L. CHAIRMAN'S CLOSING COMMENTS:

Upcoming Meetings:	Date	Location
Council	Dec 12	Anc.
C + AK Bd Fish	Dec 13	Anc
C.	Dec 14	Anc.
SSC	Nov. 27, 28	Anc.

ADVISORY PANEL NOMINATIONS CLOSE

on October 5, 1979. Voting to take place at

next Council Meeting: Anchorage, AK on
Anchorage/Westward/Hilton Hotel

FISHING VESSEL OWNERS' ASSOCIATION
INCORPORATED
ROOM 232, C-3 BUILDING
FISHERMEN'S TERMINAL
SEATTLE, WASHINGTON 98119

(206) 284-4720

September 28, 1979

STATEMENT TO THE NORTH PACIFIC FISHERIES
MANAGEMENT COUNCIL 10-3-79 SITKA ALASKA

My name is Robert D. Alverson, I am the manager of the Fishing Vessel Owners Association of Seattle. Our vessels operate in the waters from Southern California to those adjacent to the Soviet Union in the Bering Sea. We fish for halibut, blackcod, pacific cod, ling cod, and albacore tuna.

LIMITED ENTRY FOR HALIBUT

The F.V.O.A. of Seattle supports a limited entry concept in the halibut industry. At this time the F.V.O.A. request that a moratorium on licenses be pursued for the 1980 halibut season. The fishing time per vessel has been drastically shortened in the halibut fishery. The number of days fishing in Area 3 during 1977 was 47, in 1978, 43 and in 1979, 34. The time for fishing in Area 2 North has been reduced from 73 in 1977, to 62 in 1978 to 24 days in 1979.

A moratorium is preferred at this time by the F.V.O.A. for the following reasons.

1. To provide a period of time to conduct a study of those vessels currently operating in the fishery and assess their needs before adoption of a limited entry program.

2. Assess the status of the stocks. An increase in a quota due to improved stock conditions would solve much of the current problem.

3. To provide time for some legal issues to be resolved concerning limited entry which have arisen out of the limited entry system for salmon.

4. The current limited entry program for salmon would not be suitable for the halibut fleet. Some modification needs to be undertaken.

The F.V.O.A. would like to see the limited entry and moratorium issues undertaken by the NPFMC. The state of Alaska has had extensive experience with their limited entry program in salmon and the state of Washington has had experience with the implementation of their moratorium.

SABLEFISH

The F.V.O.A. is aware that until the blackcod resource is fully exploited by the United States fishermen off the coast of Alaska that any gear restriction on the blackcod harvest would be premature. The F.V.O.A. however request that the council support the policy of promoting the harvest of blackcod by longlines wherever possible thoughout the Gulf of Alaska in order to promote conservation and management; to enhance the juvenile stock of 3-4 year old fish, and to reduce gear conflicts between domestic users groups and between United States and foreign fishermen.

With respect to the health of the blackcod resource the Fishing Vessel Owners Association is still not convienced that the optimum yield has been set at a level to adequately rebuild the resource. The new equilibriums yield for the Gulf of Alaska has been reduced from 17,400 M.T. to 14,000 M.T. (see letter attached from NMFS). This follows after a 9000 M.T. catch during 1978. This reduction in E.Y. with a catch of 9000 M.T. indicates that the decline in the resource has not been arrested and a further reduction in the quota is probably

required. Though there is a strong year class of 3 and 4 year olds, this does not necessarily reflect any trend that following year classes have been adequately recuited. The F.V.O.A. requests that the S.S.C. reconsiders the O.Y. for blackcod in the Gulf of Alaska. The F.V.O.A. believes the O.Y. should be set between (8-11,000 M.T.). There is no evidence to suggest that the current O.Y. level of 13,000 M.T. will result in any significant rebuilding of the resource with an E.Y. of 14,000 M.T.

SHOULD TRAWLING BE MORE RESTRICTIVE IN S.E. ALASKA

The F.V.O.A. in reference to the domestic trawl operations in the Gulf of Alaska has previously stated before the NPFMC that a newly expanding fishery should be given all the support that the government can give such that the manner of the new fisheries expansion is an compatible with existing conservation and inhancement measures provided to established fisheries.

The question, should trawling be more restrictive, is somewhat missleading as there are no restrictions in the sense of preventing domestic trawl operations on nursery or spawning grounds, or requirements for the use of midwater gear or pelagic gear as the foreign operations are required to operate with. There are no time area closures which domestic operations must abide by. The NPFMC can not ignore the needs of the halibut and blackcod resources and will have to impose regulations to prevent domestic trawl operations on spawning grounds and nursery areas in the future. There are a significant number of fishermen which have an economical dependance upon the health of these two resources and the maintenance of the resource is essential for communities in Alaska, Washington and Oregon.

SHOULD JOINT VENTURE BE ENCOURAGED OFF OF S.E. ALASKA

Joint venture activity should not be encouraged off of South East Alaska. The high volume low valued species which joint ventures should be restricted to, such as, pollock, and atka mackerel are in the western gulf of Alaska dn Bering Sea. These are the areas the joint venture should conduct their operations. South Eastern Alaska has a realatively low concertration of pollock, but does have many of the higher valued species such as cod, blackcod and perch which the domestic processors should be given first chance at. The F.V.O.A. has been against the joint venture operations in general and even more so if conducted in the South Eastern Alaska region on the higher valued bottom fish species.

FISHING VESSEL OWNERS ASS'N.

Robert D. Alverson, Manager

Catch and Effort Data for Chinook and Coho Salmon
in Southeast Alaska, 1977 and 1978.

COHO--

	1977	1978
CPUE (catch per hour)*	0.85	1.68
Catch (Southeast power troll)+	351,413	706,290

CHINOOK--

CPUE (catch per hour)*	0.64	0.82
Catch (Southeast power troll)+	238,351	319,092

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* Source: Alaska Trollers Association Log Book Program, unpublished data

+ Source: Alaska Department of Fish and Game Fish Ticket Summaries, 1977 and 1978. 1978 data are preliminary.

 2nd Issue June 1979 Fishermen's News

URI Researchers Report

Fishing regulations could cause job dissatisfaction

Commercial fishing regulations which cause fishermen to become dissatisfied with their jobs could potentially lead to family violence and mental illness, say two University of Rhode Island anthropologists.

These societal problems will occur if fishery management plans substantially change those characteristics of fishing which New England commercial fishermen highly value, according to Dr. Richard B. Pollnac and Dr. John J. Poggie.

