AGENDA D-6
SEPTEMBER 1983

M E M O R A N D U M

TO: Council, SSC and AP Members

FROM: Jim H. Branson
Executive Director

DATE: September 20, 1983

SUBJECT: Bering Sea/Aleutian Islands Groundfish Fishery Management Plan

ACTION REQUIRED

1. *The Council should confirm the beginning date of the foreign trawl closure in the Petrel Bank area of the Aleutian Islands.*

2. *The Council is scheduled to propose 1984 catch figures for total allowable catch (TAC), domestic processed catch (DAP) and joint venture processed catch (JVP).*

BACKGROUND

1. At the May 1982 meeting the Council approved Amendment 1 for Secretarial review. The Council had received a comment from the National Marine Fisheries Service suggesting the beginning date of the foreign trawl closure in the Petrel Bank be changed from January 1 to seven days prior to the opening of the king crab season in the area. NMFS requested the change because the rationale for the closure in the FMP was:

> "To avoid gear conflicts during the conduct of the domestic king crab fishery and to avoid the incidental catch of king crab by trawling. Data available from the fishery in the Petrel Bank area indicates a substantial incidental trawl catch of red, blue and golden king crab. The crab savings affected by the trawl closure is a direct benefit to the domestic fleet in terms of potential catch and of long-range benefit in terms of conservation of crabs not subject to the rigors of a trawl effort during the softshell or molting period."

and coordinating the closure with whatever dates the crab season would be set would comply more closely with that rationale.

The May 4, 1982 letter from NMFS is included here as item D-6(a). The language concerning the Petrel Bank is underlined.

Although the May 4, 1982 letter was included in the Council notebooks, the Council motion approving Amendment 1 did not specify approval of the change in the beginning date of the Petrel Bank foreign trawl closure nor

does the Council record speak to this particular item. It was the staff's understanding, however, that the Council wanted the change, so it was included in the amendment as submitted to the Secretary. Because the record is not clear, the Japan Fisheries Association has questioned the change in the beginning date of the foreign trawl closure in the Petrel Bank. If the Council still wants to include the date change in Amendment 1, the following motion would confirm that intent:

> "I move that as part of Amendment 1, approved by this Council in May 1982, it was the intent of the Council that the beginning date of the foreign trawl closure for Petrel Bank be set seven days prior to the announced opening of the king crab season in that area."

2. Amendment 1 frameworks the determination of total allowable catches (TAC), domestic processed catch (DAP) and joint venture processed catch (JVP) in the Bering Sea/Aleutian Islands groundfish fishery. Under the framework system, the Council should propose TAC, DAP, and JVP figures at this meeting for the 1984 groundfish fishery, after which the Regional Director will publish the proposed figures in the Federal Register and ask for comments. Based on comments received and the best scientific information available, the Council will propose final figures at the December meeting. The final figures will be implemented administratively by the Regional Director.

   (a) 1984 TACs. In order to provide the biological basis for TACs, the PMT submitted for Council review in July the Resource Assessment Document (RAD). Summaries of the RAD were mailed to the public after the July meeting. The entire document was sent out upon request.

   Table A from the RAD, item D-6(b) summarizes the biological condition of the groundfish stocks. Table 56 from the RAD, item D-6(c), presents three possible TAC options suggested by the PMT for public review. If the Council would like to send out the three options for public review, a motion is in order. Any modifications of the three options or additional options should be included in the motion.

   > Suggested Motion: "I move that we send out for public comment the three TAC options for 1984 in Table 56 of the RAD, item D-6(c) in our briefing books."

   (b) 1984 DAP and JVP. Under the framework procedure, DAP and JVP for 1984 should be based on 1983 DAP and JVP harvests, plus any additional amounts necessary for the 1984 domestic fishery. The National Marine Fisheries Service has conducted a survey of the domestic industry to determine DAP for 1984. The results for each groundfish species, projected 1983 harvests and 1983 DAPs, are shown in Table 1, item D-6(d). NMFS was not able to obtain projected 1984 JVPs for this meeting.

   The September 16, 1983 Council mailing included a report from Natural Resources Consultants on the Pacific cod resource in the FCZ off Alaska and projections for U.S. utilization during 1983-1986. The

information in the report should be considered when proposing and finalizing the 1984 Pacific cod DAPs and JVPs. The Summary from that report is included here as item D-6(e).

In order to send out projected 1984 DAPs and JVPs for public review, the Council could use the 1983 JVPs in Table 1 with modifications specified.

> Suggested Motion: "I move that we send out for public comment the 1984 Projected DAPs and 1983 JVPs contained in Table 1, item D-6(d) as our proposed 1984 DAPs and JVPs. Final estimates of U.S. needs for 1984 will be made at the December Council meeting following the public comment period."

TABLE 1

1983 DAP, JVP, 1983 Domestic Harvest, 1984 Projected DAP, JVP (mts)

Species	1983 DAP	1983 DAP[1/] Harvest	1984 DAP Projected	1983 JVP	1983 JVP[2/] Harvest	1984 JVP Projected
Pollock, BS	10,500	858	14,762	64,000	136,611	
Pollock, AI	0	0	500	0	?	
Yellowfin sole	1,200	0	1,000	30,000	22,165	
Turbots	1,000	0	0	75	76	
Flatfish	1,200	0	100	10,000	11,578	
Pacific cod	26,200	32,732	~~106,242~~ 115,312	17,065	13,567	Not
POP, BS	550	0	1,864	830	132	Avail-
POP, AI	550	0	0	830	0	able
Rockfish, BS	1,100	0	50	450	7	
Rockfish, AI	0	0	0	0	0	
Sablefish, BS	500	2	1,678	200	110	
Sablefish, AI	500	0	50	200	0	
Atka mackerel	0	0	0	14,500	10,419	
Squid	0	0	0	50	9	
Other species	1,800	2,380	0	6,000	1,056	
Total	45,100	35,972	126,246	144,200	195,730	

1/ July 31

2/ September 2

Table A.--Estimated MSY and EY (in thousand t) for 1984, and views on stock condition and abundance trends for groundfish in the Eastern Bering Sea/Aleutians Region.

Species	MSY	EY (1981)	EY (1984)	Stock condition	Abundance trend
Pollock					
(Eastern Bering Sea)	1,500	1,200	1,200	Good	Average abundance but weaker
(Aleutians)	100	100	100	Good	1979-81 year classes recruiting to fishable stock
Pacific cod 1/	--	168	291	Very good	Historic high abundance, expected to decline rapidly
Yellowfin sole	150-175	215	310	Very good	Historic high and increasing in abundance
Turbots	107	76	67	Fair	
(Arrowtooth flounder)	(27)		(20)	Good	Average and stable abundance
(Greenland turbot)	(80)		(47)	Fair	Declining abundance
Other flatfish	88-150	93	150	Good	
(Alaska plaice)	(45-70)	(33)	(70)	Good	Average and stable abundance
(Rock sole-flathead sole-other flatfish)	(43-80)	(60)	(80)	Good	Average and stable abundance
Pacific ocean perch	12-17				
(Eastern Bering Sea)	--	5	2.0	Poor	Low and stable abundance
(Aleutians)	--	13	10.7	Poor	Low and stable abundance
Other rockfish					
(Eastern Bering Sea)	7-15	11	3.1	Fair	Average and stable abundance
(Aleutians)	23-45	11	11.0	Fair	Average and stable abundance
Sablefish					
(Eastern Bering Sea)	13	2	4.2	Poor but improving	Low abundance with some increase in CPUE
(Aleutians)	2	0.9	1.8	Poor but improving	
Atka mackerel	23-28	25	26	Good	Average and stable abundance
Squid	> 10	10	10	--	Average and stable abundance
Other species	67	94	61	Good	High and stable abundance
TOTAL GROUNDFISH	2,112-2,229	2,023.9	2,247.8		

1/ MSY is not applicable.

AGENDA D-6(a)
SEPTEMBER 1983

UNITED STATES DEPARTI
National Oceanic and Atm:
National Marine Fisheri
P.O. Box 1668
Juneau, Alaska 99802

ACTION	ROUTE TO	INITIAL
	Exec. Dir.	
	Deputy Dir.	

May 4, 1982

Jim H. Branson, Executive Director
North Pacific Fishery Management Council
P.O. Box 3136 DT
Anchorage, AK 99510

Dear Jim:

We wish to make a number of comments on the revised sections of Amendment 1 to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area (FMP) that was distributed for public review and comment on March 31, 1982.

Under Section 11.3.2 of the FMP, as revised by Amendment 1, a procedure is established for the determination of DAP, JVP, and TALFF at the beginning of each fishing year. Under the proposed procedure, DAH = DAP + JVP, which excludes one of the current components of DAH termed "domestic non-processed catch" (DNP). We support the elimination of the separate allocation category established for DNP and recommend that Section 14.4.5.4 of the FMP, as amended by Amendment 1, be likewise deleted. This section stipulates that U.S. fishermen catching or delivering nonprocessed fish for use as bait or for direct consumption shall report necessary information for periodic reassessment of DNP.

We support the elimination of DNP as a separate allocation category for three reasons: (1) the current total DNP amount of 1,500 mt was originally established in the FMP without prior knowledge or record of the present or anticipated amount of groundfish actually used by domestic fishermen for crab bait or personal consumption and in all likelihood does not truly reflect the amount of groundfish used for these purposes, (2) monitoring of the small amounts designated as DNP is not practicable and is not done, and (3) in our view, those amounts of groundfish which are used for the above purposes can be considered to be "processed" on board U.S. vessels and should be included under DAP rather than as a separate DNP category.

Our second comment relates to the tables in the revised amendment package which stipulate initial TAC, DAH, and TALFF figures for the major groundfish species or species groups. In these tables, the initial TAC established for Atka mackerel applies only to the Aleutian Islands area (fishing area IV), even though foreign catch reports show a significant amount of this species is caught in other areas of the eastern Bering Sea. We suggest, therefore, that the initial TAC for Atka mackerel be applied to all fishing areas covered by the FMP. We also recommend that a footnote be added to these tables to clarify that the TAC for "Non-specified Species" equals the amount of those species caught during the fishing year.

Another suggestion we would like to make for your consideration is to delete all reference to the Fishery Management Plan for Bering-Chukchi Sea Herring in Section 14.2.2 of the FMP as revised by Amendment 1. Reference to the proposed management regime for herring in Amendment 1 could be awkward and the FMP can be later amended to conform with the Fishery Management Plan for the Bering-Chukchi Sea Herring when the latter becomes effective.

Our last comment concerns the January 1 through June 30 closure of Petrel Bank to foreign trawling that is currently stipulated under Section 14.5.3 of the FMP as amended by Amendment 1. The rationale for this closure is to avoid gear conflicts during the conduct of the domestic king crab fishery and to avoid the incidental catch of king crab in foreign trawl operations.

Currently, the domestic king crab fishery in the Adak area is conducted from November 1 through February 15. Thus, the current restrictions on the foreign trawl fishery do not prevent potential gear conflict or ground preemption problems in the Petrel Bank area during the first two months of the domestic king crab fishery.

In order to avoid these potential problems, we suggest the restrictions on foreign trawling be changed so that Petrel Bank would be closed to foreign trawling from seven days before the opening of the domestic king crab fishery through June 30. This closure would (1) provide the flexibility necessary to accommodate any changes in the king crab fishing season without having to amend the FMP to support changes in regulations, (2) maintain protection against gear conflict and ground preemption problems in the growing domestic Tanner crab fishery which currently operates from January 15 through June 15 in the western Aleutian Islands area, and (3) mitigate the trawl mortality of king crab during their soft shell or moulting period which occurs during spring months.

We feel that the above changes to Amendment 1 would improve and facilitate the management of the Bering Sea and Aleutian Islands area groundfish fishery. We also feel that the amounts of Pacific cod and "other species" designated as DNP under the Fishery Management Plan for Groundfish of the Gulf of Alaska should be redesignated as DAP as soon as it is feasible.

Sincerely,

for Robert W. McVey
Director, Alaska Region

Table A.--Estimated MSY and EY (in thousand t) for 1984, and views on stock condition and abundance trends for groundfish in the Eastern Bering Sea/Aleutians Region.

Species	MSY	EY (1981)	EY (1984)	Stock condition	Abundance trend
Pollock					
(Eeastern Bering Sea)	1,500	1,200	1,200	Good	Average abundance but weaker
(Aleutians)	100	100	100	Good	1979-81 year classes recruiting to fishable stock
Pacific cod 1/	--	168	155	Very good	Historic high abundance, expected to decline rapidly
Yellowfin sole	150-175	215	>200	Very good	Historic high and stable abundance
Turbots	107	76	85	Good	
(Arrowtooth flounder)	(27)		(20)	Good	Average and stable abundance
(Greenland turbot)	(80)		(65)	Good	Average and stable abundance
Other flatfish	88-150	93	120	Good	
(Alaska plaice)	(45-70)	(33)	(58)	Good	Average and stable abundance
(Rock sole-flathead sole-other flatfish)	(43-80)	(60)	(62)	Good	Average and stable abundance
Pacific ocean perch	12-17				
(Eastern Bering Sea)	--	5	3.4	Poor	Low and stable abundance
(Aleutians)	--	13	11.6	Poor	Low and stable abundance
Other rockfish					
(Eastern Bering Sea)	7-15	11	3.1	Fair	Average and stable abundance
(Aleutians)	23-45	11	11.0	Fair	Average and stable abundance
Sablefish					
(Eastern Bering Sea)	13	2	4.2	Poor but improving	Low abundance with some increase in CPUE
(Aleutians)	2	0.9	1.8	Poor but improving	
Atka mackerel	23-28	25	26	Good	Average and stable abundance
Squid	> 10	10	10	--	Average and stable abundance
Other species	67	94	67	Good	High and stable abundance
TOTAL GROUNDFISH	2,112-2,229	2,023.9	1,998.1		

1/ MSY is not applicable.

Table 56.--Three options on total allowable catches for the Bering Sea-Aleutians groundfish complex and comparisons with the 1983 OY's.

Species	TAC 1	TAC 2	TAC 3	1983 OY
Pollock				
(Bering Sea)	1,200,000	961,000	864,100	1,000,000
(Aleutians)	100,000	80,000	72,000	100,000
Pacific cod	291,000	233,000	209,000	120,000
Yellowfin sole	310,000	248,000	223,200	117,000
Turbot	67,000	53,600	48,200	90,000
Other flatfish	150,000	120,000	108,000	61,000
Pacific ocean perch				
(Bering Sea)	2,000	1,600	1,400	3,250
(Aleutians)	10,700	8,600	8,300	7,500
Other rockfish				
(Bering Sea)	3,100	2,500	2,200	7,727
(Aleutians)	11,000	8,800	7,900	(both)
Sablefish				
(Bering Sea)	4,200	3,400	3,000	3,500
(Aleutians)	1,800	1,400	1,300	1,500
Atka mackerel	26,000	20,800	18,700	24,800
Squid	10,000	8,000	7,200	10,000
Other fish species	61,000	49,300	48,591	77,314
TOTAL	2,247,800*	1,800,000	1,623,591	1,623,591

Footnotes: TAC 1 = Sum of equilibrium yields from Part I, Table A
EY's are estimated from species-by-species analyses

TAC 2 = Groundfish complex catch level equals 1,800,000 t and species TAC's are adjusted according to EY values shown in TAC 1.
Species TAC = Species EY x 1,800,000 ÷ 2,247,800

TAC 3 = Groundfish catch level equals 1983 OY's; and species TAC's are adjusted according to EY's shown in TAC 1.
Species TAC = Species EY x 1,623,591 ÷ 2,247,800

* TAC 1 cannot exceed 2,000,000 t since OY for the groundfish complex has been set to range from 1.4 to 2.0 million t.

Table 56.--Three options on total allowable catches for the Bering Sea-Aleutians groundfish complex, and comparisons with the 1983 OYs.

Species	TAC 1	TAC 2	TAC 3	1983 OYs
Pollock				
(Bering Sea)	1,000,000	778,000	902,000	1,000,000
(Aleutians)	100,000	77,600	90,200	100,000
Pacific cod	155,000	120,600	139,800	120,000
Yellowfin sole	200,000	155,600	180,400	117,000
Turbot	85,000	66,100	76,700	90,000
Other flatfish	120,000	93,300	108,200	61,000
Pacific ocean perch				
(Bering Sea)	2,720	2,120	2,500	3,250
(Aleutians)	9,280	7,220	8,400	7,500
Other rockfish				
(Bering Sea)	3,100	2,400	2,800	7,727
(Aleutians)	11,000	8,600	9,900	(both)
Sablefish				
(Bering Sea)	4,200	3,300	3,800	3,500
(Aleutians)	1,800	1,400	1,600	1,500
Atka mackerel	26,000	20,200	23,500	24,800
Squid	10,000	7,800	9,000	10,000
Other fish species	71,900	55,760	64,791	77,314
TOTAL	1,800,000	1,400,000	1,623,591	1,623,591

Notes:

TAC 1 = EY from Part I modified by multi-species/ecosystem analyses in Part II.

$$\text{TAC 2} = (\text{TAC1}) \times \frac{(1{,}400{,}000)}{(1{,}800{,}000)}$$

$$\text{TAC 3} = (\text{TAC1}) \times \frac{(1{,}623{,}591)}{(1{,}800{,}000)}$$

SUMMARY

The key elements of this document follow:

1. In calendar year 1982, U.S. cod catches from Alaska exceeded 40,800 metric tons. About 34,200 metric tons or 84 percent of this total was caught in the Bering Sea/Aleutians.
2. For the first time since the development of large-scale foreign fisheries in the late 1960's, the 1982 U.S. cod catch in the Bering Sea/Aleutians (34,200 metric tons) exceeded that region's foreign cod catch (28,173 metric tons).
3. U.S. cod production from Alaska in 1982 resulted primarily from Domestic Annual Production which, by definition, was both caught and processed by domestic entities, and secondarily by Joint Venture Production which was also caught by U.S. flag vessels but processed by foreign vessels.
4. U.S. cod catches from the Bering Sea/Aleutians region are projected to reach 60,000 metric tons in 1983 and expand to 85,000 metric tons in 1984.
5. The continued growth in 1983 and 1984 will stem largely from additional U.S. vessels entering the fishery which process their catches at sea, and from fresh deliveries to shore plants in Akutan and Dutch Harbor.
6. New vessel entrants are the result of both conversions from other fisheries, the newly-constructed 201-foot F/V Northern Glacier and two 132-foot trawlers built for American Fishing Ventures.

