M E M O R A N D U M

TO: Council, SSC, and AP Members

FROM: Jim H. Branson
Executive Director

DATE: July 7, 1982

SUBJECT: Gulf of Alaska Groundfish

ACTION REQUIRED

(1) Review the 1982 domestic sablefish fishery and consider closing sablefish in the Southeast area for conservation reasons.

(2) Consider eliminating directed foreign fishing for sablefish in the Yakutat area West of 140°W as part of Amendment #11.

(3) Make a decision on the proposal to make sablefish an exclusive hook and line fishery East of 140°W.

(4) Review the pollock Acceptable Biological Catch (ABC) in the Central area.

BACKGROUND

I. Amendment #11, Sablefish

A. The Council has already taken the following action on Amendment #11:

1. Set the sablefish OY at 8,200 mt Gulf-wide distributed as follows:

Table 1
Council Distribution of 8,200 OY for
Sablefish, Gulf of Alaska (mt)

			Eastern	
	Western	Central	W of 140°	E of 140°
EY	2,225	4,075	2,240	2,425
OY	1,660	3,050	1,680	1,810
DAH	270	1,220	530	1,810
Reserve	332	610	336	-0-
TALFF	1,058	1,220	814	-0-
1981 TALFF	1,410	1,820	600	-0-

2. The annual determination of DAH will be based on the previous year's fishery. Reserves and unutilized DAH can be reapportioned by the Regional Director as the need arises.

3. Domestic vessels must report their catch and advise the management agencies by radio or telephone of their departure before leaving Alaskan waters.

4. The NMFS Regional Director may issue field orders to adjust time and/or area restrictions on foreign fisheries for conservation reasons.

5. The Council's objective is to manage the Gulf of Alaska sablefish resource to develop the domestic fishery Gulf-wide.

6. The Council moved to withhold submission of Amendment #11 for Secretarial review until after the July meeting; it asked the Regional Director to inform the foreign fleets of the new sablefish OY's in the Western and Central areas and ask the State Department to make foreign allocations based on the new OYs. The Council asked that further foreign allocations in the Yakutat area West of 140° be withheld until after the July meeting; that the Regional Director and the Commissioner of ADF&G notify the domestic fleet of the new OYs and that the Eastern area be managed on the basis of the new estimates of EY in Table 1, and the 1982 resource surveys and fishery performance as they become available. The Council instructed the PMT to again analyze the unresolved biological questions about sablefish and evaluate the need for extending the area closed to foreign fishing to 147°W, which would close the entire Regulatory Area.

7. The Council deferred until July a motion to make sablefish an exclusive hook and line fishery East of 140°W, and asked that U.S. pot fishermen and hook and line groups have another opportunity to come to agreement on this problem.

B. The Plan Maintenance Team met on June 24 and 25 in Seattle in response to the Council's instructions. Their report was included in the last Council mailing.

They made the following recommendations:

1. No further allocations of sablefish should be made to foreign fleets in the Eastern Regulatory area (only 140°W - 147°W longitude is now available to them).

2. The OY should equal the DAH but not exceed the ABC in the Eastern area. The ABC Gulf-wide should be 75% of the EY.

3. If recommendations 1 and 2 are adopted, then the management divisions of the Eastern Regulatory Area should remain as Yakutat (137°W to 147°W), Southeast outside and Southeast inside waters. If they do, the Council will have to change the motion which distributed the OY as shown in Table 1. The new OY distribution should be as shown in Table 2.

Table 2
PMT Recommended OY Distribution (mt)

	Western	Central	Yakutat	Southeast
EY	2,225	4,075	3,381	1,290
OY	1,660	3,050	=DAH, ABC[1/]	=DAH, ABC[2/]
DAH	270	1,220	--	--
Reserve	332	610	--	--
TALFF	1,058	1,220	--	--

1/ ABC = 0.75 x 3,381 = 2,350 mt (rounded figure)

2/ ABC = 0.75 x 1,290 = 960 mt (rounded figure)
500 mt would be allocated to Southeastern inside waters, leaving 460 mt for the Southeastern outside (FCZ) area.

C. The Council staff contacted the principle pot and longline fishermen by letter explaining that the Council wanted to make a decision at the July meeting on the ALFA proposal to make sablefish an exclusive hook and line fishery East of 140°W longitude. We followed up the letter with phone calls.

Apparently the user groups are unable to come to an agreement on this problem.

Mr. Bill Scott of Bellingham, Washington telephoned the Council office (June 21) to report that two 108' pot vessels started fishing in the FCZ off Southeast on June 1, apparently all effort is north of Cape Addington.

II. Pollock in the Central Gulf of Alaska

A. Joint venture catches of pollock in the Central Gulf of Alaska are 74,137 mt so far this year. The current FMP allocates only 13,320 mt of pollock for DAH, 19,040 mt for reserves, and 62,840 mt for TALFF. At the May meeting the Council requested that unallocated TALFF, currently 40,490 mt, be withheld to ensure an adequate supply of fish for the joint ventures and to protect the stocks. They also asked the PMT to re-examine the population estimates for pollock and determine if there is sufficient biological information to support an ABC higher than the lower bound of the MSY range, as currently specified in the FMP.

B. The PMT did not find sufficient evidence to recommend that ABC for pollock in the Central Regulatory Area be increased above the low end of the current MSY range. The team's rationale is detailed in their June 30 report.

If the Council decides to maintain the pollock OY at 95,200 mt in the Central area, two issues need to be resolved. First, because of the great interest in joint ventures, including the Japanese commitment to purchase 320,000 tons of fish by May 1984, there will be no pollock OY available for TALFF in the Central area. The mechanisms for determining

DAH contained in Amendment #11 will automatically eliminate the TALFF. Because implementation of Amendment #11 may not occur before the spring of 1983, the Council should ask the State Department to withhold all TALFF for pollock in the Central area for 1983.

Secondly, joint ventures may be capable of harvesting all of the pollock OY in the Central area. However, under the Processor Preference Amendment to the MFCMA, shore based processors have to be given allocations first. The amount of pollock allocated to shore based processors (DAP) is 5,380 mt in 1982. If it is the same in 1983 there would only be 89,820 mt for joint ventures.

The amount of DAP actually used has been 994 mt in 1980, 507 mt in 1981, and 972 mt through April this year. Determining DAH as laid out in Amendment #11, the Regional Director could revise DAP to reflect the actual harvest. You may want to recommend a DAP amount to the Regional Director.

Agenda D-5(a) is a letter from James Schones, sablefish pot fisherman, opposing the ALFA proposal for an exclusive hook and line sablefish fishery east of 140°W.

July 16, 1982

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

Dear Jim:

The Highliners Association and the Coalition for Open Ocean Fisheries would like to take this opportunity to make a statement on the issue of central Gulf of Alaska pollock OY which the PMT addressed in late June 1982 and, we understand, the Council will address at its July meeting.

We understand that the NWAFC is now conducting further studies into the central Gulf pollock OY, the results of which will be available later this summer. The Council is likely to readdress this issue in October in order to set the 1983 OY for central Gulf pollock. While we plan to comment on this issue in detail at the October meeting when these additional studies become available, we would now like to express our views that an increase in OY for central Gulf pollock appears justified.

From a biological perspective, we note that the figure of 375,000 mt chosen by the PMT as the estimate of spawning biomass in Shelikof Strait is the lower end of the confidence interval of the smallest of three acoustical estimates made in 1981. The individual estimates (not given in the PMT report) were 558,000 metric tons (375,000 tons lower end of confidence interval) 576,000 tons and 801,000 tons, with a mean of 645,000 tons. Also not stated was the upper end of the confidence interval for the largest estimate (801,000 tons) was about 1,000,000 tons. Hence, the range of estimates from which a choice might be made was from 375,000 to 1,000,000 tons. It is also not stated in the PMT report that the 595,000 ton figure cited for the entire central Gulf was the lower end of a 595,000 to 1,191,000 ton range and is acknowledged in the FMP as being a minimal estimate. The absence in the PMT report of information on the array of estimates and confidence intervals available prevents the reader from appreciating how conservative the PMT's selections were. Such data, along with information on whether or not the on-bottom component of the Shelikof Strait population was included in the estimates, should be provided in any subsequent report.

It is from these conservative biomass estimates that the OY of 95,000 in the central Gulf was calculated.

We would like to provide further details on this issue in October, but appreciate the opportunity to present in general, the context of our view now: that the OY should be increased.

Sincerely,

Rudy A. Petersen

Rudy A. Petersen, President
The Highliners Association

R. Barry Fisher

R. Barry Fisher
Coalition for Open Ocean
Fisheries

D5.1.1

(DRAFT)

Information on Gulf of Alaska Pollock Resource

compiled by

Loh-Lee Low

and

Miles Alton

July 15, 1982

Resource Ecology and Fisheries Management Division
Northwest and Alaska Fisheries Center
National Marine Fisheries Service, NOAA
2725 Montlake Boulevard East
Seattle, Washington 98112

(Draft)

Information on Gulf of Alaska Pollock Resource

Compiled by Loh-Lee Low and Miles Alton

The North Pacific Fishery Management Council will be considering all sources of information bearing on the condition of the pollock resource in the Gulf of Alaska during its July 1982 meeting. The Gulf of Alaska Plan Maintenance Team (PMT) previously had met on June 24 and 25 to do the same thing and has prepared a Team report to be submitted to the Council for the July meeting. This report concluded that the "PMT has not found sufficient evidence to recommend that ABC for pollock in the Central Regulatory Area be increased above the low end of the MSY range given in the FMP."

Since this report was prepared, further analyses have been completed by the Northwest and Alaska Fisheries Center (NWAFC). Presented in this report are the results of these analyses. These results may be interpreted to indicate that the pollock resource in the Gulf of Alaska may be in better condition than previously believed.

DERIVATION OF MSY

A review of past reports shows that MSY was obtained from biomass estimates from bottom trawl surveys that took place in various areas during the years 1972-77 (Alton, Hughes, and Hirschhorn 1977). Biomass estimates from regions not surveyed, e.g., the region around the Shumagin Islands, were obtained from extrapolations from density figures from adjacent surveyed regions. Estimates of exploitable biomass and MSY by INPFC areas are shown in Table 1; the lowest of the estimates, based on a catchability coefficient of 1.0, was accepted for MSY. Estimates for the Chirikof and Kodiak areas were later combined under central Gulf of Alaska, as were those for Yakutat and southeastern areas (eastern Gulf of Alaska).

Since 1977 the allowable biological catch has been set the same as the low end of the MSY range.

LINES OF INQUIRY

Information is compiled for this report according to the following lines of inquiry:

1. What does CPUE show in terms of:
   a. long term trend (1973-81)
   b. recent year's trend (1977-81)
   c. Is CPUE indicative of stock abundance trend?
2. What is the biomass and surplus production of the resource?
   a. from commercial catch-at-age information (cohort analysis)
   b. from U.S. hydroacoustic surveys in the Shelikof Strait in 1980 and 1981

Table 1.--Estimates of exploitable biomass and potental yield of pollock by INPFC areas in the Gulf of Alaska (in 1,000 mt).

Area	Biomass (B)[1/]	Yield (MSY = ABC)[2/]	Year of Survey
Shumagin	357-713	57-114	1974
Chirikof	340-680	54-109	1973, 1975
Kodiak	255-511	41-82	1972-73
Yakutat	78-155	12-25	1975
Southeastern[3/]	11-22	2-4	1976-77
All Areas	1,041-2,081	166-334	

1/ MSY = M(0.4)(B) = (0.4)(0.4)(B)

2/ Range of biomass is based on catchability coefficient of 1.0 and 0.5.

3/ Outside waters.

From Miles and Nelson (1982)

c. from U.S.-USSR survey in and outside Shelikof Strait by the Soviet research vessel SHANTAR in 1981.

3. What percentage is the pollock biomass in Shelikof Strait during spawning relative to the biomass of pollock outside the Strait?

EXAMINATION OF PAST REPORTS

The following reports were examined and pertinent information extracted:

1. Gulf of Alaska Groundfish Plan Maintenance Team meeting report and its appendix tables (June 28, 1982).

2. Alton M. and R. Nelson. 1982. Status of the Gulf of Alaska pollock resource. (Report submitted to the NPFMC, May 1982).

3. Low et al. 1980. Condition of groundfish resources of the Gulf of Alaska in 1980. (Document submitted to INPFC, October 1980).

4. Balsiger, J. and M. Alton. 1981. Condition of sablefish and pollock in the Gulf of Alaska in 1981. (Document submitted to INPFC, September 1981).

5. Okada et al. 1982. Trends of groundfish stocks in the Bering Sea and the northeastern Pacific based on additional preliminary statistical data in 1981. (Fishery Agency of Japan. Document submitted at U.S.-Japan bilateral meeting, May 1982).

6. Nunnallee, E., N. Williamson, and M. Nelson. 1982. Acoustic-trawl surveys of spawning walleye pollock (Theragra chalcogramma) in the Shelikof Strait-Chirikof Island Region of the Gulf of Alaska in 1980 and 1981. (NWAFC report).

7. Padeev, N. and T. Borets. 1981. The results of the cruise carried by the R/V SHANTAR in the Gulf of Alaska February 1-June 26, 1981. (Report by the Pacific Res. Inst. of Fish. and Oceanography submitted at the U.S.-USSR bilateral meeting in June 1982).

TYPES OF INFORMATION COMPILED

The following types of information are compiled in this report:

1. Catch-per-unit-effort trends.

At least eight sequences of CPUE trends are compiled in Appendix A, the section on CPUE information. These sequences include those previously reported and made available to the PMT and new ones compiled by Miles Alton (NWAFC).

2. Biomass and surplus production estimates using age-structured (cohort) analysis.

This analysis was performed by Miles Alton (NWAFC) and Dr. Rick Deriso (IPHC). They used a least-squares approach to analyze catch-at-age data (Doubleday 1976) similar to the cohort analysis technique (Pope 1972). The analysis provides a first-cut estimate of pollock abundance, annual surplus, production, and year-class strengths. The results are shown in Appendix B.

3. Biomass Estimates in the Shelikof Strait

This analysis was reported in Nunnallee et al. (1982) and was available to the PMT at its June meeting.

4. Biomass Estimates In and Outside Shelikof Strait

Estimates were made from trawl data collected by the R/V SHANTAR during February-June 1981. The station-by-station information was provided to U.S. scientists through our cooperative research arangement and has been computerized by the NWAFC. Miles Alton and Craig Rose (NWAFC) used the station-by-station data to estimate biomass in the same manner as they would using U.S. survey data.

CPUE TRENDS

Trends in CPUE are often used as indicators of stock abundance if the data can be compiled appropriately. In attempts to do so, Appendix A, the section on CPUE, shows the various sequences of CPUE trends that have been reported in previous reports and new ones computed here. This Appendix shows that there are at least eight sequences of CPUE that are important to the interpretation of pollock abundance over time.

A thorough examination of the sequences shows the following general features:

1. CPUE can be highly variable
   a. between gear types, such as surimi trawlers versus frozen fish trawlers;
   b. between vessel size classes;
   c. between INPFC areas, even though they are neighbor areas; and
   d. between months or quarters of the year.

These high sources of variation are illustrated in CPUE sequences 1, 2, 3, 5, 6, and 8 as described in Appendix A.

2. The high sources of variation reflect
   a. inconsistencies in the data quality from year to year, especially those reported by foreign nations;
   b. that varying degrees of targeting on pollock by the different gear types and vessel classes would have to be accounted for;
   c. that migration or movement of pollock from area-to-area and month-to-month can be rather rapid and have to be accounted for.

3. As a result of high variations in CPUE due to factors that may not be directly indicative of overall pollock abundance, it is extremely difficult to standardize the data to eliminate sources of variation in order to obtain

representative or overall CPUE trends that are indicative of pollock abundance changes from year-to-year.

Despite these problems, however, CPUE sequences 1, 4, and 6 were compiled to determine if there are general annual patterns of change. These sequences, described in greater detail in Appendix A, show trends from the following fisheries:

Sequence 1: 1973-81 trend of Japanese trawlers compiled from Japanese-reported data

Sequence 4: 1977-80 trend of Korean trawlers from Korean-reported data

Sequence 6: Three sets of data showing 1978-81 trends of Japanese surimi trawlers, Japanese freezer trawlers, and Korean freezer trawlers from U.S. observer data.

The annual CPUE trends indicate that:

4. There are questions over the quality of data in CPUE Sequence 1. It is difficult to determine if abundance of pollock was in fact as low as indicated during 1973-76 and as high during 1980-81. The pollock fishery in the Gulf of Alaska was generally not an important fishery for Japanese frozen-fish trawlers during 1973-76; therefore, abundance may have been underrepresented. There are some questions over how the data are compiled for Japanese surimi and frozen-fish trawlers for 1980-81 which may overrepresent abundance for the frozen-fish trawlers then.

5. Even though CPUE trends are difficult to interpret because of inconsistent data quality and high sources of variation which are difficult to account for, there is an overall stable or increasing trend in CPUE which suggests that it is highly probable that pollock abundance has increased since

the early 1970s and that abundance has probably increased or at least stayed stable from 1978 to 1981. In order to verify if these observations are true, other types of data and analyses bearing on status of stocks have to be examined.

BIOMASS AND SURPLUS PRODUCTION BASED ON COHORT ANALYSIS

Miles Alton (NWAFC) and Rick Deriso (IPHC) completed a preliminary analysis of the pollock age structured catch data from the commercial fishery. This is a first-cut cohort analysis using the Doubleday procedure (Doubleday 1976). Their report of the analysis is listed in Appendix B.

Their results (shown in Tables 2 and 3) suggest that exploitable biomass is higher in recent years (1979-81) than in earlier years (1976-78). This trend is very similar to trends in CPUE Sequence 1. Exploitable biomass for 1976-81 ranged from 632,000 t to 1,160,000 t. The average was 859,000 t. The increasing trend in biomass is due partially to the stronger recruitment of age 3 fish in recent years (1978-81) than during 1976-77 (Table 3).

They estimated that annual surplus production of pollock varied from a deficit of 10,000 t in 1977 to 475,000 t in 1979 (Table 2). The average surplus production during 1976-80 was 287,000 t (range of 171,000-388,000 t). In recent years (1978-80), annual surplus production averaged 427,000 t (range of 153,000-558,000 t).

It is important to note that actual catches of pollock in the Gulf of Alaska averaged 100,000 t during 1976-81 (range of 83,800-133,000 t), thereby suggesting substantial underexploitation of the resource for at least six years.

Table 2. Preliminary estimates of exploitable biomass and annual surplus production for Pollock aged 3-10 years in the combined regions Kodiak, Chirikof, and Shumagin (units of 1000 metric tons). Figures in parentheses are approximate 95% confidence intervals around the best estimates.

Year	Total exploitable biomass	Annual surplus production	Catch (3-10 ages)
1976	536 (494-653)	164 (129-194)	83
1977	618 (540-765)	-10 (-12- -4)	111
1978	496 (417-648)	399 (311-546)	84
1979	812 (644-1112)	475 (273-644)	98
1980	1188 (820-1658)	407 (153-558)	91
1981	1504 (881-2124)	*	133
Average	859 (632-1160)	287 (171-388)	100

*Not computable

Table 3. Preliminary estimates of abundance of three-year-old Pollock in the combined Kodiak, Chirikof, and Shumagin regions (units in millions of fish). Figures in parentheses are approximate 95% confidence intervals around the best estimates.

Years	Abundance of three-year-olds
1976	442 (343-542)
1977	281 (289-362)
1978	1328 (917-1738)
1979	2035 (1258-2729)
1980	1610 (849-2184)
1981	1230 (506-1712)
Average	1154 (693-1545)

SPAWNING BIOMASS IN SHELIKOF STRAIT

from U.S. Hydroacoustic Survey

The report by Nunnallee et al. (1982) estimated the spawning biomass of pollock in the Shelikof Strait-Chirikof Island region in 1980 and 1981 using hydroacoustic techniques. There were four series of surveys: 1980 April 2-14, 1981 March 3-15, 1981 March 25-27 and 1981 April 4-10.

Estimated biomass from the surveys is shown in Table 4. Mean biomass was at least 557,793 t (range of 369,848-745,738 t). It should be noted that the PMT adopted the low end of the range (375,000 t) as the spawning biomass of pollock in Shelikof Strait on the advice of the scientists who conducted the hydroacoustic surveys.

BIOMASS OF POLLOCK IN AND OUTSIDE SHELIKOF STRAIT

from U.S.-USSR Trawl Survey

The Soviet research vessel SHANTAR conducted a series of U.S.-USSR cooperative ichthyoplankton/trawl surveys on groundfish in the Gulf of Alaska during February 1-June 26, 1981. Results of the survey were reported to the U.S. at the June 1982 U.S.-USSR bilateral meeting (Fadeev and Borets 1982). Although the Soviet report estimated the biomass of pollock from its ichthyoplankton and trawl data, it is difficult to relate the numbers with those estimated by us from data obtained from our survey cruises and commercial fisheries.

In order to estimate numbers to relate to ours, Miles Alton and Craig Rose (NWAFC) used the station-by-station trawl data from the R/V SHANTAR cruise and analyzed them to derive biomass estimates based on our estimation procedures. Trawl catch rates (lbs per nautical mile) of trawling were first computed for

Table 4. Estimates of pollock biomass in the Shelikof Strait - Chirikof Island region determined from acoustic surveys in April 1980 and March and April 1981.

Survey Dates	Mean Density ($\bar{D}$) (kg/1000m^2)	SD($\bar{D}$)	Area (km^2)	Biomass (mt)	95% C.I. (mt)
1980					
Northern Area	24.8	2.4	4,109	101,851	82,837 - 120,865 (± 19%)
Southern Area	77.2	9.2	7,861	607,132	465,443 - 748,821 (± 23%)
Total			11,970	708,983	566,024 - 851,942 (± 20%)
1981					
March 2-19	116.6	19.8	6,870	801,008	534,397 - 1,067,619 (± 33%)
March 24-29	66.5	11.6	8,674	576,455	379,242 - 773,668 (± 34%)
April 4-10	45.9	7.9	12,138	557,793	369,848 - 745,738 (± 34%)

From Nunnallee et al. (1982)

each station and the data extrapolated over the area trawled (by depth ranges) to calculate biomass.

During the period March 14-May 28 when the U.S. hydroacoustic survey was taking place in Shelikof Strait by the NOAA R/V MILLER FREEMAN (March 2-April 10), the R/V SHANTAR surveyed three major areas in the vicinity of Kodiak Island: Shelikof Strait, Albatross Bank, and Chirikof area. The estimated biomass from these areas is shown in Table 5.

The overall biomass in the vicinity of Kodiak Island during the time when pollock was spawning in Shelikof Strait was estimated to be 1,062,900 t. The distribution of this biomass was 49% in Shelikof Strait, 36% in Albatross Bank, and 15% in the Chirikof area.