The two specialists in maritime anthropology are completing an 18-month study on the characteristics of fishing New Englanders like and dislike, and the level and types of satisfaction they receive from their jobs. The study, funded by the National Science Foundation, attempts to predict some of the hidden social costs produced by the 1976 Fisheries Conservation and Management Act.

For the study, Dr. Poggie and Dr. Pollnac probed the attitudes of ever 200 fishermen in the Pemaquid Peninsula, Maine; New Bedford, Mass., and Point Judith, R. I. areas. Overall fishermen responded that the most important need met by their occupation was self fulfillment and the creation of a meaningful life.

The fishermen revealed that second in importance was the need for economic security. Third on their list was the time provided for family and social life.

Analysis of study responses showed that those engaged in the same type of fishing hold much more similar attitudes than do neighbors on a port who fish on different species.

"For example, those involved in inshore fisheries said they did not find their work as financially rewarding, but felt the way of life allowed them more time with their families. In contrast, offshore fishermen felt their work was economically satisfying, but it strained family relationships," Dr. Pollnac reported.

The URI researcher warns fishery managers that some schemes can affect one group of fishermen much more than others, and the consequences should be weighed before applying uniform management measures.

"Managers should also be aware that any schemes, such as ones limiting participation in a fishery, which assume all individuals are equally adaptable to working conditions in different ports and fisheries could produce a poorly adapted and inefficient labor force," said Dr. Poggie.

The study also provides an insight into the choices fishermen make regarding different styles of fishing.

"Individuals generally make tradeoffs when they choose a style of fishing. It apparently takes, however, more than money to lure New England fishermen into a style of fishing which demands longer time at sea than what they already spend," Dr. Poggie commented.

The URI anthropologists also note that despite the fact that fishermen preferred the type of fishing they currently do, over half of the long trip (4—7 days) fishermen interviewed indicated they would rather fish shorter trips.

"This preference conflicts with the projected tendency for New Englanders to shift to longer trip fishing. It's possible that this shift will be accompanied by some sort of social or psychological dislocation," the URI researchers stated.

The U. S. fishermen rank their needs in the same order as do fishermen from other countries where URI anthropologists have conducted similar studies. This order conflicts with the American industrial worker who ranks economic security as most important followed by time for family and social life, and then the need for self fulfillment and creativity.

The information which Dr. Poggie and Dr. Pollnac have collected, combined with other studies being conducted at the University of Maine, will form the most comprehensive social study of New England fishermen to date.

Southeast Alaska Empire

Sept. 4, 1979

Coho Returns Fluctuate

Citing the extreme low level of the coho run returning to the inside waters of Southeastern Alaska this season, officials of the Alaska Department of the Fish and Game announced today that commercial trolling will be closed in state waters effective 12:01 a.m. Friday, through Sept. 21.

Coho catches in the inside waters by commercial and sport troll fisheries and gillnet fisheries have been well below normal levels in recent weeks. Catches in the outside areas have sharply declined in the last week indicating that most of the run is already in the inside waters. The remaining portions of the coho run in the outside and inside water area will be needed for escapement.

The National Marine Fisheries Service is presently considering the possible necessity to also close the offshore waters.

Commercial trolling will be reopened on Sept. 21 for King salmon fishing.

COMMENTS
ON THE
FISHERY MANAGEMENT PLAN
FOR THE
TANNER CRAB OFF ALASKA

submitted by the
Japanese Tanner Crab Industry

Sitka, Alaska
October 4-5, 1979

On behalf of the Japanese Tanner crab fishery in the eastern Bering Sea, the following comments are being submitted to the North Pacific Fishery Management Council for consideration on the proposed management regime for the 1980 fishery management plan (FMP). As a recommended management regime for the foreign fishery during 1980, the following comments support a fleet separation line at 58°N latitude and 173°W longitude and a total allowable level of foreign fishing (TALFF) north and west of this line equal to 15,000 metric tons from which no more than 2,500 mt of C. opilio only can be taken from the area south of 58°N latitude and west of 173°W longitude.

FLEET SEPARATION LINE

During 1978 and 1979, the Japanese Tanner crab fleet was restricted to the areas north of 58°N latitude and west of 173°W longitude. As a result of this restrictive measure, there has been no gear conflict between the U.S. and Japanese fleets and no competition for the fishing grounds. Since approximately 98% of the harvestable C. bairdi male population is located south of 58°N latitude, the optimum yield (OY) for this species has been efficiently reserved for U.S. fishermen. (Note: Japanese fishermen fishing south of 58°N latitude and west of 173°W longitude return all incidentally caught C. bairdi to the water.) Because this fleet separation line has been more than adequate for the past two years, a change does not appear to be necessary for the 1980 season.

The Japanese industry fully recognizes that the U.S. Tanner crab industry has been rapidly expanding in harvesting and processing capacity. However, even with the drastic decline in C. bairdi during 1979, the U.S. fleet has not yet ventured to the more remote fishing areas north of 57°30'N latitude and west of 172°W longitude. In fact, over the past two years, the U.S. fishery has expanded more to the east and this year, the fleet did not fish beyond 171°W longitude. For both species, the fishery has continued to concentrate around the Pribilof Islands and north of Unimak Island and the Alaskan Peninsula.

A number of factors seem to offer an explanation as to why this fishery pattern will probably not change during the 1980 season. Firstly, only 2% of the harvestable C. bairdi male population is found in the waters north of 58°N latitude. Since C. bairdi is the primary target species for the U.S. fishery, total effort is concentrated in the southern fishing areas from the beginning of the season. Furthermore, compared with the average size of C. bairdi taken in the U.S. fishery, those found north of 58°N latitude and west of 173°W longitude are much smaller. It would appear that the C. bairdi resource in the northern and western areas is simply unattractive to U.S. fishermen.

Secondly, the largest concentrations of C. opilio are also found in the waters south of 58°N latitude. Although C. opilio is taken incidentally in the U.S. C. bairdi fishery, a target fishery does not really begin until the C. bairdi fishery begins to phase down. However, a shift into the C. opilio fishery does not result in any drastic shift in fishing area. Although the 1979 harvest of C. opilio was over 13 times the 1978 harvest, the area of fishing did not significantly expand. Considering the probability for higher dead-loss rates in live tanks and the higher operating costs for all vessel classes to operate in these more remote areas, the higher concentrations of crabs in the southern areas are simply much more attractive and convenient for the U.S. industry.

Thirdly, during the late spring and early summer a number of more attractive fisheries begin to draw vessels away from the Tanner crab fishery. The herring fishery attracts a large number of vessels from the fishery during the first part of May. After the herring season, many crab vessels begin to prepare for the salmon season as tender vessels. Other crab vessels move north into the more lucrative blue king crab fishery near St. Mathhew Island which begins around mid-July.

