


D-1 GULF OF ALASKA GROUND FISH CHECKLIST

The Council needs to review and take action on the following items at this meeting.

<u>ITEM</u>	<u>TAB</u>
1. Review PT and SSC ABC recommendations. Set 1989 ABCs.	D-1(a)
2. Review DAP and JVP survey results.	C-5, C-6
3. Set initial TACs.	
4. Set initial DAPs, JVPs, and TALFFs.	D-1(a)
5. Examine potential bycatches of halibut given initial TACs. Set a halibut PSC limit for domestic bottom trawl gear. Apportion halibut PSC limit to DAP and JVP. Adjust groundfish TACs to provide additional halibut protection if necessary.	D-1(b)
6. Identify zero-TALFF/zero-JVP species and provide bycatch amounts to joint venture and foreign fisheries from ABC if necessary.	D-1(c)
7. Review TACs, DAPs, JVPs, TALFFs, and PSCs; adjust as necessary.	D-1(c)
8. Approve 1989 TACs, DAPs, JVPs, TALFFs, and PSCs.	D-1(c)
9. Consider taking emergency action to establish a Shelikof District for purposes of managing pollock.	D-1(d)
10. Report of Bycatch Committee.	D-1(e)

M E M O R A N D U M

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke   
Executive Director

DATE: November 28, 1988

SUBJECT: Gulf of Alaska Groundfish Fishery Management Plan

ACTION REQUIRED

- A. Review status of stocks and adjust 1989 ABCs where necessary.
- B. Set Initial 1989 TACs for discussion purposes.
- C. Review 1989 DAP and JVP estimates.
- D. Identify groundfish species categories where DAP and/or JVP estimates exceed ABC.

BACKGROUND

- A. Review of 1988 status of stocks and adjust 1989 ABCs

You received a report on the status of the Gulf of Alaska groundfish resource at the September Council meeting. Subsequently the plan team met on November 7-10, 1988 to review the earlier assessment following receipt of additional information. A final Resource Assessment Document (RAD) for the Gulf of Alaska was prepared and mailed to you on November 18. The determination of ABC for pollock has been a very difficult one this year given the results of recent surveys and several contradictory pieces of information. The team has concluded that given the uncertainty in the data pertaining to the pollock resource in the Western and Central regulatory areas, that they are unable to determine ABC for 1989. However, the plan team notes that a 1989 pollock TAC of 0-50,000 mt does not appear to significantly affect the projected biomass level in the near term. They also add that the Council may want to limit pollock harvest in Shelikof Strait during the spawning period and suggest 6,250 mt as a commercial harvest that would provide important biological information. A limited harvest would likely encourage fishermen to seek other spawning aggregations elsewhere in the Gulf.

Pacific cod appears to be in good condition with ABC estimated at 71,200 mt. Flounder also appear healthy with an ABC of 354,700 mt. Sablefish ABC was reduced to 30,900 mt following evidence that the strong 1984 year class will not fully recruit into the 1989 fishery. For slope rockfish, the team recommends an ABC range of 14,700 mt - 30,700 mt with a conservative TAC to minimize possible adverse effects of targeting on the deep slope species of this assemblage. For pelagic rockfish, the team maintains a 3,300 mt ABC and,

because data are insufficient to determine a shelf demersal rockfish ABC, recommends that the Council consider setting TAC no higher than 420 mt for the Southeast Outside District. A summary of the final RAD is provided as item D-1(a)(1).

B. Set Initial 1989 TACs

After reviewing 1989 ABCs the Council must set initial total allowable catch (TAC) for each managed groundfish species or species category in the Gulf of Alaska. A computer spreadsheet and the attached worksheet (item D-1(a)(2)) are provided for your use. Initial TACs are necessary as a first-step in determining resource apportionments.

For 1989 the Council may wish to consider separating Arrowtooth flounder from the flounder category. This low-valued species currently comprises about half of this species category. The plan team noted that continuing to manage this category with Arrowtooth flounder could possibly lead to overharvest of the less-abundant but more valuable species. A letter from NMFS supporting this change is provided as item D-1(a)(3).

On October 20, 1988 the Council released preliminary ABC and TAC estimates for a minimum 30-day public review. The review period ended on November 25. Only three comments were received prior to this meeting and they are provided in your notebooks as item D-1(a)(4), (5), and (6).

C. Review 1989 DAP and JVP Estimates

At the September 1988 meeting you chose to set preliminary 1989 DAP estimates equal to the preliminary 1989 TACs. Since then NMFS has completed its annual industry survey and its 1989 estimates are provided under item C-5. Estimates of DAP were obtained from a questionnaire supplied to U.S. processors. JVP estimates were calculated following a review of actual joint venture permit requests and are provided under item C-6.

D. Identify groundfish species where DAP and/or JVP estimates equal or exceed ABCs.

The Council needs to determine initial DAP and JVP estimates before proceeding through the rest of the checklist. A computer spreadsheet is available as an aid in determining TAC apportionments. From the review of industry survey results it should be clear as to which groundfish resources are insufficient to fulfill domestic, joint venture, and foreign requests. Gulf of Alaska groundfish species in this category will certainly include pollock, rockfish, and sablefish. Other species may fall into this category as a result of your decisions on TAC, DAP and JVP values.

PART A. STATUS OF STOCKS AND DETERMINATION OF 1989 ABCs

Pollock - The 1988 acoustic survey in Shelikof Strait produced a biomass estimate of only 330,000 mt. This is substantially below the most pessimistic projection from 1987. The Team noted that the biomass estimate from the 1987 bottom trawl survey in the Gulf of Alaska (593,000 mt) provides a different view of current conditions, but could not determine which is more accurate. ABC, determined as production above the threshold level, would be 0 if the lower biomass estimates are correct. While the Team is concerned over the dramatic decline in pollock since 1984, we no longer support the previously identified threshold value. A wide range of recruitment has been observed for this stock in the last 8 years, and we have no objective basis for concluding that a biomass less than 770,000 mt will result in year class failure. Therefore, we have lost confidence in the assumption that 770,000 mt represents a threshold.

Because of the uncertainty surrounding the data, the Team cannot identify an ABC for 1989.