7. New shoreside entrants include Sealaska, a division of Con Agra, and Trident Seafoods, which operated the first half of 1983 until it was damaged by fire. Trident will reportedly reopen in 1984.
8. Investments by the U.S. industry in cod fisheries in the Bering Sea/Aleutians since 1980 total $50-$70 million and are growing.
9. Foreign cod catches in the Bering Sea/Aleutians totaled 28,000 metric tons in 1982 and are likely to be about the same in 1983. In 1982, about 10,000 metric tons of foreign catch was incidental and 18,000 metric tons was from directed fisheries.
10. Major foreign directed cod catches in this region stemmed from large Korean freezer trawlers, small Japanese freezer trawlers, Japanese longliners and small Korean freezer trawlers.
11. Foreign cod catches in the Gulf in 1982 were nearly all the result of directed fisheries by Japanese longliners and Korean and Japanese freezer trawlers operating in the Western Gulf adjacent to the eastern Aleutians and the southeast Bering Sea.
12. Relative to current (1983) cod OY levels of 120,000 metric tons in the Bering Sea and Aleutians, projected allowable cod harvests in 1984 are about 148,000 metric tons and are projected to drop precipitously to 60,000 metric tons in 1985.

13. Projected domestic catch for 1983 in the Bering Sea/Aleutians would equal projected allowed harvest in 1985 without provision for any foreign removals (incidental or directed).
14. Projected domestic catch alone in 1984 would exceed the projected 1985 allowable harvest by 25,000 metric tons.
15. Management policies established in September and December of 1983 for 1984 will also be particularly important to the 1985 fisheries when U.S. capacity is certain to exceed the projected allowable harvest.
14. Because of these factors (summarized in Figure 2) this document should be made available to the NPFMC as soon as possible so that your views regarding this information can be available for the Council's consideration.

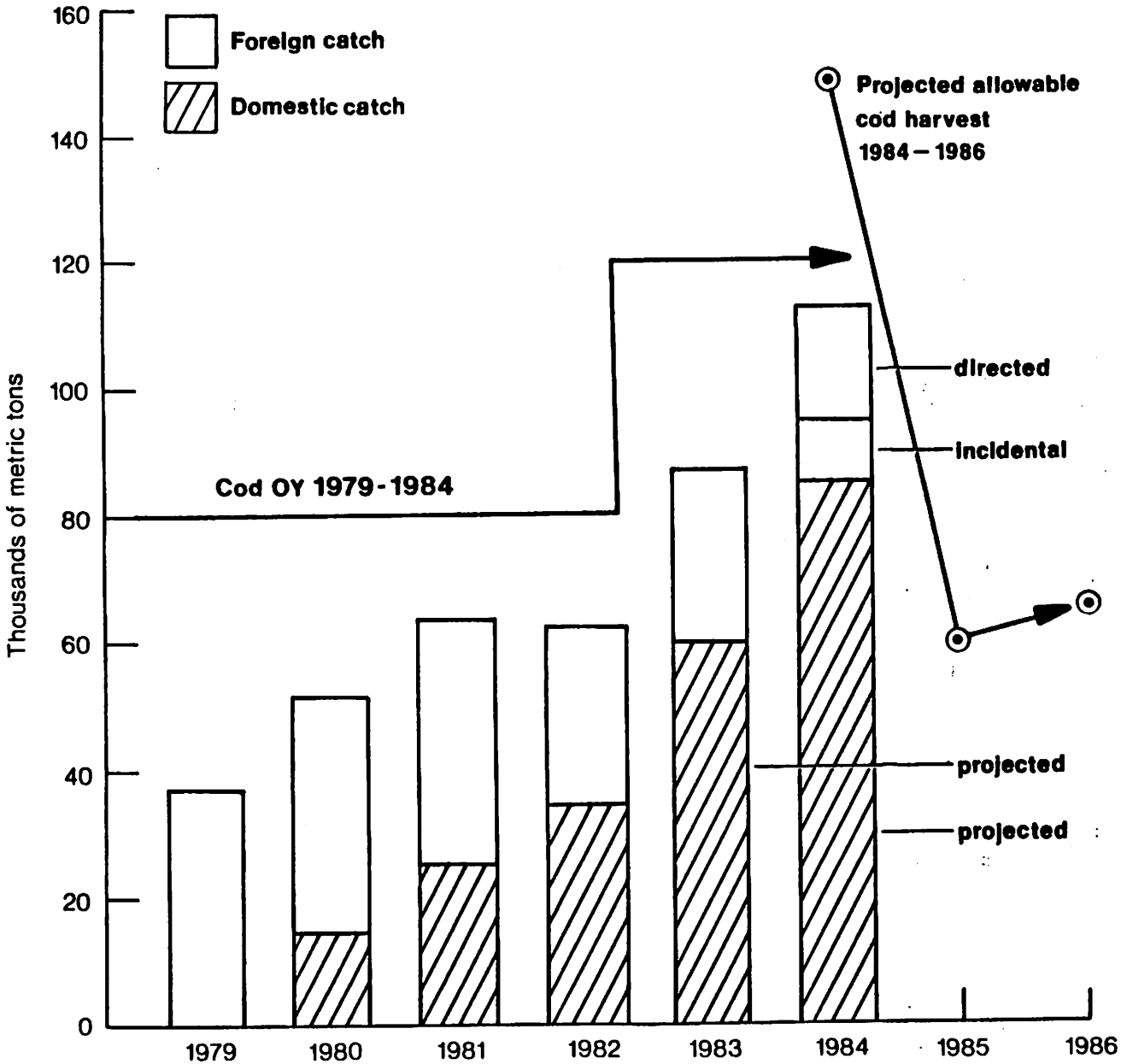


Figure 2. Foreign and domestic cod catches from the Bering Sea/Aleutians during 1979-1982, and projected catches for 1983-1984 as they relate to cod Optimum Yield and Projected Allowable

SEP 1983

THE HIGHLINERS ASSOCIATION
4055 — 21st Avenue West
Seattle, Washington 98199
Telephone (206) 784-5818 or 285-3493

August 24, 1983

Mr. Jim H. Branson
Executive Director
North Pacific Fishery Management Council
P. O. Box 3136 DT
Anchorage, Alaska 99510

Dear Jim:

Please find enclosed two copies of a report by NRC entitled "Pacific Cod in the FCZ Off Alaska: Foreign and U.S. Harvest 1973-1982 and Projections for U.S. Utilization During 1983-86". The Highliners Association requested NRC to develop the report because of our concern that the rapid growth of the U.S fishery coupled with the declining cod stocks would quickly place the U.S. in a position of fully utilizing the OY--particularly in the Bering Sea/Aleutians. We feel our concerns have been confirmed by NRC's findings.

Because of the importance of this fishery to U.S. fishermen and processors, I encourage the Council to take up the matter of 1984 Bering Sea OY and TALFF as soon as possible. We hope that this document can be made available to the Advisory Panel, Scientific and Statistical Committee and other relevant groups at the September meeting when we understand groundfish issues will be discussed.

We appreciate your consideration.

Sincerely,

Rudy A. Petersen

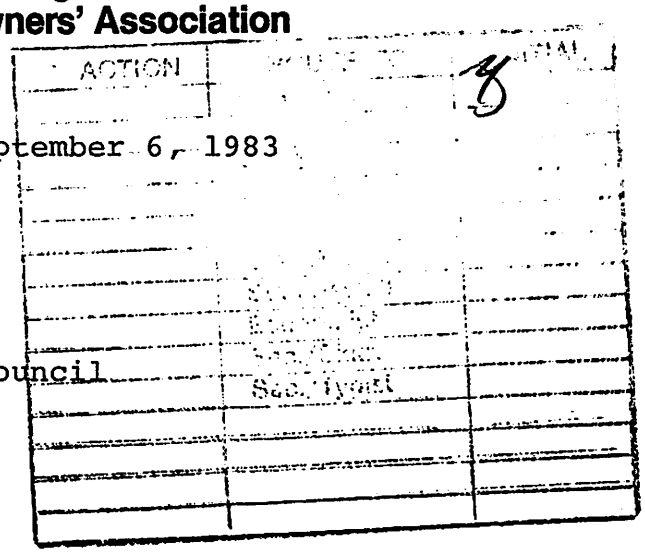
Rudy A. Petersen
President

Enclosure

Agenda D-6(e)
SUPPLEMENTAL

SEP 12 1983

North Pacific Fishing Vessel Owners' Association



September 6, 1983

Jim Branson
North Pacific Fisheries Management Council
P.O. Box 3136 DT
Anchorage, AK 99510

Dear Jim:

It has come to our Association's attention that a rather comprehensive study dealing with the codfish resources in the Bering Sea and Gulf of Alaska has been completed by Natural Resources Consultants. It pretty much details the resources from the immediate past and has projections into the immediate future. In effect, it shows that the cod stocks are at a peak and from 1984 on the stocks will be on the down side of that peak. Along with this biological certainity is the fact that our American fleet will be able in 1984 to harvest the cod OY completely.

The results of this study were alluded to by Rudy Petersen, Council member, at the July Council meeting in Homer when the Fisheries Development Zone was pushed through by then Chairman Tillion. It was Rudy's contention along with this Association's complete support, that it perhaps would be wise to delay sending on that amendment until after the Council had a chance to preview NRC's cod report. However, now that the report is out, it's important conclusion is what this Association is currently concerned with.

We would pointedly like to ask that the North Pacific Fisheries Management Council, through the mechanisms of the MFCMA, withhold any 1984 cod TALFFA as a directed fisheries. Clearly, the Americanization of the cod resources has taken place at an accelerated pace unimagined just three years ago and it is now logical for the Council to take the next step. . . . A reasonable and timely revocation on any directed foreign cod allocations. Hopefully, it can be done in a timely fashion and without a lot of beaurcratic side stepping.

This issue, hopefully, will be an easy one for the Council to support and implement. It is, we feel, a giant step in the arena of fisheries development in Alaska and one that should be purcursor of the MFCMA's

Building C-3, Room 218 Fishermen's Terminal Seattle, Washington 98119 Telephone 206-285-3383

coming home to roost. It is a concept we all should back 110% as we move toward complete utilization of our bottomfish in the American FCZ.

Respectfully submitted,

Dennis Petersen
President
NPFVOA

cc: Senator Stevens
Senator Gorton
Robert McVey
Lucy Sloan
Rudy Petersen

AGENDA D-6(e)
SUPPLEMENTAL

Coalition for Open Ocean Fisheries

Building C-3, Room 218
Fishermen's Terminal
Seattle, Washington 98119
(206) 285-3383

SEP 16 1983

ACTION	ROUTE TO	INITIAL
	Exec. Dir.	
	Deputy Dir.	
	Admin. Off.	
	Exec. Sec.	
	Staff Asst. 1	
	Staff Asst. 2	
	Staff Asst. 3	
	Economist	
	Sec./Bkkr.	
	Sec./Typist	

September 9, 1983

Mr. Jim H. Branson
Executive Director
North Pacific Fishery Management Council
P. O. Box 3136 DT
Anchorage, Alaska 99510

Dear Jim:

Coalition for Open Ocean Fisheries has recently reviewed a document prepared by Natural Resources Consultants which evaluates the current and near future status of Pacific cod resources and associated fisheries in the Bering Sea/Aleutians and Gulf of Alaska. We understand from The Highliners Association, sponsors of the study, that copies have been provided to your office in hopes that the information might be of assistance to the Council in establishing levels of cod optimum yield and allocations for the coming year.

In accordance with The Highliners, our members believe that elimination of TALFF on Bering Sea/Aleutian cod in 1984 is warranted to ensure adequate yield for the domestic industry in 1984 and 1985. Due to the sharp decline in this areas cod stocks during the coming year, we strongly feel that management measures to be established for 1984 will have a major impact on options for 1985 when stocks will reach projected low levels. Thus, we believe an eye for long-term management is desirable.

We are proud of our industry's achievements in developing these cod fisheries. We note that growth has occurred through at-sea and shoreside domestic production as well as through joint ventures.

Continued viability of these fisheries, particularly in the Bering Sea/Aleutians area, now seems dependent upon elimination of foreign directed cod fisheries. We believe that time has come and look forward to the Councils support.

Sincerely,

Dennis Peterson - North Pacific Fishing Vessel Owners

F/V Golden Fleece

F/V Polar Star

Royal Viking Inc.

Marine Resources Co

Highliners assoc.

Westward Trawlers, Inc.

SEP 20 1983 AGENDA D-6
SUPPLEMENTAL

September 13, 1983

Council Members
North Pacific Fishery Management Council
P. O. Box 3136DT
Anchorage, Alaska 99510

Dear Sirs:

The undersigned have reviewed with interest the document prepared by Natural Resources Consultants entitled "Pacific Cod in the FCZ Off Alaska: Foreign and U.S. Harvests 1973-1982 and Projections for U.S. Utilization During 1983-1986." The document demonstrates the rapid growth rate of U.S. cod fisheries in the FCZ off Alaska and points out the danger signs of declining stock sizes expected in 1985 and 1986.

Although there may be some question as to the magnitude of stock reduction that will occur in 1985 and subsequent years, there can be no question of the growth pattern of U.S. shoreside and at-sea processing activities. We note, for example, that at least one vessel, The Blue Ocean, in addition to those identified in the report, will enter the fishery next year. It is apparent that U.S. harvest alone will come close to the OY in 1984 and could significantly overrun an adjusted OY in 1985.

The undersigned feel there is adequate supporting data to warrant elimination of any cod TALFF in the Bering Sea in 1984. Although U.S. harvest may fall slightly short of the current OY in 1984, we believe that any surplus beyond the U.S. harvest should be carried over to 1985 when the OY may be somewhat less than necessary to supply U.S. demand.

Yours sincerely,

AGENDA D-6
SUPPLEMENTAL

SEP 22 1983

FISHERIES AGENCY
MINISTRY OF AGRICULTURE, FORESTRY AND FISHERIES
GOVERNMENT OF JAPAN

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Sep. 21, 1983

Mr. Jim H. Branson
Executive Director
North Pacific Fishery Management Council
605 West 4th Avenue
Anchorage, Alaska 99510
U.S.A.

Dear Mr. Branson :

I would hereby submit the enclosed comments of the Fisheries Agency of the Government of Japan (GOJ) on Resource Assessment Document (RAD).

The GOJ strongly requests that the North Pacific Fishery Management Council take full account of its comments as well as those submitted by Japanese fishing industry.

Sincerely yours,

Keiichi Nakajima

Keiichi Nakajima
Director
Oceanic Fisheries Department
Fisheries Agency

The species by species approach has been widely and for the long-term accepted for the fisheries management including the determination of Optimum Yield of groundfish species all over the world. This approach has been used for the groundfish in the Bering Sea and Aleutian Islands area.

The U.S. and Japan have cooperated on the stock assessment and stock survey on the groundfish, such a cooperation has been strengthen since establishment of the U.S. fishery conservation zone in 1977.

We consider that the above mentioned approach used in this area is duly scientific and reasonable one, judging from the fact that the resource of groundfish in this area have been maintained in good condition, except for Pacific Ocean Perch damaged by the excessive fishing efforts of the U.S.S.R. trawling vessels in the past as shown in Table A of Part I.

Nevertheless, the concept of groundfish complex analysis which is newly introduced in the RAD is not considered as an establish method. The Plan Management Team (PMT) weights analytical results by the new method rather than the results by the species by species approach in proposing the three options on total allowable catch for the next year. We consider that the determination of TAC for the next year should follow the results of resource assessment by the species by species approach which have been used.

On the other hand, although the stock of pollock is in good condition as shown Table A of PartI, three options on TACs for the pollock proposed figures less than EY(1.3 million mt) because of poor recruitments of 1979-1981 year classes.

The results of survey conducted by Japanese fishing vessels show that recruitments of 1979-1981 year classes have occured at the average level. Therefore, we consider that the next year's TAC for the pollock should be set at the same level of EY(1.3 million mt).

We, therefore, feel that TAC for all species should be set at 1,998 thousand mt in 1984 incorporating an allowable catch of 1.3 milliom mt for pollock.

1. Extreme care is called for using the conclusion of groundfish complex analysis shown in PartII in setting tentative TACs for 1984.

   Groundfish complex analysis (Multi-species and ecosystem analysis) seems ambitious and charming approach, but it includes many problems at this stage.

   a In conducting simulation, a further examination should be made as to whether an accurate assessment has been made in correlating and quantfying the various factors such as trophic levels, predations, mortality, growth, etc..

   b The period of examination for the various species has been set at a 10 years in this simulation. However, variations occur in the cycles of change in stock size by differences

in life-spans, etc. Therefore, different time periods should be varied for the characterizing individual species.

c As seen in the case of Pacific Cod, this model is not able to explain the appearance of strong year classes. When strong classes are targeted, it will be necessary to conduct supplementary examinations of short-term catch policies.