Upon careful analysis of the logistics of the U.S. Tanner crab fishery, it appears reasonable to conclude that even with a further increase in the industry harvesting and processing capacity, the fishery will probably not expand to the north of 58°N latitude and west of 173°W longitude. The resource south of 58°N latitude can sustain an increased U.S. fishery and large areas still remain totally unutilized in the area south and east of the fleet separation line.

ABC FOR C. OPILIO

Assessing the ABC for C. opilio requires a full analysis of three different data bases: (1) NMFS surveys; (2) Japanese surveys; and (3) the performance of the U.S. and Japanese commercial fisheries. Because surveys and the Japanese fishery have been conducted in the areas north of 58°N latitude and west of 173°W longitude for the past two years only, the data base is still incomplete. Sole reliance upon any one single data source may, therefore, result in biased figures which do not reflect the actual condition of the resource. For example, results of the 1978 NMFS survey estimated the abundance of male C. opilio crabs greater than 99 mm carapace width to be about 9,500 mt north of 58°N latitude. However, as the 1979 Japanese fishery progressed, it became apparent the abundance was much higher. It was noted by the Plan Development Team in a May, 1979 report that at the time the abundance was estimated from the 1978 survey, the Japanese fishery had already removed some 13,400 mt from the survey area indicating a population of at least 23,000 mt at the beginning of the fishery. A comparison between the 1978 and 1979 Japanese catch rates did not indicate any declining trends and suggested the level of Tanner crab abundance north of 58°N latitude and west of 173°W longitude was similar to that in 1978 and capable of supporting the 1979 fishery. Results of the fishery itself demonstrated the resource was capable of sustaining a 15,000 mt harvest.

For the past two years the Japanese have surveyed the waters north of 58°N latitude and west of 173°W longitude using both pot and trawl gear. In a report submitted during the U.S.-Japan scientific meeting held in Seattle in May, 1979, the Japanese scientists estimated the abundance of male C. opilio crabs greater than 100 mm carapace width to be 33,000 mt in the survey areas north of 58°N latitude

and west of 173°W longitude based upon a sampling gear efficiency of 0.345. Using the FMP exploitation rate of .58, the ABC was estimated at 19,000 mt. This estimate has been substantiated by the performance of the 1979 fishery.

Preliminary analysis of the data from the first phase of the 1979 Japanese survey indicates that the average resource density and abundance of male C. opilio crabs greater than 100 mm carapace width is similar to that of 1978. This year, the United States and Japan also conducted a cooperative survey to study sampling gear efficiency. The results of this survey should be helpful for a better understanding of the resource condition and should be considered for review in the assessment of the ABC.

In addition to the performance of the 1979 Japanese fishery and the preliminary analysis of the first phase of the 1979 Japanese survey, the results of the 1979 NMFS survey also indicate that the status of the resource north of 58°N latitude has remained fairly stable. The estimated number of harvestable male C. opilio crabs greater than 100 mm carapace width from the 1979 survey is very similar to the number estimated from the 1978 survey. However, it is noted that the ABC from the 1979 survey is calculated from those crabs greater than 104 mm rather than 100 mm as was done in 1978. There appears to be no scientific basis for increasing the size from which the ABC is calculated.

Based upon the performance of the Japanese fisheries north of 58°N latitude and west of 173°W longitude and the results of the U.S. and Japanese surveys conducted in these areas, it can be reasonably concluded that the resource in the area of the Japanese fishery is capable of sustaining a harvest of at least 15,000 mt and that the ABC for C. opilio is probably greater than 126 million pounds.

OY FOR C. OPILIO

In the absence of any basis for deviating from the ABC, the OY for C. opilio should be equated with the ABC.

CATCH TRENDS FOR C. OPILIO

In order to provide an estimate of the U.S. catch for C. opilio, Figures 1 and 2 project the 1980 catch for the Bering Sea based upon historical catch records for all Alaska. Figure 2 shows that even though the C. opilio catch increased significantly between 1978 and 1979, the total Bering Sea catch increased by only 8 million pounds. This appears to be an average increase for the Bering Sea when compared to previous annual increases. It is possible that with the decline in C. bairdi, C. opilio has been an acceptable substitute in the market. Therefore, it appears that the total Bering Sea catch of Tanner crab must be taken into consideration when projecting the future catch of C. opilio.

Based upon past catch records, the highest projected catch for the Bering Sea Tanner crab fishery for 1980 would be about 112 million pounds. This would be a 34 million pound increase over 1979 and the largest increase within the past 5 years. From this projected catch of 112 million pounds, it can be assumed that 27 million pounds will be C. bairdi. This would result in a C. opilio catch of 85 million pounds. Compared with the 1979 catch of C. opilio, this also represents a 52 million pound increase and would appear to be more than a reasonable estimate for the 1980 U.S. catch.

TALFF FOR C. OPILIO

With an OY of 126 million pounds and an estimated U.S. catch of 85 million pounds for C. opilio, a surplus of 41 million pounds remains. This is more than adequate to allocate 15,000 mt to TALFF.

CONCLUSION

The Japanese Tanner crab industry feels the above comments are reasonable in support of the option which retains the status quo for the 1980 Tanner crab foreign fishery. Survey results demonstrate that the C. opilio fishery is capable of sustaining a substantial increase in the U.S. catch and at the same time providing a sufficient surplus for a 15,000 mt TALFF north of 58°N latitude and west of 173°W longitude.

For a number of years, the Japanese mothership Tanner crab catch has provided stability to the Japanese market. Channels of distribution have been developed by the mothership fleet companies which provide the basis for expanding the market with the imported product from the U.S. During 1979 alone, imports of Tanner crab from the U.S. increased by 4,000 mt over 1978. Through these established channels of distribution, a reasonable opportunity exists for further expansion of the Japanese market during 1980 with increased imports from the United States.