Although the Team was unable to provide an estimate of ABC, the Council, in setting TAC, may wish to note that the biomass projection model shows little difference in short term biomass trend under catches ranging from 0 to 50,000 mt for 1989.

The Team recommends that only a limited fishery occur in Shelikof Strait during the spring spawning period to provide data for future stock assessments. A fishery of approximately 6250 mt would provide for adequate samples from the Shelikof Fishery. Limiting the Shelikof Strait fishery to this level would encourage commercial operations outside the Strait, provided that additional TAC is made available for those areas. This could provide an opportunity to collect additional biological samples relevant to stock unity questions.

The team has no new information for pollock stocks in the Eastern Gulf of Alaska and suggests the 1989 ABC be set at the 1988 level of 3400 mt.

Pacific cod - Pacific cod stocks in the Gulf of Alaska are currently healthy. The best estimate of current exploitable biomass is 558,700 mt. Fishing mortality which maximizes yield is estimated from stock reduction analysis such that  $F_{0.1} = 0.16$ ,  $F_{msy} = 0.18$  and  $F_{max} = 0.26$ . ABC, calculated as the product of current biomass and  $U_{msy}$ , is 71,200

Flounders - The flounder complex appears to be in good condition. Biomass estimates from 1984 to 1987 bottom trawl surveys show the resource to be stable, with a slight overall increase (3%) during this period. ABC for the flounder complex was estimated by applying  $F_{max}$  and  $F_{0.1}$  levels to the 1987 biomass estimate, resulting in an ABC of 554,700 mt. Gulfwide flounder catches in 1987 were only 2% of this amount. The Plan Team

recommends that the ABC be apportioned to the individual management areas as follows: 111,500 mt (Western Area), 384,300 mt (Central Area), and 58,900 mt (Eastern Area).

Because this is a mixed species fishery dominated by arrowtooth flounder, the Plan Team notes that it is possible to overfish the less abundant, more desirable flatfish species. The Plan Team therefore recommends that arrowtooth flounder be assigned a separate TAC.

Sablefish - The 1988 Cooperative Longline Survey indicates that sablefish biomass remains high in the Gulf. Evidence of a strong 1984 year class expected to fully recruit in 1989 was not evident in survey data. Biomass projections applying the F0.1 exploitation rate to pessimistic biomass and recruitment assumptions indicate the population would remain above the historic low levels until 1993. Based on this assessment of risk, the Plan Team recommends applying the F0.1 exploitation rate to the pessimistic biomass estimate to obtain a 1989 ABC of 30,900 mt. The TAC should be set to assure that all sources of fishing mortality including PSC discards, gear loss, and high-grading do not greatly exceed this level.

Slope rockfish - The PT recommends a gulfwide ABC range of 14,700 to 30,700 mt for the slope rockfish assemblage. This ABC range is based on stock reduction analysis using biological parameters from POP and biomass estimates from areas deeper than 100 m in the 1987 triennial trawl survey. It is recommended that a conservative TAC be adopted to minimize possible effects of targeting on the deep slope species of this assemblage. A recommendation to apportion ABC by regulatory areas is included.

Pelagic shelf rockfish - The PT applied a fishing mortality rate determined for POP to the biomass estimates from the 1987 trawl survey, resulting in gulfwide ABC of 3,300 mt, to be apportioned among regulatory areas based on the distribution of this assemblage in the 1987 trawl survey.

Demersal shelf rockfish - Very little is known about demersal shelf rockfish in the Gulf of Alaska compared to other groundfish species. Estimates of absolute abundance, exploitable biomass, MSY, and ABC are not available for this species group. What is known about the biology of demersal shelf rockfish indicates that all species in this group are very long-lived and slow growing with low natural mortality rates.

Information collected by the Alaska Department of Fish and Game indicates that length and age distributions and catch rates in the Southeast Outside District have continued to decline at current recommended harvest levels. While an estimate of ABC is not available, continued declines in fishery performance at the current level of harvest indicates that the current harvest is above the recruitment rate into this fishery. This suggests that

sustainable yield is likely to be below the 1988 harvest level of approximately 600 mt.

Based upon that information, ADF&G is submitting a recommendation to the Alaska Board of Fisheries to set a harvest range for the directed fishery in the Southeast Outside District of 300 mt to 420 mt which represents 50% to 70% of the 1988 harvest.

Thornyhead rockfish - Longline survey indices and mean lengths in trawl surveys have shown recent declines. DAP catches of thornyheads have continued to increase with the 1988 year-to-date catch being the highest on record. Estimates of ABC range from 3,280-4,650 mt. The PT recommends that the ABC remain at 3,750 mt.

Other species - No recommendations were made by the PT for this group. FMP procedures define the reasonable quota for this category to be set at 5% of the sum of the TACs established for the other species categories.

Table 1. Maximum sustainable yields (MSYs), comparisons of acceptable biological catches (ABCs) for 1988 and 1989 (rounded to nearest 100 mt), and catches through October 22 for groundfish.

Species	MSY (mt)	ABC (mt)		1988	1988	
		1988	1989	Catch	TAC	
Pollock	Unknown	W/C	90,000-120,000	Unknown	24,106	90,000
		E	3,375	3,400	64	3,000
		Total	93,375-123,375	3,400	24,170	93,000
Pacific cod	34,200	W	19k-35k	13,500	4,178	19,000
		C	73k-137k	52,000	24,282	60,800
		E	7k-13k	5,700	78	200
		Total	99k-185k	71,200	28,538	80,000
Flounders	121,400	W	142,650	111,500	617	1,600
		C	538,280	384,300	13,377	21,300
		E	86,770	58,900	956	100
		Total	767,700	554,700	14,950	23,000
Sablefish	33,500-42,000	W	5,600	4,900	3,170	4,060
		C	15,700	13,900	13,286	12,540
		WYK	6,000	5,300	5,459	4,900
		SE/EYK	7,700	6,800	6,448	6,500
		Total	35,000	30,900	28,363	28,000
Slope rockfish	12,900-25,500	W	4,850	3,500	2,271	4,850
		C	7,100	6,500	7,093	7,100
		E	4,850	4,700	4,759	4,850
		Total	16,750	14,700-30,700	14,123	16,800
Pelagic shelf rockfish	Unknown	W	550	500	194	550
		C	2,350	2,400	455	2,350
		E	400	400	182	400
		Total	3,300	3,300	831	3,300
Demersal shelf rockfish (SE Outside district)			660	<600	625	660
Thornyhead rockfish	3,750	Gulf-wide	3,800	3,800	2,406	3,750
Other species	NA	NA	NA	728	12,426	
			1,077,585!	690,600*	114,734	260,936

! Summed, using 108,375 mt and 142,000 mt midpoint of the respective pollock and cod ABC ranges.