It is still premature to adopt the results of groundfish complex analysis in setting TACs for the next year.

2 Assessment of resource conditions of individual species reflects interrelationships among the various species and also includes the long-term resource trends of individual species.

As mentioned above, the surveys for assessment of resource condition of individual species which has been jointly conducted by Japan and the U.S. are comprehensive and detailed. These results of survey reflect interrelationships among the various species and since these surveys have been conducted annually, the accumulation of annual survey results indicates the long-term resource trends on individual species.

Further, these survey results have been fully examined by scientists concerned at the Japan-U.S. scientist meetings.

Fisheries management based on stock conditions for individual species is quite scientific and has thus far maintained the resource in good condition. Accordingly, there is, in our view, no need to introduce the analytical model, as shown in PartII, which has been recently developed.

3 TAC for all species of 1,998 thousand mt is appropriate in light of the results of groundfish complex analysis shown in PartII

We are fundamentally opposed to adoption of the groundfish complex analysis as shown in PartII (but we expect that such analysis method will be established as a reliable method and it will contribute to fisheries management in this area in the future.).

However, as shown in the simulation in Figure 35 in PartII, there is no difference in the predicted long-term trends of population biomass between adoption of 1,988 thousand mt and adoption of 1,632 thousand mt on TAC for all species except squid.

Moreover, according to the Amendment 1 to the groundfish FMP in this area, TACs are reviewed annually and they would still be possible to make suitable adjustments during fishing season, even if some problems were to develop at any time.

Under these circumstances, a TAC of 1,998 thousand mt is eminently appropriate; any figure below this level would, we must say, be overly conservative.

4 Given the good stock conditions for pollock, it would not be appropriate to set the 1984 catch level below 1.3 million mt.

In the RAD, the primary concern regarding the pollock resource relates to recruitments of 1979-1981 year classes. But, the results of survey conducted by Japanese commercial vessels from late May to early June, 1983 have shown the average recruitments of 2,3, and 4-year old fish (i.e. 1979-1981 year classes).

Since the pollock stocks, as shown in TableA of PartI, are in good condition, there should be no impediments to setting the 1984 catch level at the EY level of 1.3 million mt.

From the standpoint of effective use of the pollock resource as well, the catch level for this species should not held to excessive low levels.

JAY D. HASTINGS
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	Exec. Dir.	
	Deputy Dir.	
	Admin. Off.	
	Exec. Sec.	
	Staff Asst. 1	
	Staff Asst. 2	
	Staff Asst. 3	
	Economist	
	Sec./Bkkr.	
	Sec./Typist	

September 22, 1983

Mr. Jim H. Branson
Executive Director
North Pacific Fishery
Management Council
P.O. Box 3136DT
Anchorage, Alaska 99510

Re: Proposed Extension of Time and Area Closure of Petrel Bank under Amendment #1 to the Bering Sea Groundfish FMP

Dear Jim:

This letter supplements my letter to you dated September 21 regarding the revisions to section 11 of Amendment #1. We decided the Petrel Bank issue should be addressed by separate letter since Council clarification and/or action will be necessary at the September meeting. The purpose of this letter is to identify the questions I will raise before the Council for clarification.

The National Marine Fisheries Service currently enforces a foreign trawl closure in the Petrel Bank area from January 1 through June 30 between 3 and 12 nautical miles. This closure is part of the new management regime developed under the FMP for the Aleutian Islands groundfish fishery. I am sure the Council will recall the lengthy debate involved in the development of this new management regime. Petrel Bank is described in the FMP and implementing regulations by a set of coordinates. A current NMFS chartlet delineating the management regime and the Petrel Bank area is attached to this letter.

The proposed regulations to implement Amendment #1 would expand the current closure in two respects: (1) extend the time for closure from seven days prior to the opening of the U.S. king crab fishery through June 30; and (2) expand the area to be closed beyond 12 nautical miles of the baseline to include the entire area within the coordinates delineating Petrel Bank. I would like to request Council to review and clarify its intent on both points. Please allow me to explain my reasons for requesting this action. Each point should be addressed separately.

Proposed extension of time for closure. The proposed extension of the time for the Petrel Bank closure from January 1 to seven days prior to the opening of the U.S. king crab fishery was first discovered by the Japanese industry and myself in the Amendment package transmitted to the Assistant Administrator for Fisheries by letter from the Council dated December 2, 1983. This final Amendment package resulted from the Council action taken during its May 1982 meeting. A public comment period preceded the May meeting. Both sections 11 (OPTIMUM YIELD) and 14 (MANAGEMENT REGIME) of the Amendment were distributed for public review by cover letter from the Council dated March 31, 1982. Neither the cover letter nor the enclosed "Explanation of Revisions to Amendment #1" suggest any proposed change in the Petrel Bank closure.

During the May 1982 SSC meeting, the PMT held two open meetings to work out the final revisions to the Amendment for Council approval. A major purpose of these two meetings was to discuss written comments I had submitted during the public comment period and to resolve a number of my concerns. As a result of the PMT meetings, a revised document was prepared for review and approval by the SSC and the Council. This revised document included no changes to section 14. The SSC reviewed and approved the revised document. Official minutes of the SSC meeting give no indication of any discussion regarding the Petrel Bank closure. The Council also reviewed and approved the revised document. It is my understanding that the tapes of the Council meeting do not include any discussion of Petrel Bank or the proposed extended closure. Nor do my personal notes of the SSC and Council meetings refer to any such discussions.

I have been recently advised that the time extension was included in the Amendment package following the May Council meeting based upon a written recommendation submitted by NMFS, Juneau during the public comment period. A copy of this comment was included in the May 1982 Council agenda book. I must confess that I had a copy of this comment during the May meeting. However, if I was aware of this particular proposal and its effect upon foreign fishing, I seriously doubt if I would have taken the responsibility upon my own to raise the issue before the Council.

Since the proposed time extension adds as much as two months to the current closure, I would like to have the Council review the issue openly and offer me the opportunity to comment upon it. It is my understanding that the basis for the extended time closure is to prevent potential gear conflict or grounds preemption problems. I do not believe a time extension is necessary for this purpose. I am not aware of any previous gear conflict or grounds preemption problems occuring in this area which we have not been able to resolve among the fishermen

themselves.

Over the past few years foreign and domestic fishermen have expended a lot of effort in preventing and resolving gear conflict and grounds preemption problems in the Alaskan fisheries. A major purpose underlying this effort is to avoid time and area closures. I believe the Council may want to encourage this effort. Should we fail in this effort, then a closure would be appropriate. Until we find that an extended closure is necessary, I would like to request from the Council clarification that it does not intend to impose the additional closure at this time. If the Council supports my request, then I would request a comment from the Council upon the current proposed rulemaking to clarify the Council intent.

Proposed extension of area for closure. I first became aware of the proposed extended area closure for Petrel Bank during the September 8 meeting in Juneau. I have reviewed the entire history of this Amendment and all its related documents to determine when this change may have been incorporated into the Amendment package. Although many of the prior documents included in the Amendment package note changes in the regulation of the Aleutian Islands management regime, the first document in which the extended area closure for Petrel Bank is clearly referenced is the preamble to the Federal Register notice on proposed rulemaking published on September 19, 1983. The relevant paragraph in the Federal Register notice reads as follows:

> Foreign Fishing Area Limitations
>
> The FMP currently stipulates that Area "D", known as Petrel Bank, is closed to foreign trawling landward of 12 nautical miles from January 1 through June 30. Amendment 1 proposes to modify this restriction by closing the entire Petrel Bank to foreign trawling from sevel days before the opening of the domestic king crab fishery, for which the exact date is set annually by the State of Alaska, through June 30. . . . (Emphasis added).

Referring to the proposed Federal Register notice included in the Amendment package forwarded to the Assistant Administrator from the Council by cover letter dated December 2, 1982, the wording of the above paragraph is the same except for the absence of the word "entire". The word "entire" appeared for the first time in the September 19 published notice. I then began to trace changes in the proposed regulations throughout the entire history of the Amendment to determine if and when a regulation had been revised or amended to implement this additional area closure. Once again, the first document in which a regulation change can be

found is the Amendment package transmitted to the Assistant Administrator on December 2, 1982, following the final Council action on the Amendment. In that document the proposed changes to the Code of Federal Regulations would add a new paragraph "(D)" to 50 CFR 611.93(c)(2)(ii) to read as follows:

> (D) From seven days prior to the opening of the United States king crab fishery through June 30 in the area known as Petrel Bank described in paragraph (c)(2)(i) of this section.

Although the wording of this additional paragraph on its own would appear to implement only an extension of time for the closure (a change which we were able to detect upon a first review), the paragraph must be read within the context of current regulations to fully understand that its effect would be to close additional area also. Even then, the interpretation of the area to be closed may be subject to debate.

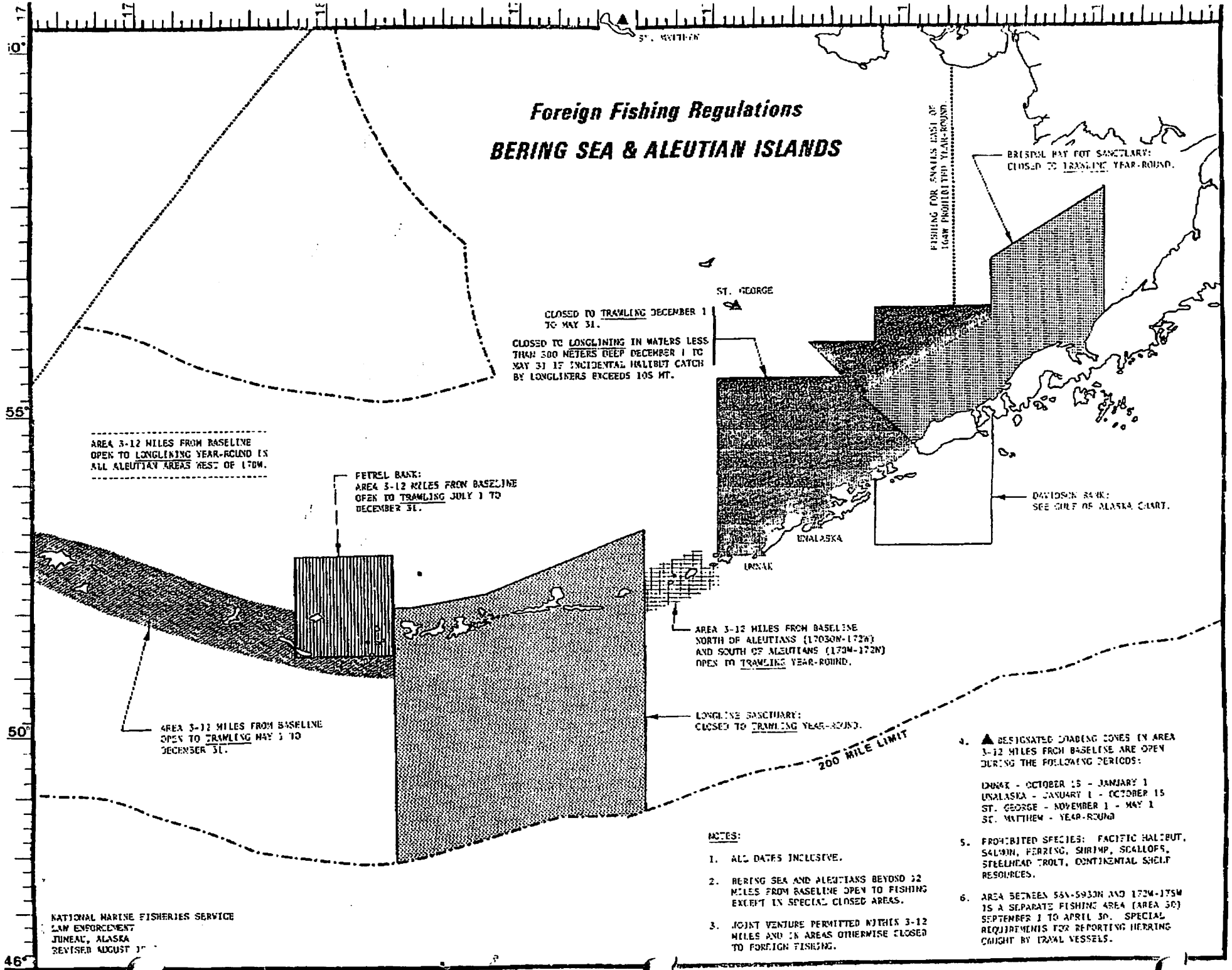
But the principle involved with this issue is that the proposed change expanding the area to be closed was incorporated into the Amendment package following final Council action in May of 1982. There is absolutely no document associated with this Amendment which gives any notice of this proposed change. Nor is there any evidence, to my knowledge, that this proposal was ever raised before the Council or its family for review and final action. We were caught completely by surprize.

This proposed change should be entirely withdrawn from this Amendment package. In this regard, I will be requesting the Council to notify the Assistant Administrator within the context of the proposed rulemaking that it was not the intent of the Council to amend the foreign fishing regulations and expand the Petrel Bank area closure and that this proposed regulation should be deleted from this Amendment package and the proposed rulemaking.

Sincerely,

Jay D. Hastings

Jay D. Hastings
representing the
Japan Fisheries Association


Foreign Fishing Regulations
BERING SEA & ALEUTIAN ISLANDS
ST. MATTHEW
FISHING FOR SNAILS EAST OF 164W PROHIBITED YEAR-ROUND.
BRISTOL BAY POT SANCTUARY: CLOSED TO TRAWLING YEAR-ROUND.
ST. GEORGE
CLOSED TO TRAWLING DECEMBER 1 TO MAY 31.
CLOSED TO LONGLINING IN WATERS LESS THAN 300 METERS DEEP DECEMBER 1 TO MAY 31 IF INCIDENTAL HALIBUT CATCH BY LONGLINERS EXCEEDS 10S MT.
AREA 3-12 MILES FROM BASELINE OPEN TO LONGLINING YEAR-ROUND IN ALL ALEUTIAN AREAS WEST OF 170W.
PETREL BANK: AREA 3-12 MILES FROM BASELINE OPEN TO TRAWLING JULY 1 TO DECEMBER 31.
DAVIDSON BANK: SEE GULF OF ALASKA CHART.
UNALASKA
UNIMAK
AREA 3-12 MILES FROM BASELINE NORTH OF ALEUTIANS (170W-172W) AND SOUTH OF ALEUTIANS (170W-172W) OPEN TO TRAWLING YEAR-ROUND.
AREA 3-12 MILES FROM BASELINE OPEN TO TRAWLING MAY 1 TO DECEMBER 31.
LONGLINE SANCTUARY: CLOSED TO TRAWLING YEAR-ROUND.
200 MILE LIMIT
55°
50°
46°
NOTES:
1. ALL DATES INCLUSIVE.
2. BERING SEA AND ALEUTIANS BEYOND 12 MILES FROM BASELINE OPEN TO FISHING EXCEPT IN SPECIAL CLOSED AREAS.
3. JOINT VENTURE PERMITTED WITHIN 3-12 MILES AND IN AREAS OTHERWISE CLOSED TO FOREIGN FISHING.
4. ▲ DESIGNATED CRABBING ZONES IN AREA 3-12 MILES FROM BASELINE ARE OPEN DURING THE FOLLOWING PERIODS:
UNIMAK - OCTOBER 15 - JANUARY 1
UNALASKA - JANUARY 1 - OCTOBER 15
ST. GEORGE - NOVEMBER 1 - MAY 1
ST. MATTHEW - YEAR-ROUND
5. PROHIBITED SPECIES: PACIFIC HALIBUT, SALMON, HERRING, SHRIMP, SCALLOPS, STEELHEAD TROUT, CONTINENTAL SHELF RESOURCES.
6. AREA BETWEEN 56N-59N AND 172W-175W IS A SEPARATE FISHING AREA (AREA 3O) SEPTEMBER 1 TO APRIL 30. SPECIAL REQUIREMENTS FOR REPORTING HERRING CAUGHT BY TRAWL VESSELS.
NATIONAL MARINE FISHERIES SERVICE
LAW ENFORCEMENT
JUNEAU, ALASKA
REVISED AUGUST

DRAFT

Status of Pacific Cod Stocks in the Eastern Bering Sea and Aleutians Region through 1983 1/

September 1983

Northwest and Alaska Fisheries Center
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
2725 Montlake Boulevard East
Seattle, Washington 98112

1/ From Richard G. Bakkala (editor). Condition of groundfish resources of the eastern Bering Sea and Aleutian Islands region in 1983. Unpubl. rep. Northwest and Alaska Fish. Cent., Natl. Mar. Fish. Serv. NOAA, 2725 Montlake Blvd. E., Seattle, WA 98112. (Document submitted to the International North Pacific Fisheries Commission in October 1983).