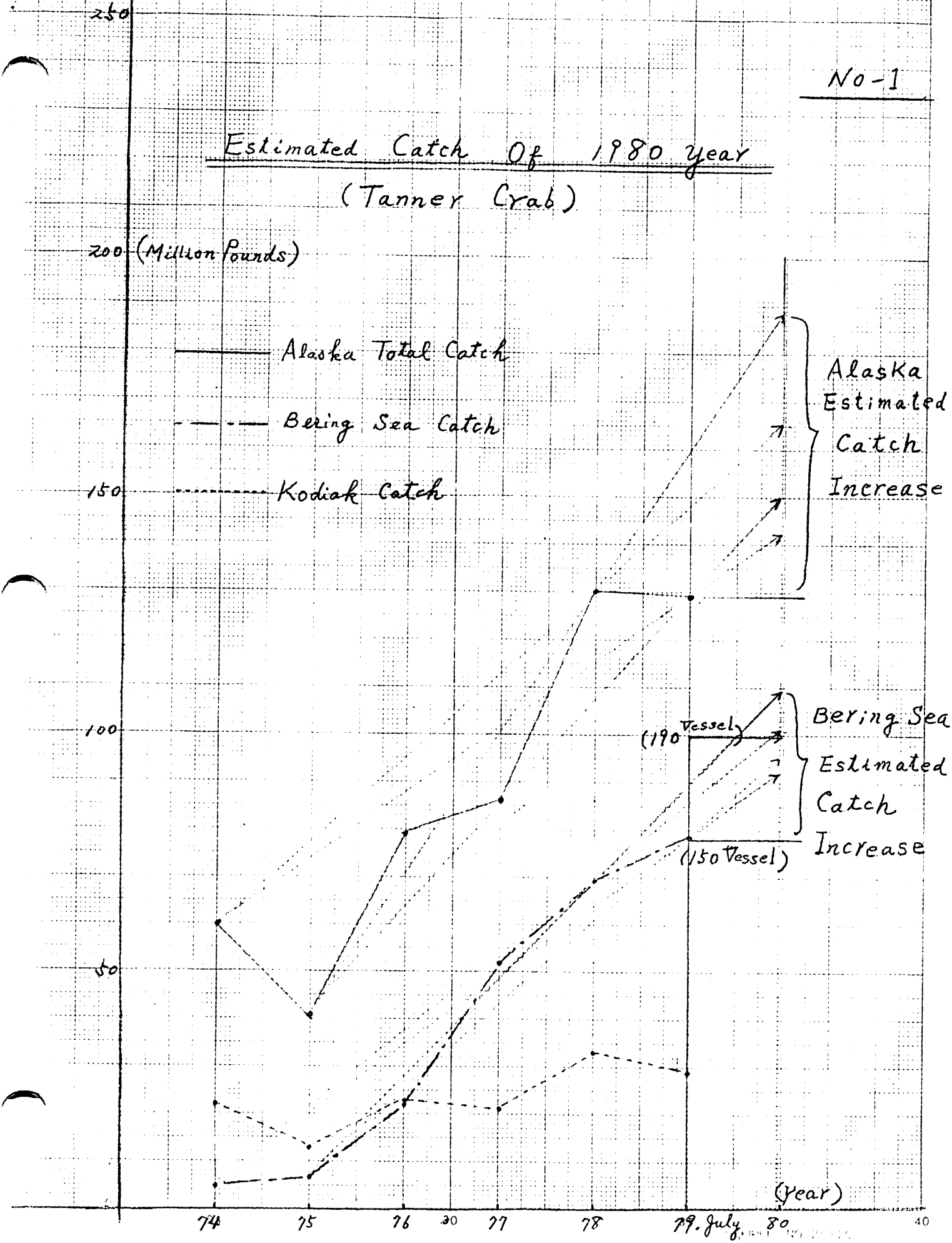
Submitted on behalf of the
Japanese Tanner Crab Industry

Tsunero Takahashi
Tsuneya Kumagai
Jay D. Hastings

No-1

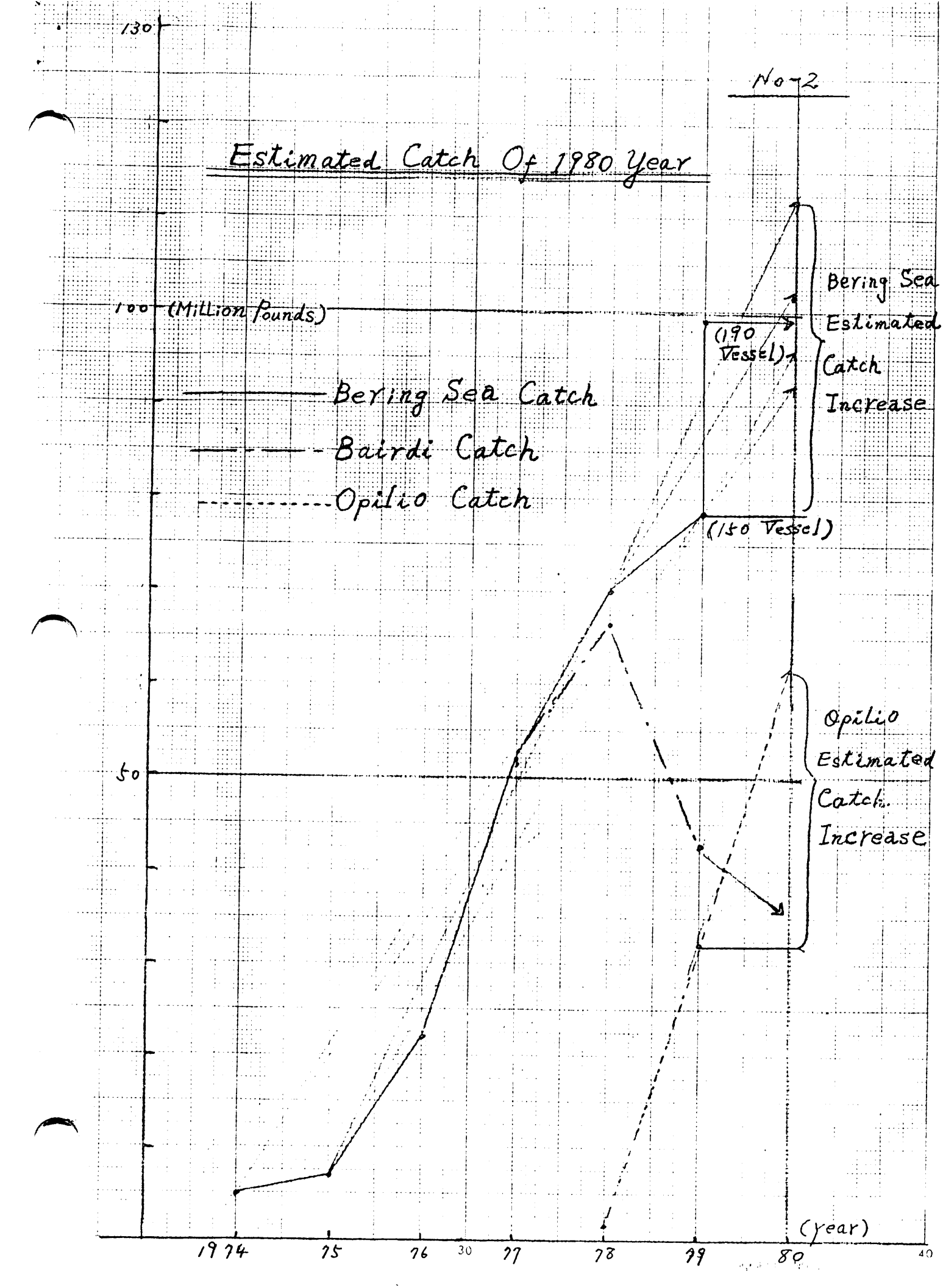
Estimated Catch Of 1980 year

(Tanner Crab)