\* Summed, using 22,700-mt midpoint of the slope rockfish ABC range.

Table 2. Exploitable biomasses, 1989 acceptable biological catches (ABCs), and estimated trends and abundances of groundfish.

Species	Exploitable Biomass (mt)		ABC	Abundance, trend
Pollock	330,000- 593,000	W/C	Unknown	Depressed, uncertain
		E	3,400	
		Total	3,400	
Pacific cod	558,700	W	13,500	High, stable
		C	52,700	
		E	5,000	
		Total	71,200	
Flounders	2,110,900	W	111,500	High, stable
		C	384,300	
		E	58,900	
		Total	554,700	
Sablefish	426,000		30,900	High, stable
Slope rockfish	170,100 306,000 226,100 702,200	W	3,500	Good, increasing
		C	6,500	
		E	4,700	
		Total	14,700-	
			30,700	
Pelagic shelf rockfish	28,400 116,600 19,300 164,300	W	500	Relative abundance and trend unknown
		C	2,400	
		E	400	
		Total	3,300	
Demersal shelf rockfish (SE Outside district)	Unknown		<600	Depressed, decreasing
Thornyhead rockfish	98,700	Gulf-wide	3,800	Good, decreasing
Other species	NA	Gulf-wide	NA	
	4,165,800		690,600 *	

\* Summed, using 22,700-mt midpoint of the slope rockfish ABC range.





UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration

National Marine Fisheries Service  
P.O. Box 21668  
Juneau, Alaska 99802-1668

AGENDA D-1(a)(3)  
DECEMBER 1988

November 21, 1988

NOV 21 1988

Clarence G. Pautzke, Chairman  
North Pacific Fishery Management Council  
P.O. Box 103136  
Anchorage, Alaska 99510

INITIAL	ROUTE TO
	Exec. Dir.
	Deputy Dir.
	Admin. Off.
	Exec. Sec.
	Staff Asst. 1
	Staff Asst. 2
	Staff Asst. 3
	Economist
	Sec. 7011
	Sec. 7012

Dear Clarence:

We have a comment on the 1989 Gulf of Alaska proposed groundfish specifications that the North Pacific Fishery Management Council will consider at its December 1988 meeting. Our comment pertains to the ABCs for the "other flounder" category. The Gulf-wide sum of the ABCs is specified in the preliminary Resource Assessment Document (RAD) to be 767,700 mt, of which 40 percent, or 303,800 mt is arrowtooth flounder. We understand that the Plan Team is making a final recommendation to set the sum of the ABCs for the "other flounder" category at 554,800 mt, of which 50 percent, or 274,600 mt is arrowtooth flounder. The final RAD contains the following ABCs for arrowtooth flounder and the rest of the "other flounder" category:

	<u>Western</u>	<u>Central</u>	<u>Eastern</u>	<u>Total</u>
"Other flounder"	73,400	185,200	21,500	280,100
Arrowtooth flounder	<u>38,100</u>	<u>199,100</u>	<u>37,500</u>	<u>274,700</u>
Total	111,500	384,300	59,000	554,800

For reasons provided below, we recommend that the Council adopt separate TACs for arrowtooth flounder, based on the above ABCs. Since separate ABC information for arrowtooth flounder is already available, our recommendation is easy to accomplish.

Our recommendation is consistent with the Plan Team's suggestion contained in the RAD that separate TACs for arrowtooth flounder be established to afford protection to less abundant species making up the flounder complex. Otherwise, these species could be adversely impacted while fishing to achieve a large flounder TAC.

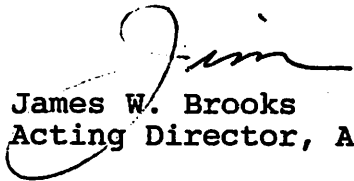
We also believe that our processor surveys would be more accurate if separate TACs for arrowtooth flounder were established. Presently, arrowtooth flounder has little commercial importance in the Gulf of Alaska. Processors would be able to consider other flounder species separate from arrowtooth



flounder when estimating amounts of flounder species needed for processing and how much bycatch of arrowtooth flounder they might need to support fishing for other target species.

We believe our recommendation rationally addresses this issue. We can discuss it further, as necessary, at the December Council meeting.

Sincerely,

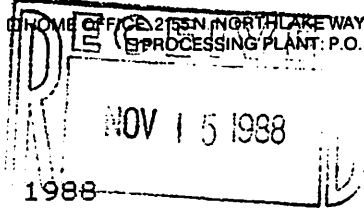


James W. Brooks  
Acting Director, Alaska Region



# ALASKA PACIFIC SEAFOODS, INC.

HOME OFFICE: 2155 N. NORTH LAKE WAY • P.O. BOX 31179 • SEATTLE, WASHINGTON 98103 • (206) 632-9900  
PROCESSING PLANT: P.O. BOX 1126 • KODIAK, ALASKA 99615 • (907) 486-3234



November 14, 1988

North Pacific Management Council  
Attn: John Peterson, Chairman  
P.O. Box 103136  
Anchorage, Alaska 99510

Dear N.P.F.M. Council members,

On behalf of Alaska Pacific Seafoods, I would like to take this opportunity to thank you for time and effort that each of you have contributed to the Council and to update you on my firm's groundfish utilization in the past and currently.

At Alaska Pacific Seafoods the trend is very clear; groundfish utilization is rapidly increasing and will continue to increase for quite some time. This growth is seen clearly in the past four years production data and in the projections forecasted for 1989.

