amount of sablefish, Greenland turbot, Pacific ocean perch, other rockfish and Atka mackerel, all of which are fully U.S. utilized. Pollock may also be fully-utilized by the DAP fishery. In 1988, PSC amounts were calculated and the necessary amount for JVP bycatch apportioned through an initial reserve release to JVP. A similar exercise for these species can be accomplished for 1990 by using updated estimates of bycatch rates and apportionments for groundfish species.

Table 1 gives the actual bycatch rates of fully-utilized species by the JVP fishery in 1988. Pollock bycatch rates in the flatfish and other (cod) fishery are not yet available. The 1989 rates, including those for pollock, are expected to be available for the final version of the SAFE.

Prohibited Species Bycatch

Amendment 12A establishes PSC caps for red king crab, C. bairdi Tanner crab, and Pacific halibut in the Bering Sea for DAP and JVP fisheries. Overall PSC limits adopted by the Council under Amendment 12A are:

C. bairdi Tanner crab:	1,000,000 crabs in Zone 1 for Zone 1 closure 3,000,000 crabs in Zone 2 for Zone 2 closure
Red king crab:	200,000 crabs in Zone 1 for Zone 1 closure
Pacific halibut:	4,400 mt catch in BSAI for Zones 1 and 2H (Area 517) closure 5,333 mt catch in BSAI for BSAI closure

These overall PSC limits will be apportioned among four fisheries: DAP flatfish (yellowfin sole, rock sole, and other flatfish); DAP other (all other fisheries, primarily pollock and cod bottom trawl target fisheries); JVP flatfish (same definition as for DAP); and JVP other (same definition as for DAP). The apportionments to each fishery, known as PSC allowances, will be in proportion to that fishery's contribution to total bycatch. For example, if the DAP flatfish fishery is expected to

take 25% of the red king crab bycatch in a fishery operating without bycatch controls, the DAP flatfish fishery would be assigned 25% of the 200,000 red king crab PSC limit, or 50,000 red king crab, as a PSC allowance. The two C. bairdi and halibut PSC limits would be apportioned using the same proportional rule, recognizing that different fisheries may contribute disproportionately to different species' overall bycatch.

A simulation model of the fishery is currently used to initially estimate the PSC allowances. The simulation is also used by the Council when establishing initial TACs and apportionments to DAP and JVP, as those apportionments and expected bycatch rates influence future bycatch. The bycatch predictions of the simulation are compared with each fishery's PSC allowance to gain insight on the nature of the impacts of the PSC allowances.

The simulation predicts bycatch by multiplying expected total groundfish tonnage in each of the four defined fisheries by quarter and by 3-digit statistical area by an estimated bycatch rate for that fishery in that quarter and area. Predicted bycatch therefore depends on the following assumptions:

1. The TAC, DAP, and JVP established for each species by the Council.

2. The proportion of each target fishery that is taken by bottom trawl, mid-water trawl, and longline.

3. The proportion of each target fishery that is taken in the first quarter of the year, second quarter of the year, and so forth.

4. The proportion of each target fishery that is taken in each statistical area in each quarter.

5. The expected bycatch rate for that fishery in that quarter and area (rates are numbers/mt of groundfish for red king crab and C. bairdi Tanner crab, and kg of halibut/mt of groundfish for halibut).

The distribution of the target fisheries in time and space can be determined from past fishery performance and by soliciting input from the industry on future fishery performance. Determining future bycatch rates is more problematic. Bycatch rates have high variance and are difficult to predict with any certainty. Bycatch rates for some species, for example, red king crab, are much more volatile than bycatch rates for other species, for example, halibut. Bycatch rates also vary according to the target fishery, area fished, time of year, and the skill and practices of the fishing master. Finally, even if all known factors could be accounted for, actual bycatch will differ from that predicted because of the random nature of the bycatch encounter.

In 1989, bycatch rates have been estimated for joint venture fisheries through actual observations of bycatch. Those data are provided in Table 2. DAP bycatch is not observed, thus NOAA-Fisheries has relied on statistical estimators of total bycatch. These estimators were derived from a statistical analysis of joint venture bycatch performance during the period 1986-1988 (Berger et al., in press). Bycatch rates implied by these estimates are provided in Table 3.

For 1990 the Council will apply these rates to total groundfish tonnage in each target fishery to predict bycatch. Public comment on how bycatch rates or bycatch performance may differ in 1990 from that observed or estimated in 1989 is welcome.