No-2

Estimated Catch Of 1980 Year



REPORT ON FISHING CONDITIONS OF JAPANESE TANNER CRAB IN THE EASTERN BERING SEA in 1979 SEASON

Japanese Tanner Crab Industry

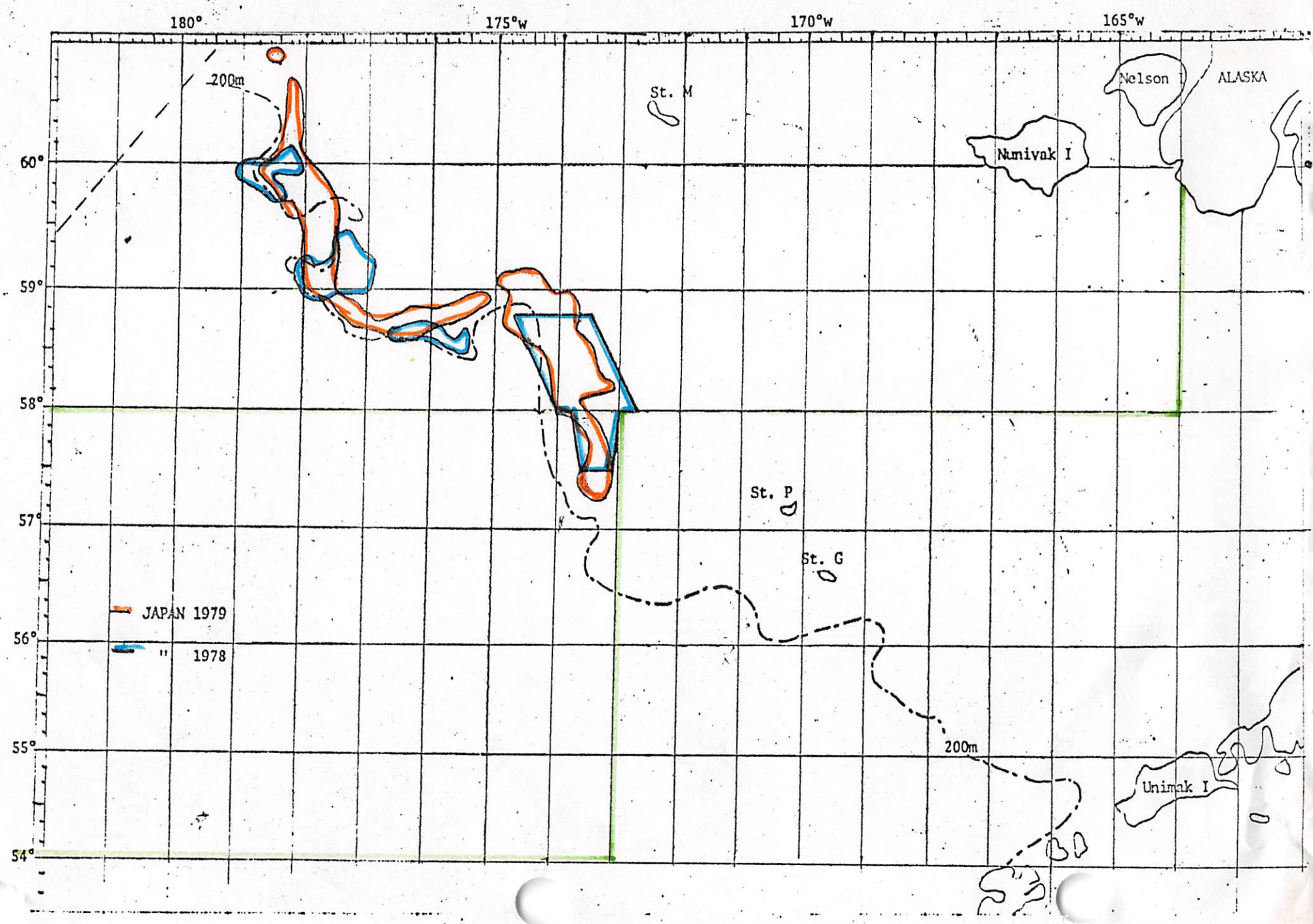
This year our fishing operation started in late February, about half a month earlier than usual years. Although the drifting ice did not flow down to the south, the weather conditions have been rather bad. The bottom temperature has been at the higher level than usual years for these two years.

CPUE trend of Japanese fishery has been very similar to 1978.