Years	Season	Area	Groundfish Utilization (Pollock Only)
1985	Jan - Mar	Shelikof Strait	1388 MT
	Oct - Dec	Gulf	1047 MT
1986	Jan - Mar	Shelikof Strait	2775 MT
	Oct - Dec	Gulf	3200 MT
1987	Jan - Mar	Shelikof Strait	3363 MT
	Sep - Dec	Gulf	10229 MT
1988 Projected	Jan - Apr	Shelikof Strait	10534 MT
	Sep - Dec	Gulf (To date )	15245 MT
1989 Projected	Jan - Apr	Shelikof Strait	11000 MT
	Sep - Dec	Gulf	16000 MT

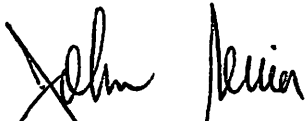
*Processors of Quality Alaska Seafoods*

Although Alaska Pacific Seafoods processed only a small percentage of the total DAP in 1985 and 1986, through our expansion efforts in the summer of 1987, we now represent 25% to 30% of the total harvest in the Central and Western Gulf. In 1985 A.P.S. had the capacity to process roughly 90 MT of pollock a day. After our expansion in 1987 we more than doubled our capacity and today A.P.S. is capable of processing 210 MT daily.

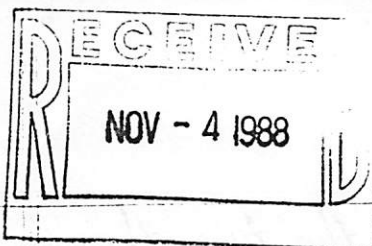
The diversification into groundfish that A.P.S. has undertaken in recent years has not only benefited our firm but the entire State of Alaska as well. A.P.S. currently employs 300 people during the 7 month course of the Pollock season. In the past, we experienced little or no activity in this seven month period and only a minimum crew was maintained.

In short, Alaska Pacific Seafoods current and future utilization of groundfish is expected to represent 25% to 30% of the current DAP for 1988. We have proven over the last two years that this figure is a realistic one. It is vital to this growing domestic industry that a sufficient supply of groundfish be made available to our shore-based plants. It is my hope that the North Pacific Fishery Management Council will consider this in both its short-term and long-term allocation decisions.

Sincerely Yours,



John Sevier  
Plant Manager  
Alaska Pacific Seafoods, Inc.



AGENDA D-1(a)(5)  
DECEMBER 1988

INITIALS

Admin. Off.  
Exec. Sec.  
Staff Asst. 1  
Staff Asst. 2  
Staff Asst. 3  
Economist  
Sec. Bkkr.  
Sec./Typist

Nov 1, 1988

Mr Clarence G. Pautzke  
Executive Director  
North Pacific Fishery Management Council

Dear Mr. Pautzke,

I appreciate this opportunity to offer input in your decision making in determining the 1989 groundfish harvest limits in the Gulf of Alaska.

I feel that I am qualified to comment and make recommendations on the amounts of fish available for harvest [(1) or (3)] on the Demersal Shelf Rockfish especially.

At present there exists since last December 1987 an emergency closure on directed commercial fishing for Demersal Rockfish as result of rapid depletion of this group since 1983. This closure should continue indefinitely, especially on the inside bays, inlets, sounds and outside coastline up to the three mile limit. This species has just about been wiped out here in Southern Alaska by commercial directed fishing combined with the Halibut openings by-catch each year.

The sad part about the by-catch at Demersal Rockfish during the Halibut opening is that they are dumped in favor of boating the higher value halibut. This must be stopped and all commercial halibut boats cited and fined for unton waste if they dump rockfish.

I have personally seen the time when you could almost walk on Selkirk Sound by stepping from rockfish to rockfish floating that had been discarded during the Halibut opening.

Actually there does not exist at this time throughout Southeast Alaska any amount (zero) of Demersal Shelf Rockfish that is available for commercial harvest even as by-catch, much less directed fishing.

I take issue with the comment on page 1 of "Summary of Status of Stocks and estimation of 1989 ABC's" etc under Demersal Shelf Rockfish "Very little is known about the species" I view this as a cop-out to claim ignorance. Much is known, relatively enough, to realize how long lived the fish are and slow to reproduce, I cite the report by ADFG "Inshore and Shallow Offshore Bottom Fish Resources in the Southeastern Gulf of Alaska" (1981-82) I own a copy of this report. It is sad that ADFG did not take their own biologist's recommendations and findings from this year long diving study done here in Sitka and shut down the directed commercial rock fishing in 1985 instead of 1987. There might be an "available amount for harvest" now.

I carried on a letter writing campaign with the Director of Fish & Game between 1985-1987 urging the closure of harvest on this species. It was not until December 1987 that ADFG finally woke up to find no fish left after 5 years of 365 day fishing and announced an emergency closure. This closure must continue regardless of the intense pressure applied by commercial fishing interests!

I would also like to take this opportunity to point out to you my letter to the council dated 6/16/88 in reply to your announcement of "Special Notice of Emergency Council Res. 82<sup>nd</sup> Plenary Session June 21-24, Anchorage Sheraton Hotel

In this letter I recommended that something be done to stop the dumping of bottom fish other than halibut during the commercial halibut openings. I never heard a reply on this. I would imagine the powerful longliners promptly trashed my letter.

I request that this letter become part of the official record of this upcoming meeting and some thought on the above concerns be taken before the complete extinction of these species of bottom fish takes place.

Steve

Ben Mitchell

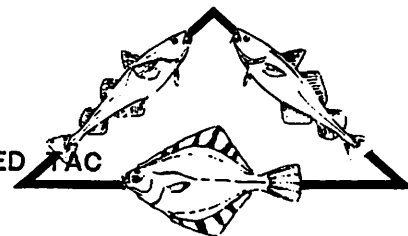
103 Davis

Sitka, AK 99835

# Alaska Groundfish Data Bank

November 25, 1988

## COMMENTS ON GULF OF ALASKA PROPOSED TAC FOR FLOUNDER AND SABLEFISH



### I. FLOUNDER

We note that there is no allowance for a JV flounder allocation in the proposed TACs. As in the last two years Kanai Fisheries - KWT hope to pursue a flounder joint venture in the Gulf of Alaska in 1989.

We have requested Permit Review committee and/or Emergency Regulation to close JV flounder fishing during the summer months when halibut bycatch is high.

We request a flounder JV TAC in the Gulf of Alaska of 20,000 metric tons.

### II. SABLEFISH

We note that the sablefish TAC is set below ABC, despite that fact that the biomass is considered above virgin biomass levels. We understand and concur with the Plan Teams reasoning that setting TAC below ABC may be important to allow for the existing waste and discards.