Table 1. 1988 JVP Bycatch Rates of Fully U.S. Utilized Species (mt/mt)

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

	Species				
Area	Sablefish	Greenland turbot	Pacific Ocean Perch	Other Rockfish	Atka Mackerel
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

Other Fishery (All Other Species, Primarily Pollock and Cod Bottom Trawl)

	Species				
Area	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

Table 2. Joint venture bycatch rates, 1989, year-to-date, by fishery and area.

Species/Area	Flatfish	All other	All fisheries
Red king crab, Zone 1 (#/mt)	1.17	0.01	1.03
C. bairdi, Zone 1 (#/mt)	0.86	0.91	0.87
C. bairdi, Zone 2 (#/mt)	4.27	0.73	1.30
Halibut (kg/mt)	0.99	2.74	1.76

Source: NOAA-Fisheries, AFSC, through September 23, 1989.

Table 3. Implied DAP bycatch rates, 1989, year-to-date, by fishery and area.

Species/Area	Flatfish	All other	All fisheries
Red king crab, Zone 1 (#/mt)	1.21	0.26	0.52
C. bairdi, Zone 1 (#/mt)	1.18	0.96	1.02
C. bairdi, Zone 2 (#/mt)	1.15	0.61	0.62
Halibut, BSAI-wide (kg/mt)	2.56	2.91	2.89

Source: NOAA-Fisheries, AFSC, through September 16, 1989.

AGENDA D-3(a-b)
SUPPLEMENTAL
DECEMBER 1989

1990 Survey #1

REQUESTS FLOATING PROCESSORS

	BERING SEA	ALEUTIANS	WEST GULF	CENT GULF	EAST GULF	BSA	GOA	ALASKA
FLOU	15,290	1,090	1,168	2,365	135	16,380	3,668	20,048
GTRB	22,564	9,363	930	400	0	31,927	1,330	33,257
PCOD	177,346	16,285	7,654	16,948	365	193,631	24,967	218,598
PLCK	1,465,204	20,232	42,120	11,482	110	1,485,436	53,712	1,539,148
RSOL	51,674	557	375	352	25	52,231	752	52,983
YSOL	45,540	0	0	0	0	45,540	0	45,540
TOTAL	1,777,618	47,527	52,247	31,547	635	1,825,143	84,428	1,909,573

REQUESTS NEW FLOATERS (NOT CURRENTLY OPERATIONAL)

	BERING SEA	ALEUTIANS	WEST GULF	CENT GULF	EAST GULF	BSA	GOA	ALASKA
FLOU	1,285	955	300	200	0	2,240	500	2,740
GTRB	5,090	3,550	350	100	0	8,640	430	9,090
PCOD	69,250	2,950	2,450	400	0	72,200	2,850	75,050
PLCK	813,622	11,000	0	0	0	824,622	0	824,622
RSOL	3,150	250	0	0	0	3,400	0	3,400
YSOL	500	0	0	0	0	500	0	500
TOTAL	892,897	18,705	3,100	700	0	911,602	3,800	915,402

REQUESTS SHORESIDE PROCESSORS

	BERING SEA	ALEUTIANS	WEST GULF	CENT GULF	EAST GULF	BSA	GOA	ALASKA
FLOU	370	0	0	9,434	25	370	9,459	9,829
GTRB	200	241	0	0	100	441	100	541
PCOD	75,591	1,750	40,428	69,425	70	77,341	109,923	187,264
PLCK	625,785	0	11,340	84,970	500	625,785	96,810	722,595
RSOL	0	0	0	4,200	100	0	4,300	4,300
TOTAL	701,946	1,991	51,768	168,029	795	703,937	220,592	924,529

REQUESTS ALL PROCESSORS

	BERING SEA	ALEUTIANS	WEST GULF	CENT GULF	EAST GULF	BSA	GOA	ALASKA
FLOU	16,945	2,045	1,468	11,999	160	18,990	13,627	32,617
GTRB	27,854	13,154	1,280	500	100	41,008	1,880	42,888
PCOD	322,187	20,985	50,532	86,773	435	343,172	137,740	480,912
PLCK	2,904,611	31,232	53,460	96,452	610	2,935,843	150,522	3,086,365
RSOL	54,824	807	375	4,552	125	55,631	5,052	60,683
YSOL	46,040	0	0	0	0	46,040	0	46,040
TOTAL	3,372,461	68,223	107,115	200,276	1,430	3,440,684	308,820	3,749,504