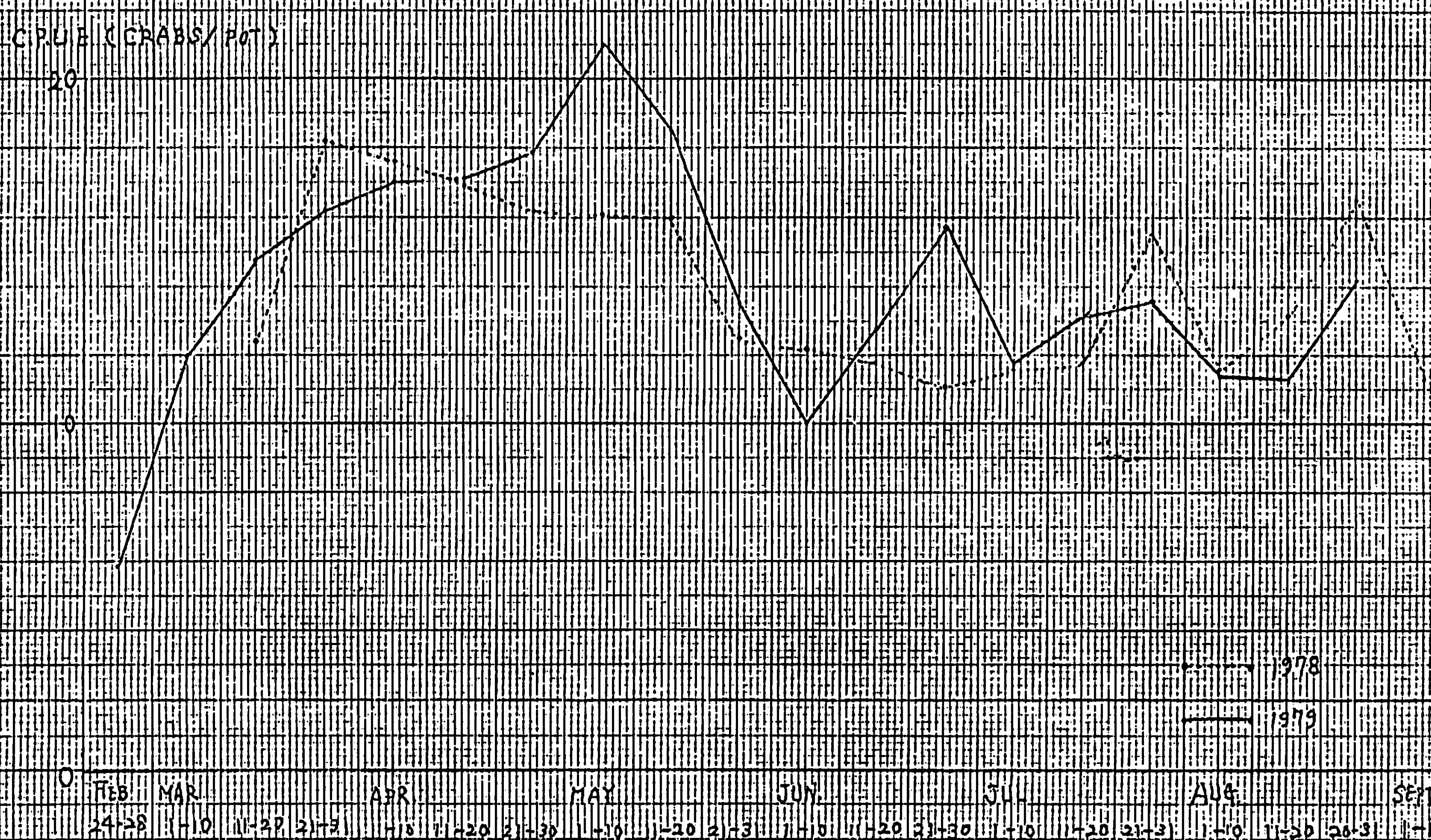
Year	Fishing Period	Day on the ground	Idle days due to bad weather	Days Pot-lifted	Catch (m.t.)	Catch /day	CPUE crab/pot
1979	2/23 ~ 8/26	185	15.5	169.5	11,727.926	69.2	14.5
1978	3/12 ~ 9/3	176	9.4	166.6	11,727.954	70.4	14.1

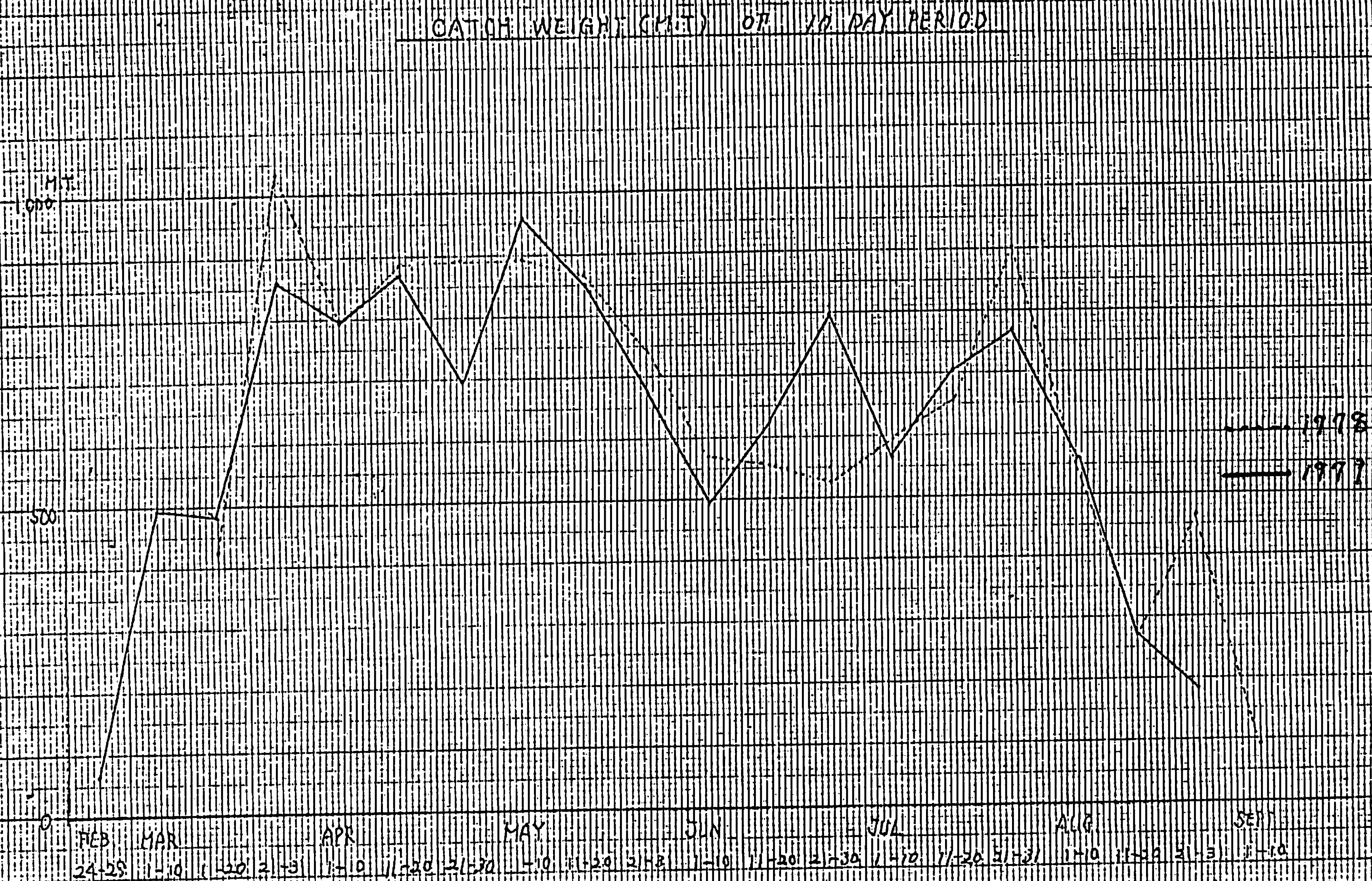
(Note: Affected by the raised price of oil and relevant materials, our op operation on the commercial base was critical this year.