PACIFIC COD

by
Richard G. Bakkala and Vidar G. Wespestad

INTRODUCTION

Pacific cod are distributed widely over the Bering Sea continental shelf and slope and have a distributional pattern similar to that of walleye pollock, Theragra chalcogramma. During the early 1960s, a fairly large Japanese longline fishery harvested cod for the frozen fish market. Beginning in 1964, the Japanese North Pacific trawl fishery for walleye pollock expanded, and cod became an important incidental catch in the pollock fishery. At present, cod are believed to be an occasional target species of the Japanese trawl fisheries when high concentrations are detected during pollock fishing operations. They also remain a target species of the Japanese longline fishery. Recently a U.S. domestic trawl fishery and joint venture fisheries, involving U.S. catcher boats delivering catches to processing vessels from other nations, began operations in the eastern Bering Sea and Aleutian Islands areas, with catches of 13,700 t in 1980 increasing to 38,400 t in 1982.

Annual catches of Pacific cod by all nations in the eastern Bering Sea and Aleutians increased from 13,600 t in 1964 to 70,400 t in 1970; since then, catches have varied between 36,600 and 66,600 t (Table 1). Catches in 1980-82 increased markedly from the level of the previous 3 years, primarily because of catches by the U.S. joint-venture and domestic fisheries. Catches by these U.S. fisheries exceeded those by fisheries from other nations for the first time in 1982.

CONDITION OF STOCKS

Relative Abundance

The abundance of Pacific cod in the eastern Bering Sea has increased substantially since the mid-1970s. The relative abundance of cod increased

Table 1.--Commercial catches (t) of Pacific cod by area and nation, 1964-82.[1/]

	Eastern Bering Sea							Aleutian Island Area							E. Bering Sea and Aleutian Comb. Total
Year	Japan	USSR	ROK[2/]	Other nations[3/]	Joint ventures[4/]	U.S.[5/]	Total	Japan	USSR	ROK	Other nations	Joint ventures	U.S.	Total	
1964	13,408	-					13,408	241	-	-				241	13,649
1965	14,719	-					14,719	451	-					451	15,170
1966	18,200	-					18,200	154	-					154	18,354
1967	32,064	-	-				32,064	293	-					293	32,357
1968	57,902	-	-				57,902	289	-	-				289	58,191
1969	50,351	-	-				50,351	220	-	-				220	50,571
1970	70,094	-	-				70,094	283	-	-				283	70,377
1971	40,568	2,486	-				43,054	425	1,653	-				2,078	45,132
1972	35,877	7,028	-				42,905	435	-	-				435	43,340
1973	40,817	12,569	-				53,386	566	411	-				977	54,363
1974	45,915	16,547	-	-			62,462	1,334	45	-				1,379	63,841
1975	33,322	18,229	-	-			51,551	2,581	257	-				2,838	54,389
1976	32,009	17,756	716	-			50,481	3,862	312	16				4,190	54,671
1977	33,141	177	-	2		15	33,335	3,162	100	-				3,262	36,597
1978	41,234	419	859	-		31	42,543	3,165	120	6			4	3,295	45,838
1979	28,532	1,956	2,446	47		780	33,761	5,171	414	6			2	5,593	39,354
1980	27,334	7	6,346	1,371	8,370	2,433	45,861	2,834	4	58	9	86	2,797	5,788	51,649
1981	27,570	-	6,147	2,481	7,410	8,388	51,996	2,426	-	476	12	1,749	5,799	10,462	62,458
1982	17,380		8,151	647	9,312	19,550	55,040	1,730		259	7	4,280	5,250	11,526	66,566

1/ Catch data for 1964-79 as reported by fishing nations and for 1980 and 1981 from French et al. 1981, 1982; Nelson et al. 1983.
2/ Republic of Korea.
3/ Taiwan, Poland, and West Germany.
4/ Joint ventures between U.S.-ROK and U.S.-USSR.
5/ U.S. vessels delivering catches to domestic processors.

six-fold between 1976 and 1979 (Figure 1) based on NWAFC research survey data in a comparative fishing area in the southeast Bering Sea (Figure 2). Based on data from large-scale surveys that have sampled major portions of the eastern Bering Sea (see Figure 2 in the section on walleye pollock in this report), the catch per unit of effort (CPUE) of cod apparently increased approximately 7 times (from 2.7 to 19.8 kg/hectare (ha)) between 1975 and 1979. Survey data since 1979 show some additional increases with the value in the large-scale survey area reaching 24.8 kg/ha in 1983.

Indices of abundance from Japanese commercial pair trawl and stern trawl vessels do not appear to have accurately reflected trends in abundance of cod (Bakkala et al. 1981), because cod are a nontarget species in these fisheries. Data from the Japanese longline fishery, which targets on Pacific cod at times, may be more representative of stock abundance. Figure 1 illustrates trends in relative abundance from longline catch and effort data from the eastern Bering Sea and Aleutian regions. Only those catches having 50% or more Pacific cod were used in the analysis to identify effort primarily directed toward cod. The trends for the eastern Bering Sea and Aleutians were similar from 1975 to 1979, showing a general decline from more than 1.5 t/100 hachi to about 1.0 t/100 hachi (A hachi is a unit of longline gear 100 m in length.) Relative abundance in the eastern Bering Sea then increased in 1980 and 1981, reaching about 3.0 t/100 hachi in 1981 but decreased moderately to 2.6 t/100 hachi in 1982. An increase in the Aleutians was not evident until 1981, and the CPUE continued to increase in this region through 1982. The increase in abundance of cod was shown earlier by survey data (1978) than longline fishery data (1980-81), because cod recruit to nearshore waters sampled by research vessels at an earlier age than they recruit to outer shelf and slope waters fished by longline vessels.

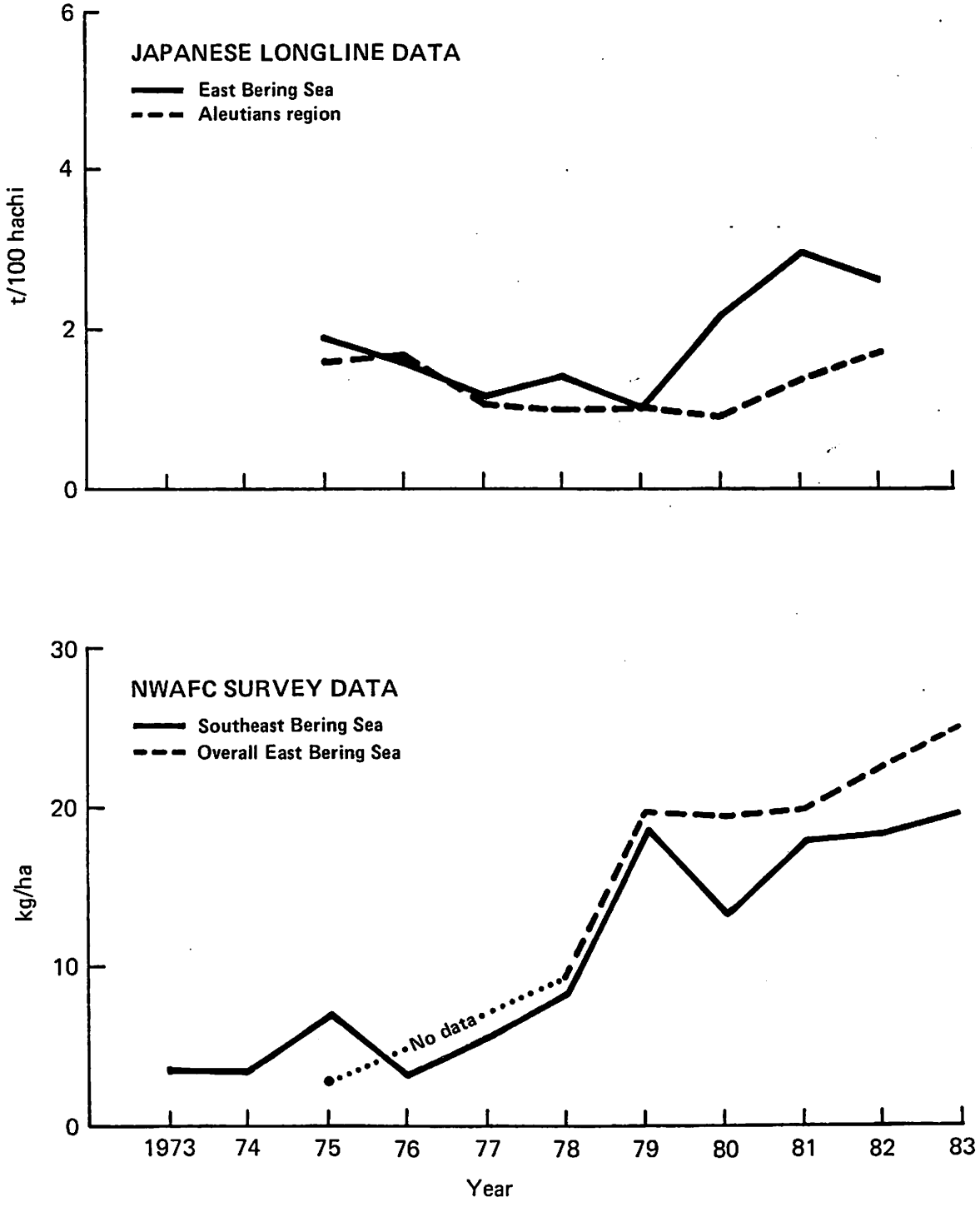


Figure 1.--Relative abundance of Pacific cod as shown by Japanese longline fishery data in the eastern Bering Sea and Aleutian Islands area and by data from Northwest and Alaska Fisheries Center (NWAFC) surveys in the eastern Bering Sea (a hachi is a unit of longline gear 100 m long).

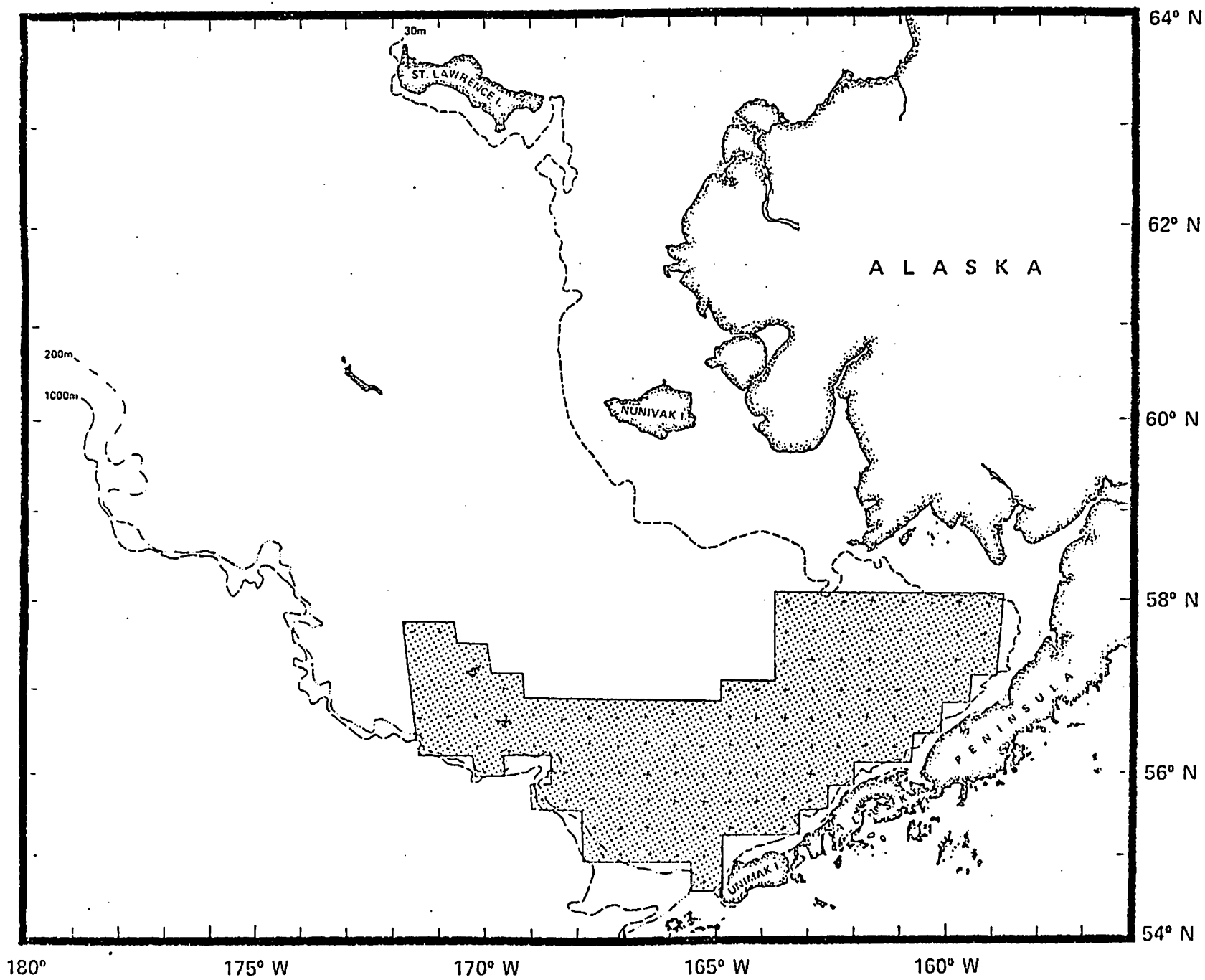


Figure 2.--Comparative fishing area sampled ar. ally during Northwest and Alaska Fisheries Center demersal trawl surveys in 1973-82.

Biomass Estimates

Estimates of biomass from large-scale NWAFC demersal trawl surveys in the eastern Bering Sea since 1975 have been as follows:

Year	Biomass mean estimate (t)	95% confidence intervals (t)
1975	64,500	51,500 - 77,500
1978	312,000	87,300 - 536,800
1979	792,300	603,200 - 981,400
1980	913,300	795,700 - 1,031,000
1981	840,100	691,700 - 988,400
1982	1,013,900	875,000 - 1,152,800
1983	1,126,400	904,000 - 1,348,800

Estimates through 1981 had suggested that the increase in biomass resulting from recruitment of the strong 1977 year-class had peaked in 1980, but the 1982 and 1983 estimates were higher than the 1980 and 1981 values. The 95% confidence intervals in these latter 3 years overlapped, however, indicating that these estimates were not significantly different.

Two biomass estimates have been calculated for the Aleutian Islands region, one based on data from a summer 1980 cooperative U.S.-Japan survey of the overall Aleutians and the other on a U.S. winter survey in the eastern Aleutians (Bakkala et al. 1983). The estimates were 231,100 t from the 1980 summer survey and 282,300 t from the 1982 winter survey. The winter survey estimate from the eastern Aleutians exceeds that from the 1980 summer survey for the entire Aleutian region, suggesting that cod may migrate from other areas in winter to spawn in the eastern Aleutian Islands region.

Size and Age Composition

The increase in abundance of cod in the eastern Bering Sea has primarily been due to the recruitment of the strong 1977 year-class to the population. Population estimates by size group illustrate the recruitment of the strong

1977 year-class to the survey area as age-1 fish in 1978 and the predominance of this year-class in the length-frequency distributions through 1981 (Figure 3). In 1982 and 1983, this year-class no longer formed a prominent mode in the overall size distribution of the population but its contribution was still apparent from the relatively large numbers of fish greater than 50 and 60 cm in 1982 and 1983 compared to earlier years. Also of interest was the evidence of moderately good recruitment to age 1 cod in 1983. Population numbers of this age group (those fish less than about 20 cm) appear to be higher than any year except 1978 when the large 1977 year-class recruited to the survey area.

The size compositions of cod in the Aleutian region as shown by the summer 1980 and winter 1982 surveys are illustrated in Figure 4. The 1980 distribution was predominantly fish with a modal length at 47 cm. A second smaller mode was observed at 69 cm. The mode at 47 cm represent age-3 fish of the 1977 year-class based on the mean length of age-3 cod during the 1982 Aleutian survey (Table 2). These data suggest that the 1977 year-class was also relatively strong in the Aleutian Islands region. A major difference between length-frequency distributions of eastern Bering Sea and Aleutian Island cod in 1980 was the much higher proportion of large fish (greater than 60 cm) in the Aleutian Islands population.

The size composition of cod in the eastern Aleutians during the winter 1982 survey was predominated by fish with a modal peak length of 61 cm (Figure 4). This mode primarily represented fish of the 1977 year-class (Table 2).