1990 Survey #1

NMFS PROJECTIONS FLOATING PROCESSORS

	BERING SEA	ALEUTIANS	WEST GULF	CENT GULF	EAST GULF	BSA	GOA	ALASKA
FLOU	8,947	598	543	1,918	82	9,545	2,143	11,688
GTRB	13,487	6,291	306	132	0	19,778	438	20,216
PCOD	116,599	8,509	4,930	9,243	199	125,108	14,372	139,480
PLCK	1,121,370	17,121	32,909	5,126	22	1,138,491	38,054	1,176,545
RSOL	33,878	399	161	216	5	34,277	382	34,659
YSOL	25,837	0	0	0	0	25,837	0	25,837
TOTAL	1,320,118	32,918	38,848	16,232	308	1,353,036	55,389	1,408,425

NMFS PROJECTIONS NEW FLOATERS (NOT CURRENTLY OPERATIONAL)

	BERING SEA	ALEUTIANS	WEST GULF	CENT GULF	EAST GULF	BSA	GOA	ALASKA
FLOU	1,135	905	300	200	0	2,040	500	2,540
GTRB	4,239	2,228	175	50	0	6,467	225	6,692
PCOD	25,925	2,600	1,225	200	0	28,525	1,425	29,950
PLCK	376,322	8,500	0	0	0	384,822	0	384,822
RSOL	1,700	250	0	0	0	1,950	0	1,950
YSOL	375	0	0	0	0	375	0	375
TOTAL	409,696	14,483	1,700	450	0	424,179	2,150	426,329

NMFS PROJECTIONS SHORESIDE PROCESSORS

	BERING SEA	ALEUTIANS	WEST GULF	CENT GULF	EAST GULF	BSA	GOA	ALASKA
FLOU	196	0	0	6,034	25	196	6,059	6,255
GTRB	200	241	0	0	100	441	100	541
PCOD	37,866	875	20,994	41,188	58	58,741	62,239	100,981
PLCK	338,224	0	11,340	72,845	250	338,224	84,435	422,659
RSOL	0	0	0	2,825	100	0	2,925	2,925
TOTAL	376,486	1,116	32,334	122,892	533	377,602	155,758	533,361

NMFS PROJECTIONS ALL PROCESSORS

	BERING SEA	ALEUTIANS	WEST GULF	CENT GULF	EAST GULF	BSA	GOA	ALASKA
FLOU	10,278	1,503	843	7,752	107	11,781	8,702	20,483
GTRB	17,926	8,760	481	182	100	26,686	763	27,449
PCOD	180,391	11,984	27,149	50,630	257	192,375	78,036	270,411
PLCK	1,835,916	25,621	44,249	77,969	272	1,861,537	122,489	1,984,026
RSOL	35,578	649	161	3,041	105	36,227	3,307	39,534
YSOL	26,212	0	0	0	0	26,212	0	26,212
TOTAL	2,106,300	48,517	72,882	139,574	841	2,154,817	213,297	2,368,115

Supplement to the POLLOCK Chapter

in the November 1989 SAFE Document for Groundfish Resources in the Bering Sea/Aleutian Islands Region as projected for 1990

December 1989

North Pacific Fishery Management Council
P.O. Box 103136
Anchorage, Alaska 99510

Projected eastern Bering Sea pollock biomass and catch at differing levels of fishing