The accuracy of the biomass estimated is suspected to be different from that which we would obtain from our own trawl surveys. In our surveys, the amount of catch is determined rather accurately since we weigh most or all of the catch. In the Soviet survey, the amount of catch is generally hail weight; therefore, the numbers are more variable. If the accuracy of the haul-by-haul catch data is questionable and more variable, then the 1 million t biomass estimated in the vicinity of Kodiak Island may have a wide confidence range. This range, however, cannot be determined easily.

Although the absolute biomass estimated may be questioned, it is important to note that the relative abundance of pollock in the three areas is probably quite accurate. If we assume this to be so, then the biomass of pollock detected by the U.S. hydroacoustic survey in Shelikof Strait may only represent 49% of the pollock present in the Central Gulf. It should also be noted that no estimate has yet been made of the pollock present in Shumagin and east of Kodiak Island. These areas are likely not devoid of pollock.

Table 5.--Pollock biomass estimated from station-by-station trawl data collected by the Soviet R/V SHANTAR during March 14-May 28, 1981 by applying U.S. estimation procedures.

Depth	Biomass in metric tons			
	Shelikof Strait	Albatross Bank	Chirikof	Total
0-100 m	83,000	-	24,500	107,500
100-200 m	25,900	368,800	135,600	530,300
200-300 m	411,900	10,400	2,300	424,600
300-500 m	-	200	300	500
Total	520,800	379,400	162,700	1,062,900
Percent	49%	36%	15%	100%

POLLOCK DISTRIBUTION IN THE GULF OF ALASKA

Pollock are found throughout the Gulf of Alasska. Major concentrations are found in the vicinity and west of Kodiak. During 1977-81, U.S. observers reported that catches by foreign fisheries were distributed as follows:

Area	Catch (t)	Percent
Shumagin	42,500	38
Chirikof	40,200	36
Kodiak	24,000	21
Yakutat	5,100	4
Southeast	900	1
Total	112,700	100

The bulk of the pollock catch is taken in the warmer months of the year, thereby probably reflecting pollock distribution during late spring to early fall (May-September). The winter distribution is not clearly known.

During early spring, pollock is known to concentrate and spawn in Shelikof Strait. This fact is clear from hydroacoustic surveys conducted by the NOAA R/V MILLER FREEMAN in 1980 and 1981 (Nunnallee et al. 1982). What is not known, of course, is the amount of spawning and distribution of fish in other regions of the Gulf of Alaska during the time pollock is known to concentrate for spawning in Shelikof Strait. It is surmised from catch history and surveys conducted by the Soviet R/V SHANTAR that not all the spawning pollock in the Gulf concentrates in Shelikof Strait during early spring to spawn.

As explained in the previous section, our analysis of the raw data from the Soviet R/V SHANTAR shows that in the vicinity of Kodiak Island (the Central

Regulatory Area), the distribution of pollock during March 14-May 28, 1981 (9-week period) was 49% in Shelikof Strait, 36% in Albatross Bank, and 15% in the Chirikof Area. A comparison of the results (biomass in t) with those from the NOAA R/V MILLER FREEMAN (Table 4) is as follows:

Period	Area	Estimated pollock biomass in metric tons in 1981 R/V SHANTAR	R/V MILLER FREEMAN
March 2-19	Shelikof	-	801,000
March 24-29	Shelikof	-	576,500
April 4-10	Shelikof	-	557,800
March 14-May 28	Shelikof	520,800	-
	Albatross Bank	379,400	-
	Chirikof	162,700	-

It is possible that some of the fish estimated in the SHANTAR cruise may have been double-counted as the pollock complete their spawning within Shelikof Strait and move out of the area. The degree of this double-counting is not known, but it is important to note that there must still have been a considerable proportion of pollock outside Shelikof Strait when the R/V MILLER FREEMAN made its survey.

Evidences of pollock outside Shelikof Strait at the time of spawning are borne out by:

1) the presence of pollock egg and larvae outside Shelikof Strait as determined by Soviet research vessels (e.g, R/V SHANTAR)

2) the presence of commercial fishing operations outside Shelikof Strait during the months of spawning. For example, in 1980, the catch of pollock by Soviet vessels (Class 4 tonnage) was:

Month	Catch		CPUE (t/hr)	
	Shumagin	Chirikof	Shumagin	Chirikof
February	909	687	2.2-3.4	3.8
March	1,765	137	2.3-2.8	2.7
April	54	9,524	0.8-1.1	2.0-3.8
May	1,992	7,355	1.8-2.5	2.4-4.6

The data illustrate that, in the period of spawning in Shelikof Strait, there were sufficient concentrations of pollock outside the Strait to support commercial fishing operations in the Shumagin and Chirikof areas.

LITERATURE CITED

Alton, M., S. Hughes, and G. Hirschhorn. 1977. Gulf of Alaska pollock--its fisheries and resource potential. NMFS, NWAFC, 25 p.

Doubleday, W. G. 1976. A least-squares approach to analyzing catch-at-age data. ICNAF Res. Bull. No. 12, p. 69-81.

Pope, J. G. 1972. An investigation of the accuracy of virtual population analysis using cohort analysis. Res. Bull. Int. Comm. Northw. Atlant. Fish. No. 9, p. 65-74.

APPENDIX A

Information on Catch-per-Unit-Effort

Sources of Data

Catch-per-unit-effort (CPUE) can be used as a relative measure of abundance of the Gulf of Alaska pollock resource. There are essentially two sources of information on CPUE:

1) Catch and effort information of the Japanese fishery as collected by the Fishery Agency of Japan and submitted to the U.S. This information source is available in two data systems:
   a) The Far Seas Fishery Research Lab (FSFRL) system where the data are broken down by month, area, gear type, vessel class, effort units, and catch by species
   b) The NWAFC system which is made up of data submitted by Japan through INPFC and the MFCMA. This data base is a more general version of the Japanese data base. For example, gear type for trawlers is not distinguished by surimi trawler or freezer trawler. For three years, however, 1977-79, the NWAFC received data breakdown by surimi and freezer trawlers from Japan. Since then, our data base included the two vessel types as a combined unit as requested by our foreign fishing regulations.
2) Catch and effort information on all foreign fisheries collected by U.S. observers. This data base is with the NWAFC.

Sequences of CPUE Data

Some of the more important sequences of data available from past reports provided CPUE trends with the following features:

Sequence 1: from Okada et al. 1982 (see Appendix Table 1)

Fishery	:	Japanese trawl fishery
Area	:	entire Gulf of Alaska combined
Gear	:	surimi factory trawler and frozen-fish factory trawler
Vessel Class	:	various tonnage classes
Period	:	annual period
Time Sequence	:	1973 through 1981
Data Source	:	Japanese data base at FSFRL

Sequence 2: from Low et al. 1980 (see Appendix Table 2)

Fishery	:	Japanese trawl fishery
Area	:	Shumagin, Chirikof-Kodiak
Gear	:	Japanese stern trawlers
Vessel Class	:	tonnage classes 7 and 9
Period	:	Jan-May, Jun-Sep, Oct-Dec
Time Sequence	:	1973 through 1979
Data Source	:	Japanese data base at NWAFC

Sequence 3: from Balsiger and Alton 1981 (see Appendix Table 3)

Fishery	:	Japanese surimi fishery
Area	:	Shumagin, Chirikof-Kodiak
Gear	:	surimi trawler
Vessel Class	:	tonnage class 7
Period	:	4 quarters of the year
Time Sequence	:	1977 through 1980
Data Source	:	Japanese data base at NWAFC

Sequence 4: from Balsiger and Alton 1981 (see Appendix Table 4)

Fishery	:	Korean trawl fishery
Area	:	Shumagin
Gear	:	trawl
Vessel Class	:	tonnage class greater than 3,000 gt
Period	:	Jul-Dec
Time Sequence	:	1977 through 1980
Data Source	:	Observer data base

Sequence 5: from Alton and Nelson 1982 (see Appendix Table 5)

Fishery	:	Japanese surimi trawl
Area	:	Shumagin, Chirikof-Kodiak
Gear	:	surimi trawler for Japan
Vessel Class	:	tonnage class 4
Period	:	quarters 3 and 4 of year
Time Sequence	:	1977 through 1981
Data Source	:	1977-79 from Japanese data base at NWAFC 1980-81 from observer data base

Sequence 6: from Alton and Nelson 1982 (see Appendix Table 5)

Fishery	:	Japanese trawl fishery
Area	:	Shumagin, Chirikof-Kodiak
Gear	:	freezer trawlers
Vessel Class	:	tonnage class 4
Period	:	quarters 3 and 4 of year
Time Sequence	:	1977 through 1981
Data Source	:	observer data base

In addition to CPUE information previously reported, the following two sequences of data (Appendix Tables 6 and 7) were compiled by Miles Alton (NWAFC) using U.S. observer data:

Sequence 7: (see Appendix Table 6)

Fishery	:	Japanese and Korean fisheries
Area	:	entire Gulf of Alaska combined
Gear	:	Japanese surimi trawler, Japanese freezer trawler, Korean freezer trawler
Vessel Class	:	selected tonnage classes
Period	:	annual period
Time Sequence	:	1977 through 1981
Data Source	:	observer data base

Sequence 8: (see Appendix Table 7)

Fishery	:	Japanese fishery
Area	:	Chirikof and Kodiak
Gear	:	freezer trawler
Vessel Class	:	vessel class 3
Period	:	quarters 3 and 4
Time Sequence	:	1979 through 1981
Data Source	:	observer data base

Appendix Table 1. CPUE information from Okada et al. 1982. Trends of groundfish stocks in the Bering Sea and the northeastern Pacific based on additional preliminary statistical data in 1981. (Doc. submitted at the US-Japan bilateral meeting, May 1982. Far Seas Fish. Res. Lab., Fish. Agency of Japan, Shimizu)

CPUE sequence 1

Table 2. CPUE of pollock caught by Japanese fishery in the Gulf of Alaska, tons per hour.

	SURIMI FACTORY TRAWL						FROZEN-FISH FACTORY TRAWL							STANDARDIZED (Frozen-fish Factory Trawl)
GRT / Year	505 1,004	1,005 1,504	1,505 2,504	2,505 3,504	3,505 4,504	4,505	305 354	405 504	505 1,004	1,005 1,504	1,505 2,504	2,505 3,504	3,505 4,505	2,505 3,504
1973	8.492	-	-	7.906	-	10.578	-	0.003	0.012	0.029	0.220	0.211	0.095	0.211
1974	-	-	-	5.429	12.706	8.156	-	0.020	0.014	0.040	0.286	0.737	0.030	0.317
1975	-	-	-	-	-	7.463	-	0.013	0.013	0.053	0.598	0.630	0.061	0.446
1976	-	-	15.333	-	-	10.915	-	-	0.022	0.020	0.377	0.753	0.050	0.495
1977	-	-	-	-	17.030	12.307	0.520	0.815	0.300	0.610	1.281	1.313	0.779	0.951
1978	-	-	-	6.219	-	6.630	0.393	0.277	0.495	0.653	1.926	1.511	0.746	1.466
1979	-	-	-	5.470	-	-	0.284	0.358	0.591	0.764	0.909	1.078	0.189	1.076
1980	-	-	4.375	-	9.000	-	0.289	0.387	0.589	0.916	1.142	3.372	0.278	3.366
1981	-	-	-	-	-	-	0.213	0.434	0.737	0.604	0.663	4.737	0.398	4.729

Appendix Table 2. CPUE information from Low, et al. 1980. Condition of groundfish resources in the Gulf of Alaska in 1980. (Doc. submitted to INPFC. NWAFC, NMFS)

Table 4.--Catch and catch-per-unit of effort (metric tons per one hour) of pollock by directed Japanese trawl fisheries on pollock in the western Gulf of Alaska (1973-79). Catch-per-unit of effort is based on catch and effort of stern trawlers (vessel classes 7 and 9[1/]) in statistical blocks and months where the pollock catch was 50 percent or more of the total fish catch.

CPUE Sequence 2

Shumagin INPFC Area

	Period											
	January-May				June-September				October-December			
	7		9		7		9		7		9	
Year	C	C/F	C	C/F	C	C/F	C	C/F	C	C/F	C	C/F
1973	-	-	-	-	-	-	-	-	-	-	-	-
1974	-	-	583	8.83	282	2.0	298	21.29	-	-	-	-
1975	619	1.68	-	-	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-	-	-	-	-
1977	139	2.67	-	-	-	-	-	-	140	10.00	952	25.73
1978	1231	2.17	-	-	-	-	-	-	-	-	-	-
1979	-	-	-	-	260	2.63	-	-	-	-	-	-

Chirikof-Kodiak INPFC Areas

	Period											
	January-May				June-September				October-December			
	7		9		7		9		7		9	
Year	C	C/F	C	C/F	C	C/F	C	C/F	C	C/F	C	C/F
1973	-	-	-	-	1675	7.94	1555	10.51	380	2.41	-	-
1974	519	2.16	7734	7.12	277	1.91	6605	8.67	109	2.27	5352	8.63
1975	1774	1.90	4142	7.45	148	1.70	-	-	-	-	-	-
1976	119	2.64	4901	11.06	501	3.94	-	-	253	3.12	-	-
1977	917	2.64	982	8.32	2044	2.52	-	-	2647	4.56	3555	12.09
1978	1648	2.01	305	6.63	4621	1.65	-	-	3208	7.60	-	-
1979	-	-	-	-	10,821	4.58	-	-	7963	8.23	-	-

1/ Vessel class 7 has gross tonnage between 2,505 and 3,504, and that of vessel class 9 of 4,505 and greater.

Appendix Tables 3 and 4: CPUE information from Balsiger, J. and M. Alton. 1981. Condition of sablefish and pollock in the Gulf of Alaska in 1981. (Doc. submitted to INPFC. NWAFC, NMFS, NOAA, Seattle, Wa. 98112).

Table 10--CPUE of pollock (t/hr) by Japanese surimi and vessel class 7 1/ trawlers in the Shumagin and Chirikof-Kodiak areas by quarter of the year (1977-80).

CPUE Sequence 3

	Shumagin SURIMI				Chirikof-Kodiak SURIMI			
	Quarter				Quarter			
Year	1	2	3	4	1	2	3	4
1977	-	-	-	17.2	8.1	-	-	15.4
1978	-	-	-	2.3	6.6	-	-	6.5
1979	-	-	0.8	4.2	-	4.9	1.6	7.9
1980	-	-	-	-	3.3	4.6	6.8	7.8
	CLASS 7				CLASS 7			
1977	* *	-	2.6	7.3	1.6	2.5	2.2	4.2
1978	2.3	1.8	2.6	*	1.8	3.0	1.5	3.8
1979	-	-	1.5	3.5	-	1.3	2.7	3.8
1980	-	*	*	*	-	2.5	2.3	4.0

1/ CPUEs based on catch and related effort in 1° x 1/2° blocks and months where the all-species catch contained 30% or more pollock.

*Insignificant catch

Appendix Table 4.

Table11.--CPUE (t/hr) of Korean trawlers of greater than 3,000 gt in the Shumagin area (based on reported catch and effort for the July to December period of each year).

CPUE Sequence 4

	Year			
	1977	1978	1979	1980
CPUE	7.3	5.9	5.9	6.3

Appendix Table 5. CPUE information from Alton, M. and R. Nelson. 1982. Status of the Gulf of Alaska pollock resource. (Doc. submitted to the NPFMC at the May Council meeting in Anchorage. NWAFC, NMFS, NOAA, Seattle).

Table 5.--CPUE of Japanese surimi-type trawlers and ROK freezer trawlers (Class 4) in western Gulf of Alaska (tons/hr) (3rd and 4th quarter).

CPUE Sequence 5	Japan					
	(61) Shumagin		(62) Chirikof		(63) Kodiak	
Year	3	4	3	4	3	4
1977	--	17.2	--	15.2	--	25.9
1978	--	2.3	--	4.5	--	12.9
1979	4.2	--	3.8	--	5.5	8.0
1980[1/]	--	6.4	9.3	6.9	4.8	5.9
1981[2/]	6.4	6.6	--	12.2	--	--

CPUE Sequence 6	ROK					
	(61) Shumagin		(62) Chirikof		(63) Kodiak	
Year	3	4	3	4	3	4
1977	9.4	6.8	--	11.9	--	--
1978	4.0	6.8	--	--	--	--
1979	4.5	5.6	--	--	--	--
1980	5.4	6.7	--	--	--	--
1981[3/]	3.6	4.1	6.3	5.0	--	--

1/ 70% rule on medium trawlers; Japan did not report in a separate category their catch and effort of Surimi trawlers.

2/ From observer cruises on Surimi large trawlers; reported total catch and associated effort not available from Japanese as of May 7, 1982

3/ This is the correct data that should have been reported in Alton and Nelson (1982).

Appendix Table 6. CPUE sequence 7: Pollock CPUE in the Gulf of Alaska based on U.S. observer data during July-December 1978-81.

A. Japanese surimi trawlers

Year	Catch	Effort	CPUE (t/hr)
1978	803	83	9.7
1979	3,047	416	7.3
1980	322	83	3.9
1981	2,918	273	7.8

B. Japanese medium-sized freezer trawlers (Class 4)

Year	Catch	Effort	CPUE (t/hr)
1977	815	154	5.3
1978	1,043	500	2.1
1979	539	123	4.4
1980	204	64	3.2
1981	1,776	485	3.7

C. Republic of Korea freezer trawlers

Year	Catch	Effort	CPUE (t/hr)
1978	1,981	623	3.2
1979	2,433	649	3.8
1980	4,407	657	6.7
1981	2,077	263	7.9

Appendix Table 7. CPUE Sequence 8: Pollock CPUE (t/vessel day) by Japanese freezer trawlers of vessel class 3 in the Gulf of Alaska. Catch and effort data were taken by U.S. observers.

A. CPUE Trend (metric tons per vessel day)

	Chirikof		Kodiak	
	3	4	3	4
Year				
1979	32.3	-	21.5	64.5
1980	66.0	84.6	44.5	60.0
1981	63.4	112.3	33.2	-

B. Catch and effort information used to compute CPUE above (catch in metric tons and effort in vessel-days fishing)

		Chirikof		Kodiak	
		3	4	3	4
1979	catch	1,097	-	883	5,550
	effort	34	-	41	86
1980	catch	1,848	3,555	5,827	4,984
	effort	28	42	131	83
1981	catch	5,587	12,249	1,261	-
	effort	88	109	38	-

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7/14/82 - Deriso

Appendix B

Preliminary results of age-structure analysis

for Gulf of Alaska Pollock

In July 1982, Miles Alton (NWAFC) and Rick Deriso (IPHC) began a quantitative analysis of Pollock age-structured catch data. This data covers preliminary estimates of the number of Pollock caught in each age class (for 3-10 year-olds) during each year (from 1976 through 1981), by all reported vessels in the combined Kodiak, Chirikof, and Shumagin regions.

A first-cut analysis of the Pollock data has been completed and the preliminary results are listed in Tables 1 and 2. Results suggest that exploitable Pollock biomass is higher in recent years (1979-1981) than in earlier years (1976-1978). Average exploitable biomass for the six years of data ranges from a low estimate of 632,000 metric tons to a high estimate of 1,160,000 metric tons with the best estimate at 859,000 metric tons. Year-class strength (Table 2) is estimated to be much higher in the 1978-1981 time period than in the years 1976 and 1977. Annual surplus production was also calculated and it represents the amount of Pollock which can be removed in a given year so that exploitable biomass at the beginning of the next year remains unchanged from the biomass at the beginning of the year. Annual surplus production (Table 1)has varied substantially from year to year, ranging from a deficit of 10,000 metric tons to a high surplus of 475,000 metric tons, according to preliminary best estimates. Average annual surplus production ranged from a low estimate of 171,000 metric tons to a high estimate of 388,000 metric tons.

Table 1. Preliminary estimates of exploitable biomass and annual surplus production for Pollock aged 3-10 years in the combined regions Kodiak, Chirikof, and Shumagin (units of 1000 metric tons). Figures in parentheses are approximate 95% confidence intervals around the best estimates.

Year	Total exploitable biomass	Annual surplus production	Catch (3-10 ages)
1976	536 (494-653)	164 (129-194)	83
1977	618 (540-765)	-10 (-12- -4)	111
1978	496 (417-648)	399 (311-546)	84
1979	812 (644-1112)	475 (273-644)	98
1980	1188 (820-1658)	407 (153-558)	91
1981	1504 (881-2124)	*	133
Average	859 (632-1160)	287 (171-388)	100

*Not computable

Table 2. Preliminary estimates of abundance of three-year-old Pollock in the combined Kodiak, Chirikof, and Shumagin regions (units in millions of fish). Figures in parentheses are approximate 95% confidence intervals around the best estimates.

Years	Abundance of three-year-olds
1976	442 (343-542)
1977	281 (289-362)
1978	1328 (917-1738)
1979	2035 (1258-2729)
1980	1610 (849-2184)
1981	1230 (506-1712)
Average	1154 (693-1545)

GULF OF ALASKA GROUNDFISH

PLAN MAINTENANCE TEAM

MEETING REPORT

June 28, 1982

DRAFT

33D/R-1

The Gulf of Alaska Plan Maintenance Team (PMT) met on Thursday and Friday, June 24 and 25, 1982 at the Northwest and Alaska Fisheries Center. On June 24th the PMT met in a closed session and on June 25th the team met with the public. A list of agency personnel and public attendees is at the end of this report.

The PMT met to discuss sablefish management in the Gulf of Alaska. The PMT considered the sablefish equilibrium yield in the Eastern Regulatory Area, and the effect that foreign fishing in the western Yakutat area may have on the domestic fishery. The PMT also considered the acceptable biological catch (ABC) of pollock in the Central Gulf of Alaska.

Sablefish

The PMT makes the following recommendations:

1. No further allocations of sablefish should be made to foreign fleets in the Eastern Regulatory Area.

2. In the Eastern Area the Optimum Yield (OY) should equal the Domestic Annual Harvest (DAH), OY = DAH, but should be less than or equal to the acceptable biological catch (ABC). The ABC for sablefish Gulf-wide should be 75% of the equilibrium yield (EY).

3. If recommendations 1 and 2 are adopted, then the management divisions of the Eastern Regulatory Area should remain as Yakutat (137°W - 147°W), Southeast outside and Southeast inside waters.

Discussion

The team noted the following points which support the above recommendations:

1. At the May 1982 meeting, the Council by formal motion, reaffirmed the PMT's working hypothesis about Gulf of Alaska sablefish management. Notably, the Council restated its objective to promote the domestic sablefish fishery throughout the Gulf. The PMT has stated in earlier reports (March 11, 1982) that significantly reduced OY for the Gulf would be necessary to promote the domestic fishery. Removing foreign effort from the Yakutat area will enhance the expansion of the domestic fleet to the area.

2. The team noted recent indications from fishermen and processors of intent to harvest and process sablefish in the Yakutat west of 140°W area. At least three processors have indicated their intent, North Pacific Processors and Mor-Pac of Cordova and Seward Fisheries.