CRAB FISHING AREA OF THE EAST BERING SEA (1979 AUG. 26)



C.P.U.E (CRABS/POT) OF 10 DAY PERIOD





CATCH WEIGHT (M.T.) OF 10 DAY PERIOD
M.T.
1,000
500
0
FEB 24-28
MAR 1-10 11-20 21-31
APR 1-10 11-20 21-30
MAY 1-10 11-20 21-31
JUN 1-10 11-20 21-30
JUL 1-10 11-20 21-31
AUG 1-10 11-20 21-31
SEPT 1-10
1978
1977

MOTHER SHIP CHAN FISHERY CATCH DATA 1/2 X 1

	179W		178W		177W		176W		175W		174W		173W		172W		
61N	Year	1978	1979	1978	1979	1978	1979	1978	1979	1978	1979	1978	1979	1978	1979	
	No. of Pot Lifts		64,318													
	Cath Wt. (tons)		573.490													
	Catch Number		887,530													
	CPUE		13.8													
	No. of Pot Lifts	4,068	58,561													
	Catch Wt. (tons)	45.772	477.004													
	Catch Number	71,374	764,067													
	CPUE	15.5	13.0													
60N																60N
	No. of Pot LIfts	17,408	17,061	8,576	5,180											
	Catch Wt. (tons)	135.586	101.713	99.496	19.358											
	Catch Number	222,525	159,649	160,325	30,283											
	CPUE	12.8	9.4	18.7	5.8											
	No. of Pot L fts	20,864	15,405	31,872	27,517		1,222				17,203	2,432				
	Catch Wt. (tons)	211.370	120.363	270.714	209.516		4.867				128.479	8.766				
	Catch Number	338,055	194,837	461,061	334,701		7,697				216,397	12,616				
	CPUE	16.2	12.6	14.5	12.2		6.3				12.6	5.2				
59N																59
	No. of Pot Lifts				54,587	6,528	86,459	7,168	52,668	266,291	444,950	21,171	39,717			
	Catch Wt. (tons)				402.242	41.278	635.007	57.366	429.500	2,611.671	4,536.939	227.110	394.512			
	Catch Number				650,695	66,730	1,059,956	89,786	725,055	3,580,612	7,320,338	303,204	640,840			
	CPUE				11.9	10.2	12.3	12.5	13.8	13.4	16.4	14.3	16.1			
	No. of Pot Lifts									164,636	83,662	412,328	194,377	33,750	1,536	
	Catch Wt. (tons)									1,811.554	873.675	4,696.671	1,600.806	350.565	8.155	
	Catch Number									2,371,546	1,386,192	6,107,644	2,531,569	476,772	13,686	
	CPUE									14.4	16.6	14.8	13.0	13.9	8.9	
58N																58N
	No. of Pot Lifts											93,654	80,882			
	Catch Wt. (tons)											889.899	758.180			
	Catch Number											1,209,972	1,080,491			
	CPUE											12.9	13.4			
	No. of Pot Lifts											28,619	43,020			
	Catch Wt. (tons)											270.136	454.020			
	Catch Number											367,628	634,544			
	CPUE											12.8	.7			
57N																57N
		179W		178W		177W		176W		175W		174W		173W		172W	

ALL TOTAL	1978	1979
No. of Pot Lifts	1,119,905	1,288,325
Catch Wt. (tons)	11,727.954	11,727.826
Catch Number	15,839,850	18,638,527
CPUE	14.1	14.5

JAPANESE TANNER CRAB. MOTHER-SHIP. CATCH DATA. 1979 (CATCH NORTH OF 58 N)

	Pulling Pots	Catch Weight (Kg) Opilio	Bairdi	Hybrid	Catch Number Opilio	Bairdi	Hybrid	Average Weight(g) OP	B	HY	Comparison-Percentage Weight OP	B	HY	Number OP	B	HY	C.P.U.E.
2 / 21																	
22																	
23																	
24	418	1,233	24	65	1,752	35	91	704	686	714	93.3	1.8	4.9	93.3	1.9	4.8	4.5
25	896	2,272	267	195	3,787	477	342	600	560	570	83.1	9.8	7.1	82.2	10.4	7.4	5.1
26	1,259	7,995		98	10,952		134	730		731	98.8		1.2	98.8		1.2	8.9
27	5,685	21,893	1,801	922	31,501	2,444	1,274	695	737	724	88.9	7.3	3.8	89.4	6.9	3.7	6.2
28	6,165	24,723	3,684	918	39,613	5,445	1,269	624	677	723	84.3	12.6	3.1	85.5	11.8	2.7	7.5
10days	14,403	58,116	5,776	2,198	87,605	8,401	3,110	663	688	707	87.9	8.7	3.4	88.4	8.5	3.1	6.9
monthly total	14,403	58,116	5,776	2,198	87,605	8,401	3,110	663	688	707	87.9	8.7	3.4	88.4	8.5	3.1	6.9
3 / 1	6,948	31,404	4,169	2,177	50,424	6,374	3,180	623	654	685	83.2	11.0	5.8	84.1	10.6	5.3	8.6
2	7,274	38,841	3,010	2,919	61,547	4,077	4,095	631	738	713	86.8	6.7	6.5	88.3	5.8	5.9	9.6
3	7,257	42,216	5,597	4,988	65,912	7,801	7,292	641	718	684	80.0	10.6	9.4	81.4	9.6	9.0	11.2
4	7,507	58,948	2,432	3,357	90,310	3,721	4,682	653	654	717	91.0	3.8	5.2	91.5	3.8	4.7	13.1
5	2,038	15,734	1,086	1,473	26,062	1,488	2,133	604	730	691	86.0	5.9	8.1	87.8	5.0	7.2	14.6
6	6,198	43,394	239	329	68,266	531	706	636	450	466	98.7	0.5	0.8	98.2	0.8	1.0	11.2
7	6,929	53,894	6,946	2,764	87,140	9,740	3,728	619	713	741	84.7	10.9	4.4	86.6	9.7	3.7	14.5
8	6,965	53,454	6,239	1,478	88,317	9,218	2,346	605	677	630	87.4	10.2	2.4	88.4	9.2	2.4	14.3
9	7,144	49,808	2,636	1,930	85,344	4,566	2,655	584	577	727	91.6	4.8	3.6	92.2	4.9	2.9	13.0
10	7,530	49,068	5,112	2,075	77,676	9,111	3,074	632	561	675	87.2	9.1	3.7	86.4	10.1	3.5	11.9
10days	65,790	436,741	37,466	23,490	700,998	56,627	33,891	623	662	693	87.8	7.5	4.7	88.6	7.2	4.2	12.0
3 / 11	7,290	62,669	3,210	2,759	100,255	5,732	3,601	625	560	766	91.3	4.7	4.0	91.5	5.2	3.3	15.0
12	7,047	55,262	8,235	2,131	85,618	13,523	2,755	645	609	774	84.2	12.5	3.2	84.0	13.3	2.7	14.5
13	8,221	48,947	5,640	1,449	80,691	9,348	2,264	607	603	640	87.3	10.1	2.6	87.4	10.1	2.5	11.2
14	7,998	54,010	13,247	2,148	80,210	20,427	2,505	673	649	858	77.8	19.1	3.1	77.8	19.8	2.4	12.9
15	7,458	62,943	9,379	2,882	98,331	13,707	3,066	640	684	940	83.7	12.5	3.8	85.4	11.9	2.7	15.4
16																	
17																	
18																	
19																	
20																	