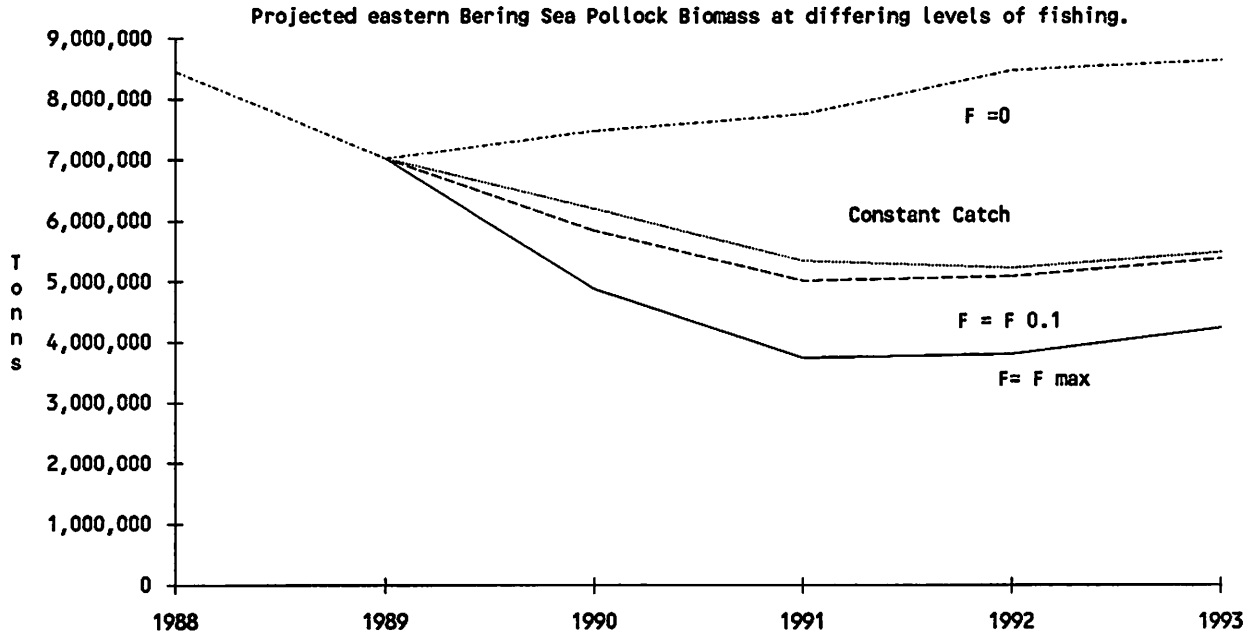
Pollock biomass trends were projected to 1993 from the cohort analysis estimate of 1988 age specific biomass. Estimates of age 3-10 were projected forward in time using a natural mortality estimate of 0.3, a fishing mortality corresponding to a catch of 1.2 million t. in 1988 and 1989 and differing fishing rates in 1990-1993. Fishing selectivity in the projections were 0.89 for age 3 and 1 for older ages. Age 3 recruits were added to the population in 1989-1992 at abundance levels estimated from the bottom trawl survey age 1-cohort analysis regression. The 1993 estimate of age 3 recruitment was derived from the Ricker spawner-recruit relationship based on the 1990 estimate of spawning biomass.

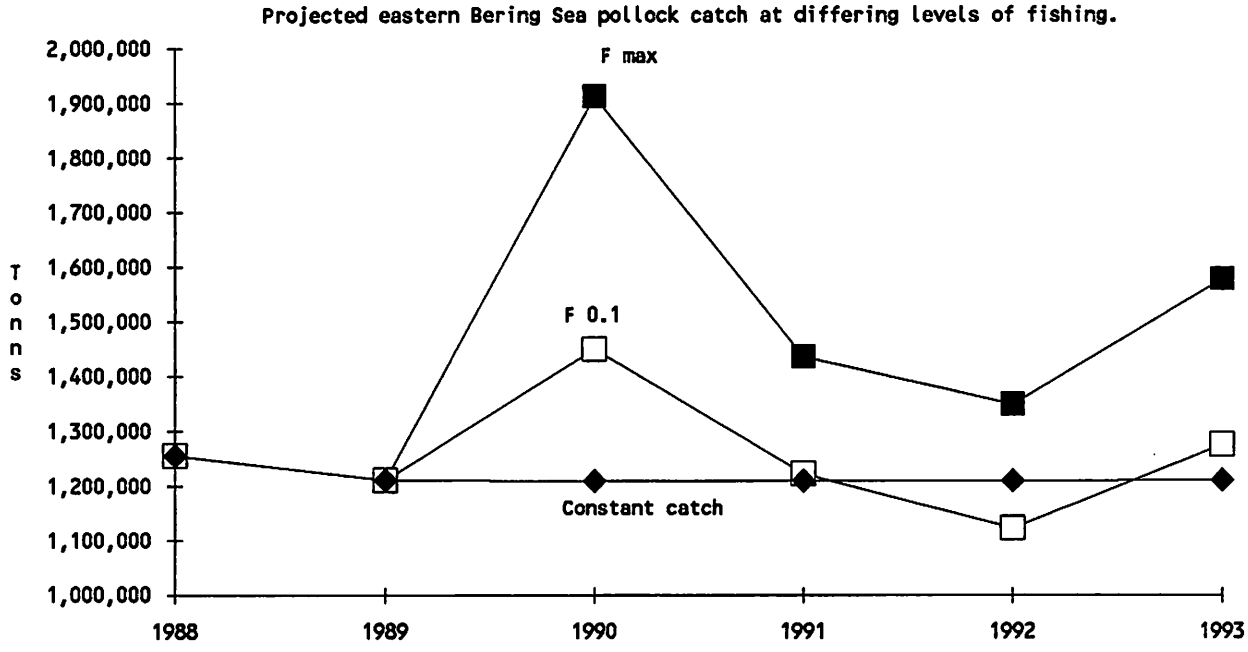
Population projections for 1990-1993 were made with F = 0, $F_{0.1}$, F_{max} = 0.55, and with a constant catch of 1.2 million t. The results of these projections are shown in the attached table and figures. In all cases where fishing occurs the eastern Bering Sea pollock population is projected to decline under projected levels of recruitment. In the absence of fishing the population is projected to increase, and an equilibrium of about 7 million t is achieved at harvests of 613, 370, 880, and 860 thousand t in 1990-1993. Harvesting at F_{max} produces the greatest yield and population declines and harvests at $F_{0.1}$ and constant catch result in only moderate population declines. Fishing at $F_{0.1}$ results in a cumulative yield of about 300 thousand t greater than is achieved under a constant catch of 1.2 million t in the 1990-1993 time period.