3. As of June 15 the domestic fleet has landed approximately 540 tons of sablefish caught in the FCZ off Southeast. At current catch rates and given the likelihood of a harvest of over 500 mt from inside Southeast waters, the domestic harvest probably will exceed the EY of 1,290 mt for Southeast. If the Southeast EY level is reached, the PMT recommends that the Regional Director close the FCZ by emergency order for conservation reasons. This would require the domestic fleet to fish in the Yakutat area if they want to fish sablefish.

4. Uncertainty exists as to the extent of sablefish migration from the western part of Yakutat to the area east of 140°W longitude where the domestic fishery has been currently operating. Removing foreign effort from the area west of 140°W will decrease the probability of interception by foreign fishermen of large sablefish migrating eastward.

5. Biological parameters for sablefish are poorly known. It is unlikely with removal of foreign effort from the Yakutat area that the total harvest will equal the ABC. If the slower growth curves (Bracken, Beamish, et al.) prove correct, productivity of the stock is probably significantly less than current estimates. Domestic harvests below the current estimates of ABC would have provided a margin of safety to avoid overharvesting the stocks, if slower growth curves are substantiated.

6. The team reiterates a point made in its April 29, 1982 report to the Council about EY in Southeast.

> "The Zenger pot survey (1981) showed a 50% decline in relative abundance of [marketable] sablefish in Southeast in 1981. The team notes that this is a precipitous and not expected decline, based on estimated rates of mortality and recruitment. The team considered that the 50% decline shown by Zenger (1981) may be due to a decrease in availability of sablefish to the survey gear. This possibility would result in an underestimate of the EY for Southeast. The effect of changes in availability on the survey results and the EY estimates should be examined in the next status of stocks documents."

Pollock

The PMT has not found sufficient evidence to recommend that ABC for pollock in the Central Regulatory Area be increased above the low end of the MSY range given in the FMP.

The PMT noted the following points in support of their determination:

1. Pollock biomass and ABC are not precisely estimated. There are several sources of imprecision in the estimates. Most of these sources could have biased the estimates either up or down. The PMT agrees that only one of these sources (the catchability coefficient used in the area swept technique) would have resulted in an obvious negative bias leading to a too low population estimate (see Appendix #1).

2. There is no new evidence that the stocks are increasing or that the old biomass estimates were wrong. Using the lower end of the confidence intervals around the hydroacoustic estimates, as advised by the scientists who conducted the 1981 Shelikof hydroacoustic survey, results in an estimate of 375,000 tons of spawning pollock in Shelikof Straits. This is not inconsistent with the old biomass estimate of 595,000 tons for the entire Central area as determined by the trawl surveys.

   Preliminary CPUE from the commercial fisheries through 1981 shows a slight decline from 1980 to 1981 in the Central Gulf area for most gear types and areas where data is available (see Appendix #2, CPUE Table).

3. The catch in the Central area under the present estimated ABC will likely be about 95,000 tons for 1982. This is approximately a 28% increase over 1981. The recent catch history in round numbers is:

1977	1978	1979	1980	1981	1982
66,000	66,000	69,000	62,000	74,000	95,000 (projected)

The PMT believes this is a significant increase and suggests that no change be made until more analysis to be presented in the 1982 status of stock document is available this October.

4. The present fishery is on the spawning grounds. The implications of a concentrated fishery on a concentrated spawning stock are not clear. The PMT believes a conservative approach is warranted.

5. Migration patterns and stock interrelationships are not clear, but most indications are of a single stock in the Central area. Consequently, the spawning stock being fished in Shelikof in April is the same stock that would be subject to a fishery elsewhere later in the year if ABC is increased.

6. The pollock stock and fishery is influenced as stronger year classes pass through the fishery. The 1972 year class (no longer important) and the 1975 and 1976 year classes appear to be strong. There may be a need to retain older fish in the stock for spawning purposes or for economic reasons for the shorebased domestic processors.

7. The PMT points out that the significant halibut savings achieved by capturing pollock in Shelikof Strait with off-bottom gear would be partially offset if an on-bottom fishery was allowed later this year.

Agency Personnel at the June 24-25, 1982 Meeting

IPHC	Steve Hoag Rick Deriso
NMFS, AK Region	Ron Berg
NMFS, NWAFC	Jim Balsiger Joe Terry Rich Marasco Miles Alton Eric Brown Craig Rose
ADF&G	Phil Rigby Jim Blackburn Barry Bracken
NPFMC	Jeff Povolny

Public attendees:

Name	Representing
Robert Alverson	FVOA - Seattle
Tom Dark	NMFS
Richard Goldsmith	NPFVOA
Henry Haugen	sablefish pot fishermen
Stephen B. Johnson	JDSTA
Paul MacGregor	NPLGA
Masaaki Matsuzama	Nippon Suisan
Tadashi Nemoto	NPLGA
Russell B. Sleipness	Jublilee Fisheries
Mick Stevens	MRC

Appendix #1

UNCERTAINTIES IN ESTIMATING POLLOCK YIELD

The estimates of pollock abundance and productivity contained in the FMP were derived from five bottom trawl surveys conducted in the Gulf of Alaska in the spring and summer from 1973 to 1975. Hughes and Hirschhorn (1979) describe the survey process and the analysis of the original data. They report:

> "An area-swept technique (Alverson and Pereyra 1969) was employed to estimate the pollock exploitable biomass, using the relation $\overline{pw} = \frac{(CPUE)(A)}{c\ \bar{a}}$ where $\overline{pw}$ is equal to the average standing stock, in weight, of the catchable population. A is the total area; $\bar{a}$ is the average bottom area covered by the trawl per standard tow; and c is a coefficient related to the effectiveness of the trawl in capturing pollock.
>
> Whereas earlier studies in Alaskan pollock assumed c = 1.0 (Alverson and Pereyra 1969), pollock were often acoustically detected off the sea bottom and above the trawl's headrope. Estimates of c given for some gadoid species of the northeastern Atlantic Ocean indicate c may not exceed 0.51 (Edwards 1968). In this report, values of both 0.5 and 1.0 provide a conservative range of biomass estimates."

Using this procedure, they calculated the "summer biomass of pollock exceeding 20 cm FL" as 610,000 to 1,200,000 tons. These numbers did not include an estimate for the portion of the Gulf from approximately 157° to 162°W longitude where no surveys were conducted.

Alton, et al. (1977) extrapolated fish densities from the surveyed areas to the non-surveyed areas and estimated the exploitable biomass for the entire pollock resource in the Gulf of Alaska at 1,055,000 to 2,110,000 tons.

Alton, et al. (1977) then applied the omnipresent yield equation MSY = .4MB to the extremities of the estimated biomass range and suggested the annual potential yield was 169,000 to 338,000 tons (95,200 to 191,000 mt in the Central area).

Subsequent to the completion of the survey cruises described above, the NWAFC adopted an alternate strategy for monitoring pollock stocks. The new procedure consists of analyzing CPUE in the commercial pollock fisheries supplemented with survey cruises designed to sample pollock populations for year class strength and other biological parameters. Consequently, the recent cruises in the Gulf are not designed for projecting biomass estimates. In the near future, it is expected that hydroacoustic and ichthyoplankton surveys will prove useful in ascertaining the condition of pollock stocks.

There are several things which lend uncertainty to the final estimate of available yield:

1. The inherent variability of sample data.

   Measures of sample variance have not been included in presentation of abundance estimates. Biases could be + or -.

2. The "c" in the biomass equation.

   Catchability cannot be determined. Due to the relatively shallow opening of the trawls used for biomass estimates, it is extremely unlikely that the herding effect of trawl lines and doors could result in a catchability near 1. Bias is likely -.

3. The appropriateness of extrapolating density values from the surveyed areas to the non-surveyed areas.

Evidence from recent surveys in the previously non-surveyed area suggest that errors from this extrapolation possibly resulted in an overestimation of abundance. Bias then is +.

4. The ".4" and M in the yield equation as well as the appropriateness of the yield equation.

Date accumulation has reached a level which will allow yield determination by alternative methods in the near future (perhaps in 1983). At the present time, alternative calculations of yield have significant drawbacks. Biases couuld be + or -.

5. How the observed year class strength affects interpretation of the yield equation results.

Hughes and Hirschhorn (1979) found the age at maximum biomass for pollock cohorts in the Gulf of Alaska was between 3.6 and 5.45 years and age at first maturity at 2.84 to 4.30 years. The 1975 and 1976 year classes are identified as being strong year classes.

Appendix #2

CPUE of Japanese surimi-type trawlers for the 3rd and 4th quarters, 1977-81, in the Kodiak and Chirikof areas.
Source: NMFS, NWAFC

Year	Foreign Reported (tons/hour)		Observer Reported (tons/day)	
		CHIRIKOF		
	3	4	3	4
1977	*	15.2	--	--
1978	*	4.5	--	--
1979	3.8	*	32.3	*
1980	1/	1/	66.0	84.6
1981	1/	1/	63.4	112.3
		KODIAK		
	3	4	3	4
1977	*	25.9	--	--
1978	*	12.9	--	--
1979	5.5	8.0	21.5	64.5
1980	1/	1/	44.5	60.0
1981	1/	1/	33.2	*

* insufficient rates and effort

1/ unable to identify catch and effort of surimi-type trawlers

CPUE of ROK Freezer Trawlers (Class 4) in Western Gulf of Alaska
(3rd and 4th quarter)
Source: NMFS, NWAFC

Year	(61) Shumagin		(62) Chirikof		(63) Kodiak	
	3	4	3	4	3	4
1977	9.4	6.8	--	11.9	--	--
1978	4.0	6.8	--	--	--	--
1979	4.5	5.6	--	--	--	--
1980	5.4	6.7	--	--	--	--
1981	3.6	4.1	6.3	5.0	--	--

CPUE of Korean Trawlers (> 3,000 gt) in Western Gulf of Alaska by quarter, 1977-81.[1/]
Source: NMFS, NWAFC

Year	Shumagin		Chirikof	
	3	4	3	4
1977	9.4 (9.4)[2/]	6.8 (6.8)	--	11.9 (11.9)
1978	4.4 (4.4)	7.0 (7.0)	--	7.2 (7.2)
1979	6.1 (6.1)	5.7 (5.7)	--	--
1980	5.7 (5.7)	7.0 (7.0)	--	--
1981	5.1 (5.2)	4.6 (5.9)	6.6 (6.9)	8.0 (8.3)

1/ from foreign reported rates and effort statistics

2/ CPUE based on 30% rule in parenthesis

GULF OF ALASKA GROUNDFISH

PLAN MAINTENANCE TEAM REPORT

June 28, 1982

APPENDIX #3

POLLOCK INFORMATION PAPER

by James Blackburn
Alaska Department of Fish and Game, Kodiak

Prepared for the June 24-25, 1982
Gulf of Alaska PMT Meeting

Information which may be pertinent to Pollock stock status in the Central Gulf of Alaska, from the Alaska Department of Fish and Game Groundfish Research

Introduction

The North Pacific Fishery Management Council has requested the Gulf of Alaska Groundfish Management Plan maintenance team to review information on the status of walleye pollock stocks in the Gulf of Alaska. Two questions were asked: can the optimum yield be increased and could pollock taken in Shelikof Strait in early 1982 by joint ventures be a stock separate from others in the Gulf?

The groundfish research staff of Alaska Department of Fish and Game does not have information which may be used to calculate optimum yield. This report is a compilation of virtually all the information on pollock which the groundfish staff has collected with some discussion and comments pertinent to the questions posed.

Sources

The ADF&G has had an observer program for the small domestic fishery since the spring of 1978. Observers have documented catch composition and taken a few length measurements. Values of catch per unit effort of pollock are available based on observer coverage. These values must be used with caution since pollock are usually not the target species.

Samples of pollock landed at Kodiak processors have been taken in 1980, 81 and 82. These include samples for length composition and age analysis.

Surveys were conducted in the northern half of Shelikof Strait in 1980 and 1981 and in the Chignik management area of ADF&G in 1981. These were

designed primarily to assess stocks of Tanner crab. A 400 mesh eastern otter trawl with a 1¼ inch mesh cod end liner was used and catch was sampled providing length frequencies, catches and population estimates.

Available Information

Age Frequencies

Age frequencies of pollock from port samples indicate that the 1976 year class has been important in the three years sampled (Figure 1).

The 1980 and 1981 age frequencies are based upon single samples while the 1982 age frequency is based on four random samples. The consistency among samples strongly suggests that they reflect age composition.

Length Frequencies

The length frequencies from port sampling in 1980 are few. A greater number were taken in 1981 but the best sample was taken in 1982, the largest number of fish were measured and the largest number of landings were sampled.

Length frequencies from observers were routinely collected by some observers, not by others, and fishing location varied. These seem more variable in both fish size and sample size.

Length frequencies were occasionally taken during the trawl surveys. They probably only roughly reflect relative abundance and may be highly biased due to the absence of an effort to be complete or representative.

The best size frequencies in 1982, from port sampling and observers, show larger average sizes than any of the 1980 samples. This suggests an increase in average size between 1980 and 1982.

Population Estimates

The population estimates for pollock in the northern half of Shelikof Strait were 6,300 to 10,000 mt in 1980 and 10,600 to 20,900 mt in 1981. The increase is partly due to an 11.5% increase in survey area in 1981.

The population estimate for pollock in the Chignik area in 1981 was 74,500 to 134,600 mt. These population estimates per unit of area surveyed are 5.96 to 9.43 mt per square nautical mile in northern Shelikof Strait in 1980, 8.94 to 17.63 mt per square nautical mile in northern Shelikof Strait in 1981, and 22.63 to 40.88 mt per square nautical mile in the Chignik area in 1981. Comparable figures from these areas in 1973-76 are 21.4 mt per square nautical mile in Chirikof and 4.1 mt per square nautical mile in Shelikof Strait (Ronholt, Shippen and Brown 1978).

Catch per unit effort

Observer coverage of domestic vessels has provided the following figures for CPUE of pollock in Shelikof Strait: 1978 - 730 kg/hr; 1979 - 1133 kg/hr; 1980 - 616 kg/hr; and 1981 - 429 kg/hr (736 kg/hr discarding questionable values). Comparable figures for 1982 do not exist. In 1982 most of the fishing effort and observer coverage has been on the east side of Kodiak, while previously it was in Shelikof. In addition the effort in 1982 has been directed toward unusually high concentrations of cod.

Discussion

The age frequencies show a clear predominance of the 1976 year class in 1980, 81 and 82. The average age of pollock aged was: 1980, 4.8 years; 1981 6.5 yrs; 1982, 5.7 yrs. Th high age in 1981 was probably due to the tendency of domestic vessels to fish inshore areas where cod and large pollock are more common and, when targeting pollock, to try to get the largest fish. This was also a single landing in 1981, as was the 1980 sample.

If the 1980 sample is considered to be fairly representative, then the 1982 samples clearly show an increase in age as well as size. The C.P.U.E. figures are not well based nor are the population estimates. Relatively few

trips were sampled for the CPUE figures and the population estimates may have been affected by immigration to the study area. Most of the samples were taken in the northern half of Shelikof Strait and it is not known how much these fish interchange with pollock on the continental shelf where foreign fisheries operate. This information is of relatively little value in monitoring the stock status of pollock in the portion of the Gulf of Alaska exploited by foreign fisheries.

I feel that the age distribution is representative of pollock recruitment conditions and it may or may not show effects of foreign fishing, depending upon population exchange between Shelikof Strait and the continental shelf stocks.

I have no direct evidence on the second question, whether the pollock exploited by the joint ventures in Shelikof Strait in winter-spring is a population separate from the stocks exploited by the foreign fleets in the central Gulf of Alaska. But indirect evidence exists.

The domestic fishermen were the original source of the information that pollock were present in Shelikof in the winter. They had seen great concentrations of them on the echo sounders and reported them to me. Reports were specific that they were present only in winter. I suggested to Lael Ronholt that Shelikof Strait be investigated when he came to Kodiak in fall of 1979 seeking input for a Miller Freeman cruise plan. When the Miller Freeman found them the following March I accepted an invitation to accompany them on part of the cruise. The pollock were found to move about, some of the time they were into Shelikof about as far as Raspberry Strait but on the west side and some of the time they were quite far south west, nearly to Chirikof Island. The thinking at the time was that they probably dispersed both east

and west of lower Shelikof after spawning, into areas exploited by foreign vessels.

Summer surveys have been conducted in the area and the population size seen in winter has not been present.

There is no evidence to suggest that the population of pollock exploited in Shelikof by the joint ventures in 1982 is separate from the population exploited by the foreign fishery. All indirect evidence suggests the opposite.

Conclusion

The age and size of pollock exploited by the domestic fleet, primarily in northern Shelikof Strait but also in other areas, seems to be stable or increasing. This may be reflection of decreased recruitment or of the passage of a large 1976 year class through the fishery.

There is no evidence to suggest that the population of pollock exploited in Shelikof Strait by the joint ventures in 1982 is separate from the population exploited by the foreign fleet. All indirect evidence suggests the opposite.

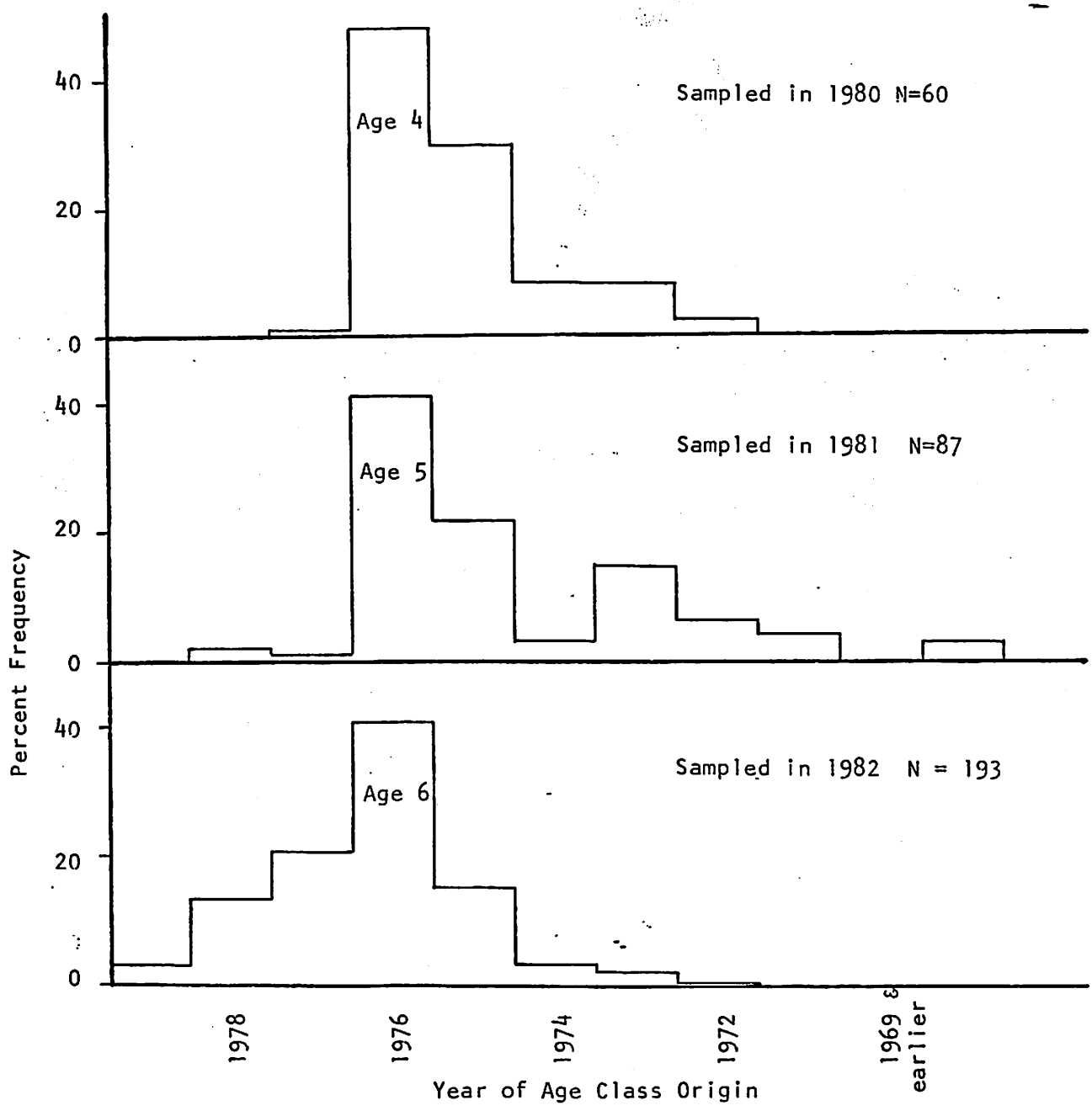

Figure 1. Age frequencies of pollock from samples taken upon landing at Kodiak during 1980, 1981 and 1982. Note that ages are offset so that a given year class is in the same column for each year.

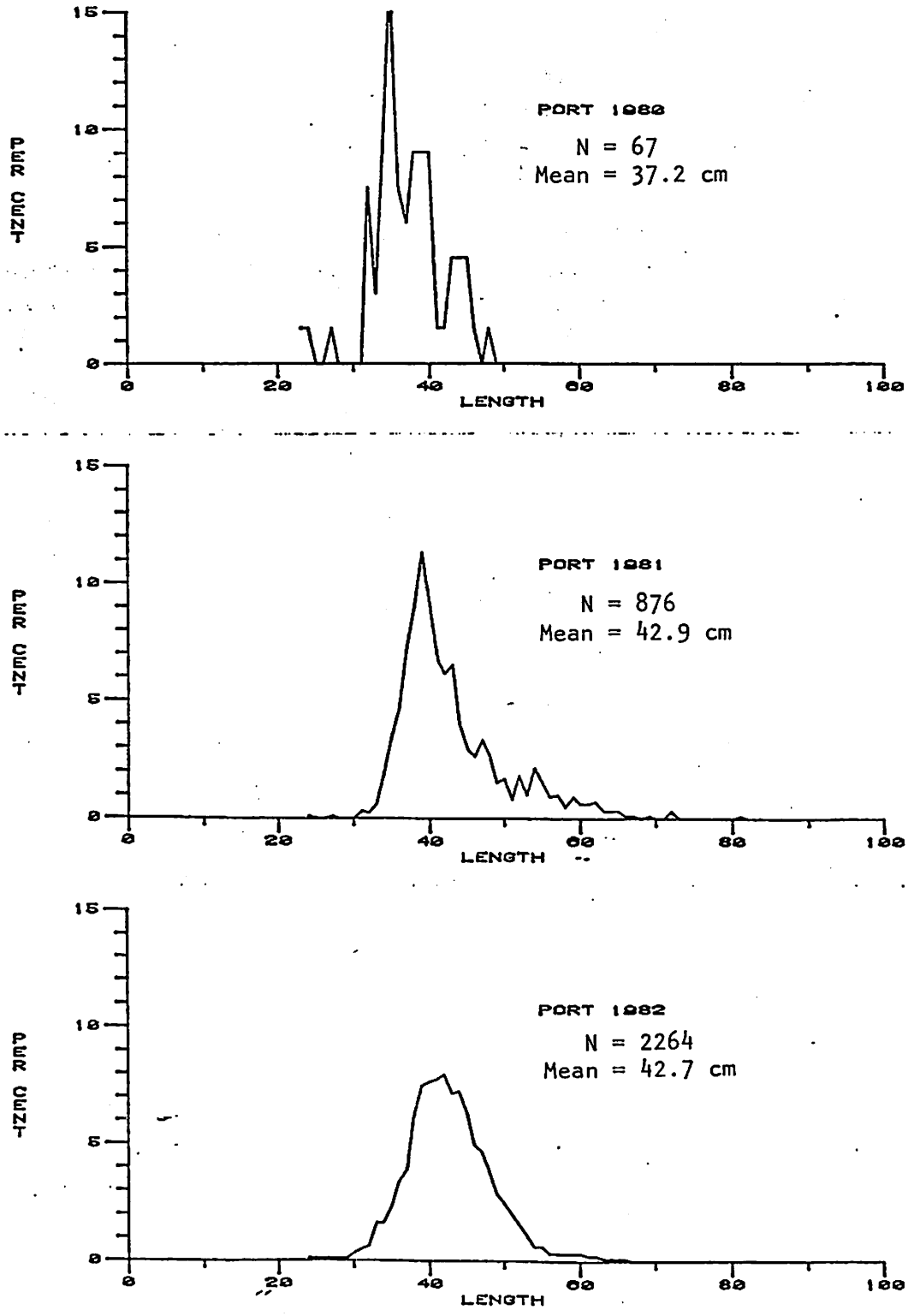

Figure 2. Length frequencies of pollock taken from fish sold in Kodiak during 1980, 1981 and 1982.