Unreliable results may be obtained from aging cod by counts of annual rings from scales (Bakkala 1982). A modal analysis of length-frequency data using the methods of MacDonald and Pitcher (1979) was therefore used as an alternate aging method to provide age-specific population estimates from eastern Bering Sea and

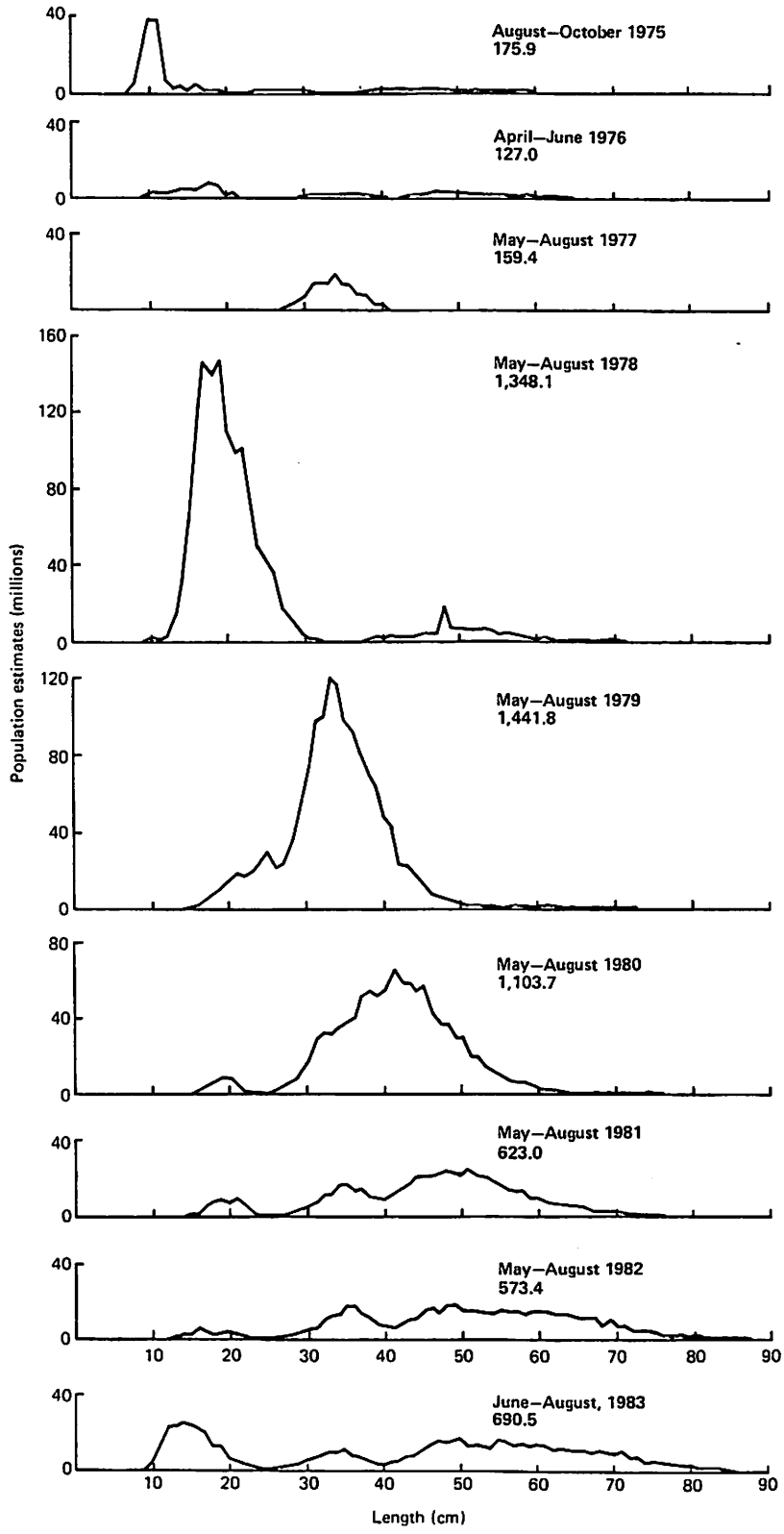


Figure 3.--Population estimates of Pacific cod by centimeter length interval in the eastern Bering Sea as shown by annual Northwest and Alaska Fisheries Center demersal trawl surveys in 1975-83. Numbers below dates are estimated population numbers within the survey areas.

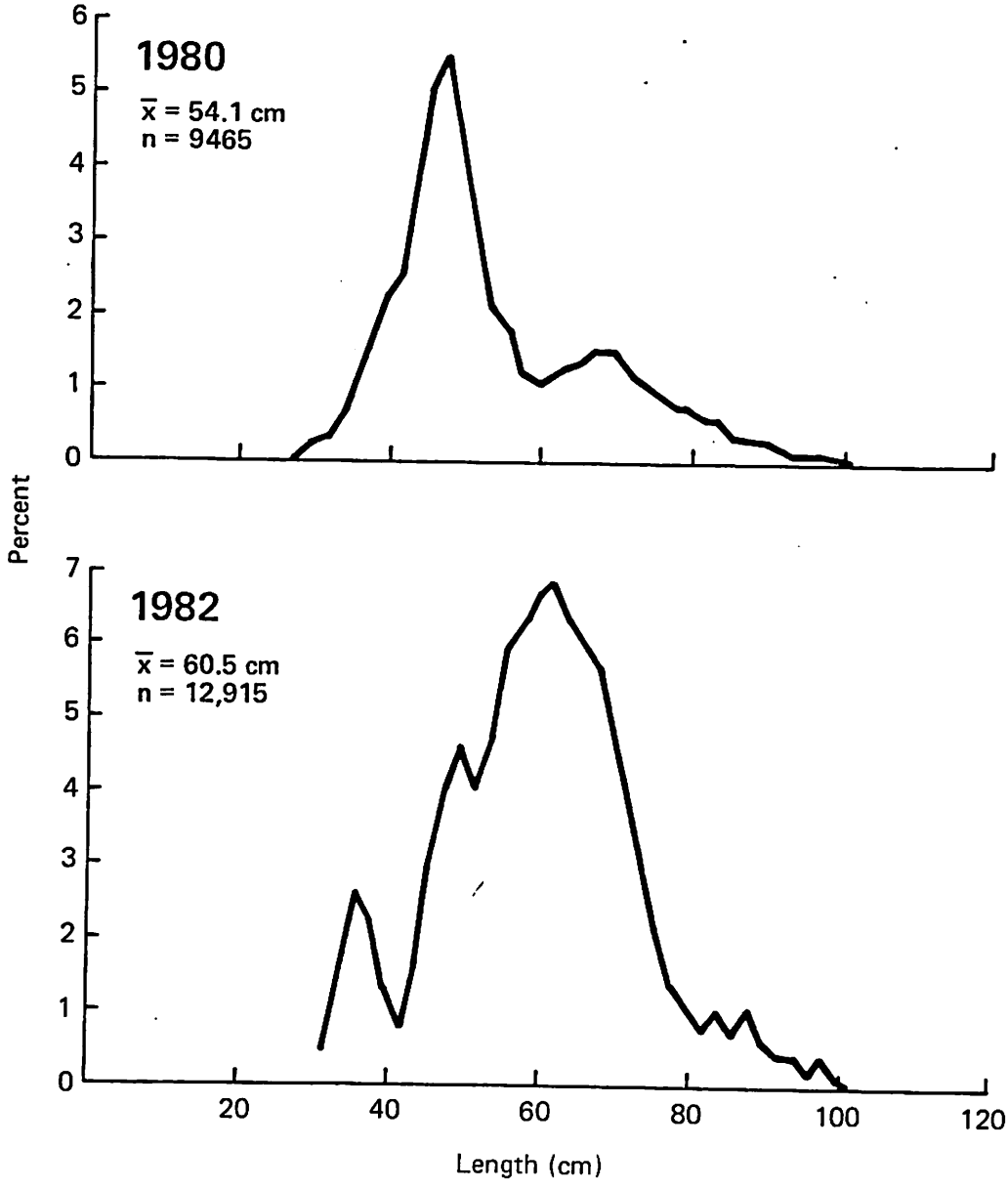


Figure 4.--Length-frequency distributions of Pacific cod sampled throughout the Aleutian Islands region during July-August, 1980 and in the eastern Aleutian Islands during February-March, 1982. Numbers of fish measured are given below mean lengths.

Table 2.--Population estimates and mean fork lengths of Pacific cod by age group in the Aleutian Islands from Unimak Pass to Seguam Pass, February-March 1982. Age composition was determined by the method of MacDonald and Pitcher (1979).

		Males			Females			Males and females combined		
Age	Year-class	Percent by age	Population numbers by age	Mean length (cm)	Percent by age	Population numbers by age	Mean length (cm)	Percent by age	Population numbers by age	Mean length (cm)
2	1980	8.6	3,754,300	36.2	7.9	3,313,500	36.1	8.3	7,067,800	36.2
3	1979	9.9	4,321,800	47.5	10.1	4,236,200	48.2	10.0	8,558,000	47.8
4	1978	15.9	6,941,000	55.3	18.4	7,717,400	58.5	17.1	14,658,400	57.0
5	1977	38.7	16,894,300	62.4	34.6	14,512,100	67.9	36.7	31,406,400	64.9
6	1976	10.9	4,758,300	69.3	10.8	4,529,800	74.5	10.9	9,288,100	71.8
7	1975	6.1	2,662,900	73.3	2.6	1,090,500	78.0	4.4	3,753,400	74.7
8	1974	4.0	1,746,200	77.2	5.9	2,474,600	81.2	4.9	4,220,800	79.5
9	1973	2.0	873,100	81.9	3.7	1,551,900	89.3	2.8	2,425,000	86.6
10	1972	1.6	698,500	87.6	3.4	1,426,000	93.5	2.5	2,124,500	91.6
11	1971	2.3	1,004,100	90.8	2.6	1,090,500	97.3	2.4	2,094,600	94.2
		Total	43,654,500			41,942,500			85,597,000	

Aleutian survey data (Tables 2 and 3). The modal analysis may not completely separate population numbers to age groups accurately, especially in the case of age groups adjacent to an abundant age group such as those associated with the 1977 year-class. There is also the obvious problem of some fully recruited year-classes showing higher abundance at an older age, such as shown by the 1980 and 1981 eastern Bering Sea data (Table 3), although this could also result from sampling biases. Regardless of these reservations, the results from the length frequency method appear to reflect observed trends in age and growth of the Bering Sea cod populations.

Samples of cod from the winter 1982 Aleutian survey have been aged using the length-frequency modal analysis, but samples from the summer 1980 Aleutian survey have not been analyzed. Analysis of the winter survey data indicates that cod sampled in the Unimak Pass to Atka Island area in February and March 1982 consisted of age groups 2-11 years (Table 2). The 1977 year-class at age 5 predominated--representing an estimated 36.7% of the total population numbers. Older age groups (6-11 years) also contributed substantially to catches, representing 28% of the total population numbers.

Results of the analysis for eastern Bering Sea cod illustrate the predominance of the 1977 year-class in the population since 1978 (Table 3).

PROJECTIONS OF ABUNDANCE

Abundance of eastern Bering Sea cod was projected through 1986 by Bakkala et al. (1983) using a numeric population simulator and 1982 survey population estimates as base year data, a natural mortality coefficient of 0.7, and the lower level of average recruitment (221 million fish at age 2) estimated by Wespestad et al. (1982).

Table 3.--Estimated population numbers (in millions of fish) for Pacific cod of the eastern Bering Sea as determined by the method of MacDonald and Pitcher (1979). Population numbers for the 1977 year-class are underlined.

Age (yr)	Year					
	1976	1977[1/]	1978	1979	1980	1981
1	55.4	0	1,268.2	158.4	42.7	62.0
2	23.9	486.9	24.2	1,106.6	442.4	132.3
3	24.5	14.0	32.8	213.5	477.4	145.4
4	11.1	24.4	24.8	12.0	93.6	166.4
5	3.7	8.6	23.1	10.6	30.9	49.9
6	3.6	4.5	9.8	6.4	6.5	32.5
7	2.8	2.8	2.8	6.3	2.1	22.1
8	0.3		4.2	2.4	3.3	9.0
9	1.2		2.1	0.7	3.4	1.1
> 10	0.4		1.8	1.1	1.4	2.1
Total	127.0	541.1	1,393.9	1,518.0	1,103.7	623.0

1/ The 1977 survey was limited to the southeast Bering Sea as shown in Figure 3. Population numbers shown here were expanded to approximate numbers that would have been available if the 1977 survey area was equivalent in area to the 1979 survey area.

The projections indicated that population numbers of age 2 and older cod in 1983 would be 476.2 million fish with a biomass of 692,900 t. The 1983 survey estimates of ages 2 and older cod were 492.0 million fish with a biomass of 1.1 million t. Thus the projected population numbers were slightly underestimated relative to survey data but the biomass was apparently more severly underestimated. One reason for the low projections was that commercial catches in 1983 have been much less than the estimated catch of 228,000 t used in the projection. Additionally, it is believed that the natural morality value of 0.7 used in the projection may be too high.

Because of the discrepancy between abundance estimates from the projections and the survey, projections were rerun by using 1979 data as base year data, survey estimates of recruitment at age 2, and three levels (0.5, 0.6, and 0.7) of natural mortality. The intent was to find the natural mortality coefficient that most nearly duplicated the annual survey biomass estimates in 1980-83 given the observed levels of recruitment and catch. The natural mortality coefficient which most nearly projected trends in biomass shown by the 1980-83 surveys was also anticipated to provide the most reliable estimates of abundance in 1984-86. Of the three natural mortality coefficients used, 0.5 most nearly duplicated the trends in biomass shown by the survey data (Table 4). The projections indicate that the biomass of age 2 and older cod will be 688,000 t in 1984; 462,000 t in 1985; and 385,000 t in 1986.

MAXIMUM SUSTAINABLE YIELD

It is apparent that the eastern Bering Sea cod population is subject to wide fluctuations in abundance. Most data come from a period when the population was undergoing a rapid increase in abundance. Thus, observations of the

Table 4.--Forecast of biomass of the Pacific cod population in the eastern Bering Sea in 1980-86 using a natural mortality coefficient of 0.5.

Year	Projected biomass age 2 and above (t)	Projected biomass age 3 and above (t)	Recruitment at age 2 1/ (millions)	Catch (t)	Exploitation rate	Fishing mortality
1979	965,600	349,100	1,106	33,800	0.097	0.124
1980	1,271,300	1,024,800	442	45,900	0.045	0.052
1981	1,267,200	1,181,800	153	52,000	0.044	0.051
1982	1,100,300	1,053,800	83	60,000	0.059	0.071
1983	882,000	835,400	83	120,000	.144	0.193
1984	687,500	581,300	190	232,500	0.400	0.671
1985	462,100	355,900	190	142,400	0.400	0.671
1986	384,700	278,500	190	111,400	0.400	0.671

1/ Recruitment for 1979-83 from survey estimates in those years and for 1984-86 from the average recruitment from survey estimates in 1980-83.

Table 5.--Forecast of biomass of the Pacific cod population in the Aleutian Region for 1984-86 and projected acceptable biological catches.

Year	Projected biomass age 3 and above (t)	Catch (t)	Exploitation rate
1980	231,100		
1984	147,000	58,800	0.4
1985	90,100	36,000	0.4
1986	70,500	28,200	0.4

population over a period of low or stable abundance is not available. In addition, survey data for only one year are available from the Aleutian Islands region, and the abundance estimates from this survey may also represent the Aleutian population at a relatively high level of abundance. It is therefore difficult to derive estimates of maximum sustainable yield (MSY) based on information from only a portion of the abundance cycle of the population. For these reasons, an estimate of MSY with present data is not considered valid.

EQUILIBRIUM YIELD

Equilibrium yield (the annual yield which allows the stock to be maintained at approximately the same level of abundance in successive years) is not an appropriate management concept to apply to the cod resource at the present time. The population is at a high point in its natural cycle of abundance due to the strong 1977 year-class, and the abundance of this year-class is expected to decline from natural causes in the next few years. Thus, yields cannot be adjusted to maintain the stock at the present level but should be increased to take advantage of the available surplus before it is lost to natural mortality.

Based on a number of simulations of the eastern Bering Sea cod population using various exploitation rates, Wespestad et al. (1982) concluded that the exploitation strategy that appeared to provide the greatest cumulative catch in 1983-86 was to increase exploitation rates to 0.4, while the strong 1977 year-class remained relatively abundant in the population. Based on these findings and the projections of Bakkala et al. (1983), the allowable catch in the eastern Bering Sea and Aleutian Islands region was estimated to be 298,200 t in 1983.

In view of the 1983 survey results which indicate that the biomass of cod in the eastern Bering Sea remained approximately the same in 1983 as 1982 (about 1 million t) and the revised projections of abundance which forecasts an exploitable biomass (age 3 and above) of about 581,300 t in 1984, the allowable catch in 1984 is estimated to be higher than previously projected. Because a large part of the population biomass consists of large relatively old fish that should be utilized before these are lost to natural mortality, it is again recommended that an exploitation rate of 0.4 be used to estimate the allowable catch in 1984. This exploitation rate applied to the exploitable biomass of 581,300 t provides an allowable catch of 232,500 t for the eastern Bering Sea region in 1984.

A second U.S.-Japan cooperative survey in the Aleutian Islands region in 1983 will provide an updated abundance estimate for that region in the near future. In the interim, an allowable catch for the Aleutians can be approximated by assuming that the relationship between the total biomass estimate in the Aleutians in 1980 (the only survey estimate available for this region) and the exploitable biomass in 1984 is the same as that in in the eastern Bering Sea. The proportion between the 1984 exploitable biomass and 1980 total biomass in the eastern Bering Sea is 581,300 t/ 913,300 t or 0.636. Applying this proportion to the 1980 estimated biomass in the Aleutians (0.636 x 231,100 t = 146,980 t) and using an exploitation rate of 0.40 produces an allowable catch of 58,800 t (Table 5).

The overall allowable catch for the combined eastern Bering Sea and Aleutian region in 1984 is thus 291,300 t or approximately that in 1983.

Following the same procedure of biomass projection, the expected allowable catches are predicted to be 178,400 t in 1985 and 139,600 t in 1986. These projections, however, will be revised as more data becomes available.

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AGENDA D-6
SUPPLEMENTAL

DRAFT

Prohibited Species Catches by Foreign and Joint-Venture Fisheries in the Eastern Bering Sea/Aleutians Region, 1977 - August 1983

Summarized by

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September 1983

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Prohibited Species Catches by Foreign and Joint-Venture Fisheries in the Bering Sea/Aleutians Region, 1977 - August 1983

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Introduction

This report summarizes data on prohibited species taken in conjunction with foreign and joint-venture groundfish fisheries that were collected by the U.S. Foreign Observer Program. The Program is run by the Northwest and Alaska Fisheries Center (NWAFC), National Marine Fisheries Center. The program places U.S. observers on foreign and joint-venture vessels within the U.S. 200-mile fishery conservation zone to (1) estimate commercial catches of groundfish species, (2) determine incidental catch of species whose retention is prohibited by U.S. fishing regulations, (3) collect biological samples and data for status of stock evaluations, and (4) monitor compliance to U.S. fishing regulations.