These population projections are primarily intended to show general trends under differing fishing regimes. The abundance levels projected are highly dependent on the estimates of age 3 recruitment. Based on the results of previous projections the estimates of age 3 recruitment based on bottom trawl survey estimates of age 1 abundance have generally been conservative and the actual population levels have been higher than projected.

Projected eastern Bering Sea pollock biomass, catch and exploitation level at different levels of fishing mortality, 1988-1993.

Year	F max	F 0.1	Constant Catch	F = 0
Biomass				
1988	8,459,253	8,459,253	8,459,253	8,459,253
1989	7,029,520	7,029,520	7,029,520	7,029,520
1990	4,869,672	5,843,825	6,197,170	7,484,500
1991	3,738,222	5,016,744	5,341,712	7,754,210
1992	3,801,610	5,090,850	5,225,108	8,486,676
1993	4,237,571	5,385,116	5,489,442	8,654,477
Catch				
1988	1,255,814	1,255,814	1,255,814	1,255,814
1989	1,210,938	1,210,938	1,210,938	1,210,938
1990	1,912,085	1,450,421	1,209,785	0
1991	1,436,066	1,222,941	1,209,921	0
1992	1,348,010	1,123,028	1,209,561	0
1993	1,578,387	1,275,820	1,211,170	0
Exploitation Level				
1988	0.15	0.15	0.15	0.15
1989	0.17	0.17	0.17	0.17
1990	0.39	0.25	0.20	0.00
1991	0.38	0.24	0.23	0.00
1992	0.35	0.22	0.23	0.00
1993	0.37	0.24	0.22	0.00


Projected eastern Bering Sea Pollock Biomass at differing levels of fishing.
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Tons
F =0
Constant Catch
F = F 0.1
F= F max
1988
1989
1990
1991
1992
1993


Projected eastern Bering Sea pollock catch at differing levels of fishing.
2,000,000
1,900,000
1,800,000
1,700,000
1,600,000
1,500,000
1,400,000
1,300,000
1,200,000
1,100,000
1,000,000
Tons
F max
F 0.1
Constant catch
1988
1989
1990
1991
1992
1993

Lankins / Hughes 12/6/89

Bering Sea/Aleutian Islands Groundfish
1990 Recommended ABCs (Plan Team and SSC)
1990 AP Recommended TAC and DAP and JVP Apportionments