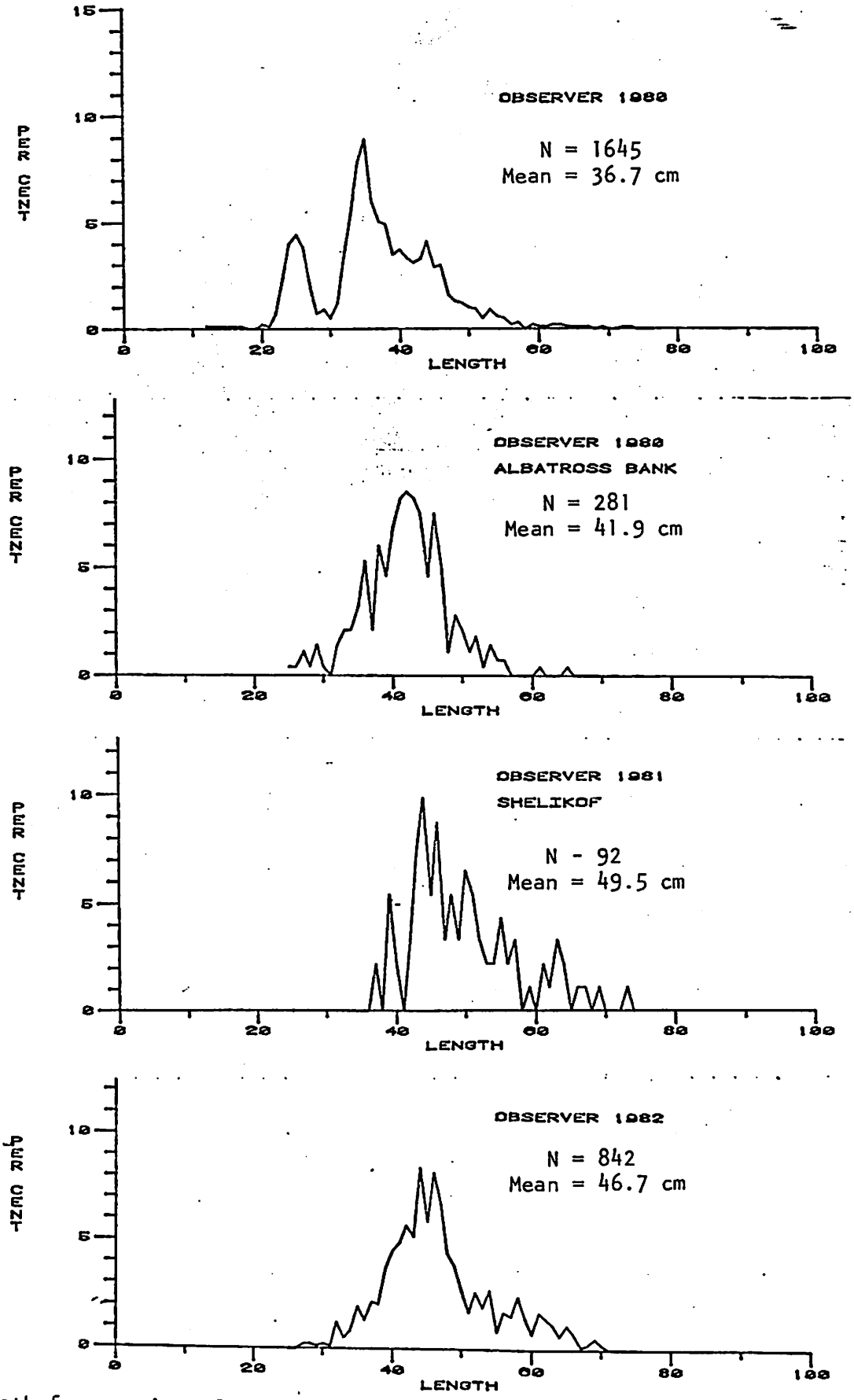

Figure 3. Length frequencies of pollock taken by observers aboard domestic groundfish vessels in 1980, 1981 and 1982 generally in Shelikof Strait.

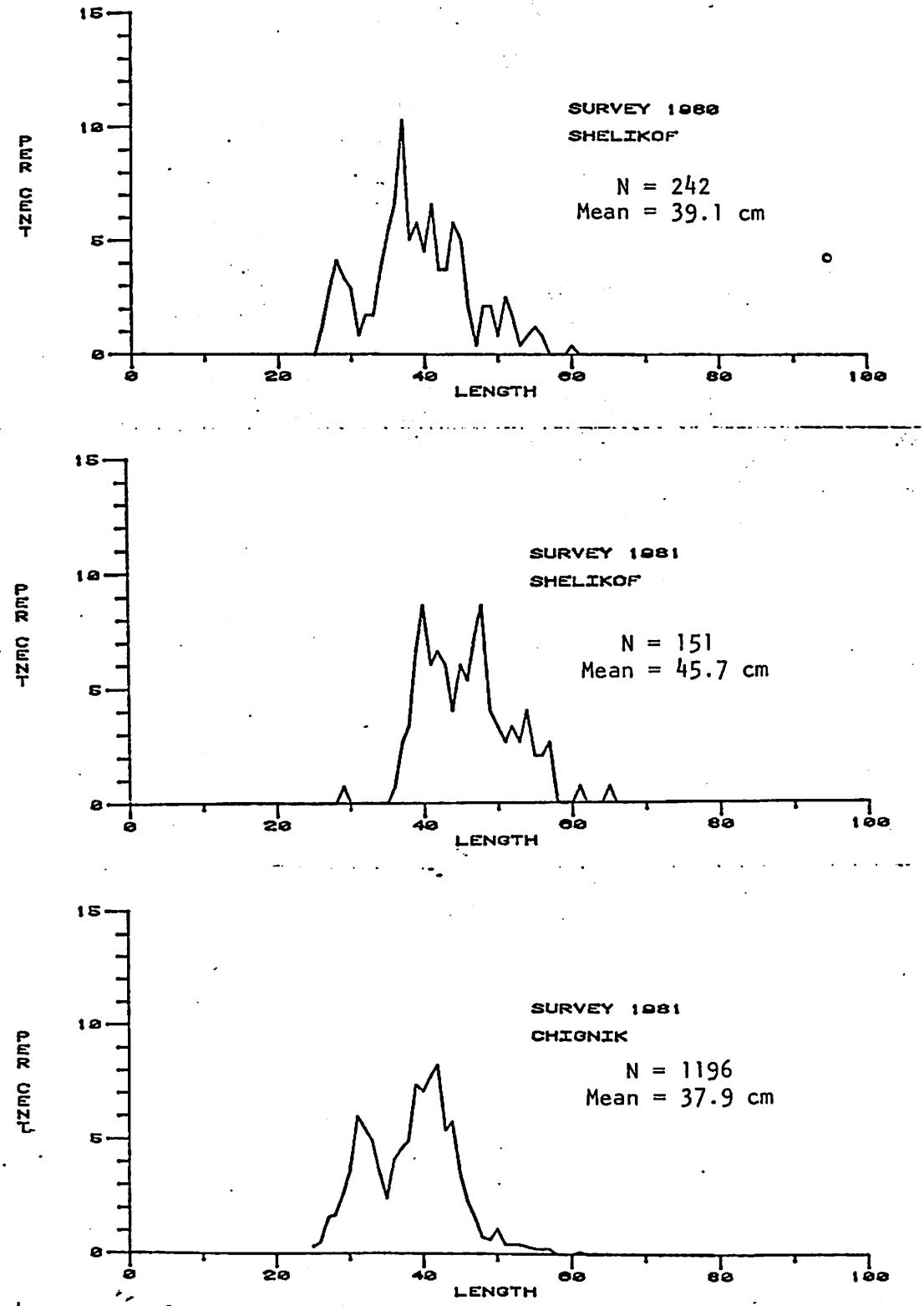

Figure 4. Length frequencies of pollock taken during surveys in Shelikof Strait and Chignik in 1980 and 1981.

AGENDA D-5(a)
JULY 1982

ILWACO FISH CO. & JESSIE'S CHARTER SERVICE

(Formerly Eides)

P. O. Box 216

Port Docks, Ilwaco, Washington 98624

AL AND JESSIE MARCHAND

Phone: (206) 642-2325

ACTION	ROUTE TO	INITIAL
	Exec. Dir.	
	Deputy Dir.	
	Admin. Off.	
	Exec. Sec.	
	[illegible]	
	[illegible]	
	[illegible]	
	[illegible]	
	Sec./Typist	

July 1, 1982

Mr. Jim Branson
Executive Director
North Pacific FMC
Anchorage, Alaska

Dear Jim:

As a blackcod pot fisherman and advisor to the Pacific Fishery Management Council I must comment on the proposal to limit black cod fishing in the Gulf of Alaska to hook and line only.

It is my intention to move my gear and explore the Alaskan waters for black cod. Initially I will fish with 600 pots. My concern is the talk in Alaska about gear conflicts with my pots.

My experience has shown that the answer to the problem of gear conflict is communication and cooperation. No fisherman wants to jeopardize his livelihood by losing gear. As long as I am able to communicate with other grounds users I am willing to adjust my gear positioning to avoid gear conflicts.

I do not feel that ever increasing legislature is the answer to the conflict problem. Therefore, I am strongly opposed to any proposals now being considered by the council restricting the black cod fishery to hook and line only.

Thank you for your attention to this matter. Please address any correspondence to Jessie's Ilwaco Fish Co.

Sincerely Yours,

James Schones

James Schones
F/V Collier Brothers
F/V Lisa Rose

Law Offices

GARVEY, SCHUBERT, ADAMS & BARER
A PROFESSIONAL SERVICES CORPORATION

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*Washington State and District of Columbia Bars
**District of Columbia Bar
***Virginia State Bar
****Oregon State and District of Columbia Bars
All others Washington State Bar

30TH FLOOR
THE BANK OF CALIFORNIA CENTER
SEATTLE, WASHINGTON 98164

(206) 464-3939

TELEX: 32-1037 (LEX SEA)
CABLE: LEX-SEATTLE

WASHINGTON, D. C. OFFICE
1000 POTOMAC STREET N. W.
WASHINGTON, D. C. 20007

(202) 965-7880

Please reply to Seattle office

July 15, 1982

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

Re: Central Gulf of Alaska Pollock OY

Dear Jim:

We are writing to you on behalf of the Japan Deep Sea Trawlers Association (JDSTA). As we have previously informed the Council, JDSTA members are facing an emergency situation. The current Japanese allocation of pollock in the Central Gulf of Alaska would sustain something like normal operations only until approximately August 1, 1982. The fishing activities of the Japanese trawl fleet in the Central Area -- the most productive area of the Gulf -- will be drastically disrupted unless additional pollock allocations are made available to Japan before that date. Such allocations will not be forthcoming unless the Council recognizes at its July meeting that the Central Area pollock OY has in fact increased since the FMP was adopted. If the Council fails to act in July to raise the pollock OY, substantial surpluses of other groundfish species already allocated to Japan will go unutilized. In addition, since we believe that the Central Area pollock stock will support additional harvest this year, failure to permit this harvest to take place will result in the waste of available pollock surpluses as well.

We believe that the recent Gulf of Alaska plan maintenance team report entitled "Pollock ABC in the Central Area" is misleading in several respects and does not fairly reflect the best available scientific information on the status of the pollock stock.

The conclusion of the PMT that the ABC should not be increased at this time directly contradicts the position taken by the Northwest and Alaska Fisheries Center (NWAFC) in the U.S.-Japan

Bilateral Meetings on Fisheries Assessment, May 1982. At page 20 of the NWAFC Summary of Reports of Bilateral Meetings, May-June 1982, the NWAFC position is stated as follows:

> "Based on this new information from the hydroacoustic survey and other evidence that the stock is in very good condition, U.S. scientists believed the EY for pollock in the central Gulf area will be increased."

However, without reference to this assessment by NWAFC scientists in May of this year, the PMT came to entirely the opposite conclusion one month later based on essentially the same information. Instead of reporting the ongoing debate on this issue and the data and interpretation supporting both sides, the data and interpretation presented in the PMT report presents a selective argument in support of the PMT's conclusions. The result in our view is that the PMT report on the Central Gulf Pollock OY issue is misleading and inaccurate and therefore should not be accepted as a basis for Regional Council action.

Our specific criticisms of the PMT report are as follows:

1. The PMT's discussion of the uncertainties surrounding the pollock biomass estimate is misleading because it does not support their conclusion.

The "area-swept technique" used for estimating exploitable pollock biomass in the FMP has a number of variables associated with it. However, with the exception of the catchability coefficient, the PMT has presented no evidence or analysis with respect to any of the variables actually used to calculate biomass which would indicate that the estimate produced is inaccurate, i.e. biased high or low. Unless the PMT can provide a more reliable estimate based upon a better methodology or demonstrably more reliable assumptions, the estimates produced by the area-swept technique are the best available.

In Appendix No. 1 to the PMT report, the PMT identifies "variability of sample data" and the elements of the yield equation MSY = .4 MB as relevant uncertainties inherent in the area-swept technique. However, the PMT also indicates that they have no basis for concluding that these variables in fact biased the biomass estimate up or down. Nor did the PMT provide any basis for a conclusion that the sampling method employed or the standard yield equation used would produce anything but an accurate estimate of biomass. Hughes and Hirschorn (1979)

describe the results of the five survey cruises conducted between 1973 and 1975 on which the FMP biomass was based. They conclude that "Agreeability of size, age and growth data between surveys over the three year study period indicated that assessment techniques were reliable." Hughes and Hirschorn (1969) at page 273. If the PMT wishes to disagree with this conclusion, they ought to provide some evidence or analysis which would support their position.

The only variable involved in the area-swept technique which in fact plainly biases the resulting biomass estimate is the catchability coefficient. The PMT acknowledges in its report that the use of a catchability coefficient of 1.0 to derive the biomass estimate used in the FMP as the basis for establishing ABC and OY results "in an obvious negative bias leading to a too low population estimate." The fact is that the biomass estimate used in the FMP as the basis for establishing ABC and OY assumes a catchability coefficient of 1.0, i.e., that the survey trawl caught 100% of the pollock in the water column above the area traversed. Hughes and Hirschorn (1979) and ordinary common sense all indicate that this assumption is plainly wrong. Hughes and Hirschorn cite evidence that the correct catchability coefficient "may not exceed 0.51." Since the true catchability coefficient is certainly less than 1.0 -- and may well be less than 0.5 -- it seems apparent that the biomass figure employed in the FMP as the basis for determining ABC and OY underestimates the actual pollock biomass by up to 100% or more.

The only other "uncertainty" associated with the FMP biomass estimate identified by the PMT relates to the extrapolation of biomass estimates from surveyed to non-surveyed areas. However the PMT report provides no shred of the "evidence" that they reference in Appendix 1 for this proposition. Although NWAFC scientists have noted variations in CPUE in recent trawl surveys between the previously surveyed and non-surveyed areas, they have concluded that those variations are meaningless with respect to the accuracy of the original extrapolation. In any event, the PMT has provided no information that the SSC, the AP, the Regional Council or the public could analyze in making a judgment on this issue.

In summary, the only element of the methodology employed in the FMP to estimate biomass which can be demonstrated to be inaccurate--the catchability coefficient--is beyond any doubt biased downward. The PMT has provided not one shred of information to indicate that there is any upward bias in the methodology which would equal or outweigh the downward bias

associated with assuming a catchability coefficient of 1.0. Thus, the pollock biomass estimate of 595,000 m.t. employed as the basis for OY and ABC calculations in the Central Gulf appears to be a significant underestimate of the true Central Gulf pollock biomass.

2. The Hydroacoustic Surveys Provide New evidence that the pollock stock in the Central Gulf is larger than originally estimated.

The PMT report states that "There is no new evidence that the stocks are increasing or that the old biomass estimates were wrong." This statement was directly contradicted by NWAFC scientists in the U.S.-Japan bilateral meetings. The NWAFC position appears in the Report of the U.S.-Japan Bilateral Meetings on Fisheries Assessment in the North Pacific at page 20:

> "The U.S. delegation described the results of the 1980 and 1981 hydroacoustic surveys on a major spawning population of pollock in the Shelikof Strait area. The 1980 survey indicated that the biomass of this spawning concentration approximated 700,000 t; variability in estimates from the 1981 survey led U.S. scientists to conclude that the lower limit of the 95% confidence interval (375,000 t) should be used as the best estimate for 1981. Based on this new information from the hydroacoustic survey and other evidence that the stock is in very good condition, U.S. scientists believed the EY for pollock in the central Gulf area will be increased."

Plainly, the PMT disagrees with the position taken by the NWAFC scientists at the U.S.-Japan bilaterals. However, no explanation for this inconsistency is found in the PMT report.

The PMT report is misleadingly selective with respect to the data reported and its interpretation. The PMT reports that the 1981 hydroacoustic survey results in an estimate of 375,000 tons of spawning pollock in Shelikof Straits. However, the PMT report omits reference to the 700,000 tons estimated in 1980. In addition, the PMT fails to point out that three separate estimates of pollock biomass made during the period early March to early April 1981 ranged from 558,000 metric tons to 800,000 tons. The PMT reports only the lower end of the confidence

interval around the lowest of the three hydroacoustic estimates. In any event, the point is this: If we average the estimates from the 1980 and 1981 hydroacoustic surveys of Shelikof Straits, we derive an estimate of the biomass of the Shelikof Strait concentration which is approximately equal to the biomass stated in the plan for the entire central Gulf. Since we know (based on historical fishing patterns) that there are pollock in other areas of the central Gulf at the time that the Shelikof Straits concentration occurs, it seems clear that the plan biomass estimate is too low. Thus, there is in fact new evidence provided by the hydroacoustic surveys which indicates that the central Gulf pollock biomass found in the FMP is underestimated, as concluded by the NWAFC scientists in the U.S.-Japan bilateral meetings.

3. Recent CPUE data indicate that the Central Gulf pollock stock is increasing.

The CPUE data cited by the PMT for the proposition that there has been a slight decline in CPUE in the central Gulf area between 1980 and 1981 simply do not support that proposition. First of all, all data with respect to the Shumagin area must be disregarded. The Shumagin area is in the Western Regulatory Area of the Gulf, not the Central Area. When the data presented for the Central Area is examined, we find three relevant sets of information. 1980 and 1981 CPUE data for Japanese surimi-type trawlers for the (1) third and (2) fourth quarters in the Chirikof area and 1980 and 1981 CPUE data for Japanese surimi-type trawlers for the (3) third quarter in the Kodiak area. When 1981 is compared to 1980 for these three data sets, we find that CPUE has gone up significantly in one, down significantly in one and has remained essentially unchanged in another. Thus, the data cited by the PMT do not support the PMT's generalization that CPUE in the Central Area has declined slightly between 1980 and 1981.

In addition, it seems highly misleading to refer only to CPUE changes between 1980 and 1981 without reviewing data from prior years with respect to overall trends. For example, although there was some decline in third quarter CPUE for Japanese surimi-type trawlers between 1980 and 1981 in Kodiak, the 1981 CPUE level was 50% higher than the CPUE in 1979. Likewise, although third quarter CPUE for Japanese surimi-type trawlers remained roughly unchanged between 1980 and 1981 in Chirikof, the 1980 and 1981 CPUEs show an increase of about 100% above the 1979 level. The PMT's statement that there was a general decline in CPUE between 1980 and 1981 is a serious mischaracterization of the data.

When the paper presented to the Council in May 1982 by Miles Alton and Russ Nelson of NWAFC is consulted on the issue of CPUE, an entirely different picture emerges. Alton and Nelson examined three nation-vessel classes for CPUE trends and concluded as follows:

> ". . .[F]or all nations vessel classes examined CPUE rose in both the Shumagin and Chirikof areas in 1980 and 1981. In the Kodiak area the CPUE of surimi-type trawlers has shown a decline from 1977 through 1980; no information is available as yet for 1981. Japanese large freezer trawlers, however, show a rise in CPUE for the Kodiak area for 1980."

Alton and Nelson (May 1982) at p. 3. Thus, not only has the PMT report omitted significant data contained in the earlier Alton/Nelson paper, but the generalization contained in the PMT report with respect to CPUE trends appears to be contradicted by the Alton/Nelson data.

4. The issue with respect to whether a concentrated fishery on a concentrated spawning stock is desirable is not an OY issue.

If special restrictions or limitations are appropriate with respect to the Shelikoff spawning concentrations, those measures should be adopted without reference to the overall Central Area pollock OY. The potential yield from the stock is unrelated to the issue of whether special protection for spawning concentrations is in order.

5. The PMT's offhand and entirely unsupported comment that "There may be a need to retain older fish in the stock for spawning purposes or for economic reasons in the shore-based fisheries" hints at conclusions that the PMT report provides no basis to assess. This sort of unsupported suggestion serves more as an invitation to the operation of prejudice than as a reasoned basis for management decisions.

6. The PMT remarks that the allocation of additional pollock to the on-bottom trawl fisheries in 1982 will reduce the halibut savings which would otherwise be achieved if these on-bottom fisheries are shut down prematurely. However, the fact that a halibut incidental catch is associated with the on-bottom

trawl fisheries has never been considered an adequate justification for halting the harvest of other groundfish surpluses. Additionally, even if some added incidental catch of halibut does occur this year, there will be a substantial net halibut savings in 1982 as a result of the extensive pelagic operations in Shelikof Straits.