The prohibited species are Pacific salmon (Onchorhynchus spp.), Pacific halibut (Hippoglossus stenolepis), king crab (Paralithodes and Lithodes spp.) and Tanner crab (Chionoecetes spp.). These species are taken incidentally in groundfish fisheries for pollock, Pacific cod, yellowfin sole, flounders, sablefish, and rockfishes. Trawl gear account for the bulk of the groundfish catches and, hence, prohibited species as well. The only other gear type is longline, and its catch is small by comparison.

Observer Sampling Procedure

The sampling procedures used by observers have been reported by Nelson et al. 1981.[1/] Prohibited species catches were estimated by extrapolating incidental rates of catch over the total catch of groundfish. Incidence

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1/ Nelson, R. Jr., R. French, and J. Wall. 1981 Sampling by U.S. observers on foreign fishing vessels in eastern Bering Sea and Aleutian Islands Region, 1977-78. Mar. Fish. Review.

rates (in numbers of prohibited species per metric ton of groundfish catch) were made by monitoring (1) the groundfish catch being emptied from fish holding bins via conveyor belts, (2) the emptying of nets, or (3) the landings of longline catch.

The incidental catches, in numbers, of each prohibited species were estimated by multiplying the average monthly incidence rates for each nation, statistical area (Fig. 1), and vessel class by the estimated monthly groundfish catches for those same nations, areas, and vessel classes. Incidental catch, by weight, was calculated by multiplying the estimated numbers of fish or crab caught each month by the average weight per individual (kg) determined from observer samples for that same data element. In instances where monthly incidence data were not available for a particular nation, area, or vessel class, mean quarterly or annual rates from those same areas or vessel classes were applied to monthly groundfish catches. In cases where no sampling was conducted by observers during the year, the incidental catch was estimated by using data collected from another nation, vessel class, or area which was judged to have a similar fishing operation.

Besides prohibited species catches, the total amount of groundfish catches have also been estimated for the foreign and joint-venture fisheries (Table 1).

Observer Coverage

Generally, observers were assigned among the fleets to optimize the amount of data collected. The amount of coverage was determined by the availability of funds for the observer program. This coverage has increased over the years as funding problems got worked out and coverage is anticipated to reach 100% soon.

Percent observer coverage is summarized in Table 2. Percent coverage is defined as 100 x observer days/total vessel days. An observer day is

sampling by one observer for 1 day on 1 vessel. The total number of vessel days are determined by the number of days vessels spent on the fishing grounds.

Pacific Salmon

Incidental catches (in numbers and weight) of Pacific salmon taken in 1977-1982 are shown in Table 3. The largest catch was 122,000 fish (388 t) in 1980. Since then, catch limits have been imposed on the foreign directed fishery and catches have declined to 24,000 fish (92 t) in 1982. Joint-venture catches of salmon have varied between 854 fish (3 t) to 2,382 fish (8 t) during 1980-82. The total salmon catch amounted to a net decrease of 45% from about 43,400 fish in 1981 to 23,600 fish in 1982.

Although all 5 species of Pacific salmon can be taken incidentally in the trawl fishery, the majority of the catch were king salmon (Onchornynchus tshawytscha, ranging from 66-94% of salmon catches).

Finer details on the 1982 catches of salmon are shown in Table 4. In the foreign groundfish fishery, 40% of the salmon were taken in Area I, while almost all of the rest (58%) were taken in Area II. In the joint-venture fishery which took place mainly in Area I, 98% of the catches of salmon occurred there. Japanese vessels, which took 82% of the groundfish catch, accounted for 71% by number of the incidental salmon catch. Interceptions of salmon by Japanese ships were estimated to have increased from 13,500 fish in 1981, to nearly 15,000 in 1982, most of which were taken by small stern trawlers and large surimi trawlers. The decrease in the total foreign incidental salmon catch is due largely to the reduced take of salmon by Korean and West German vessels and by the absence of Polish trawlers which took 14% of last year's salmon catch. The estimated 1982 Korean catch of about 6,000 salmon represents a decrease of nearly 30%

from the catch of 8,500 fish in 1981. Korean trawlers, which in 1981 took a large percentage of their estimated salmon catch during January and February, had a lower estimated 1982 catch due to much-reduced incidence rates during those months.

The catches by West Germany declined from about 3,900 salmon in 1981 to less than 200 in 1982. This may be due to the fact that the West Germans did not fish in Area II during February and March of 1982, the months in which they were estimated to have taken 43% of their catch of salmon in 1981.

Pacific Halibut

Incidental catches of Pacific halibut for 1977-1982 are shown in Table 5. The total estimated catch in the foreign and joint-venture fisheries declined 24% from about 1,092,000 in 1981 to 835,000 in 1982 . A 57% decrease in the catch of halibut in the foreign fisheries (from about 989,000 in 1981 to 423,000 in 1982) more than offset a nearly 300% increase in the halibut catch in the joint-venture fisheries (from approximately 104,000 in 1981 to 412,000 in 1982).

The decrease in the 1982 catch of halibut in the foreign fisheries was primarily due to a 72% reduction in the estimated catch of halibut by Japanese small stern trawlers from 614,000 in 1981 to 171,000 in 1982 (Table 6). In January 1981, an extremely high incidence rate of 103 halibut/t was observed on Japanese small trawlers in Area I, and this resulted in a calculated catch of 431,233 halibut for that vessel class-area-month, a figure over 70% of the entire 1981 halibut catch on Japanese small trawlers. Observers on Japanese small trawlers fishing in Area I during January 1982, however, did not report seeing any halibut in the landings. The elimination of the high halibut catch in January was thus responsible for 70% of the 72% decrease in the estimated halibut catch for Japanese small trawlers.

The 1982 incidental catches of halibut decreased from those of 1981 on Japanese surimi motherships (a reduction of 86% from 47,000 to 6,600), Korean large trawlers (a decrease of 33% from 239,000 to 160,000), and on the West German large freezer trawler (a decline of 98% from 16,101 to 334). Japanese freezer motherships on the other hand, were estimated to have increased their incidental halibut catch from 2,300 in 1981 to 13,700 in 1982 (an increase of nearly 500%). Without further study, changes in the monthly incidence rates from those of 1981 are the only obvious reasons which can be cited for these fluctuations in the incidental catch of halibut.

Most of the estimated catches of halibut in the joint-venture fisheries were taken in the U.S.-U.S.S.R. operation targeting on yellowfin sole in Area I. Although the total groundfish catch in that fishery declined from 45,400 t in 1981 to 35,200 t in 1982, higher 1982 average monthly incidence rates (including an observed rate of 26 halibut/t in August) resulted in the calculated halibut catches increasing from 88,600 in 1981 to 330,000 in 1982, an increase of 73%. In contrast, the 230% increase (from 8,500 to 28,000) in the estimated halibut catch in the U.S.-Soviet joint-venture targeting on Atka mackerel and Pacific cod in the Aleutian Islands area (Area IV) was primarily due to an expansion of this fishery from groundfish landings of 2,200 t in 1981 to 17,900 t in 1982, not to an increase in incidence rates. The U.S.-West German joint-venture operation in Area I not only expanded in terms of tonnage of groundfish caught (from 1,700 t in 1981 to 4,700 in 1982), but the season changed from July through September of 1981 to March through May of 1982. Monthly average halibut incidence rates as high as 16 halibut/t, combined with a larger total groundfish catch were responsible for the increase in the estimated halibut catch for this fishery from 0 in 1981 to nearly 52,700 in 1982.

The overall average weight of halibut was 4.6 kg in the foreign directed fisheries and 1.4 kg in the joint-venture fisheries.

Tanner Crab

The 1982 estimated incidental catches of Tanner crab declined from those of 1981 in both the foreign and joint-venture fisheries (Table 7). In the foreign fishery, the incidental catch decreased from about 5.6 million to 2.3 million, a reduction of 59%, and in the joint-venture operations it decreased from 744,600 to 78,200, a reduction of 89%. The total 1982 Tanner crab incidental catch (foreign and joint-venture fisheries combined) amounted to 2.4 million crab, which represents a 62% decrease from 1981, and the lowest estimated catch for all years from 1977 through 1982.

The decrease in the 1982 catch of Tanner crab was primarily due to large reductions in the numbers of crab observed aboard Japanese small trawlers and Korean large freezer trawlers (Table 8). In Area I, Japanese small trawlers were estimated to have taken approximately 1,085,000 Tanner crab during the first three months of 1981. In 1982, this vessel class was calculated to have caught 306,000 crabs during this same period, a reduction of nearly 72%. In 1982, Area I incidence rates for February and March were markedly lower than in the previous year. Also, the Japanese small trawlers in 1982 took a greater percentage of their groundfish catch during the months of November and December, when the incidence rates were even lower than those during February-March. Korean large freezer trawlers were estimated to have taken 1,135,000 Tanner crab in Area I from October through November of 1981, while in 1982, the estimated catch by this vessel class for the same area/months was only 57,000. This 95% reduction in incidental Tanner crab catch for these months appears to be due to a change in monthly incidence rates from 41 to 60 crab/t in 1981 to rates of 0.2 to 5.3 crab/t in 1982. A partial shift in

target species from yellowfin sole in 1981 to pollock in 1982 during these months may have influenced the incidence rates.

As observed with the estimated incidental catches of halibut, the calculated incidental catch of Tanner crab by the Japanese freezer mothership increased from 1981 to 1982 while the estimated Tanner crab on other vessel classes decreased markedly. Monthly incidence rates that were generally higher in 1982 than in 1981 were thought to be responsible for the increase from about 37,000 to 159,600 in the estimated numbers of Tanner crab taken incidentally by the Japanese freezer mothership.

The joint-venture operation targeting on yellowfin sole in Area I was usually responsible for taking the largest percentage of the joint-venture incidental catch of Tanner crab. The estimated incidental catch of this fishery, however, decreased from 737,500 crab in 1981 to 78,200 in 1982, a reduction of 89%. This decrease was primarily due to lower incidence rates for the months of August and September. Four species of Tanner crab were observed in the foreign directed fisheries: Chionoectes bairdi, C. opilio, C. tanneri, and C. angulatus. C. opilio made up the largest percentage of the incidental catch, 55%; C. tanneri was next in importance, composing nearly 27% of the catch by number; and C. bairdi and C. angulatus made up 14% and 47%, respectively. In the joint-venture fishery, C. bairdi and C. opilio together were estimated to have composed 99.95% of the incidental Tanner crab catch. The species C. tanneri and C. angulatus are normally found in deeper water than the other two species, and are most often encountered in the catches of small stern trawlers and longline vessels.

King Crab

The 1982 incidental catches of king crab (like those of Tanner crab) declined from those of 1981 in both the foreign and joint-venture fisheries

(Table 9). In the foreign fishery, the number of king crab taken incidentally declined 48% from about 730,000 to 380,000, and in the joint-venture operations it decreased 82% from approximately 1,080,000 to 190,000. The total 1982 king crab incidental catch (foreign and joint-venture fisheries combined) amounted to an estimated 574,000 crab, which represents a 68% decrease from 1981, and the lowest estimated king crab catch for all years from 1977 through 1982.

The greater portion of the decrease in the estimated 1982 incidental king crab catch in the foreign fishery was due to a reduction in numbers of crab taken by Japanese small trawlers fishing in Areas II and IV (Table 10). In Area II, the estimated catch declined from about 294,700 king crab in 1981 to 115,900 in 1982. The Area II monthly average incidence rates generally decreased from 1981 to 1982 as evidenced by the reduction of the annual incidence rates from 5.1 crab/t to 2.7 crab/t. In Area IV, the annual average incidence rates only decreased from 2.8 crab/t to 2.6 crab/t. The average incidence rates for July, however, changed from 14.0 crab/t in 1981 to 2.4 crab/t in 1982, and were accompanied by a 59% reduction in the July groundfish catch in that area. This resulted in an estimated decrease of nearly 120,100 king crab in the July landings.

The 1982 estimated incidental catch of king crab by the Japanese freezer mothership was markedly larger than that of 1981, just as the estimated 1982 catches of halibut and Tanner crab had been. Higher average monthly incidence rates appeared to be primarily responsible for the increase in king crab catches by this vessel class from 289 in 1981 to about 26,500 in 1982.

The joint-venture operation targeting on yellowfin sole in the Bristol Bay region was estimated to have taken 99.96% of the king crab intercepted

by the 1982 joint-venture fisheries. The estimated numbers of king crab taken by this particular joint-venture decreased 82% from those of the previous year, from over 1,073,600 in 1981 to 193,800 in 1982. A decrease in the 1982 monthly incidence rates for May through September largely explained the difference in the estimated crab catch. The reasons for the reduced incidence rates are less clear as this joint-venture fishery operated in the same general area as in the past, and targeted on the same species.

In the Bristol Bay yellowfin sole joint-venture fishery, red king crab (Paralithodes camtschatica) is the species of king crab that is taken incidentally, and composed nearly all (99.69%) of the king crab caught by joint-venture fisheries in 1982. In sharp contrast, red king crab made up only 19.4% of the incidental king crab taken by the foreign directed fishery. Golden king crab (Lithodes aequispina) composed the majority (69.6%) of the king crab caught by foreign ships, and blue king crab (P. platypus) and couesi king crab (L. couesi) made up 5.4% and 5.6%, respectively.

January-August Period, 1982 and 1983

The observer data are current through August 1983 and for comparison to 1982 catches, data are compiled for the January-August period (Tables 11 and 12). For the same 8-month period, the foreign directed fisheries took 734,000 t of groundfish in 1983 as opposed to 676,000 t in 1982. The Joint-Venture fisheries, however, expanded more than two-fold and took 199,000 t of groundfish in 1983 compared to 96,000 t in 1982 during the same 8-month period.

Along with the expansion of the Joint-Venture Fisheries, the incidental catch of salmon, king crab, and Tanner crab have changed radically. For the

January-August period, the catch patterns of 1982 and 1983 from Table 11 can be summarized as follows:

Fishery/Species	January-August Period 1982	January-August Period 1983	Percent change from 1982 to 1983
A. Direct Foreign Fishery			
Total groundfish (t)	676,000	734,000	+ 9
Pacific halibut (numbers)	294,500	334,200	+13
Pacific salmon (numbers)	11,300	8,100	-28
King crab (numbers)	214,500	299,200	+39
Tanner crab (numbers)	1,322,400	1,433,200	+ 8
B. Joint-Venture Fishery			
Total groundfish (t)	96,000	200,000	+108
Pacific halibut (numbers)	381,000	291,000	-24
Pacific salmon (numbers)	1,800	26,500	+1,372
King crab (numbers)	173,200	524,600	+203
Tanner crab (numbers)	52,300	428,800	+720

A finer break-down of the 1983 joint-venture catches of prohibited species is provided in Table 13. The Table shows that most of the increases in salmon, king crab, and Tanner crab catches occurred in the U.S.-U.S.S.R. Joint-Venture. Almost all of the increased catches of salmon occurred during August 1983.

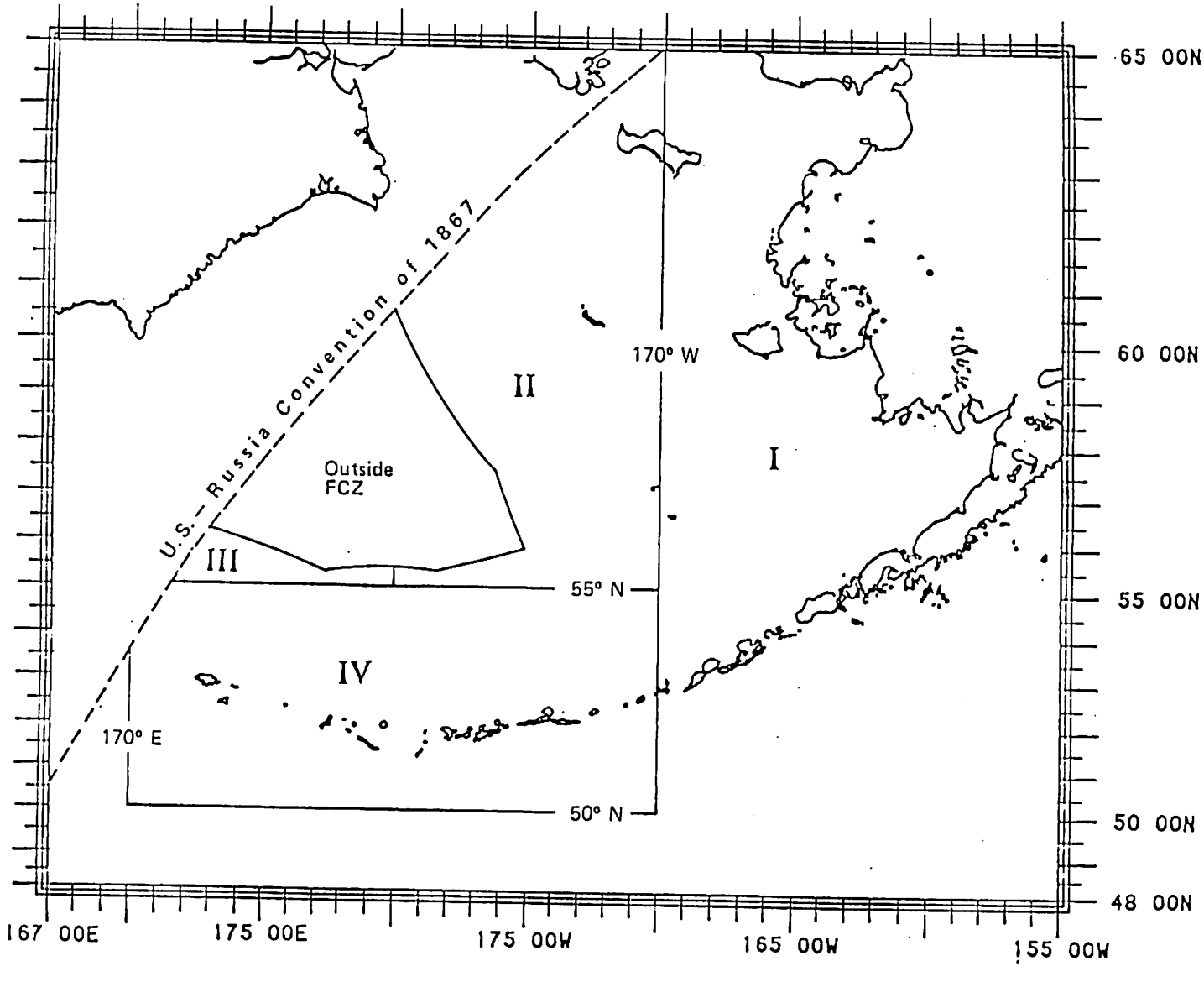

Figure 1.--U.S. statistical areas in the Bering Sea/Aleutian Islands region used to summarize catch and effort data.