However, since the trawl TAC depends on the longline TAC we feel that there should be some discussion on this subject.

Our main concern is that since September the trawl fleet has been discarding sablefish -- the fish are dead kept or discarded.

It seems to us that there might be some value in setting TAC = ABC and then setting aside an appropriate reserve for anticipated waste in the longline fishery.

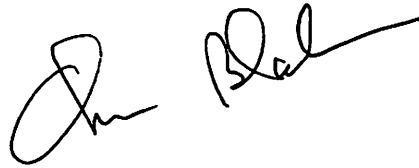
For the trawl fishery we would recommend that the amount between the TAC and ABC be put in reserve and that the Regional director be given authority to release the reserves if the trawl quota less reserves is taken AND AT THE SAME TIME reduce the 20% bycatch retention (15% if our proposal is enacted by emergency rule) to a low level, perhaps 3 or 5%.

Our intent is to reduce waste without encouraging topping off or targeting if the retention rate the first part of the year proves inadequate to last the full year.

We feel that with the stocks above virgin biomass and expected to go down fished or unfished that this is an opportune time to experiment with a limited retention rule. We would have no



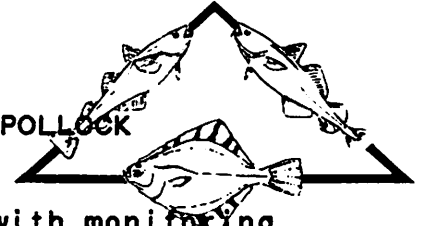
problem allowing the limited retention we suggest above to be used only by vessels carrying observers so that better data on the natural bycatch rate could be obtained.

A handwritten signature in black ink, consisting of a large, stylized initial 'J' followed by a surname that appears to be 'Blal'.

# Alaska Groundfish Data Bank

November 25, 1988

## COMMENTS ON TAC FOR GULF OF ALASKA POLLOCK



**SUGGESTED TAC:** 90,000 to 100,000 Metric Tons with monitoring.

**JUSTIFICATION:** The justification for a 90,000 to 100,000 metric ton TAC for pollock in the Gulf of Alaska is twofold -- procedural and biological.

**A. Procedural --** While the regional director can adjust a TAC downward inseason with relative ease given biological justification, adjusting a TAC upward seems to more difficult. Further, it is easier to document that catches and age structure indicate a lower stock than expected than it is to adequately document that the stock biomass is higher than expected.

**B. Biological**

**1. The status of stocks is uncertain.**

- a. The survey looked only at Shelikof Strait in 1988.
- b. There is indication based on catch timing versus the hydroacoustic survey that the hydroacoustic survey did not correspond with the spawning period of the biomass (See Nov. 3 memo from Peter Craig ADF&G to the Gulf of Alaska Plan Team).
- c. Though an overall biomass decline is evident in both the 1987 bottom trawl survey and the 1988 hydroacoustic survey, the degree of decline is much less in the bottom trawl survey.
- d. The 1987 bottom trawl survey indicated increases in biomass in nearshore Kodiak waters -- this either indicates separate stocks or a stock redistribution.
- e. The bulk of the decline was in the Shumagin area.
- f. The ADF&G bottom trawl crab survey indicates a significant increase in pollock stocks around Kodiak between 1987 and 1988.
- g. The fishery has shifted from principally a first quarter Shelikof Strait fishery to a year round fishery mainly outside Shelikof Strait. Making the Shelikof Strait biomass important only if the East side of Kodiak fish are products of Shelikof Strait.

**2. Importance of Shelikof Strait**

- a. The current flows south through Shelikof Strait indicating that eggs produced in Shelikof Strait should land in the Shumagin and Unimak areas -- notably Shumagin showed significant fish declines in the 1987 bottom trawl survey.
- b. Egg, larvae and age 0 fish distribution all indicate spawning on the east side of Kodiak. This is an area where the southward currents flowing down Shelikof Strait would be unlikely to carry eggs and larvae.

- c. A 1972 NMFS paper proposes a geographical separation of stocks east and southwest of Kodiak Island.

2. Recruitment

- a. The periods of high egg production in Shelikof Strait failed to produce successful year classes. See Graph 1, Pollock Biomass MT).
- b. Though Shelikof Strait has been a major site of egg production in recent time, there is egg production on the east side of Kodiak year round -- its amount is unknown as data is sparse.

3. Historical

- a. The historical estimates of pollock biomass in the Gulf of Alaska, shown in Table 1, Biomass Estimates Vs. Recruitment Strength, range from a low of 48,000 MT to a high of 3.4 million metric tons.
- b. Shrimp fishermen did not see any amount of pollock in the Gulf of Alaska until the mid 1970s.
- c. Shelikof Strait does not appear to have been the site of a notable spawning aggregation until the mid to late 1970s.
- d. There is some feeling that Shelikof Strait is an anomaly resulting from several excellent year class survivals in a row and that the stock is now returning to more normal levels.

4. Setting TAC

- a. The historic, pre Shelikof Strait catches 1977-1981 were all between 100,000 and 200,000 metric tons. When the fishery was at its peak in Shelikof 1983-1985 catches ranged from 200,000 to over 300,000 MT.
- b. The RAD offers a number of biomass estimates for 1989 based on different recruitment scenarios.
- c. The 1983 year class seems to be a weak year class, the 1984 year class is giving mixed signals (See Recruitment table following) and the 1985 year class at this point is considered strong. The 1986 and 1987 year classes are unknown, though there is an abundance of small fish in the area.
- d. Based on the above, Scenarios B or D in the RAD pp. 37-39, would seem appropriate. These two scenarios give a biomass range of 600,000 to 1 million MT for 1989, depending on which survey the estimate is based on.
- e. We believe the bottom trawl survey is the most reliable and best covers the grounds now being fished.
- f. The exploitation rate historically has been over 10% and we consider 10% a reasonable exploitation rate.

6. 1989 Management Scenario

- a. Closely monitor the fishery, catch rates and age class composition as well as the fleet distribution.
- b. Hold a portion of the TAC in reserve for release if information on abundance of age 4 and age 3 fish warrants.
- c. Monitor for evidence of geographical stock separations. The smaller size of 1988 Shelikof Strait fish should make this group identifiable.
- d. Review stock status at all subsequent NPFMC meetings.