For the reasons described above, we believe that the PMT report does not accurately reflect the best scientific information available and should not be accepted as a basis for Regional Council action. The biomass estimate used in the FMP as the basis for ABC and OY determinations is negatively biased by the assumption of a catchability coefficient of 1.0. Evidence from the hydroacoustic surveys and recent CPUE data also indicate that the Central Area pollock stock is larger than originally estimated and can support a harvest in 1982 above the OY level specified in the FMP.

Very truly yours,

GARVEY, SCHUBERT, ADAMS & BARER
A Professional Services Corporation

By Stephen B. Johnson
Stephen B. Johnson

4SBJ:Q

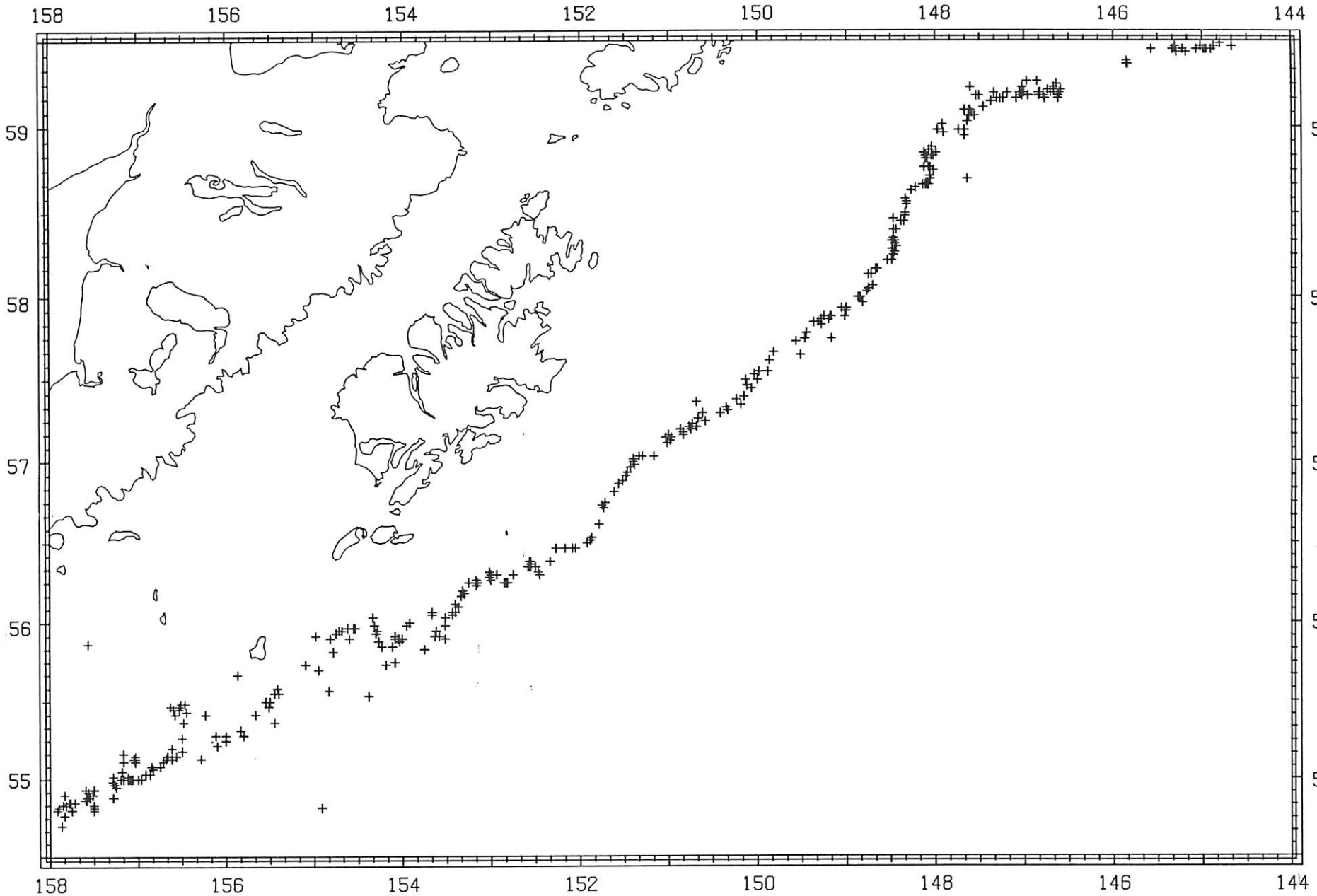

FIGURE C-1. SABLEFISH, ALL MONTHS, 1977-1979

Greg Baker

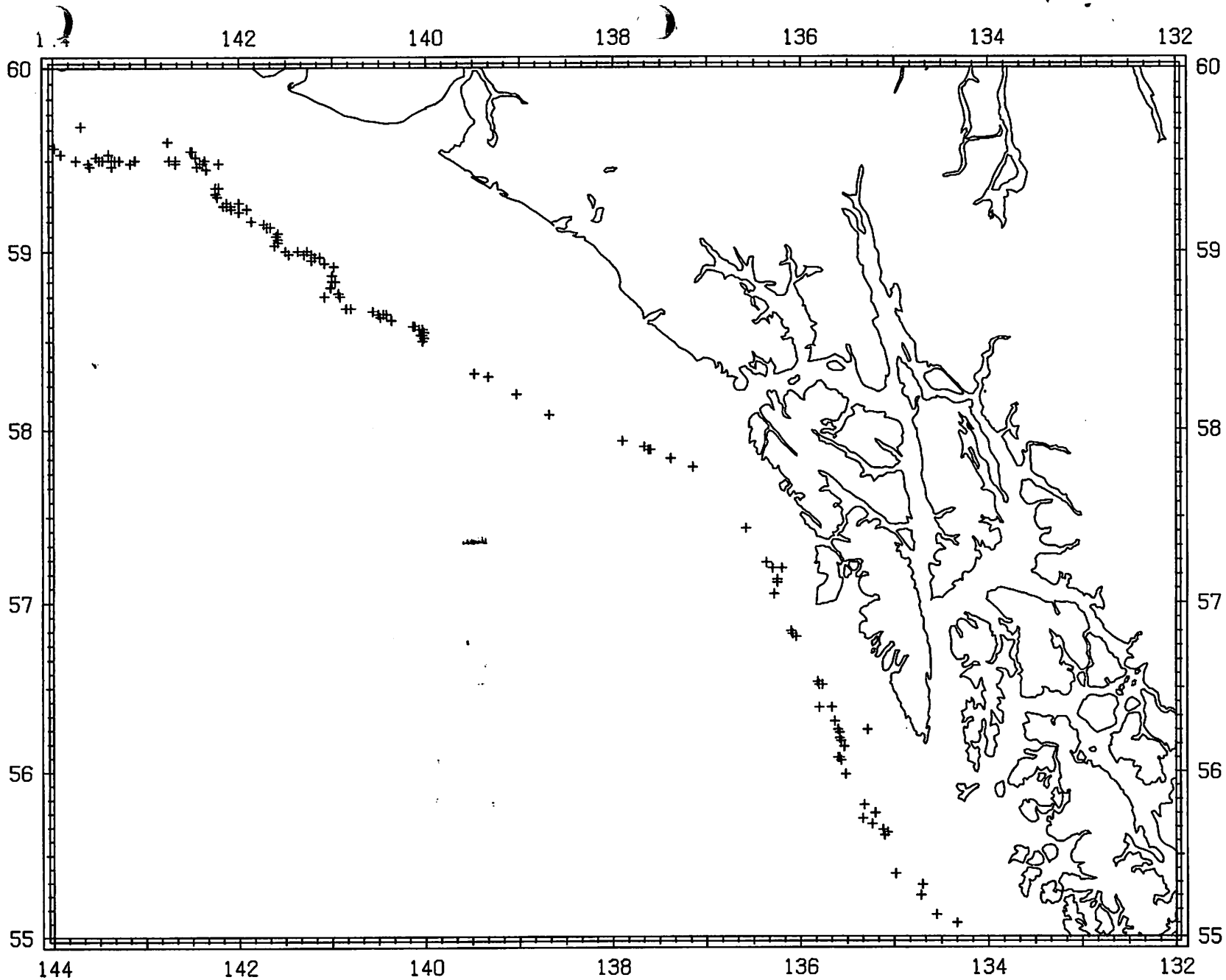

FIGURE D-1. SABLEFISH, ALL MONTHS, 1977-1979

ALASKA SEA GRANT PROGRAM
University of Alaska
Fairbanks, Alaska 99701

A SUMMARY OF PRODUCTIVE FOREIGN FISHING LOCATIONS IN THE ALASKA REGION DURING 1977-79: LONGLINE FISHERIES

by

Gary B. Smith[1], R. S. Hadley[2], Robert French[1],
Russell Nelson Jr.[1], and Janet Wall[1]

A Cooperative Effort of
Northwest and Alaska Fisheries Center
National Marine Fisheries Service, NOAA

and

Alaska Sea Grant Program
University of Alaska

1 Northwest and Alaska Fisheries Center
2725 Montlake Boulevard East
Seattle, WA 98112

2 Alaska Sea Grant Program
University of Alaska
Fairbanks, Alaska 99701

Sea Grant Report 80-1
July 1980

ALFA

ALASKA LONGLINE FISHERMEN'S ASSOCIATION

Box 2234
Sitka, Alaska 99835
Telephone (907) 747-3400
Telex 46-314 HPC SIKA

MEMORANDUM

Date: 7/15/82

TO: Plan Maintainance Team,
Gulf of Alaska Groundfish

FR: Greg Baker
ALFA

RE: Sablefish Logbook Information

Earlier in the month several members of the PMT requested that ALFA collect logbook information from domestic longline fishermen operating in the Southeastern Outside and Yakutat E of 140 degrees districts of the Eastern Regualtory Area. As might be imagined the middle of the season is not the best time to acquire logbook data from fishermen who for the most part are still fishing out of a variety of ports and in several diverse areas of Southeastern. These problems notwithstanding we have collected as much logbook data as possible prior to the July NPFMC meeting.

While relatively small, our sample of logbooks represents production amounting to some 100 mt of sablefish, dressed Western Cut and landed primarily in Sitka. The effort reflected in our sample represents approxiamately 400,000 hooks fished.

PRELIMINARY

Table 1. Catch rate and average weight of sablefish landed by domestic vessels in the Eastern Gulf of Alaska, Southeastern Outside District, 1981-82.

Year	Catch rate fish/hook	Catch rate lbs./hook	Average weight (pounds)
1981[1/]	.062	:36	5.58
1982[1/]	.081	.455	5.56

1/ From logbook data supplied by U.S. fishermen operating in the Southeastern Outside District of Eastern Gulf of Alaska.

Table 3. (continued)

1/ From logbook data supplied by U.S. fishermen operating W of 140 degrees W longitude in the Yakutat Area (INPFC), 1982.

Another question which was addressed to ALFA by several PMT members referred to the apparent increase in the pounds per trip landed in the 1982 season to date. Possible explanations for this increase that were suggested by Team members included: 1) Larger vessels operating in the fishery; 2) Longer vessel trips; or 3) An actual increase in the availabilty or relative abundance of fish in the area. Without any quantitative data to evaluate these possible explanations we can only offer some qualitative answers based on our observation of the fishery to date.

Larger vessels: Based on our observations there have been no significant changes in the composition of the sablefish longline fleet. Two larger freezer vessels have operated in the Southeastern Outside District to date but one of those vessels also operated year-round during the 1981 season and it's landings should not have caused a significant change in pounds landed per trip. The other vessel which operated for a short time in the fishery made only two landings and these landings should be identifiable and hence could be removed from the data set if deemed necessary. Otherwise, except for the usual number of vessel ownership transfers which usually are balanced in terms of vessel size, no difference in fleet composition has been noted.

Longer vessel trips: Average vessel trips still remain within the guidelines that resulted from ALFA's marketing efforts which began in 1980. To the best of our knowledge most processors are still requiring a maximum 10 day trip limit for Western Cut sablefish. No significant change in vessel trip length has been observed and we must conclude that this is not a source of the increased pounds per landing observed.

Increased availabilty/relative abundance: The question of availability is essentially a qualitative explanation given the state of the art of fisheries management today. One possible explanation for increased availability might be the absence of foreign trawling in the Southeastern area. Our logbook data compiled in the development of Amendment # 10 clearly indicated reduced CPUE in the presence of foreign trawlers. Additionally, as you will recall, U.S. fishermen believe that the actual foreign trawl catch of sablefish off Southeast by foreign trawlers was greater than indicated by the available data. Assuming that foreign trawling did have a negative impact (short term) on domestic catch rates then their absence might result in improved availabilty. Regarding relative abundance, CPUE increases this year suggest that the relative abundance of sablefish in the Southeastern District (Outside) may have improved since 1981. Table 2 indicates that CPUE is at 1980 levels this year. Logbook data and personal communication with fishermen suggests that fishing has significantly improved this year.

Table 2. Harvest, catch rate, average weight, and relative size of sablefish landed by domestic vessels in the Eastern Gulf of Alaska, Southeastern Outside District, 1977-82.

Year	Catch rate fish/hook	Catch rate lbs./hook	Average weight (pounds)	% large (over 5 pounds)	% small (under 5 pounds)	Domestic Harvest Offshore
1977[1/]	.109	.58	5.3	60	40	755.7
1978[1/]	.106	.56	5.3	67	33	1017.6
1979[1/]	.093	.47	5.0	63	37	2319.1
1980[1/]	.083	.40	4.8	58	42	1707.0
1981[2/]	.062	.36	5.58	3/	3/	
1982[2/]	.081	.455	5.56	3/	3/	

1/ From " Evidence For The Need To Reduce Sablefish Harvest in the Eastern District Of The Gulf Of Alaska, Bracken, 1981

2/ From logbook data supplied by U.S. fishermen-operating in the Southeastern Outside District of the Eastern Gulf of Alaska.

3/ Only one vessel supplying logbook data for the years 1981-82 provided % breakdowns for fish over 5 lbs. and under 5 lbs., consequently that analysis was not included in this preliminary data set.

Table 3. Catch rate and average size of sablefish harvested by domestic vessels in the Yakutat Area (INPFC) W of 140 degrees W longitude.

Year	Catch rate fish/hook	Catch rate lbs./hook	Average weight (pounds)
1982[1/]	.07	.44	5.5

D-5 Supplemental
JULY 1982

Status of the Domestic Sablefish Fishery in the Eastern Gulf of Alaska Based on Fishery Performance 1979 - 1982

By

Barry E. Bracken
Alaska Department of Fish and Game
Division of Commercial Fisheries
P.O. Box 667
Petersburg, Alaska 99833

Presented to the North Pacific
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The domestic sablefish fishery in the Eastern Gulf of Alaska dates back to 1906 when a harvest of 38 mt is reported. The harvest fluctuated wildly dependent on market conditions and condition of other fisheries until the early 1940's. From 1941 to 1951 the catch averaged 2800 mt and peaked in 1946 at 4245 mt round weight. Harvests generally declined through the 1950's and 1960's and averaged only 900 mt from 1960-1969. Catches continued to fluctuate through the 1970's and averaged 1360 mt from 1970-1980. The catch peaked in 1979 at 3222 mt, the highest domestic catch since 1946.

The Alaska Department of Fish and Game has maintained in-season catch logs for the Chatham Strait fishery since the early 1970's. Because of the increased domestic effort in the outside waters after the foreign fleets withdrew in 1978, the Department began maintaining in-season fish ticket logs for the offshore waters as well in 1979. The attached Table shows a summary of domestic catch data through June for 1979-1982.

There was a decline in effort and landing size in 1980 and 1981 from the 1979 level. While total reported catch for 1982 is below 1979 and slightly below 1980, it is an 80% increase over 1981, and the average landing size of 7.7 tons is the largest for the four year period.

There are many factors which effect fishery performance. Among these are economics and resource availability. The 1982 season started out with sablefish prices almost double those of the 1981 season. That coupled with the threat of poor salmon prices is probably responsible for the 50% increase in vessels engaged in the fishery this year. Market conditions do not, however, explain the increased landing size observed so far in 1982. A portion of the increase in landing size is attributable to two large landings made by a catcher processor vessel which are averaged into the calculation. If those landings are removed, the average landing still exceeds 6.3 tons.

Reports from fishermen indicate that the undersize fish which resulted in discard rates as high as 40-50% by number in 1981 are not on the grounds this year. One

could assume that they had grown into the marketable size category except that the percentage of large fish has also increased. The decline in small fish could have made more hooks available to the larger, heavier fish in the area. That would tend to increase both the percentage of large fish and the average landing weight.

Weather and market have also had an influence on performance. Most fishermen are no longer on five day trip limits. That coupled with good weather has allowed the fishermen to spend more time on the grounds resulting in larger landings. Most fish this year have been landed western cut which tends to increase the percent that fall into the large fish category.

A harvest not to exceed 1290 mt has been suggested for the Southeastern area for 1982. That recommendation is based on results of the 1981 NMFS pot indexing survey applied to the previous 12 month's landings. That would result in the lowest harvest in the area since 1977, and well below the 1970 to 1980 average harvest.

As of July 9, 1982, ADF&G has landing reports for 910 mt of which 847 has been harvested in the Southeastern area. At the current catch rate the harvest in the FCZ could easily exceed 1200 mt by August. That coupled with an estimated harvest of 450 to 500 mt in state waters could result in a total Southeastern harvest in excess of 1700 mt even if the fishery is closed the end of July.

While fishery performance is not as good an indicator of stock status as CPUE and other parameters, it should not be ignored. Unfortunately, CPUE information is not available to ADF&G since the port sampling program was discontinued in May 1981. The data presented here does suggest that, for whatever reasons, the fishery is considerably better this year than it was in 1981 and the average landings exceed even those of 1979. This seems to indicate that marketable size sablefish are at least as abundant as last year when approximately 1850 mt were harvested in the Southeastern area and possibly even more abundant.

Region I sablefish landings through June in the domestic fishery 1979-1982

Year	Tons Round Weight			Boats	Landings	Tons/landing	% large
	Southeast	Yakutat	Total				
1979	872	106	978	94	176	5.6	-
1980	729	69	798	71	157	5.1	-
1981	410	5	415	33	78	5.4	60
1982[1/]	706	57	763	50	99	7.7	65

1/ Preliminary

Preliminary Cruise Results
NOAA R/V John N. Cobb JC-82-2

Sablefish Indices of Relative Abundance in the Coastal Waters of Southeastern Alaska

Cruise Period and Area:

On July 1, 1982 the NOAA research vessel John N. Cobb completed a 51-day study of the sablefish (Anoplopoma fimbria) resources in the coastal waters of southeastern Alaska from Cape Cross to Cape Muzon. Depths surveyed ranged from about 150 to 450 fathoms.

Objectives:

The sablefish survey is an ongoing program whose primary objective is monitoring sablefish relative abundance and size composition along the outer coast of southeastern Alaska. In addition to monitoring relative abundance and size composition, the survey included observations on sablefish distribution and biology.

Methods:

Four indexing sites off southeastern Alaska (Cape Cross, Cape Ommaney, Cape Addington, and Cape Muzon) surveyed in previous years were surveyed again this year. At each site except Cape Muzon, a 10-trap longline was set as near as possible to the 150, 225, 300, 375, and 450 fathom isobaths. At Cape Muzon, the desired depths and bottom topography could not be located and traps were fished at depths between 208 and 220 fathoms. Trap fishing time was limited to 24 hours $\pm$ about one hour by using magnesium alloy timed-release devices to close the trap tunnel entrances. A perforated plastic bait jar containing about two pounds of chopped herring was hung in each trap.

Date collected included:

1. Number of sablefish captured in each trap.
2. Length frequencies (to the nearest cm) of all sablefish.
3. Otoliths and sexual development from a random sample of sablefish captured at each site.

Gear:

Trap dimensions were 34" x 34" x 8'. The frames were constructed of 3/8" diameter low carbon, smooth steel rod. Each trap was equipped with a single tunnel and webbed with 3-1/2" stretched mesh nylon. Tunnels were green 2-1/2" stretched mesh nylon. Groundlines were 550 fathoms in length and were made of 5/8" diameter polypropylene line. Trap gangions were spaced at intervals of 50 fathoms along the groundlines. Trap bridles were attached to the gangions by 2-1/2" brummel hooks. Bridles and gangions were of 1/2" diameter polypropylene line.

Sources of Error:

Because of adverse weather, the planned sampling scheme of five repetitions (5 10-trap sets fished at each depth at each site) was not attained. The number of strings fished at each site was 5 at Cape Addington, 4 at Cape Muzon, and 3 each at Capes Ommaney and Cross. At Cape Addington part of the first set (traps at depths of 150 and 225 fathoms) were pulled after a 9-day soak and the remainder of the set (traps at depths 300 to 450 fathoms) pulled after an 11-day soak. These relatively long soak times resulted in some decomposed fish and skeletons. The numbers of decomposed fish and skeletons are included in the total number of fish caught at Cape Addington (Table 3) but are excluded from the length frequency for Cape Addington (Fig. 5).

A potential source of error may have been bait quality. Bait used during the survey was from two distributors, one in Juneau and the other near Seattle. The Juneau bait, initially considered of "better" quality than the Seattle bait because of its later processing, apparently was of lower quality than the older Seattle bait. Preliminary onsite comparison of the two baits was conducted at Cape Ommaney and Cape Muzon (Table 5). Analyses of the 1982 survey data included calculations using both kinds of bait separately and in combination (Table 6).

Results:

Annual abundance index surveys were repeated for the fifth time at Cape Cross, Cape Ommaney, and Cape Addington and for the fourth time at Cape Muzon. The 1982 survey captured 1411 sablefish, including an additional 80 fish captured during a bait experiment at Cape Muzon. Of the 1411 sablefish captured, 674 were tagged and 712 were sacrificed for observations on sexual maturity and extraction of otoliths. Catch rates of marketable size sablefish (> 57 cm) continued to decline at all four sampling sites (Fig /). For all four sites combined, the decline in catch rate, of marketable size sablefish was -25% compared to 1981 and -64% compared to 1979 (Table 7). The Cape Muzon site is unique in its depth distribution and sampling density compared to the Cape Cross, Cape Ommaney, and Cape Addington sampling sites. Elimination of the Cape Muzon data from data for the remaining three sampling sites does not adversly affect the trend of decreasing abundance. The decline of marketable size sablefish at Cape Cross, Cape Ommaney, and Cape Addington combined was -21% compared to 1981 and -55% compared to 1978. Prerecruit size (< 57 cm) sablefish continued to increase at Capes Addington (25%) and Muzon (94%) but decreased at Capes Cross (-21%) and Ommaney (-77%). For all four sampling sites combined, prerecruite size sablefish increased 11% compared to 1981 and 54% compared to 1979 (Table 7).