Table 1.--Estimated groundfish catches (1,000 t) in the Eastern Bering Sea (Aleutians region, 1977-1982).

Nation/Fishery	1977	1978	1979	1980	1981	1982
Direct Foreign Fishery						
Japan	1,048.2	1,111.0	1,045.6	1,053.5	1,032.9	971.8
USSR	264.4	288.7	244.1	3.6	0.0	0.0
Korea	43.1	69.8	107.0	177.6	167.4	193.1
Taiwan	5.5	6.3	6.2	5.5	6.0	6.8
Poland	0	0	0	48.1	55.0	0.0
West Germany	0	0	0	6.7	11.9	16.4
Total	1,361.2	1,475.8	1,414.0	1,295.0	1,273.2	1,188.1
Joint-Venture Fishery						
U.S.-Japan	-	-	-	-	11.4	47.0
U.S.-U.S.S.R	-	-	-	24.8	47.7	53.0
U.S.-Korea	-	-	-	7.8	13.7	<0.1
U.S.-Taiwan	-	-	-	-	-	0.2
U.S.-Poland	-	-	-	-	2.2	4.0
U.S.-W. Germany	-	-	-	-	3.5	4.3
Total	-	-	-	32.6	78.5	108.6

Table 2.--Observer coverage in the Eastern Bering Sea/Aleutians Region, 1977-82.

A. Percent Observer Coverage (100 x observer month/total vessel month).

Nation/Fishery	1977	1978	1979	1980	1981	1982
Direct Foreign Fishery						
Japan	28.0	8.9	11.7	7.4	8.3	27.0
USSR	12.2	7.6	15.0	5.5	-	-
Korea	17.6	8.3	13.7	9.0	16.2	32.3
Taiwan	0	0	0	0	0	22.2
Poland	-	-	19.8	12.5	18.5	-
West Germany	-	-	-	20.8	9.3	73.7
Total	26.0	8.6	12.3	7.8	10.1	28.0
Joint-Venture Fishery						
U.S.-Japan	-	-	-	-	74.5	71.5
U.S.-U.S.S.R	-	-	-	40.0	20.2	56.5
U.S.-Korea	-	-	-	0.0	22.7	83.3
U.S.-Taiwan	-	-	-	-	3.7	88.4
U.S.-Poland	-	-	-	-	-	0.0
U.S.-W. Germany	-	-	-	-	0.0	63.5
Total	-	-	-	29.2	21.8	61.9

B. Observer Months of Coverage

Nation/Fishery	1977	1978	1979	1980	1981	1982
Direct Foreign Fishery						
Japan	N.A.	95.9	112.6	74.3	76.1	256.0
USSR	N.A.	15.9	20.8	0.2	-	-
Korea	N.A.	5.3	13.3	12.8	19.4	45.6
Taiwan	N.A.	0.0	0.0	0.0	0.0	3.6
Poland	N.A.	-	4.0	7.6	11.5	-
West Germany	N.A.	-	-	0.8	0.9	5.7
Total	N.A.	117.0	150.6	95.6	107.9	310.9

Table 2.--Continued.

Nation/Fishery	1977	1978	1979	1980	1981	1982
Joint-venture Fishery						
U.S.-Japan	-	-	-	-	2.5	7.5
U.S.-U.S.S.R	-	-	-	8.7	6.1	18.4
U.S.-Korea	-	-	-	0.0	1.7	0.2
U.S.-Taiwan	-	-	-	-	0.1	3.5
U.S.-Poland	-	-	-	-	-	0.0
U.S.-W. Germany	-	-	-	-	0.0	1.7
Total	-	-	-	8.7	10.4	31.3

Footnote: N.A. means not available

Table 3.--Estimated incidental catches (Nos. and t) of salmon (Oncorhynchus spp.) in the foreign and joint-venture groundfish fishery in the Bering Sea/Aleutian Island region, 1977-82.[1/]

Year	Total		Foreign		Joint-venture	
	(Nos.)	(t)	(Nos.)	(t)	(Nos.)	(t)
1977	47,840	198	47,840	198	NF	NF
1978	44,548	137	44,548	137	NF	NF
1979	107,706	340	107,706	340	NF	NF
1980	122,002	388	120,104	381	1,898	7
1981	43,191	140	42,337	137	854	3
1982	23,623	92	21,241	85	2,382	8

1/ Estimated catches for years 1977-78 from Nelson et al., 1981a; 1979 from French et al., 1981; 1980 from Nelson et al., 1981b; and 1981 from Nelson et al., 1982.

NF = No fishing.

Table 4.--Estimated incidental catches of Pacific salmon (in numbers of fish and metric tons) by foreign groundfish and joint-venture vessels in the Bering Sea/Aleutian region, 1982.

	Number of fish					Weight (metric tons)				
	Area I	Area II	Area III	Area IV	Total all areas	Area I	Area II	Area III	Area IV	Total all areas
FOREIGN GROUNDFISH VESSELS										
Japan										
SMS	92	0			92	0.32	0			0.32
FMS	0				0	0				0
SST	809	3,620	28	249	4,706	2.60	12.79	0.10	0.39	15.88
LST	1,788	8,358		2	10,148	5.70	37.70		T	43.40
LFT	14	10		3	27	0.03	0.04		T	0.07
LL	4	0		0	4	0.01	0		0	0.01
Republic of Korea										
SST	58	16		0	74	0.18	0.14		0	0.32
LFT	5,752	162	0	40	5,954	23.30	0.50		0.29	24.09
LL	0	0		0	0	0	0		0	0
Taiwan										
SST	0	40			40	0	0.12			0.12
LFT	13	0			13	0.07	0			0.07
West Germany										
LFT	63	10		110	183	0.15	0.03		0.28	0.46
All nations total	8,593	12,216	28	404	21,241	32.36	51.32	0.10	0.96	84.74
Percent by area	40.45	57.51	0.13	1.90		38.19	60.56	0.12	1.13	
JOINT-VENTURE VESSELS										
US-USSR	181			44	225	0.70			0.10	0.80
US-Korea			0		0			0		0
US-Japan	1,497	6			1503	4.19	0.01			4.20
US-Poland	20			2	22	0.07			0.01	0.08
US-Taiwan	11				11	0.02				0.02
US-W. Germany	621			0	621	2.59			0	2.59
Joint-venture totals	2,330	6	0	46	2382	7.57	0.01	0	0.11	7.69
Percent by area	97.82	0.25	0	1.93		98.44	0.13	0	1.43	

SMS = Surimi motherships
FMS = Freezer motherships
SST = Small stern trawler
LST = Large surimi trawler
LFT = Large freezer trawler
LL = Longliner
T = trace, weight <0.005 t

Table 5.--The estimated incidental catch (Nos. and t) of halibut (*Hippoglossus stenolepis*) in the foreign and joint-venture groundfish fishery in the Bering Sea/Aleutian Islands region, 1977-82.[1/]

Year	Total		Foreign		Joint-Venture	
	(Nos.)	(t)	(Nos.)	(t)	(Nos.)	(t)
1977	344,973	1,453	344,973	1,453	NF	NF
1978	599,852	2,853	599,852	2,853	NF	NF
1979	583,811	2,863	583,811	2,863	NF	NF
1980	1,164,514	4,597	959,566	4,311	204,948	286
1981	1,092,347	2,936	988,731	2,704	103,616	232
1982	835,455	2,172	423,340	1,609	412,115	563

1/ Estimates for years 1977-78 from Nelson et al., 1981a; 1979 estimates from French et al., 1981; 1980 from Nelson et al., 1981b; and 1981 from Nelson et al., 1982.

NF = no fishing.

Table 6.--Estimated incidental catches of Pacific halibut (in numbers of fish and metric tons) by foreign groundfish and joint-venture vessels in the Bering Sea/Aleutian region, 1982.

	Number of fish					Weight (metric tons)				
	Area I	Area II	Area III	Area IV	Total all areas	Area I	Area II	Area III	Area IV	Total all areas
FOREIGN GROUNDFISH VESSELS										
Japan										
SMS	5,657	971			6,628	14.63	1.68			16.31
FMS	13,697				13,697	21.94				21.94
SST	52,869	55,483	369	62,564	171,285	221.73	510.36	3.53	150.55	886.17
LST	5,823	5,620		1,140	12,583	37.26	20.03		19.53	76.82
LFT	9,613	2		113	9,728	33.63	0.01		1.94	35.58
LL	5,231	7,640		7,228	20,099	19.39	32.62		27.35	79.36
Republic of Korea										
SST	22,604	162		589	23,355	43.23	0.32		24.12	67.67
LFT	152,853	2,546	0	4,626	160,025	367.48	5.85	0	24.71	398.04
LL	598	415		0	1,013	3.82	2.17		0	5.99
Taiwan										
SST	1,087	514			1,601	9.55	3.35			12.90
LFT	754	2,238			2,992	5.99	0.84			6.83
West Germany										
LFT	197	68		69	334	0.54	0.34		0.30	1.18
All nations total	270,983	75,659	369	76,329	423,340	779.19	577.57	3.53	248.50	1,608.79
Percent by area	64.01	17.87	0.09	18.03		48.43	35.90	0.22	15.45	
JOINT-VENTURE VESSELS										
US-USSR	330,311			28,025	358,336	430.83			59.89	490.72
US-Korea				2	2				T	T
US-Japan	334	0			334	1.08	0			1.08
US-Poland	3			0	3	0.03			0	0.03
US-Taiwan	144				144	0.45				0.45
US-W.Germany	52,676			620	53,296	69.87			0.88	70.75
Joint-venture totals	383,468	0		28,647	412,115	502.26	0		60.77	563.03
Percent by area	93.05	0		6.95		89.21	0		10.79	

SMS = Surimi motherships
FMS = Freezer motherships
SST = Small stern trawler
LST = Large surimi trawler
LFT = Large freezer trawler
LL = Longliner
T = trace, weight <0.005 t

Table 7.--Estimated incidental catches (Nos. and t) of Tanner crab (Chionoecetes spp.) in the foreign and joint-venture groundfish fishery in the Bering Sea/Aleutian Island region, 1977-82.[1/]

Year	Total (Millions of crab)	Total (t)	Foreign (Millions of crab)	Foreign (t)	Joint-venture (Millions of crab)	Joint-venture (t)
1977	17.6	3,728	17.6	3,728	NF	NF
1978	17.3	4,267	17.3	4,267	NF	NF
1979	18.0	3,654	18.0	3,654	NF	NF
1980	11.4	2,114	11.1	2,058	0.3	56
1981	6.3	1,472	5.6	1,196	0.7	276
1982	2.4	448	2.3	425	0.1	24

1/ Estimated catches for years 1977-78 from Nelson et al., 1981a; 1979 from French et al., 1981; 1980 from Nelson et al., 1981b; and 1981 from Nelson et al., 1982.

NF = no fishing.

Table 8 .--Estimated incidental catches of Tanner crab (in numbers of crab and metric tons) by foreign groundfish and joint-venture vessels in the Bering Sea/Aleutian region, 1982.

	Number of crab					Weight (metric tons)				
	Area I	Area II	Area III	Area IV	Total all areas	Area I	Area II	Area III	Area IV	Total all areas
FOREIGN GROUNDFISH VESSELS										
Japan										
SMS	3,454	196			3,650	0.45	0.05			0.50
FMS	159,664				159,664	32.39				32.39
SST	681,842	809,247	3,942	13,596	1,508,627	135.54	116.81	0.55	3.35	256.25
LST	66,621	36,464		0	103,085	12.16	5.26		0	17.42
LFT	142,383	12		0	142,395	28.63	T		0	28.63
LL	6,138	5,860		1,882	13,880	3.87	2.97		0.83	7.67
Republic of Korea										
SST	54,432	6		0	54,438	10.69	T		0	10.69
LFT	232,872	3,253	0	11,042	247,167	42.95	0.69	0	1.77	45.41
LL	13	7		0	20	0.01	T		0	0.01
Taiwan										
SST	79,138	4,577			83,715	22.79	0.46			23.25
LFT	7,439	2,789			10,237	1.89	0.46			2.35
West Germany										
LFT	308	85		0	393	0.05	0.02		0	0.07
All nations total	1,434,304	862,505	3,942	26,520	2,327,271	291.42	126.72	0.55	5.95	424.64
Percent by area	61.63	37.06	0.17	1.14		68.63	29.84	0.13	1.40	
JOINT-VENTURE VESSELS										
US-USSR	78,189			0	78,189	21.73			0	21.73
US-Korea				0	0				0	0
US-Japan	3,086	0			3,086	1.17	0			1.17
US-Poland	37			0	37	0			0	0
US-Taiwan	1,965				1,965	0.38				0.38
US-W.Germany	1,488			0	1,488	0.41			0	0.41
Joint-venture totals	84,765	0		0	84,765	23.69	0		0	23.69
Percent by area	100.00	0		0		100.00	0		0	

SMS = Surimi motherships
FMS = Freezer motherships
SST = Small stern trawler
LST = Large surimi trawler
LFT = Large freezer trawler
LL = Longliner
T = trace, weight <0.005 t

Table 9.--The estimated incidental catch (Nos. and mt) of king crab (Lithodes and Paralithodes spp.) in the foreign and joint-venture groundfish fishery in the Bering Sea/Aleutian Islands region, 1977-82.[1/]

Year	Total		Foreign		Joint-Venture	
	(Nos.)	(t)	(Nos.)	(t)	(Nos.)	(t)
1977	599,623	641	599,623	641	NF	NF
1978	1,277,931	1,097	1,277,931	1,097	NF	NF
1979	1,007,796	1,008	1,007,796	1,008	NF	NF
1980	1,147,671	1,022	858,129	781	289,542	241
1981	1,817,152	1,308	733,026	666	1,084,126	642
1982	573,919	433	380,004	343	193,915	90

1/ Estimates for years 1977-78 from Nelson et al., 1981a; 1979 from French et al., 1981; 1980 from Nelson et al., 1981b; and 1981 from Nelson et al., 1982 .

NF = no fishing.

I:21.5.17

Table 10.--Estimated incidental catches of king crab (in numbers of crab and metric tons) by foreign groundfish and joint-venture vessels in the Bering Sea/Aleutian region, 1982.

	Number of crab					Weight (metric tons)				
	Area I	Area II	Area III	Area IV	Total all areas	Area I	Area II	Area III	Area IV	Total all areas
FOREIGN GROUNDFISH VESSELS										
Japan										
SMS	88	0			88	0.08	0			0.08
FMS	26,456				26,456	33.52				33.52
SST	43,346	115,902	352	116,060	275,660	53.08	62.17	0.25	111.89	227.39
LST	1,373	3,728		27	5,128	1.68	4.42		0.03	6.13
LFT	7,786	1		3	7,790	9.50	T		T	9.50
LL	6,462	2,468		1,485	10,433	5.23	2.33		1.46	9.02
Republic of Korea										
SST	7,363	0		0	7,363	7.66	0		0	7.66
LFT	38,687	70	0	2,003	40,760	40.56	0.02	0	3.19	43.77
LL	436	79		570	1,085	0.40	0.06		1.14	1.60
Taiwan										
SST	3,337	798			4,135	2.89	0.43			3.32
LFT	1,089	0			1,089	0.86	0			0.86
West Germany										
LFT	5	0		12	17	0.01	0		0.03	0.04
All nations total	136,428	123,064	352	120,160	380,004	155.47	69.43	0.25	117.74	342.89
Percent by area	35.90	32.38	0.09	31.62		45.34	20.25	0.07	34.34	
JOINT-VENTURE VESSELS										
US-USSR	193,818			11	193,829	89.76			0.02	89.78
US-Korea				0	0				0	0
US-Japan	0	0			0	0	0			0
US-Poland	0			0	0	0			0	0
US-Taiwan	56				56	0.08				0.08
US-W.Germany	22			8	30	T			0.03	0.03
Joint-venture totals	193,896	0		19	193,915	89.84	0		0.05	89.89
Percent by area	99.99	0		0.01		99.94	0		0.06	

SMS = Surimi motherships
FMS = Freezer motherships
SST = Small stern trawler
LST = Large surimi trawler
LFT = Large freezer trawler
LL = Longliner
T = trace, weight <0.005 t

Table 11. Monthly prohibited species summary (by number) in the Bering Sea.