Species	Area	ABC: Plan Team (Nov '89)	ABC: SSC (Dec '89)	ABC: Council (Dec '89)	AP Recommendations: TAC	Reserve	DAP	JVP
Pollock	BS	1,450,000	1,450,000		1,280,000 ~~1,250,000~~	192,000 ~~187,500~~	1,088,000 ~~1,062,500~~	
	AI	153,600	153,600		~~50,000~~ 100,000	~~7,500~~ 15,000	~~42,500~~ 85,000	
Pacific Cod		417,000	417,000		217,000 ~~237,000~~	~~35,550~~ 32,550	~~191,250~~ 174,250	10,200 1/2
Yellowfin sole		278,900	278,900		205,000 ~~225,000~~	~~33,750~~ 30,750	~~29,750~~ 12,750	161,500
Greenland turbot		7,000	7,000		7,000	1,050	5,950	
Arrowtooth flounder		242,500	106,500		10,000	1,500	8,500	
Rock sole		216,300	216,300		60,000 ~~100,000~~	~~15,000~~ 9,000	~~63,750~~ 29,750	21,250 1/
Other flatfish		188,000	188,000		60,150	9,023	10,200	40,927
Sablefish	BS	3,800	2,700		3,200	480	2,720	
	AI	9,600	3,700		6,650	998	5,652	
Pacific Ocean perch		6,300	6,300		6,300	945	5,355	
	AI	16,600	16,600		16,600	2,490	14,110	
Other rockfis	BS	500	500		500	75	425	
	AI	1,100	1,100		1,100	165	935	
Atka mackerel		24,000	24,000		21,000	3,150	17,850	
Squid		10,000	10,000		500	75	425	
Other species		55,500	55,500		5,000	750	4,250	
TOTALS		3,080,700	2,937,700		2,000,000	300,000	1,466,122	233,877

1/ RETAINABLE BYCATCH ONLY
2/ CALCULATED AS 5% OF YFS AND OFF DIRECTED JVP

12/
10:22 am
final

Bering Sea/Aleutian Islands Groundfish
1990 ABCs, TACs, and DAP and JVP Apportionments

Species	Area	ABC			Council Decision: December 6					JVP Groundfish Bycatch Needs	
		Plan Team (Nov '89)	SSC (Dec '89)	Council (Dec '89)	TAC	Reserve	TAC less 15%	DAP	JVP	Rate	Amount (mt)
Pollock	BS	1,450,000	1,450,000	1,450,000	1,280,000	192,000	1,088,000	1,088,000		0.1371	22,451
	AI	153,600	153,600	153,600	100,000	15,000	85,000	85,000			
Pacific Cod		417,000	417,000	417,000	227,000	34,050	192,950	192,950		0.0429	7,025
Yellowfin sole		278,900	278,900	278,900	207,650	31,148	176,503	12,750	163,753		
Greenland turbot		7,000	7,000	7,000	7,000	1,050	5,950	5,950		tr.	1
Arrowtooth flounder		242,500	106,500	106,500	10,000	1,500	8,500	8,500		0.0002	33
Rock sole		216,300	216,300	216,300	60,000	9,000	51,000	51,000		0.0999	16,359
Other flatfish		188,000	188,000	188,000	60,150	9,023	51,128	10,200	40,927	0.0859	14,066
Sablefish	BS	3,800	2,700	2,700	2,700	405	2,295	2,295		tr.	1
	AI	9,600	3,700	4,500	4,500	675	3,825	3,825			0
Pacific Ocean perch		6,300	6,300	6,300	6,300	945	5,355	5,355		tr.	1
	AI	16,600	16,600	16,600	6,600	990	5,610	5,610			0
Other rockfis	BS	500	500	500	500	75	425	425		tr.	1
	AI	1,100	1,100	1,100	1,100	165	935	935			0
Atka mackerel		24,000	24,000	24,000	21,000	3,150	17,850	17,850			
Squid		10,000	10,000	10,000	500	75	425	425			
Other species		55,500	55,500	55,500	5,000	750	4,250	4,250		0.0112	1,834
TOTALS		3,080,700	2,937,700	2,938,500	2,000,000	300,000	1,700,000	1,495,320	204680		

TESTIMONY ON AGENDA ITEM D-3
BERING SEA GROUNDFISH

MR. CHAIRMAN, MEMBERS OF THE COUNCIL, MY NAME IS ERIC SILBERSTEIN AND I SERVE AS PRESIDENT OF EMERALD SEAFOODS.

MOST HERE KNOW BY NOW THAT OUR COMPANY IS CLEARLY AND UNEQUIVOCALLY ON RECORD IN SUPPORT OF COUNCIL POLICIES AND RECOMMENDATIONS AIMED AT CONSERVING THIS COUNTRY'S PRECIOUS GROUNDFISH RESOURCE. CONSERVATION IS THE PREEMINENT ISSUE BEFORE THE COUNCIL TODAY, AND I'M MAKING THIS SEEMINGLY OBVIOUS POINT ONLY BECAUSE IT'S BECOME OBFUSCATED IN PRIOR DEBATE OVER APPORTIONMENTS.