Correcting catch rates for inferior bait does not markedly alter abundance trends. For Cape Ommaney, correcting for inferior bait increased catch rates from 0.486 per trap to 0.930 per trap for marketable size sablefish and from 0.219 per trap to 0.246 per trap for prerecruit size sablefish. At Cape Addington, catch rates for marketable size fish increased from 1.028 per trap to 1.187 per trap and for prerecruit size fish from 1.120 per trap to 1.240 per trap.

Additional analyses of the 1982 survey data are anticipated and results of these additional analyees will be included in an upcoming cruise report of the survey.

Table 1 --Numbers of total sablefish and marketable-sized sablefish (in parentheses) - captured by depth and set at the Cape Cross site during the 1978, '79, '80, '81 and '82 abundance index surveys.

Year and set	Depth (fathom/meter) 150/275	225/412	300/550	375/686	450/824	Total catch
	Number of fish					
1978						
1	0 (0)	22 (14)	23 (20)	8 (7)	15 (12)	68 (53)
2	3 (1)	4 (3)	28 (24)	30 (27)	16 (16)	81 (71)
3	0 (0)	11 (10)	36 (33)	38 (35)	55 (52)	140 (130)
4	1 (1)	12 (11)	34 (31)	35 (32)	31 (31)	113 (106)
5	0 (0)	7 (7)	15 (13)	33 (29)	56 (50)	111 (99)
Total	4 (2)	56 (45)	136 (121)	144 (130)	173 (161)	513 (459)
Mean	1 (<1)	11 (9)	27 (24)	29 (26)	35 (32)	103 (92)
1979						
1	4 (0)	8 (7)	36 (28)	26 (25)	26 (24)	100 (84)
2	3 (1)	20 (9)	31 (26)	37 (33)	14 (14)	105 (83)
3	4 (2)	10 (9)	37 (28)	32 (28)	23 (21)	106 (88)
4	4 (3)	16 (10)	18 (15)	29 (27)	25 (25)	92 (80)
5	5 (3)	11 (10)	17 (15)	17 (16)	20 (20)	70 (64)
Total	20 (9)	65 (45)	139 (112)	141 (129)	108 (104)	473 (399)
Mean	4 (2)	13 (9)	28 (22)	28 (26)	22 (21)	95 (80)
1980						
1	30 (16)	5 (4)	20 (11)	20 (15)	13 (12)	88 (58)
2	13 (6)	4 (2)	34 (22)	14 (11)	19 (19)	84 (60)
3	33 (2)	24 (12)	32 (14)	22 (18)	17 (17)	128 (63)
4	16 (1)	13 (8)	34 (19)	24 (22)	25 (22)	112 (72)
5	11 (0)	9 (4)	31 (19)	19 (16)	24 (23)	94 (62)
Total	103 (25)	55 (30)	151 (85)	99 (82)	98 (82)	506 (315)
Mean	21 (5)	11 (6)	30 (17)	20 (16)	20 (19)	101 (63)
1981						
1	11 (5)	31 (13)	16 (3)	9 (6)	9 (6)	76 (33)
2	5 (4)	12 (7)	23 (8)	13 (11)	4 (3)	57 (33)
3	11 (7)	33 (17)	19 (12)	11 (5)	6 (6)	80 (47)
4	8 (4)	10 (6)	12 (7)	19 (14)	7 (5)	56 (36)
5	15 (7)	27 (16)	18 (7)	3 (3)	7 (7)	70 (40)
Total	50 (27)	113 (59)	88 (37)	55 (39)	33 (27)	339 (189)
Mean	10 (5)	23 (12)	18 (7)	11 (8)	7 (5)	68 (38)
1982						
1	11 (3)	13 (9)	13 (10)	20 (12)	5 (4)	52 (38)
2	1 (0)	14 (7)	22 (9)	9 (2)	9 (8)	55 (26)
3	4 (2)	15 (7)	17 (6)	21 (11)	7 (3)	64 (29)
Total	16 (5)	42 (23)	52 (25)	50 (25)	21 (15)	171 (93)
Mean	5 (2)	14 (8)	17 (8)	17 (8)	7 (5)	57 (31)

11e2--Numbers of total sablefish and marketable-sized sablefish (in parentheses) captured by depth and set at the Cape Ommaney site during the 1978, '79, '80, and '81 abundance index surveys.

Year and set	Depth (fathom/meter) 150/275	225/412	300/550	375/686	450/824	Total catch
	Number of fish					
1978						
1	3 (2)	6 (5)	12 (10)	42 (40)	24 (19)	87 (76)
2	6 (6)	8 (8)	22 (19)	32 (23)	35 (32)	103 (88)
3	6 (6)	9 (9)	27 (24)	26 (19)	47 (41)	115 (99)
4	3 (3)	15 (15)	15 (13)	34 (29)	35 (28)	102 (88)
5	9 (9)	4 (4)	20 (20)	25 (25)	10 (8)	68 (66)
Total	27 (26)	42 (41)	96 (86)	159 (136)	151 (128)	475 (417)
Mean	5 (5)	8 (8)	19 (17)	32 (27)	30 (27)	95 (83)
1979						
1	9 (4)	36 (36)	44 (40)	37 (34)	61 (59)	187 (173)
2	6 (2)	41 (41)	30 (27)	45 (44)	55 (51)	177 (165)
3	8 (4)	36 (36)	21 (20)	48 (44)	25 (24)	138 (128)
4	6 (0)	24 (24)	27 (24)	66 (63)	44 (42)	167 (153)
5	3 (1)	34 (33)	42 (39)	39 (37)	70 (67)	188 (177)
Total	32 (11)	171 (170)	164 (150)	235 (222)	255 (243)	857 (796)
Mean	6 (2)	34 (34)	33 (30)	47 (44)	51 (49)	171 (159)
1980						
1	8 (2)	26 (26)	38 (23)	66 (49)	71 (67)	209 (167)
2	6 (3)	14 (13)	33 (23)	35 (33)	51 (46)	139 (118)
3	5 (0)	22 (22)	36 (26)	33 (32)	34 (33)	130 (113)
4	3 (1)	10 (9)	41 (33)	36 (33)	32 (31)	122 (107)
5	16 (10)	11 (11)	34 (27)	18 (18)	24 (20)	103 (86)
Total	38 (16)	83 (81)	182 (132)	188 (165)	212 (197)	703 (591)
Mean	8 (3)	17 (16)	36 (26)	38 (33)	42 (39)	141 (118)
1981						
1	12 (8)	19 (14)	11 (4)	24 (13)	24 (20)	90 (59)
2	7 (4)	11 (7)	50 (14)	49 (15)	21 (14)	138 (54)
3	4 (1)	14 (9)	20 (11)	22 (10)	10 (6)	70 (37)
4	10 (6)	29 (22)	38 (24)	21 (10)	16 (10)	114 (72)
5	11 (1)	14 (10)	14 (6)	38 (10)	16 (14)	93 (41)
Total	44 (20)	87 (62)	133 (59)	154 (58)	87 (64)	505 (263)
Mean	9 (4)	17 (12)	27 (12)	31 (12)	17 (13)	101 (53)
[illegible]						
1	3 (2)	2 (2)	1 (1)	2 (1)	3 (3)	11 (9)
2	2 (2)	3 (3)	2 (1)	10 (8)	17 (12)	34 (26)
3	12 (5)	7 (7)	7 (6)	17 (5)	14 (11)	61 (34)
Total	17 (9)	12 (12)	11 (8)	29 (14)	34 (26)	104 (71)
Mean	6 (3)	4 (4)	4 (3)	10 (5)	11 (9)	35 (24)

Table 3 --Numbers of total sablefish and marketable-sized sablefish (in parentheses) captured by depth and set at the Cape Addington site during the 1978, '79, '80, and '82 abundance index surveys.

Year and set	Depth (fathom/meter) 150/275	225/412	300/550	375/686	450/824	Total catch
	Number of fish					
1978						
1	1 (0)	10 (8)	25 (20)	25 (15)	15 (14)	76 (57)
2	6 (4)	9 (8)	20 (17)	21 (17)	24 (19)	80 (65)
3	3 (0)	6 (2)	21 (12)	40 (26)	12 (10)	82 (50)
4	13 (10)	28 (27)	38 (24)	49 (45)	39 (37)	167 (143)
5	8 (4)	21 (19)	51 (36)	34 (28)	21 (19)	135 (106)
Total	31 (18)	74 (64)	155 (109)	169 (131)	111 (99)	540 (421)
Mean	6 (4)	15 (13)	31 (22)	34 (26)	22 (20)	108 (84)
1979						
1	9 (3)	89 (88)	32 (6)	43 (25)	42 (40)	215 (162)
2	9 (0)	35 (35)	36 (13)	82 (34)	38 (36)	200 (118)
3	28 (6)	14 (12)	25 (14)	33 (12)	31 (27)	131 (71)
4	7 (1)	33 (32)	28 (18)	47 (11)	24 (23)	139 (85)
5	7 (0)	32 (30)	26 (9)	25 (7)	10 (10)	100 (56)
Total	60 (10)	203 (197)	147 (60)	230 (89)	145 (136)	785 (492)
Mean	12 (2)	41 (39)	29 (12)	46 (18)	29 (27)	157 (98)
1980						
1	36 (32)	54 (54)	86 (65)	48 (40)	34 (31)	258 (222)
2	29 (20)	30 (28)	61 (44)	11 (10)	23 (23)	154 (125)
3	12 (7)	59 (53)	98 (67)	45 (42)	41 (40)	255 (209)
4	19 (11)	59 (56)	91 (61)	40 (28)	42 (42)	251 (198)
5	17 (14)	35 (35)	16 (11)	8 (7)	17 (17)	93 (84)
Total	113 (84)	237 (226)	352 (248)	152 (127)	157 (153)	1,011 (838)
Mean	23 (17)	47 (45)	70 (50)	30 (25)	31 (31)	202 (168)
1981						
1	9 (0)	5 (1)	69 (48)	20 (4)	10 (9)	113 (62)
2	6 (0)	29 (19)	11 (6)	79 (30)	6 (5)	131 (60)
3	3 (2)	51 (36)	19 (9)	16 (10)	8 (3)	97 (60)
4	18 (6)	19 (14)	51 (24)	14 (9)	9 (9)	111 (62)
5	14 (9)	20 (16)	9 (3)	6 (4)	3 (3)	52 (35)
Total	50 (17)	124 (86)	159 (90)	135 (57)	36 (29)	504 (279)
Mean	10 (3)	25 (17)	32 (18)	27 (11)	7 (6)	101 (56)
1982						
1	14 (3)	5 (2)	44 (14+)	16 (11)	15 (14)	95 (34+)
2	34 (5)	37 (22+)	16 (3)	8 (2)	9 (8)	106 (40+)
3	4 (1)	32 (21)	13 (11)	24 (12)	10 (7)	39 (50)
4	27 (5)	34 (26)	22 (15)	20 (11)	7 (5)	116 (60)
5	28 (10)	41 (26)	33 (20)	29 (10)	9 (7)	143 (68)
Total	127 (24+)	154 (93+)	128 (46+)	97 (54)	50 (42)	565 (252+)
Mean	25 (4+)	30 (19+)	22 (9+)	19 (11)	10 (8)	113 (51+)

*Bad bait used during 1982 sets 1 and 2 at all depths.

Table 1 --Numbers of total sablefish and marketable-sized sablefish (in parentheses) captured by string and set at the Cape Muzon site during the 1979, '80, '81 and '81 abundance index surveys.

Year and set	String 1	2	3	4	Total catch
	----------Number of fish----------				
1979					
1	24 (24)	75 (71)	75 (66)	43 (40)	217 (201)
2	49 (47)	42 (38)	23 (20)	79 (72)	193 (177)
3	21 (21)	40 (38)	49 (36)	47 (44)	157 (139)
4	25 (24)	47 (42)	43 (39)	72 (70)	187 (175)
Total	119 (116)	204 (189)	190 (161)	241 (226)	754 (692)
Mean	30 (29)	51 (47)	48 (40)	60 (56)	188 (173)
1980					
1	37 (33)	62 (56)	81 (74)	95 (81)	275 (244)
2	36 (33)	38 (34)	61 (54)	62 (51)	197 (172)
3	24 (18)	58 (54)	62 (54)	33 (25)	177 (151)
4	35 (31)	39 (31)	58 (54)	51 (42)	183 (158)
Total	132 (115)	197 (175)	262 (236)	241 (199)	832 (725)
Mean	33 (29)	49 (44)	66 (59)	60 (50)	208 (181)
1981					
1	26 (20)	37 (27)	31 (24)	25 (19)	119 (90)
2	36 (28)	12 (7)	31 (27)	69 (48)	148 (110)
3	32 (25)	27 (25)	42 (29)	39 (30)	140 (109)
4	51 (42)	19 (17)	46 (30)	32 (25)	148 (114)
Total	145 (115)	95 (76)	150 (110)	165 (122)	555 (423)
Mean	36 (29)	24 (19)	38 (28)	41 (30)	139 (106)
1982					
1	14 (8)	59 (18)	60 (21)	19 (12)	154 (59)
2	49 (21)	19 (13)	37 (12)	59 (38)	159 (85)
3	19 (8)	20 (15)	—	26 (17)	65 (40)
4	21 (13)	16 (15)	38 (14)	23 (19)	100 (58)
Total	102 (47)	114 (61)	135 (48)	127 (86)	481 (242)
mean	25 (12)	29 (15)	34 (12)	32 (22)	120 (60)

Table 5.--No./trap of sablefish captured at Cape Cameney and Cape Muzon using bait (frozen herring) from two separate distributors. Bait quality ("good" vs "bad") was subjective and based on visual observation and smell.

Cape Cameney

pot seq	buoy 2		buoy 3		buoy 4		buoy 5	
bait quality	good	poor	good	poor	good	poor	good	poor
1	0		1		1		4	
2	0		1		0		0	
3	0		0		3		4	
4	2		1		1		0	
5	0		0		2		0	
6	1		3		0		0	
7	0		0		4		0	
8	6		lost pot		1		2	
9	0		0		3		4	
10	0		3		1		0	
	9	0	8	1	13	4	12	2

Cape Muzon 6/23-24/82

	buoy 1		buoy 2		buoy 3		buoy 4	
	good	poor	good	poor	good	poor	good	poor
1	1		0		3		4	
2	0		1		3		1	
3	3		4		3		0	
4	0		2		2		1	
5	1		0		1		2	
6	1		0		2		0	
7	5		3		3		0	
8	1		0		0		1	
9	1		0		0		2	
10	0		1		1		1	
	5	8	8	3	27	9	11	9

Numbers of total, marketable-size and prerecruit-size sablefish captured at southeastern Alaska abundance index sites during the 1978-82 annual surveys. Annual percentage change in numbers of sablefish, and the percentage change from the baseline year are indicated by site and size category.

	Total				Marketable size				Prerecruit size			
	No.	No./pot	Annual change	% change from baseline yr	No.	No./pot	Annual change	change from baseline year	No.	No./pot	annual change	% change from baseline yr
Cape Cross												
1978 (250 pots)	513	2.052			459	1.836			54	.216		
1979 " "	473	1.892	-8%	-8%	399	1.596	-13%	-13%	74	.296	+37	+37
1980 " "	506	2.024	+7%	-1.4%	315	1.260	-21%	-31%	191	.764	+158	+254
1981 " "	339	1.356	-33%	-34%	189	.756	-40%	-59%	150	.600	-21	+178
1982 (150 pots) all bait	171	1.140	-15%	-44%	93	.620	-18%	-66%	78	.520	-13	+141
Cape Ommaney												
1978 (250 pots lifted)	475	1.900			417	1.668			58	.232		
1979 " "	857	3.428	+80%	+80%	796	3.184	+91%	+91%	61	.244	+5%	+5%
1980 " "	703	2.812	-18%	+48%	591	2.364	-26%	+42%	112	.448	+84%	+93%
1981 " "	505	2.020	-28%	+6%	263	1.052	-55%	-37%	242	.968	+116%	+317%
1982 (146 pots) all bait	103	0.705	-65%	-63%	71	0.486	-54%	-71%	32	.219	-77%	-6%
* 1982 corrected (97 pots) good bait	113.95	1.174	-42%	-38%	90.10	0.930	-12%	-44%	23.85	.246	-75%	+6%
Cape Addington												
1978 250 pot lifts	540	2.160			421	1.684			119	.476		
1979 " "	785	3.140	+45%	+45%	492	1.968	+17%	+17%	293	1.172	+146%	+146%
1980 " "	1011	4.044	+29%	+87%	838	3.352	+70%	+99%	173	.692	-41%	+45%
1981 " "	504	2.016	-50%	-7%	279	1.116	-67%	-34%	225	.900	+30%	+89%
odd bad 1982 " "	565	2.260	+12%	+5%	257	1.028	-9%	-39%	281	1.12	+25%	136%
1982 (good bait only; 150 pots)	364	2.427	+20%	+12%	178	1.187	+6%	-30%	186	1.240	+38%	160%
Cape Muzon												
1979 160 pots	754	4.713			692	4.325			62	.388		
1980 " "	832	5.200	+10%	+10	725	4.531	+5%	+5%	107	.428	+73%	+73%
1981 " "	555	3.469	-33%	-26	423	2.644	-42%	-39%	132	.825	+23%	+113%
1982 149 pots	481	3.228	-7%	-32%	242	1.624	-39%	-62%	239	1.604	+94%	300%

* from experiment @ Ommaney and C. Muzon (42+51 fish)/(19+20 pot lifts) : (7+29)/(20+20) = 2.650

Table 7.-- Summary of percentages of total, marketable, and prerecruit-size sablefish captured at southeastern Alaska abundance index sites during the 1978-82 annual surveys.

	Total Sablefish		Marketable-size		Prerecruit-size	
	Annual change (%)	Change from baseline year (%)	Annual change (%)	Change from baseline year (%)	Annual change (%)	Change from baseline year (%)
Cape Cross						
Cape Ommaney						
Cape Addington						
1978						
1979	+38	+38	+30	+30	+85	+85
1980	+5	+45	+3	+34	+11	+106
1981	-39	+12	-58	-44	+30	+167
1982	-14	-25	-71	-55	-12	+132
III four sites						
1979						
1980	+6	+6	+4	+4	+19	+19
1981	-38	-34	-53	-51	+28	+53
1982	-9	-40	-25	-64	+11	+54

Fig. 1. No./pot of marketable size sablefish captured at Cape Cross, Cape Ommaney, Cape Addington, and Cape Muzon during NMFS annual assessment surveys 1978-1982. (Cape Muzon not sampled in 1978).

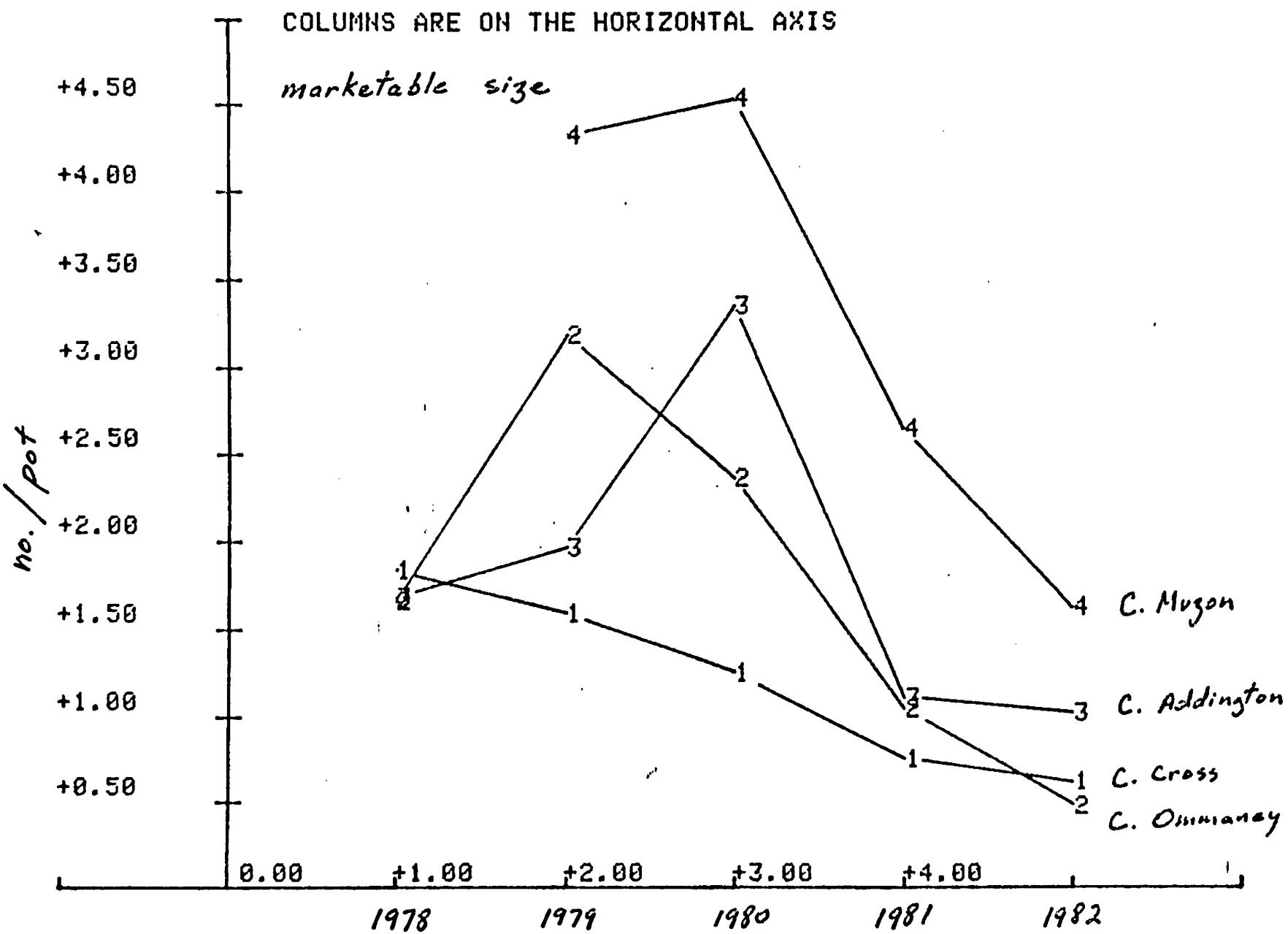


Fig. 2. No./pot of pre-recruit, Table fish captured at Cape Cross, Cape Ommaney, Cape Addington, and Cape Muzon during NMFS annual assessment surveys 1978-1982. (Cape Muzon not sampled in 1978).