6. The 0 - 50,000 MT figure

The RAD states that there is no statistical difference between taking 0 and taking 50,000 MT. It should be noted that the 50,000 MT is NOT AN UPPER LIMIT, BUT ONLY THE HIGHEST NUMBER USED IN THE ANALYSIS. IT IS UNKNOWN WHAT THE UPPER LIMIT IS WHERE A STATISTICAL DIFFERENCE WILL OCCUR.

I would like to end this comment with a quote from the 1988 RAD concerning Pacific cod in the Gulf of Alaska

*Since the recent increases in the cod population resulted from an unpredicated phenomenon working on what appeared to be a relatively small parent stock, we could also assume that the population might return to relatively low levels in the future.*

We feel the same statement applies to Gulf of Alaska pollock.

Following are some tables and graphs for fun and games.

A handwritten signature in black ink, appearing to read "J. Paul".

RECRUITMENT

Probably the most significant consideration in setting the 1989 Gulf of Alaska pollock TAC is recruitment. The table below shows the population estimates derived from different methods and the recruitment strength of that year's year class.

It is notable that the years of highest biomass estimates were also the years of weak recruitment.

The 1984 and 1985 year classes may well be strong and there is evidence in the 1988 ADF&G crab bottom trawl survey that the 1988 year class may be strong. In short, there appears to be several years of strong recruitment coming into the fishery.

POLLOCK BIOMASS ESTIMATES  
VS.  
RECRUITMENT STRENGTH  
MILLION METRIC TONS

Year	95% Confidence Interval	Shelikof Strait Hydroacoustic	Bottom Trawl	Recruitment Strength
1961			48,042	
1967				Strong W of SE Kodiak
1970				Strong SE & E of Kodiak
1973-75			522,22 - 1,200,00	
1976	690,000 - 1,420,000			
1977	600,000 - 1,230,000			
1978	830,000 - 1,770,000			Significant
1979	1,170,000 - 2,580,000			Significant
1980	1,540,000 - 3,330,000			Weak
1981	2,120,000 - 4,510,000	3,410,000		Weak
1982	2,070,000 - 4,380,000	not avail		Weak
1983	1,600,000 - 3,390,000	2,370,000		Weak
1984*	1,080,000 - 2,330,000	1,830,000	1,200,000	Strong Kodiak, Yakutat & SE
1985*	560,000 - 1,280,000	680,000		Prob. strong
1986	250,000 - 630,000	491,500		Unknown
1987	150,000 - 420,000	480,000	846,761	Unknown
1988	Not available	311,400		Strong spike of 5-15 cm (2-6 in) pollock in 1988 ADF&G bottom trawl crab survey

Notes:

\*: p. 18 of the RAD states:

"Also the 1984 year class as 3-year-olds were prevalent in all areas, but especially in the Kodiak, Yakutat and Southeast INPFC Statistical Areas."

However p. 30 states, "Abundance estimates for the 1984 year class appear to be similar in magnitude to the weak 1980-1983 year classes . . . The 1984 year class appears to be weak but

this result should be viewed with caution since the estimate of 1984 year class abundance from the stock assessment is based on only one catch-at-age data point from the 1984 cohort, the catch of 3-year-olds in 1987 . . . Estimates of year class strength from the acoustic/trawl surveys indicate that the 1984 year class recruited strongly based on relative abundance estimates of 3-year-olds in 1987 and absolute abundance estimates of 4-year-olds in 1988."

It is difficult to reconcile these two statements and if the year class was prevalent in all areas I expect it should be considered strong.

- <sup>b</sup>: p. 18 of the RAD states: "It seems unusual to see so many 2-year-old pollock taken in the bottom trawl survey . . . Perhaps the strong showing of 2-year-olds in the 1987 bottom trawl survey is evidence that the 1985 year class is strong."