WE URGE THE COUNCIL TO ADOPT A MACRO-MANAGEMENT APPROACH TO ALLOCATIONS, INSTEAD OF THE MICRO-MANAGEMENT TECHNIQUES WHICH HURT EVERYONE INVOLVED IN THE FISHERY.

LET ME CLARIFY. REVIEWING THE CURRENT STOCK ASSESSMENT REPORT FOR POLLOCK IN THE BERING SEA IS MERELY CONDUCTING A POST-MORTEM ON A FISHERY ALREADY DECIMATED BY FOREIGN FLEETS POACHING WITHIN THE EEZ. THIS CREATES A CLASSIC PARADOX. THIS SO-CALLED "SAFE" REPORT, WHILE OSTENSIBLY DESIGNED TO SUPPORT RECOMMENDED APPORTIONMENTS TO DAP, JVP, AND GROUNDFISH PSC, IN REALITY IS A DAMAGE ASSESSMENT REPORT. IT RELEGATES US TO MANAGING WHAT'S LEFT AFTER JAPANESE, KOREAN AND OTHER FOREIGN FLEETS HAVE TAKEN AN ESTIMATED 2 MILLION TONS OF POLLOCK OVER THE CURRENT TAC OF 1.2 MILLION TONS. THERE ARE SOME PEOPLE IN THIS ROOM WHO WILL CONTEND THAT IF FOREIGN ENCROACHMENT IS FACTORED IN TO THE HARVESTING EQUATION, THE ANNUAL POLLOCK CATCH IS ACTUALLY IN EXCESS OF

5.2 MILLION TONS. AND, FRIGHTENINGLY, EVEN THAT FIGURE MAY BY LOW.

TO SUPPORT MY CASE, I OFFER THE COUNCIL THE ATTACHED EXHIBIT WHICH WAS PROVIDED BY ONE OF OUR COLLEAGUES. IN THE INTEREST OF TIME, I WON'T TRY TO WALK THROUGH THE DATA, WHICH I SUSPECT YOU'VE SEEN BEFORE. HOWEVER, FOR THOSE WHO HAVEN'T, THE INFORMATION WAS EXTRAPOLATED FROM 1986 DONUT HOLE TRANS-SHIPMENT REPORTS.

THE CONCLUSION ONE CAN EASILY DRAW FROM THIS DATA IS THAT WE ARE ALREADY EXCEEDING THE TAC. SOME OF YOU MAY DISCOUNT THIS FINDING BECAUSE OF THE METHODOLOGY, AND I'LL READILY ADMIT I'M NOT A SCIENTIST. BUT THE EVIDENCE OF FOREIGN ENCROACHMENT IS PLAINLY THERE. IT MUST BE FACTORED IN TO ANY FISHERIES MANAGEMENT EQUATION. THE DEGREE TO WHICH IT'S FACTORED, OF COURSE, IS THE QUESTION. HOWEVER, I SUBMIT WE CANNOT ERR IF WE TAKE A VERY CONSERVATIVE STANCE, REFLECTING THE OBVIOUS " LACK OF EMPIRICAL DATA " CONCERNING THE SIZE OF THE POLLOCK RESOURCE.

BY INCLUDING DONUT HOLE TRANS-SHIPMENT DATA IN COMPUTING TAC AND COROLLARY APPORTIONMENTS, THE COUNCIL CAN THEN DEVELOP THE TYPE OF MACRO-MANAGMENT POLICIES THIS FISHERY SO DESPERATELY NEEDS. THAT CAN ONLY BE ACHIEVED, HOWEVER, BY CONTROLLING DONUT HOLE OPERATIONS.

SIMPLY DEMURRING TO EXAMINE THE IMPACT OF POACHING BY FOREIGN FLEETS BECAUSE OF INTERNATIONAL POLITICAL SENSITIVITIES IS UNACCEPTABLE. A NATIONAL TREASURE IS AT STAKE. WE MUST PROTECT IT, AND ONE OF THE STEPS WE NEED TO

TAKE IS INCREASED SURVEILLANCE OPERATIONS ON THE EEZ BORDERS.