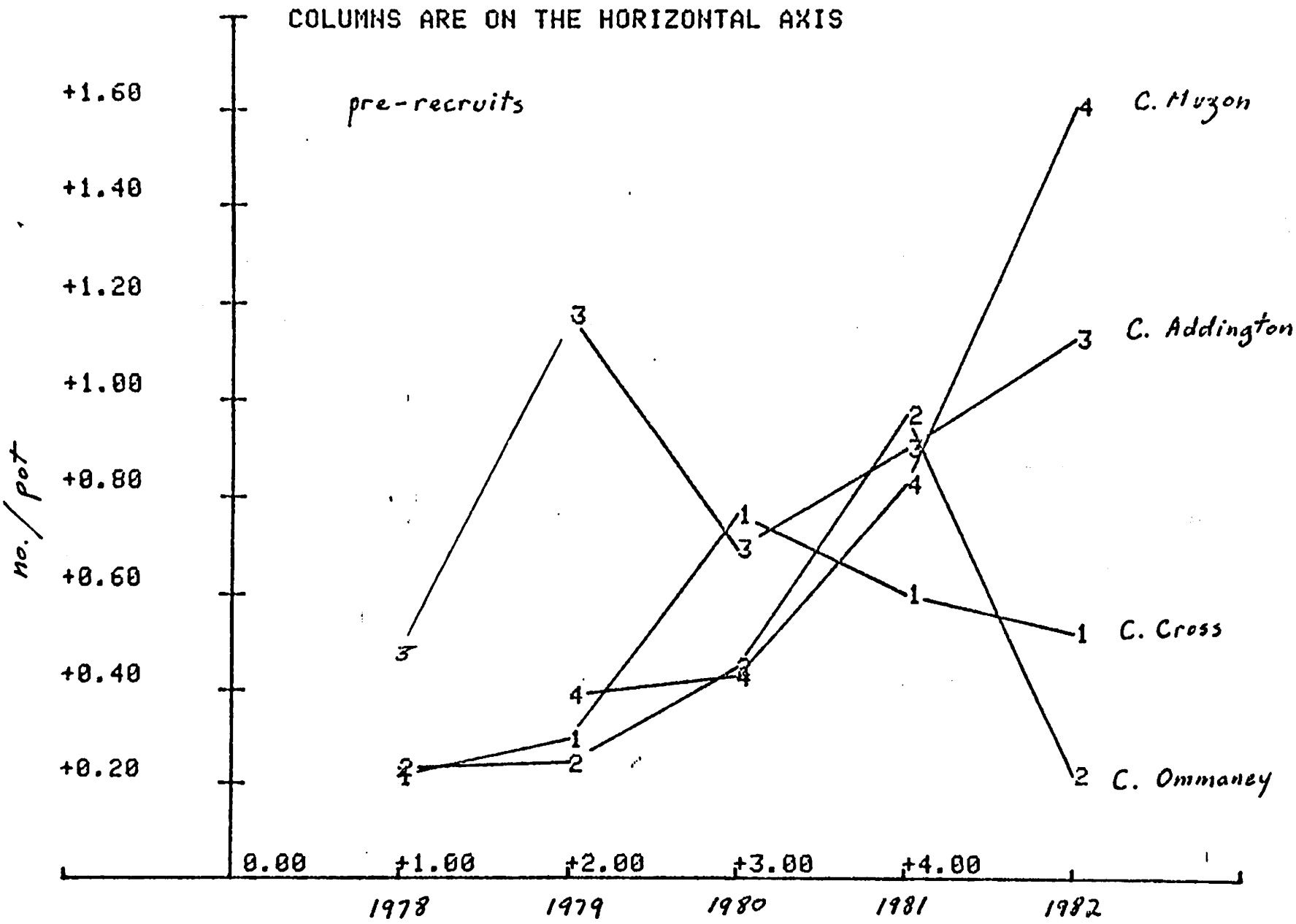


Fig. 3 Length compositions of sablefish captured at the Cape Cross abundance index site, 1978-1982.

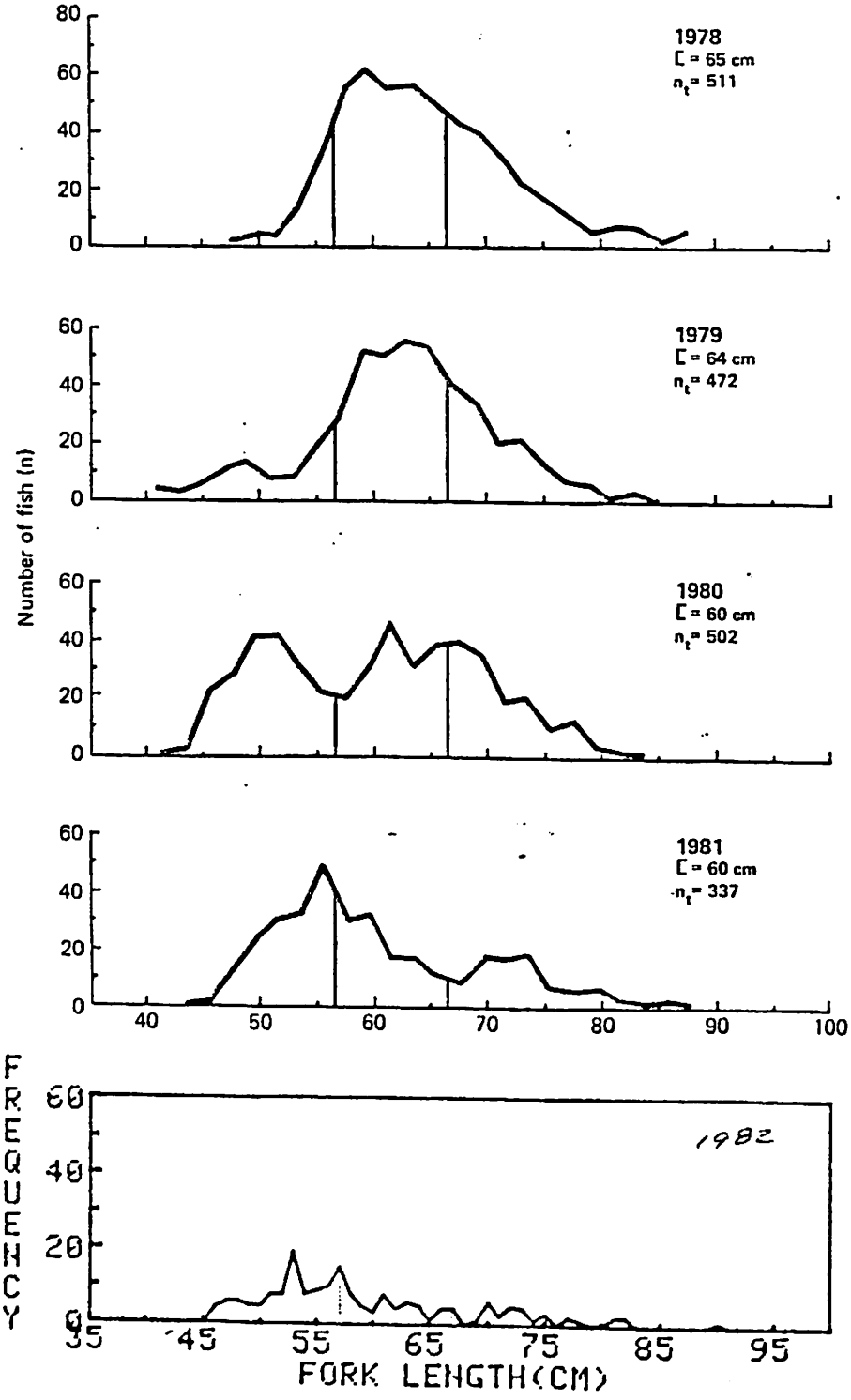


Fig. 4. Length compositions of sablefish captured at the Cape Ommaney abundance index site, 1978-82.

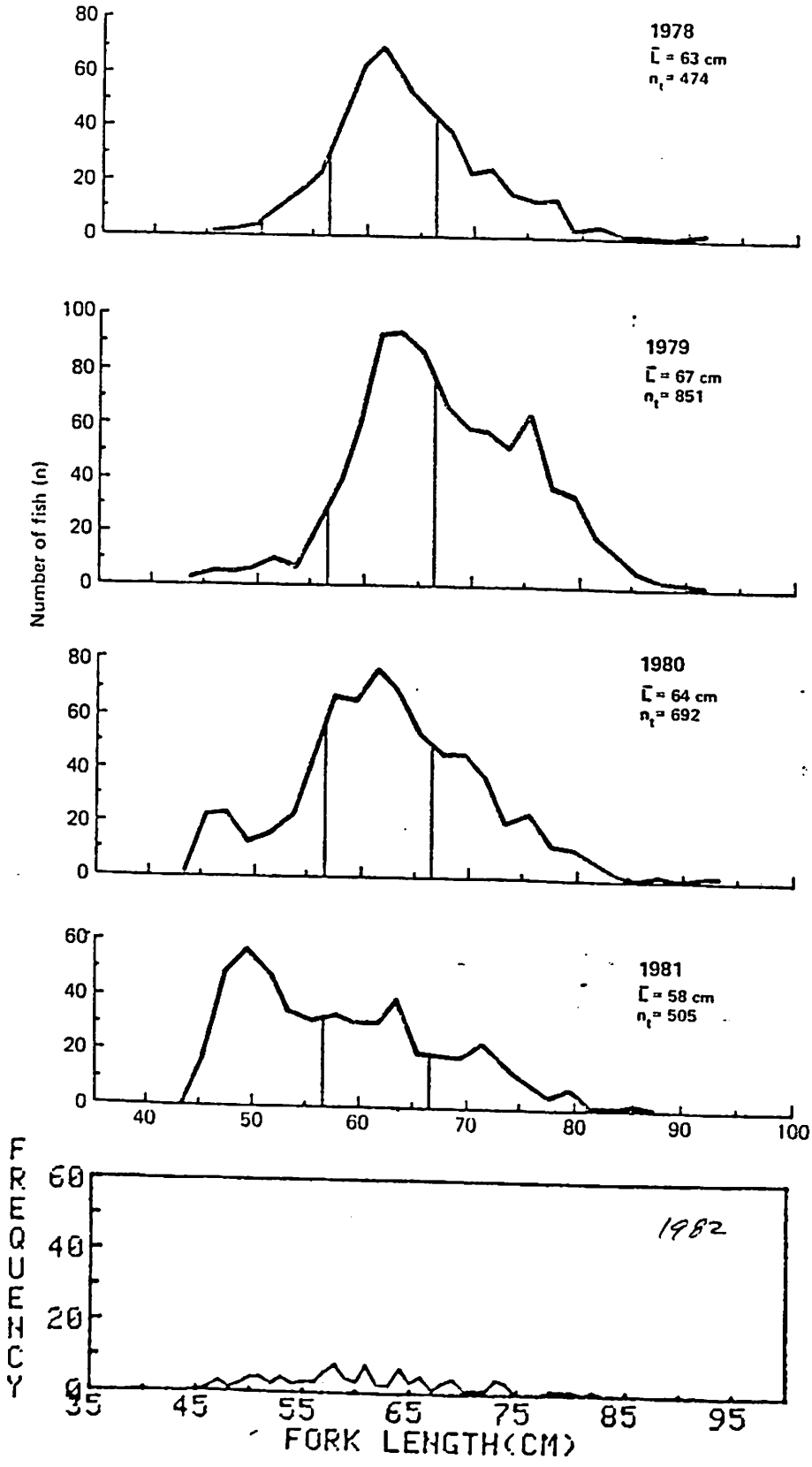


Fig. 5. Length compositions of sablefish captured at the Cape Addington abundance index site, 1978-82.

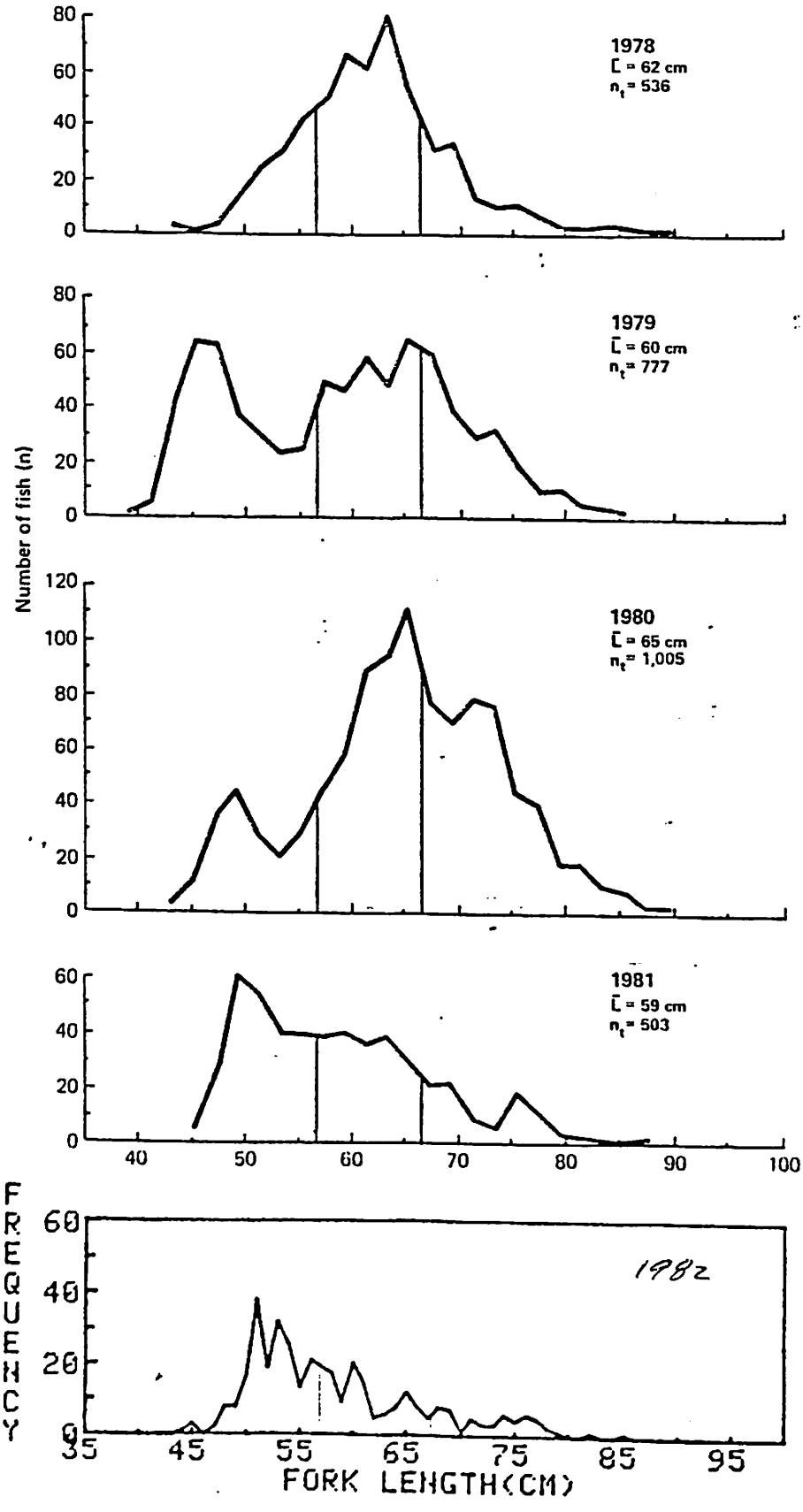
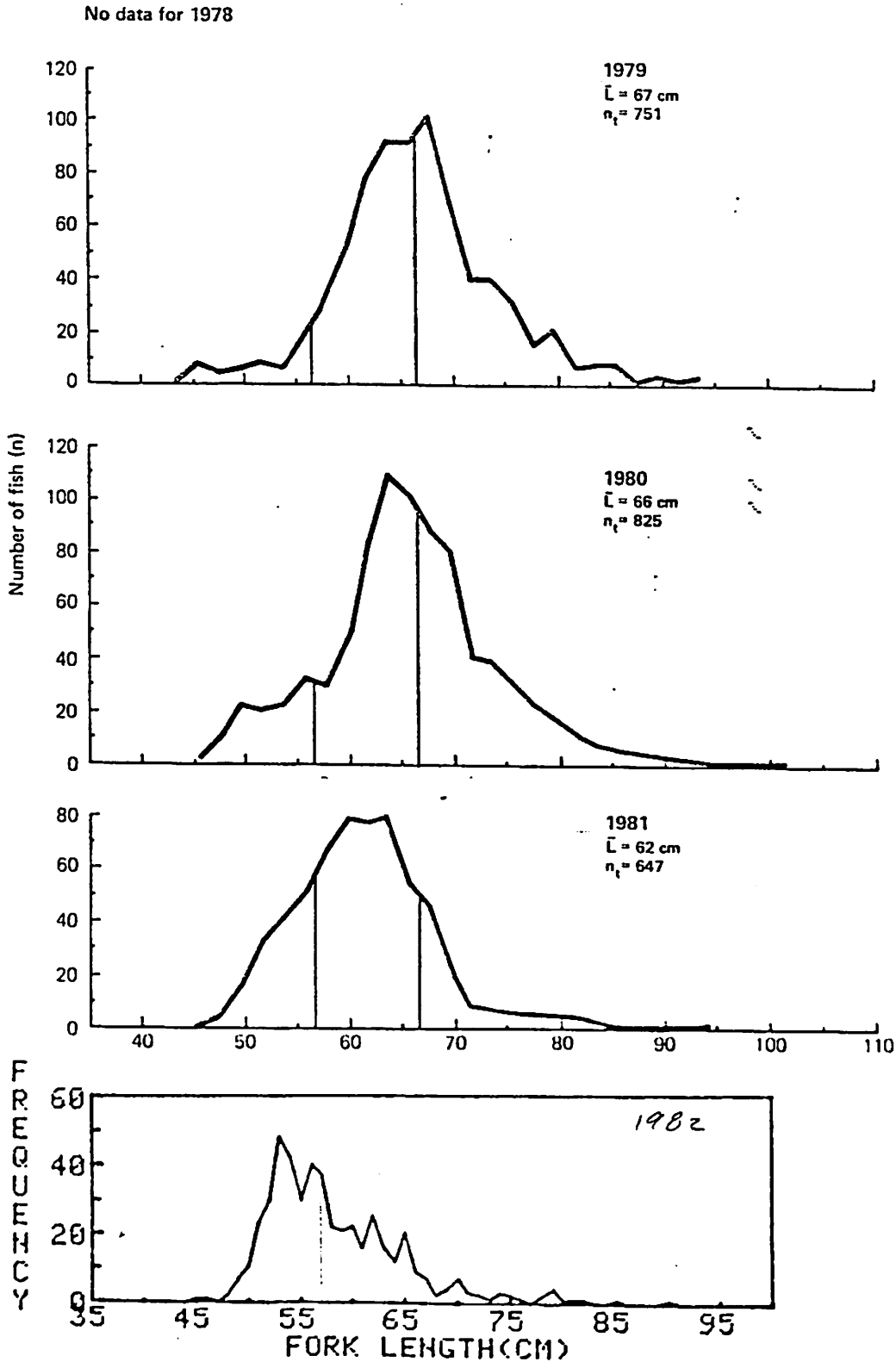


Fig. 6. Length compositions of sablefish captured at the Cape Mendocino abundance index site, 1979-82



NATURAL RESOURCES CONSULTANTS
4055 21st Avenue West • Seattle, Washington 98199, U.S.A. • (206) 285-34

July 19, 1982

Mr. Paul MacGregor
Mundt, MacGregor, Happel, Falconer
& Zulauf
Bank of California Center
Suite 1230
Seattle, Washington 98164

Dear Mr. MacGregor:

Domestic sablefish longline fishermen, pot fishermen, the North Pacific Fishery Management Council, as well as your client, the Japanese Longline-Gillnet Association, have been waiting for results of the 1982 southeast Alaska NMFS sablefish pot index survey for an update of sablefish stock conditions in the southeast Alaska offshore area.

While the survey has been completed and preliminary information is available, some technical difficulties were experienced:

1. Poor weather hampered the sampling effort which resulted in completion of only 150 pot lifts rather than the usual 250 pot lifts at the Cross Sound and Cape Ommaney abundance index sites. At the Cape Addington and Cape Muzon sites, as in past years, 250 and 200 pot lifts were completed.

2. "Bad bait" (determined foul by smell and sight) was used during at least half of the survey effort. Bad bait was reportedly used in all pots at the Cross Sound site. At Capes Ommaney and Addington, pots were baited separately with good and bad bait. I have no final word on the quality of baits used at Cape Muzon.

3. Tests conducted at Ommaney and Addington reportedly indicate substantial differences in sablefish catch rates between good and bad bait, with bad bait producing lower catches. Differences are being evaluated further by the NMFS Auke Bay staff who conducted the survey this year. In previous years (1978, 1979, 1980 and 1981), the survey was conducted by NMFS at the Seattle Center.

As you know, the NMFS sablefish pot survey was designed to be a standardized survey and was conducted accordingly during 1978-1981. Incomplete sampling efforts at the Cross Sound and Cape Ommaney sites as well as the use of bad bait constitute a serious variation in the 1982 survey relative to earlier years. This is unfortunate particularly in view of the Council's pending OY decisions and because of the recruitment of juveniles into the fishery in 1982 which was predicted to be high in abundance relative to prior survey years.

The results of the 1982 survey must be regarded as "questionable" at the present time. NMFS is evaluating the use of a "bait correction factor" about which I cannot comment since I have not seen the data.

Use of domestic CPUE sablefish data and the cooperative U.S./Japanese longline survey data constitute other sources of resource information which could possibly assist in evaluating 1982 southeast Alaska sablefish stock conditions.

Sincerely,

NATURAL RESOURCES CONSULTANTS

Steve Hughes

Steven E. Hughes
Partner

Henry Haugen

BEFORE THE NORTH PACIFIC
FISHERY MANAGEMENT COUNCIL

STATEMENT RE SABLEFISH
GULF OF ALASKA GROUNDFISH
FISHERY MANAGEMENT PLAN
AMENDMENT #11

July 21 , 1982

My name is Henry Haugen and I appear on behalf of the vessels ARCTIC MIST, PROWLER and SABLEFISH. Each of these vessels engages in the sablefish or black cod fishery on the West Coast, including Southeast Alaska utilizing pot gear. These vessels represent the bulk of the potential U.S. offshore black cod fishing effort in Southeast Alaska.

For a number of years, the Alaska Longline Fishermen's Association (ALFA) has attempted to ban trawlers and pot fishermen from the sablefish fishery. It is submitted that this is nothing more than an economic allocation scheme designed to benefit a small group of Alaska fishermen who regard the fishery resource as theirs alone. Such localized protection from competition as here proposed does not meet federal management requirements. The North Pacific Council is required to set an optimum yield that will provide "the

greatest overall benefit to the Nation", not to local fishermen. You are charged with promoting the domestic groundfish fishery off Alaska, not promoting the Alaska hook and line fishery. You are charged with promoting efficiency, not the maintenance of a decades-old fishery technique. Finally, you are prohibited from allowing a particular entity to acquire an excessive share of the fishery resource or allocating the resource on economic grounds alone.