Month/Nation	Groundfish catch (1,000's t) 1982	1983	Numbers (1000's) Halibut 1982	1983	Salmon 1982	1983	King Crab 1982	1983	Tanner Crab 1982	1983
January										
Japan	21.2	14.5	38.0	43.2	1.1	0.1	13.9	7.9	334.8	28.2
Korea	15.7	1.0	16.9	0.2	4.1	0.0	<0.1	<0.1	6.1	0.1
Taiwan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Germany	0.6	2.0	0.1	0.0	<0.1	<0.1	0.0	<0.1	0.1	0.0
Joint-Venture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February										
Japan	44.1	42.0	21.0	44.4	1.6	1.9	15.4	15.4	109.8	172.2
Korea	19.7	14.8	0.1	3.1	<0.1	0.1	0.0	2.6	0.0	23.9
Taiwan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Germany	0.0	1.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0
Joint-Venture	<0.1	0.5	0.2	5.2	<0.1	<0.1	0.0	0.0	<0.1	8.4
March										
Japan	46.5	56.2	31.3	34.3	1.3	1.6	22.3	42.0	147.4	250.0
Korea	10.7	3.8	3.7	0.2	0.9	0.0	<0.1	0.6	1.2	2.9
Taiwan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Germany	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Joint-Venture	2.0	3.6	22.9	7.1	0.3	<0.1	0.0	4.6	0.8	34.4
April										
Japan	19.7	29.5	3.0	20.9	0.8	0.3	12.3	16.6	49.2	100.7
Korea	18.3	19.1	74.1	45.7	0.4	0.1	2.8	2.5	28.9	189.3
Taiwan	0.3	0.0	0.9	0.0	0.0	0.0	0.0	0.0	1.1	0.0
West Germany	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Joint-Venture	7.8	17.7	19.2	12.4	0.7	0.1	10.5	24.8	3.2	41.2
May										
Japan	24.1	19.5	7.9	12.8	0.1	<0.1	12.6	20.1	62.0	137.7
Korea	17.6	22.6	58.0	49.8	<0.1	<0.1	9.0	62.3	162.6	74.4
Taiwan	0.7	0.0	1.5	0.0	<0.1	0.0	<0.1	0.0	1.9	0.0
West Germany	0.8	0.5	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0
Joint-Venture	13.2	22.4	13.5	20.7	0.2	0.1	37.2	56.8	6.2	50.4
June										
Japan	99.8	123.1	7.7	22.2	0.2	0.1	39.5	46.7	114.3	176.8
Korea	5.9	29.5	3.4	15.5	<0.1	<0.1	0.4	25.5	9.5	91.7
Taiwan	1.7	0.0	0.5	0.0	<0.1	0.0	0.5	0.0	46.3	0.0
West Germany	2.1	3.0	0.0	0.0	<0.1	0.0	0.0	<0.1	0.0	0.0
Joint-Venture	36.6	53.1	19.9	60.3	0.2	0.7	29.4	168.6	2.1	92.6
July										
Japan	137.8	132.7	13.7	26.6	0.2	0.9	13.7	9.1	53.8	52.5
Korea	13.9	17.1	2.8	3.7	<0.1	0.0	9.2	18.5	12.5	13.9
Taiwan	0.4	0.0	0.2	0.0	0.0	0.0	<0.1	0.0	12.8	0.0
West Germany	1.9	2.7	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	0.0
Joint-Venture	21.1	52.9	84.8	95.7	0.1	1.9	47.1	241.3	27.1	101.3
August										
Japan	153.1	170.1	5.6	8.6	0.6	3.0	41.1	22.4	154.1	97.7
Korea	17.1	26.2	4.0	3.1	<0.1	0.1	21.2	6.9	10.1	21.2
Taiwan	0.3	0.0	0.1	0.0	0.0	0.0	0.6	0.0	3.9	0.0
West Germany	2.3	3.0	0.0	<0.1	<0.1	<0.1	<0.1	0.0	0.0	0.0
Joint-Venture	15.2	49.1	220.5	89.6	0.3	23.6	49.0	28.5	12.9	100.5
Total through August										
Japan	546.3	587.6	128.2	212.9	5.9	7.8	170.8	180.2	1,025.4	1,015.8
Korea	118.8	134.1	163.0	121.3	5.4	0.3	42.6	119.0	230.9	417.4
Taiwan	3.4	0.0	3.2	0.0	<0.1	0.0	1.1	0.0	66.0	0.0
West Germany	7.7	12.2	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.0
Foreign Total	676.2	733.9	294.5	334.2	11.3	8.1	214.5	299.2	1,322.4	1,433.2
Joint-Venture	95.9	199.3	381.0	291.1	1.8	26.5	173.2	524.5	53.3	428.8

2:20.10.3

Table 12. Monthly prohibited species summary (by weight) in the Bering Sea.

Month/Nation	Groundfish catch (1,000's t) 1982	1983	Halibut 1982	1983	Salmon 1982	1983	King Crab 1982	1983	Tanner Crab 1982	1983
					Weight (tons)					
January										
Japan	21.2	14.5	154.0	63.0	4.9	0.5	11.2	9.4	55.8	6.4
Korea	15.7	1.0	99.0	0.8	16.5	0.0	<0.1	0.1	1.9	<0.1
Taiwan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Germany	0.6	2.0	0.3	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0
Joint-Venture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February										
Japan	44.1	42.0	128.5	125.7	7.3	9.2	19.0	12.3	22.3	23.9
Korea	19.7	14.8	0.2	18.7	0.1	0.3	0.0	2.6	0.0	2.7
Taiwan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Germany	0.0	1.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0
Joint-Venture	<0.1	0.5	0.3	5.6	<0.1	<0.1	0.0	0.0	<0.1	0.8
March										
Japan	46.5	56.2	127.8	135.6	4.9	7.2	27.5	28.2	30.1	49.1
Korea	10.7	3.8	21.3	1.1	3.6	0.0	<0.1	0.5	0.4	0.8
Taiwan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Germany	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Joint-Venture	2.0	3.6	28.1	7.2	1.5	<0.1	0.0	4.5	0.3	7.5
April										
Japan	19.7	29.5	19.4	80.0	2.4	1.8	10.7	13.4	5.9	17.4
Korea	18.3	19.1	162.8	114.5	1.8	0.4	3.0	3.1	8.0	37.6
Taiwan	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.0
West Germany	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Joint-Venture	7.8	17.7	26.2	17.2	2.4	0.8	10.4	22.5	1.3	9.6
May										
Japan	24.1	19.5	27.1	49.2	0.6	0.1	8.1	16.6	9.7	23.7
Korea	17.6	22.6	63.4	96.0	0.1	<0.1	11.7	49.7	26.4	14.8
Taiwan	0.7	0.0	0.9	0.0	0.0	0.0	<0.1	0.0	0.3	0.0
West Germany	0.8	0.5	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0
Joint-Venture	13.2	22.4	27.4	37.6	0.7	0.3	17.2	37.4	2.2	15.3
June										
Japan	99.8	123.1	26.9	83.4	0.3	0.3	19.9	38.2	21.0	29.3
Korea	5.9	29.5	7.9	53.5	<0.1	0.1	0.4	22.3	1.5	19.9
Taiwan	1.7	0.0	2.0	0.0	<0.1	0.0	0.2	0.0	13.2	0.0
West Germany	2.1	3.0	0.0	0.0	<0.1	0.0	0.0	<0.1	0.0	0.0
Joint-Venture	36.6	53.1	40.8	82.5	0.6	2.7	16.7	72.4	0.9	40.7
July										
Japan	137.8	132.7	53.1	60.3	0.4	2.0	12.4	10.1	10.5	12.0
Korea	13.9	17.1	13.8	10.3	<0.1	0.0	7.4	16.5	2.3	3.6
Taiwan	0.4	0.0	1.2	0.0	0.0	0.0	0.1	0.0	4.5	0.0
West Germany	1.9	2.7	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0
Joint-Venture	21.1	52.9	132.9	141.5	0.3	4.4	16.4	118.5	4.7	29.4
August										
Japan	153.1	170.1	19.2	31.8	1.7	6.7	37.6	17.8	29.4	18.4
Korea	17.1	26.2	36.2	9.3	0.1	0.2	21.7	6.0	2.0	3.0
Taiwan	0.3	0.0	2.1	0.0	0.0	0.0	0.6	0.0	1.0	0.0
West Germany	2.3	3.0	0.0	<0.1	0.1	<0.1	<0.1	0.0	0.0	0.0
Joint-Venture	15.2	49.1	264.7	149.8	0.8	50.8	23.3	13.1	4.6	27.3
Total through August										
Japan	546.3	587.6	556.0	628.7	22.5	27.7	146.4	146.0	184.7	180.2
Korea	118.8	134.1	404.6	304.2	22.2	1.0	44.2	100.8	42.5	82.5
Taiwan	3.4	0.0	6.5	0.0	<0.1	0.0	0.9	0.0	19.2	0.0
West Germany	7.7	12.2	0.3	<0.1	0.2	0.1	<0.1	<0.1	<0.1	0.0
Foreign Total	676.2	733.9	967.4	933.9	44.9	28.8	191.5	246.8	246.4	262.7
Joint-Venture	95.9	199.3	520.4	441.4	6.3	59.0	84.0	368.4	14.0	133.5

Table 13.--Estimated incidental catch of prohibited species by joint-venture fisheries in the Bering Sea/Aleutian region through August, 1983.

Month/Nation	Groundfish catch t	Halibut Nos.	Halibut t	Salmon Nos.	Salmon t	King crab Nos.	King crab t	Tanner crab Nos.	Tanner crab t
January	NF	-	-	-	-	-	-	-	-
February									
US-USSR	530.0	5,169	5.6	2	<0.1	0	0.0	8,421	0.8
March									
US-USSR	3,574.7	7,106	7.2	3	<0.1	4,615	4.5	34,390	7.5
April									
US-USSR	7,629.5	12,219	16.7	5	<0.1	24,833	22.5	41,239	9.6
US-Japan	8,245.6	38	0.1	121	0.8	0	0.0	0	0.0
US-Korea	1,871.9	168	0.5	6	<0.1	0	0.0	6	<0.1
May									
US-USSR	17,735.4	20,627	37.4	15	<0.1	56,773	37.4	50,385	15.3
US-Japan	4,671.0	77	0.1	79	0.2	3	<0.1	0	0.0
US-Korea	484.5	0	0.0	0	0.0	0	0.0	0	0.0
June									
US-USSR	18,138.6	52,646	67.8	55	0.2	143,969	63.3	87,168	38.5
US-Japan	32,982.0	466	1.8	694	2.5	0	0.0	222	0.1
US-Korea	1,937.5	7,186	12.9	0	0.0	24,626	9.0	5,174	2.1
July									
US-USSR	12,389.0	54,282	86.1	21	0.1	240,527	117.6	101,051	29.3
US-Japan	38,493.3	273	1.3	1,854	4.4	18	0.1	4	<0.1
US-Korea	2,008.5	41,159	54.1	0	0.0	794	0.8	231	0.1
August									
US-USSR	12,447.1	36,343	79.8	17	0.1	27,490	12.0	100,177	27.2
US-Japan	35,028.4	19	0.1	23,588	50.7	0	0.0	3	<0.1
US-Korea	2,514.0	53,211	69.9	0	0.0	1,027	1.1	298	0.1
Total through August									
US-USSR	71,914.3	188,392	300.6	118	0.4	498,208	257.5	422,831	128.2
US-Japan	119,420.2	872	3.4	26,336	58.6	21	0.1	229	0.1
US-Korea	8,816.4	101,724	137.4	6	<0.1	26,447	10.9	5,709	2.3
TOTAL	200,150.9	290,988	441.4	26,460	59.0	524,676	268.5	428,769	130.6

Table 56.--Three options on total allowable catches for the Bering Sea-Aleutians groundfish complex and comparisons with the 1983 OY's.

Species	TAC 1	TAC 2	TAC 3	1983 OY
Pollock				
(Bering Sea)	1,200,000	961,000	864,100	1,000,000
(Aleutians)	100,000	80,000	72,000	100,000
Pacific cod	291,000	233,000	209,000	120,000
Yellowfin sole	310,000	248,000	223,200	117,000
Turbot	67,000	53,600	48,200	90,000
Other flatfish	150,000	120,000	108,000	61,000
Pacific ocean perch				
(Bering Sea)	2,000	1,600	1,400	3,250
(Aleutians)	10,700	8,600	8,300	7,500
Other rockfish				
(Bering Sea)	3,100	2,500	2,200	7,727
(Aleutians)	11,000	8,800	7,900	(both)
Sablefish				
(Bering Sea)	4,200	3,400	3,000	3,500
(Aleutians)	1,800	1,400	1,300	1,500
Atka mackerel	26,000	20,800	18,700	24,800
Squid	10,000	8,000	7,200	10,000
Other fish species	61,000	49,300	48,591	77,314
TOTAL	2,247,800*	1,800,000	1,623,591	1,623,591

Footnotes: TAC 1 = Sum of equilibrium yields from Part I, Table A
EY's are estimated from species-by-species analyses

TAC 2 = Groundfish complex catch level equals 1,800,000 t and species TAC's are adjusted according to EY values shown in TAC 1.
Species TAC = Species EY x 1,800,000 ÷ 2,247,800

TAC 3 = Groundfish catch level equals 1983 OY's; and species TAC's are adjusted according to EY's shown in TAC 1.
Species TAC = Species EY x 1,623,591 ÷ 2,247,800

* TAC 1 cannot exceed 2,000,000 t since OY for the groundfish complex has been set to range from 1.4 to 2.0 million t.

PACIFIC COD POPULATION PROJECTIONS

(Eastern Bering Sea)

		Last Year's Projection	This Year's Projection
A. ASSUMPTIONS AND INPUT VALUES			
1. Natural Mortality, M		0.7	0.5
2. Recruitment (Millions), R		221.7	190.0
3. Catch Levels (t)	1982	50,000	60,000
	1983	227,900	(120,000)
4. Exploitation Rate	1983	0.4	0.07
	1984	0.4	0.4
	1985	0.2	0.4
	1986	0.2	0.4
B. RESULTS (PROJECTED LEVELS)			
1. Exploitable Biomass (t)	1983	569,800	835,400
	1984	294,500	581,300
	1985	217,800	355,900
	1986	237,200	278,500
2. Catch Levels (t)	1983	227,900	(120,000)
	1984	117,800	232,500
	1985	43,600	142,400
	1986	47,400	111,400

AGENDA D-6
SUPPLEMENTAL

SEP 26 1983

KOREA DEEP SEA FISHERIES ASSOCIATION

#10-1, 2GA, HOIHYUN-DONG.
SEOUL. KOREA

C. P. O. BOX 2710
TELEX: KODESE K27538
CABLE ADD : "KOPELAGIC"
SEOUL
TEL: 779-0531~5

Alaska Office

REF NO:_____

DATE : Sept. 26. 83

Mr. Jim H. Branson
Executive Director
North Pacific Fishery Management Council
605 West Avenue
Anchorage, Alaska 99510

Dear Mr. Branson:

I am pleased to inform you that Procedure and Regulation for Avoiding Gear Conflict in Korean version has developed as enclosed and distributed to all our Korean fishing vessels and directed to observe immediately.

I will of course inform this matter to whom who should know, however, in case it is necessary I would like to request you to disseminate this information to appropriate agencies.

Sincerely,

Han Mo Kim
Director
Alaska Office

Encl: Chart of Procedures and Regulations
for Avoiding Gear Conflicts

CC: Mr. Dennis Petersen
North Pacific Fishing Vessel Owners' Association

Mr. J. Craig Hammond
Fisheries Service

CDR. Choate Budd, Jr.
US. Coast Guard

Mr. Russ Nelson
N.W. & Alaska Fisheries Center

Jay Hastings
Japan Fisheries

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

September 23, 1983

Jim Branson, Executive Director
North Pacific Fishery Management Council
P.O. Box 3136 DT
Anchorage, AK 99510

Dear Jim:

Following is a summary of JVP amounts which could be used as a basis for discussion, at least, at the Council meeting. The figures were derived by combining the surveys received from 5 joint venture companies (1 Soviet, 3 Korean and 1 Taiwanese) and adding these amounts to double the 1983 Japanese joint venture catches.

The Bering Sea Pacific cod figure may not be adequate to provide for bycatches when fishing for other species. Also, the figures do not include any increases for new joint ventures. Reserves are probably sufficient to cover any shortfall.

1984 JVP Groundfish (mt)

	W. GULF	C. GULF	E. GULF	ALL GULF	BERING SEA	ALEUT IS.
Pollock	300	225,000	-	-	293,000	3,000
Pacific cod	250	8,621	-	-	14,180	-
Flounders	0	4,620	-	-	22,000	-
POP	2,300	4,100	-	-	50	50
Sablefish	1,100	110	-	-	100	100
Rockfish	-	-	-	4,100	20	-
YFSole	-	-	-	-	28,600	-
Atka mackerel	400	0	-	-	16,000	-
Other Sp.	-	-	-	1,400	2,000	-
Turbots	-	-	-	-	100	-
Thornyheads	-	-	-	50	-	-

Sincerely,

Phil Chitwood
Chief, Management Operations