ITS COMMON KNOWLEDGE WITHIN THIS INDUSTRY THAT THERE ARE REALLY NO LARGE POLLOCK RESOURCES IN THE DONUT HOLE. TO BE PERFECTLY HONEST, I FEEL THE FOREIGN FLEETS WOULD STARVE TO DEATH IF FORCED TO FISH EXCLUSIVELY WITHIN DONUT HOLE BOUNDARIES. THE REASON THEY DON'T, OF COURSE, IS BECAUSE THEY ENGAGE IN COVERT OPERATIONS INSIDE THE EEZ, STEALING MILLIONS OF POUNDS OF POLLOCK -- POLLOCK WHICH LEGALLY BELONGS TO AMERICA.

IN ORDER FOR THIS "SAFE" REPORT TO LIVE UP TO ITS NAME, WE MUST SHIFT OUR FOCUS FROM ALLOCATING DECREASING AMOUNTS OF AN ALREADY VIOLATED POLLOCK RESOURCE, AND PROTECT OUR BOUNDARIES FROM FURTHER TRESPASSING BY FOREIGN FLEETS.

I URGE YOU TODAY, AS YOU MAKE IMPORTANT DECISIONS CONCERNING RESOURCE ALLOCATION, TO MAKE AN EVEN MORE IMPORTANT DECISION: TO ISSUE AN EMERGENCY REQUEST FOR INCREASED COAST GUARD AUTHORITY ON THE EEZ BORDERS.

Transshipment Data - 1986 - Donut Area

Product Type	Finished Product				Round Weight
Fillets, skin on; two per fish	62,754 MT	x .33	= 30%		207,088 MT
Fillets, (Butterfly) w/skin	1,376 MT	x .33	= 30%		4,541 MT
Fillets, Skinless: two per fish	27,652 MT	x .48	= 21%		132,729 MT
Gutted, only	7,164 MT	x .143	= 70%		10,245 MT
Headed and Gutted	190,130 MT	x .182	= 55%		346,037 MT
Other products	1,592 MT	x .476	= 21%		7,578 MT
Roe, Separated from fish	15,761 MT	x .100	= 100%		15,761 MT
Flounders, diagonal cut	38,516 MT	x .182	= 55%		70,099 MT
Tucza, head, guts tail belly rem'd	16,027 MT	x .455	= 22%		72,923 MT
Whole fish	191,890 MT	x .100	= 100%		191,890 MT
Others - less than 1000MT	1,900 MT	x .33	= 30%		6.270 MT
Surimi: Minced fish product	564,366 MT	x .476	= 21%		2,686,382 MT
Fish Meal: from carcass of Total*	53,727 MT	x	= 2%		----------
Fish Meal: from whole fish	82,677 MT	x .588	= 17%		486,141 MT
	1,255,532 MT				4,237,684 MT
USA Domestic	30,240 MT	x .476	= 21%		144,000 MT
	1,285,772 MT				4,381,684 MT
Donut Area (Reported)	248,212 MT			25%	992,848 MT
	1,533,984 MT				5,374,532 MT
Foreign Fishing Vessel	150,000 MT	x .476		21%	714,000 MT
(one trip a year)	1,683,984 MT				6,088,532 MT

(Footnote: Fish Meal Total = 136,404 MT
From whole fish 82,677 MT
from carcass 53,727 MT)

	1% = x	100.00	
	2% = x	50.00	
	3% = x	33.33	
*	4% = x	25.00	
	5% = x	20.00	
	10% = x	10.00	
	15% = x	6.67	
	16% = x	6.25	
*	17% = x	5.88	
	18% = x	5.56	
	19% = x	5.26	
	20% = x	5.00	
*	21% = x	4.76	Surimi also fillet without skin
	22% = x	4.55	
	23% = x	4.35	
	24% = x	4.17	
*	25% = x	4.00	Surimi & meal
*	30% = x	3.33	Fillet with skin/two per fish
	35% = x	2.85	
	40% = x	2.50	
	45% = x	2.22	
	50% = x	2.00	
*	55% = x	1.82	Headed & Gutted
	60% = x	1.67	
	65% = x	1.54	
	70% = x	1.43	Gutted only
	75% = x	1.33	
	80% = x	1.25	
	85% = x	1.18	
	90% = x	1.11	
	100% = x	1.00	Whole fish