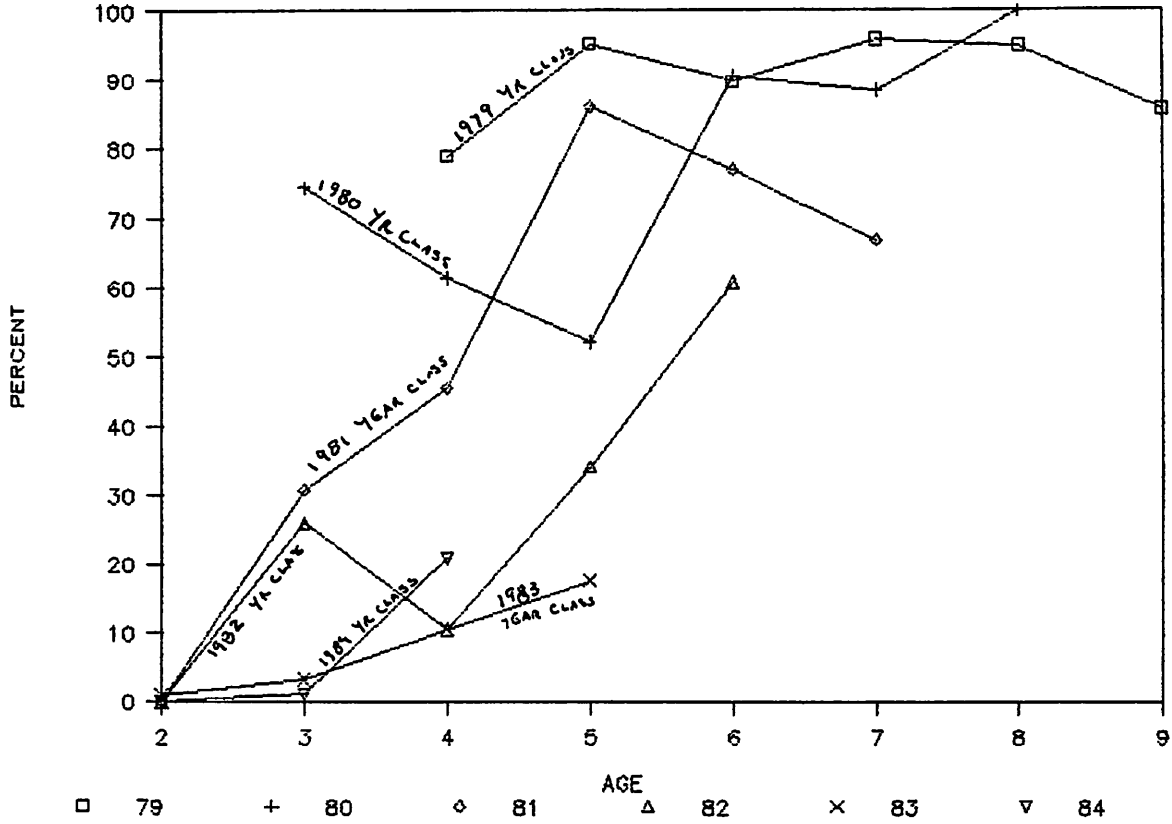
p. 4

**GULF OF ALASKA  
POLLOCK CATCHES - TALFF, JVP AND DAP COMBINED  
METRIC TONS**

1967	6,000
1968	6,000
1969	18,000
1970	9,000
1971	9,000
1972	35,000
1973	38,000
1974	61,000
1975	48,000
1976	N/A
1977	120,400
1978	96,300
1979	107,700
1980	116,300
1981	149,000
1982	168,800
1983	215,500
1984	306,600
1985	261,900
1986	73,100
1987	62,000

# % SPAWNING FEMALES

BY YEAR CLASS BY AGE



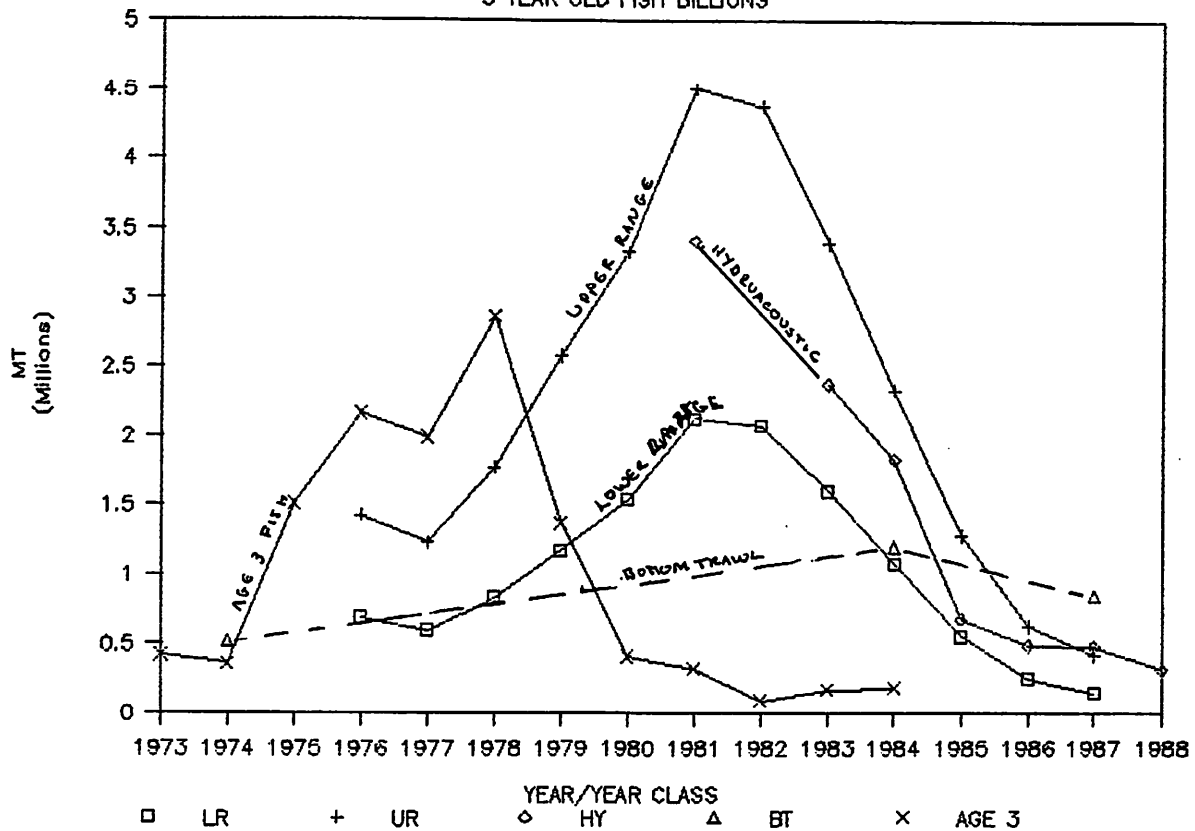
## COMMENTS

Note that the 1979, 1980 and 1982 year classes each actually experienced a decline in the percent of females in spawning condition in Shelikof Strait. Its hard to say what this means, just that something happened to the 1980 year class females in 1984 and 1985, to the 1979 year class females in 1985 and 1986 and to the 1982 year class females in 1986.



# POLLOCK BIOMASS MT

3 YEAR OLD FISH BILLIONS



## COMMENTS

This exercise shows the different methods for calculating pollock biomass:

LR = equals the lower range of the 95% Confidence Interval

UR = the upper range of the 95% Confidence Interval

HY = the Hydroacoustic estimate

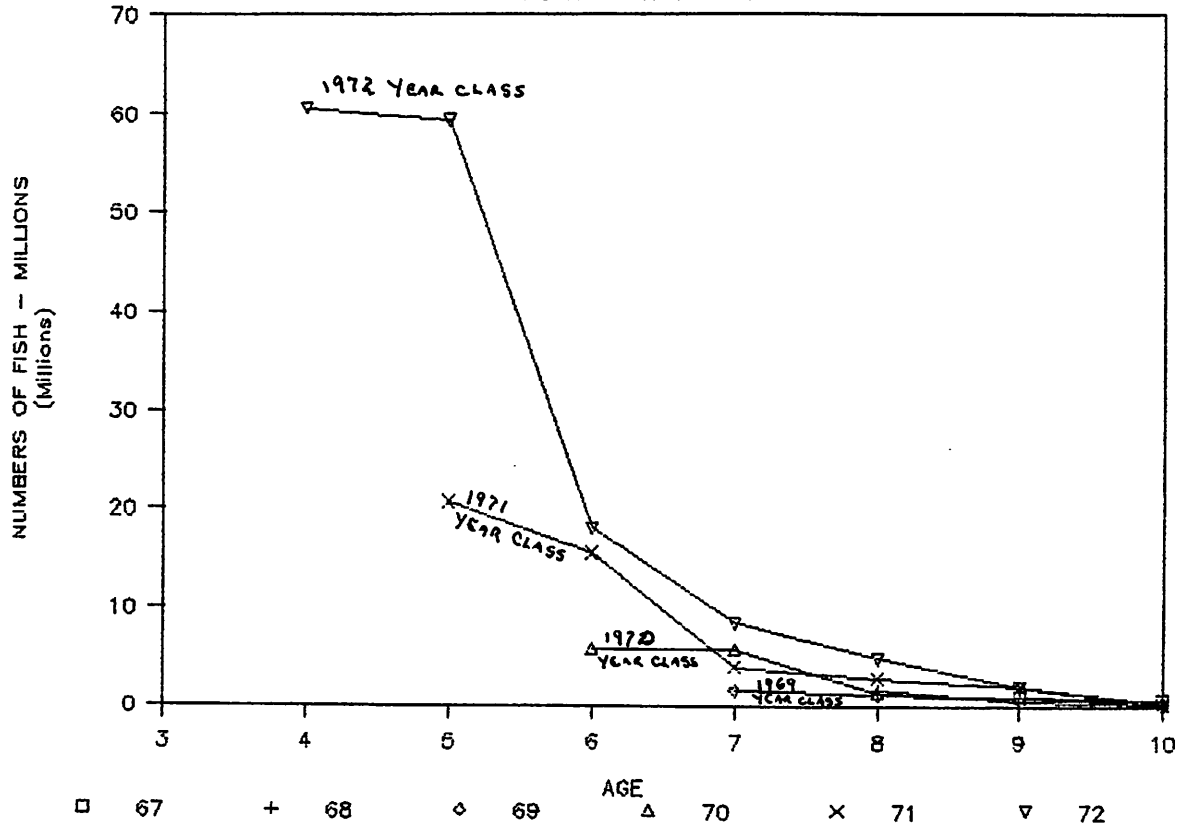
BT = the bottom trawl survey estimate

Age 3 = the number of fish at age 3 for the 1973 - 1984 year classes.

The point is, the big biomass years didn't produce much recruitment.

# 1967-1972 YEAR CLASSES

INDEXED CATCH AT AGE



## COMMENTS

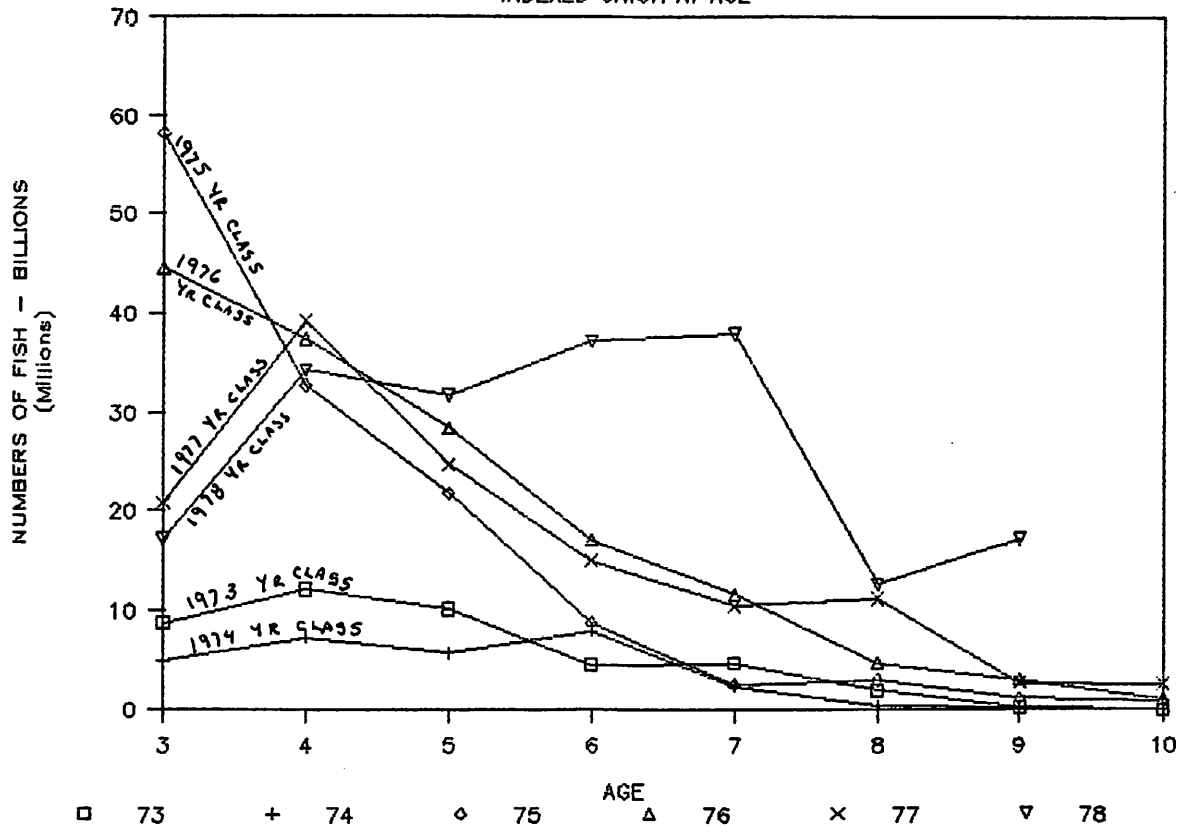
This graph and the next two simply show the percentage of each year class, at age, in the catches.

To find out what year the fish were caught add the age to the year class -- for example, the four-year-old fish from the 1972 year class showed up in the 1976 fishery.

Basically it seems the 1970s had several well recruited year classes, while the 1980s are having a little problem with recruitment.

# 1973 - 1978 YEAR CLASSES

INDEXED CATCH AT AGE



P. 11

# 1979 - 1984 YEAR CLASSES

INDEXED CATCH AT AGE