There are three methods of catching sablefish - trawling, hook and line, and pots. Each has its adherents, and all three methods are in use at the present time on the West Coast of the United States. None has proven to be more destructive of the resource than any of the others. Only the Alaska longliners appear to have moved to exclude competing gear.

There is no valid basis to restrict sablefish fishing to hook and line gear and the arguments made for doing so simply do not withstand examination. Niether the Plan Development Team nor the Scientific and Statistical Committee has found any reason within their expertise to justify such a proposal and hence remain silent.

ALFA states that "available data" establishes that pot gear targets on smaller sablefish than does hook and line gear. That is contrary to the data of which we are aware. According to the data presented in the report accompanying Amendment #11, longline vessels operating in the Eastern Gulf of Alaska take about 60% large sablefish (over 5 lbs.) and 40% small sablefish (under 5 lbs.). This ratio has remained relatively constant over the past 5 years. A casual examination of the fishing records of the vessels I here represent indicates that the landings of small fish, that is between 3 and 5 pounds, is well under 10% of the total catch. One fish ticket indicates that 25% of the catch was greater than 7 pounds, and in another instance 45% was over 11 pounds. Thus, the information indicates that the hook and line gear catches an excessively large amount of small sablefish, whereas pots take much larger fish - exactly contrary to the arguments of ALFA.

The second major reason put forward for the proposal is to avoid gear conflicts and grounds preemption. As to gear conflicts, there is none. There is no trawl effort and precious little pot fishing. There is apparently some lost and

abandoned gear from foreign fishing and from an Alaskan vessel (BILLY DAWN) no longer in operation. The contending groups have asked the Council to charter a vessel and go pick it up, but there has been no response. As to the future, fishermen can either learn to talk to one another and advise of the location of their gear or suffer the consequences.

As to grounds preemption, one must ask by what right do any fishermen have exclusive domain over the ocean floor? Pot fishermen do not now and have not claimed that the hook and line fishery should be banned simply because the gear occupies grounds. There is adequate room for both types of gear and neither one should be subject to discriminatory treatment by management officials.

It is patently obvious that the arguments advanced are without substance and the real purpose of the proposal is to reserve the off-shore sablefish resource to the longliners at the expense of other gear types. Such a decision would be contrary to the facts, be without support from your expert advisory panels, and fly in the face of the law. Approval by the Secretary would seem highly unlikely and would probably be the first exclusive allocation scheme to a particular gear

type under the 1976 Act.

Equally disturbing is the numbers game that is being played. At its May meeting, the Council adopted an area wide OY of 8200 metric tons for the Gulf - a figure that was mid-way between the extremes proposed and which would allow both a re-building and an increased domestic fishery. It is now apparent that there is a move which has as its effect:

1. A substantial increase in the allocation of OY to areas West of 147° W and a substantial decrease in the area East of 137° W.
2. The continuation of the inside fishery at its current full level and which, by action of the State of Alaska, is now reserved to the longline fleet.
3. An immediate substantial reduction in the off-shore Southeast Alaska OY such that the quota has been reached after some three months of actual fishing effort.

I do not believe that the Council, the advisory boards, or the public understood that the domestic sablefish fishery off Southeast Alaska was being severely curtailed. The available documentation indicates that the Council and others

understood that that OY figure was 1800 metric tons, not the 500 tons now contained in the current recommendation of the Plan Maintenance Team. As euphemistically stated in the Team's draft report, "some members of the PMT believe that EY for Southeast has been miscalculated at too low a level."

This issue should be clarified and if allowed to stand places the Council in a frustrating position - the State of Alaska has already made half the OY for Southeast Alaska sablefish exclusively the domain of longliners and the remaining half is so minor that action is hardly warranted.

The most effective way to regulate the sablefish fishery would be to establish minimum lengths or weights of fish which are commercially landed. It would be wise and economically beneficial to require fishermen to throw back undersized fish and let them grow up. As the pot fishery experience has shown, the percentages of small fish taken by pots can be extremely low, 10% or less. There seems to be no reason why we should allow a 40% small fish capture and landings by the longline fishermen if it makes no economic sense. An appropriate minimum size would be 4-1/2 to 5 pounds, round, for both hook and line and pot fishermen.

COALITION FOR OPEN OCEAN FISHERIES

July 19, 1982

Clement V. Tillion
Chairman
North Pacific Fishery
Management Council
P.O. Box 3136DT
Anchorage, Alaska 99510

Dear Mr. Tillion:

The Coalition for Open Ocean Fisheries (COOF) wishes to re-emphasize its opposition to the proposal of the Alaska Longline Fishermen's Association (ALFA) to restrict the sablefish fishery east of 140° West longitude to hook and line gear. The ALFA proposal addresses no conservation or management issues, and if adopted, would be in violation of the mandates of the Magnuson Fishery Conservation and Management Act (MFCMA).

As you are aware, COOF supports an open ocean, multiple fishery use concept for domestic fisheries within the Fishery Conservation Zone. Closures or gear restrictions should be instituted only for protection of fishery resources. These measures should not be imposed to promote the interests of one domestic user group over another. The Coalition also believes that conflicts between domestic fishermen should be resolved, whenever possible, through negotiated settlement rather than government intervention and regulation.

In an attempt to resolve some of the concerns that led to the ALFA proposal, representatives from the Coalition and the Alaska Draggers' Association as well as pot fishermen met with ALFA members on January 19, 1982. As ALFA President G. Gregory Baker noted in his March 3, 1982 letter to the Council,

> "The participants agreed that because there is no present or planned domestic trawl fishery for sablefish East of 140°,... there is no need at this time for restrictions on the domestic trawl fishery in this area." (emphasis added.)

With regard to the pot fishery, ALFA modified its original proposal so that pots would be allowed in the waters from Cape Addington to Dixon Entrance. This modification, however, was not acceptable to the non-ALFA participants at the meeting.

During this meeting, it became apparent to the COOF representatives that the motivation behind ALFA's proposed restrictions on the pot fishery did not relate to conserving sablefish stocks, but emanated from ALFA's fears that a pot fishery—if it ever developed—might result in preemption of grounds (through lost pots) and gear conflicts. No such problem now exists.

At the January meeting, COOF representatives, mindful of ALFA's concerns, suggested that the following actions could prevent gear conflict and grounds preemption problems from arising:

(1) The establishment of a voluntary gear reporting system maintained by industry, whereby hook and line fishermen could be advised of areas where pots are set; and

(2) The development by industry of an information packet which would be mailed to applicants for federal or state sablefish permits. This material would advise fishermen of the existence of the voluntary reporting system and the importance of avoiding gear conflicts as well as grounds preemption due to lost or abandoned pots.

In addition, pot fishermen at the meeting also offered to drag for pots which ALFA alleges were lost by a sablefish vessel in 1980 and are interfering with the hook and line fishery. (This single incident was the impetus for ALFA's proposed gear restrictions.) Unfortunately, COOF's suggestions and the pot fishermen's offer to drag for lost gear were not enough to persuade ALFA to withdraw its modified proposal for restricting the pot fishery for sablefish.

After reviewing the November 16, 1981 document accompanying ALFA's original proposal, COOF has been unable to discern any data which would substantiate that a conservation or management problem exists in the sablefish fishery which necessitates the closure of the area east of 140° West longitude to all gear but hook and line. Nor apparently were the Council's Plan Maintenance Team (PMT) and Scientific and Statistical Committee (SSC) convinced there were conservation or management issues involved. The PMT did not receive enough information to evaluate the proposal, and therefore, did not take a position on it. The SSC made no recommendation, but believed the proposal may conflict with one of the objectives of the Gulf of Alaska Groundfish Fishery Mangaement Plan. If the Council were to adopt ALFA's

proposal, the restrictions would not be supported by the best scientific information available, and would thus fail to meet the criterion of National Standard 2. What is especially telling, though, about ALFA's motivation for the proposal is the statement in its November 16, 1981 document that the gear restriction is just one of the management changes that

> "are necessary to promote the continuation of the traditional longline fishery in the Gulf of Alaska." (emphasis added.)

One must then view ALFA's proposal as an allocation issue.

As an allocation, ALFA's proposal (either in its original form or as modified) fails to meet the provisions of the MFCMA. It is not "fair and equitable" to all fishermen nor "reasonably calculated to promote conservation;" thus failing to meet the tests of National Standard 4. ALFA's proposal runs counter to National Standard 5 because it has economic allocation as its sole purpose. Furthermore, as COOF noted in its March 2, 1981 letter to the Council,

> "Pot vessels have operated successfully when longline vessels have not suggesting that implementation of a longline fishery only closes a viable gear option and may promote inefficiency."

Consequently, restricting the sablefish fishery east of 140° West longitude to hook and line gear may promote inefficiency rather than efficiency, and another mandate of National Standard 5 would be violated.

The Coalition urges that the Council adopt the position reached by the domestic user groups at their January meeting: no restrictions on trawling for sablefish east of 140° West longitude. But the Coalition also urges that the Council reject ALFA's proposal which would limit the pot fishery for sablefish to the waters from Cape Addington to Dixon Entrance. To adopt any of ALFA's proposed gear restrictions—which have no underlying conservation or management rationale or supporting data—would defeat the Congressional purpose of promoting "domestic fishing under sound conservation and management priniciples." (emphasis added.)

The Coalition, however, does not feel that ALFA's concerns should be brushed aside if the Council were to dismiss ALFA"s petition. It is incumbent upon domestic user groups to take steps—whether they be voluntary reporting systems or publicity campaigns—to ensure that gear conflicts and grounds preemption problems resulting from lost or abandoned gear are held to a

minimum. The Coalition for Open Ocean Fisheries wants to work with other domestic fishermen to achieve these ends through voluntary industry action rather than imposed government regulations.

Sincerely,

Rudy Petersen
Highliners Association

Dennis Petersen
AMERICAN NO. 1
Ken Petersen

Shirley A. Feller
Fishing Ventures International

Joseph C. Gaggero
Westward Trawlers

Richard J. Gutenstein
North Pacific Fishing Vessel
Owners' Association

Walter Pereyra
Marine Resources Company

Southeastern Sablefish Harvest through July 16, 1982 with a Catch Projection for a Level Equal to the 1981 Harvest

Catch January - May	300 tons round weight
Catch during June	406 tons
Catch July 1-16	286 tons
Total Catch through July 16	992 tons
Catch rate June 1 - July 16	115 tons per week
Remaining harvest to reach 1981 level (1,350 t)[1/]	358 tons

Time to reach 1981 level at current catch rate - 3.0 weeks

Lag time on fish ticket reports - 1 week

Projected date when last year's offshore harvest will be reached - August 2

1/ Actual 1981 offshore harvest including incidental catch in foreign trawl fishery totaled 1,390 mt. A 1,350 mt level will provide 500 mt for State waters.

JULY82/Y

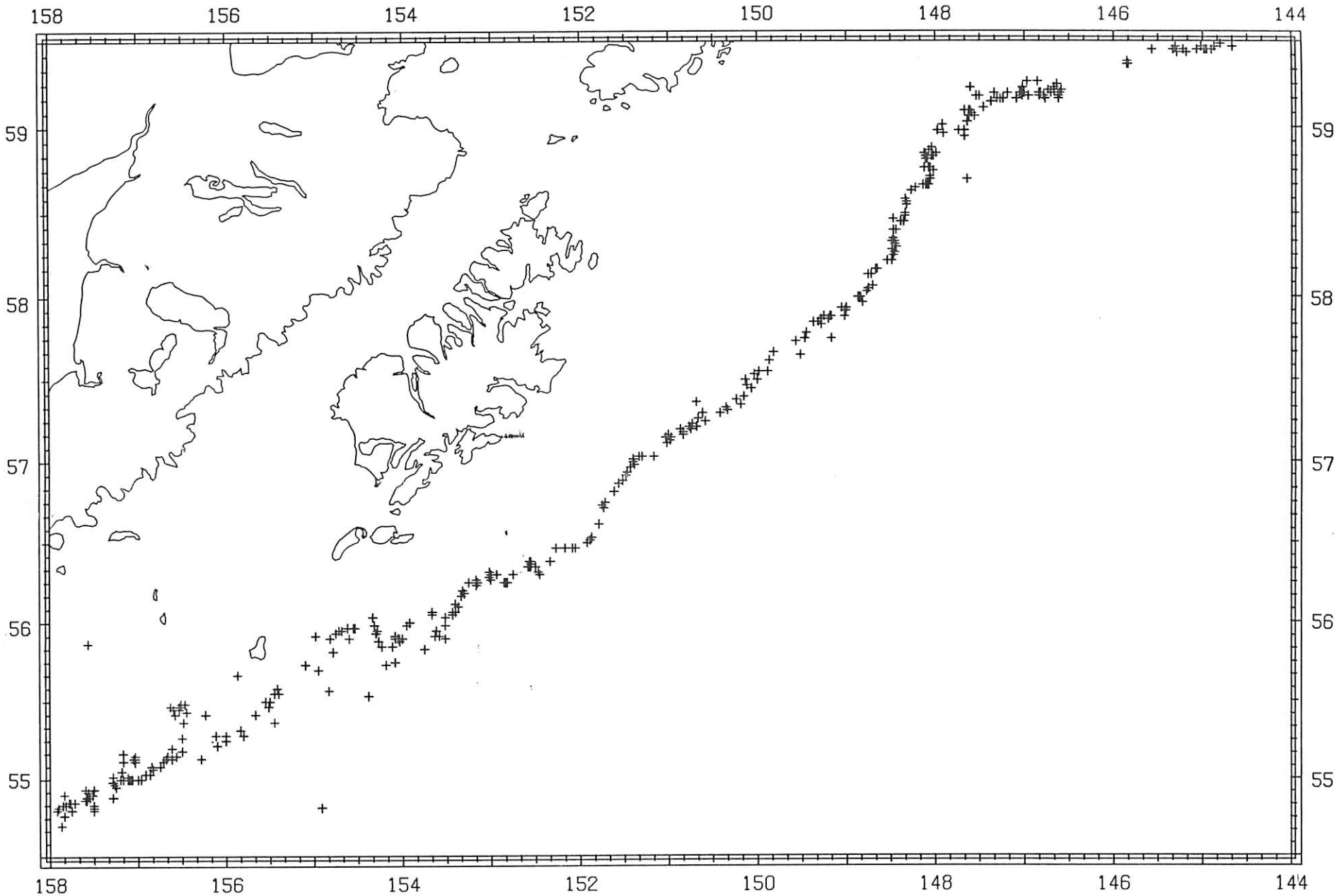


FIGURE C-1. SABLEFISH, ALL MONTHS, 1977-1979

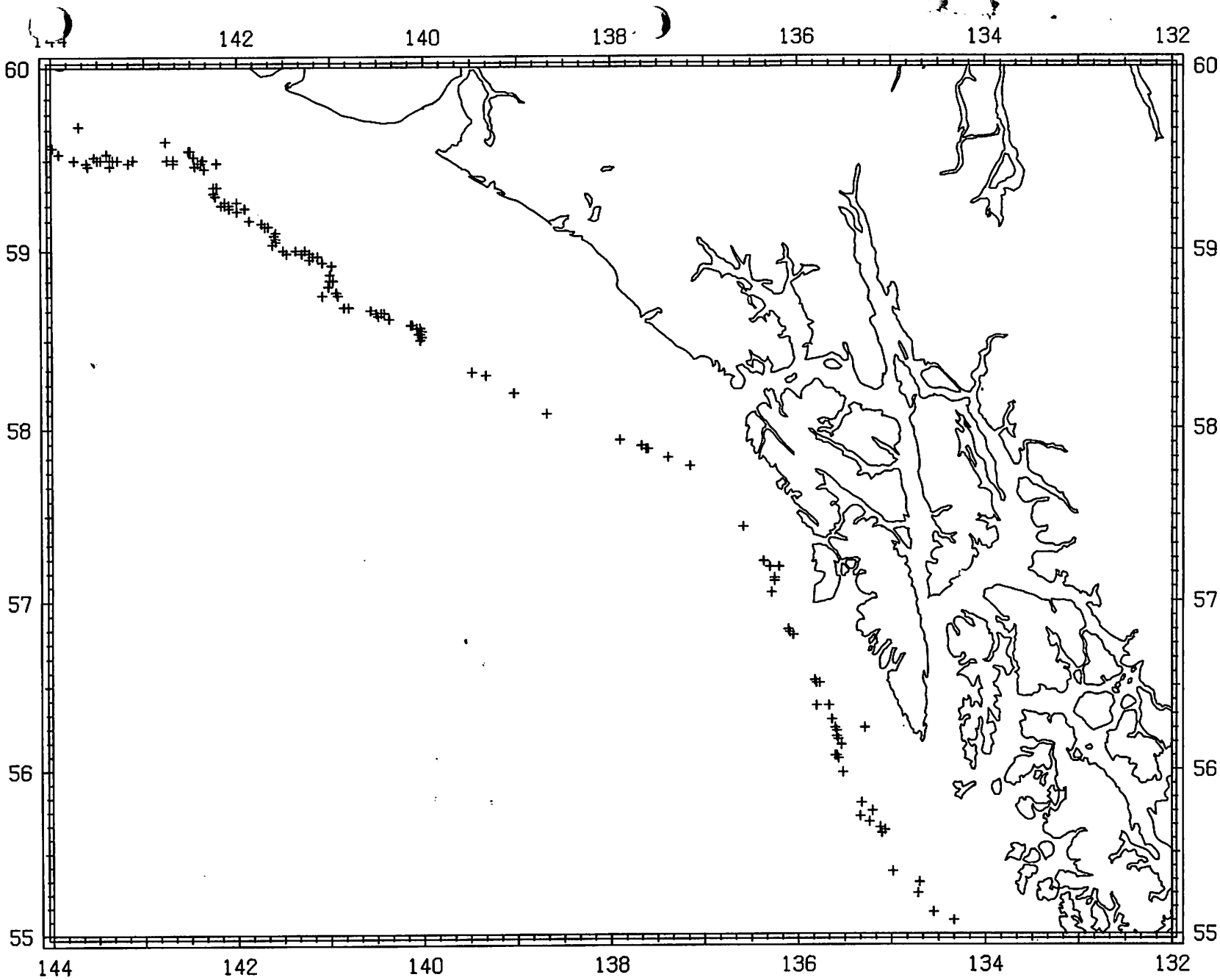


FIGURE D-1. SABLEFISH, ALL MONTHS, 1977-1979

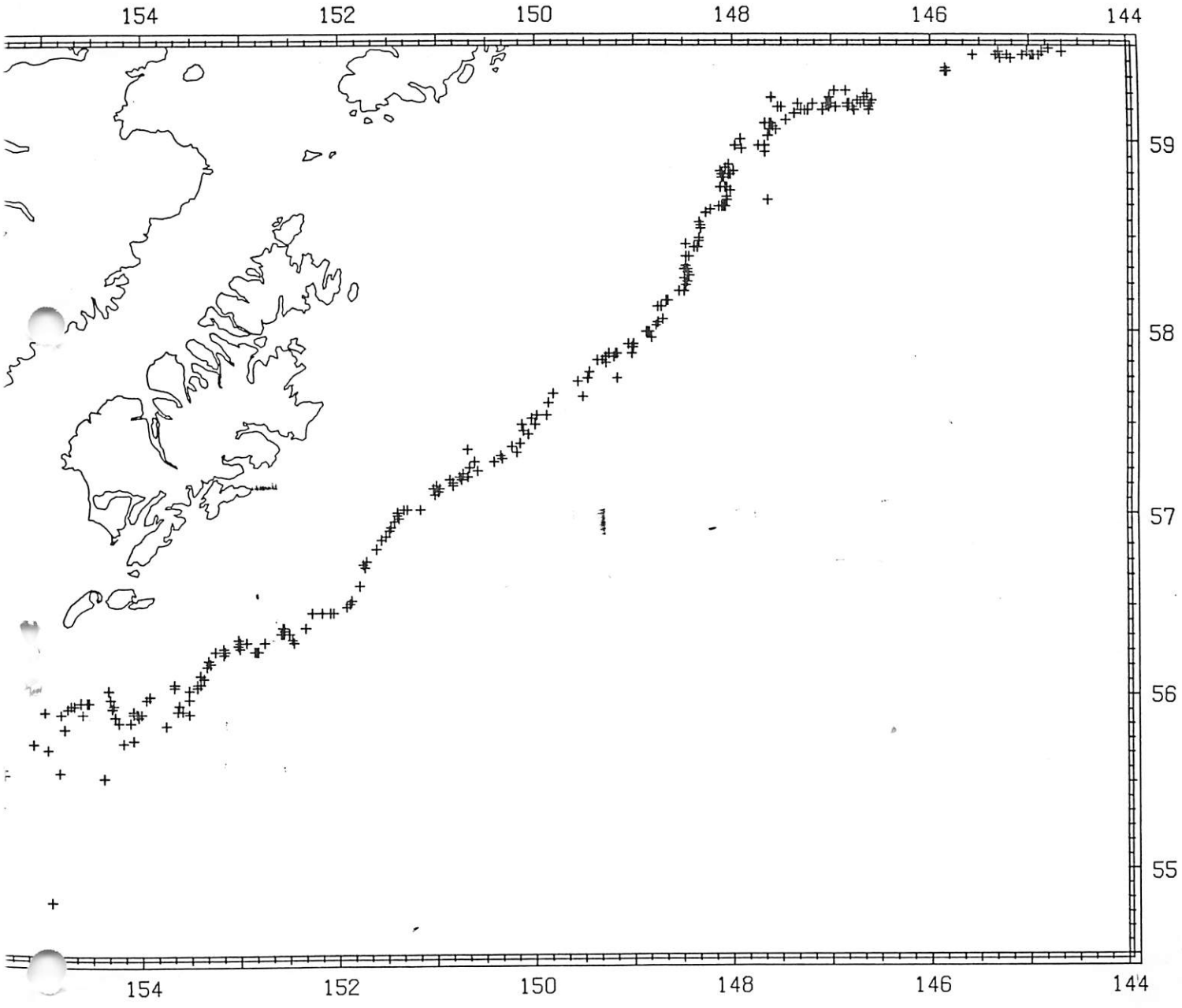


FIGURE C-1. SABLEFISH, ALL MONTHS, 1977-1979

ALASKA SEA GRANT PROGRAM
University of Alaska
Fairbanks, Alaska 99701

A SUMMARY OF PRODUCTIVE FOREIGN FISHING LOCATIONS IN THE ALASKA REGION DURING 1977-79: LONGLINE FISHERIES

by

Gary B. Smith[1], R. S. Hadley[2], Robert French[1],
Russell Nelson Jr.[1], and Janet Wall[1]

A Cooperative Effort of
Northwest and Alaska Fisheries Center
National Marine Fisheries Service, NOAA

and

Alaska Sea Grant Program
University of Alaska

1 Northwest and Alaska Fisheries Center
2725 Montlake Boulevard East
Seattle, WA 98112

2 Alaska Sea Grant Program
University of Alaska
Fairbanks, Alaska 99701

Sea Grant Report 80-1
July 1980