Table

JAPANESE TANNER CRAB, MOTHER-SHIP, CATCH DATA, 1979 (NORTH OF 58°N)

No. 1

	Pulling Pots	Catch Weight (Kg) Opilio	Bairdi	Hybrid	Number Opilio	Bairdi	Hybrid	Average Weight (g) OP	B	HY	Comparison Percentage Weight OP	B	HY	Number OP	B	HY	C.P.U.E.
3/11																	
12																	
13																	
14																	
15																	
16	3,328	46,030	3,858	1,692	70,833	6,324	2,197	650	610	770	89.2	7.5	3.3	89.3	8.0	2.7	23.8
17	1,792	15,008	362	118	24,986	670	157	601	540	752	96.9	2.3	0.8	96.8	2.6	0.6	14.4
18	1,530	16,388	2,949	325	26,497	4,834	382	619	610	851	83.3	15.0	1.7	83.6	15.2	1.2	20.6
19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10days	44,670	361,257	46,880	13,504	567,421	74,565	16,927	637	629	790	85.7	11.1	3.2	86.1	11.3	2.6	14.8
21	4,224	50,773	10,965	-	88,470	17,975	—	574	610	-	82.2	17.8	-	83.1	16.9	—	25.2
22	3,712	40,428	2,156	—	64,423	3,171	—	628	680	-	94.9	5.1	—	95.3	4.7	—	18.2
23	3,840	47,917	3,894	1,431	73,891	8,420	1,389	649	700	1,030	86.7	10.7	2.6	88.3	10.1	1.6	21.8
24	3,456	36,957	2,151	1,098	59,986	2,218	1,615	616	970	680	91.9	5.3	2.8	94.0	3.5	2.5	18.5
25	3,840	33,017	2,094	1,751	55,450	3,035	1,945	595	690	900	89.6	5.7	4.7	91.8	5.0	3.2	15.7
26	1,664	25,414	1,810	—	47,240	3,175	—	538	570	-	93.4	6.6	—	93.7	6.3	—	30.3
27	4,096	40,294	1,075	621	61,534	1,132	955	655	950	650	96.0	2.6	1.4	96.7	1.8	1.5	15.5
28	3,840	36,763	2,635	952	55,890	3,711	1,535	658	710	620	91.1	6.5	2.4	91.4	6.1	2.5	15.9
29	4,096	37,412	7,144	1,924	59,265	10,354	3,006	631	690	640	80.5	13.4	4.1	81.6	14.3	4.1	17.7
30	3,328	35,988	3,751	811	53,850	5,861	811	668	640	1,000	88.7	9.3	2.0	89.0	9.7	1.3	18.2
31	3,842	38,245	1,451	2,006	56,746	2,134	2,446	674	680	820	91.7	3.5	4.8	92.5	3.5	4.0	16.0
10days	39,938	423,208	41,126	10,594	676,745	61,186	13,702	625	672	773	89.1	8.7	2.2	90.0	8.1	1.9	18.8
Monthly Total	150,398	1,221,206	125,472	47,588	1,945,164	192,378	64,520	628	652	758	87.6	9.0	3.4	88.3	8.7	3.0	14.6
4 / 1	3,968	51,583	607	1,032	78,388	1,065	1,186	658	570	870	96.9	1.1	2.0	97.2	1.3	1.5	20.3
2	2,048	29,321	2,528	897	46,003	4,013	1,150	637	630	780	89.5	7.7	2.8	89.9	7.8	2.3	25.0
3	3,712	39,854	2,761	1,491	63,197	3,210	1,448	631	860	1,030	90.4	6.3	3.3	93.1	4.7	2.2	18.3
4	4,224	54,238	2,911	2,995	87,323	4,621	3,523	621	630	850	90.2	4.8	5.0	91.5	4.8	3.7	22.6
5	3,968	45,829	3,125	2,696	75,783	5,388	3,501	605	580	770	88.7	6.1	5.2	89.5	6.4	4.1	21.3
6	3,968	38,224	1,739	1,639	57,608	2,760	1,725	664	630	950	91.9	4.2	3.9	92.8	4.4	2.8	15.6
7	384	6,569	33	231	10,351	110	385	635	300	600	96.1	0.5	3.4	95.4	1.0	3.6	28.2
8	4,352	67,547	—	456	112,768	—	570	599	—	800	99.3	—	0.7	99.5	—	0.5	26.0
9	3,840	45,512	2,497	1,439	74,011	4,305	1,439	615	580	1,000	92.0	5.0	3.0	92.8	5.4	1.8	20.8
10	4,096	34,752	4,506	1,742	60,169	7,387	1,936	578	610	900	84.8	11.0	4.2	86.6	10.6	2.8	17.0
10days	34,560	413,429	20,707	14,618	665,60	?,859	16,863	621	630	867	92.1	4.6	3.3	93.0	4.6	2.4	.7

JAPANESE TANNER CRAB, MOTHER-SHIP, CATCH DATE. 1979 (NORTH OF 58°N)

No. 2

	Pulling Pots	Catch Weight (Kg) Opilio	Bairdi	Hybrid	Catch Number Opilio	Bairdi	Hybrid	Average Weight (g) OP	B	HY	Comparison Percentage Weight OP	B	HY	Number OP	B	HY	C.P.U.E.
4 /11	4,096	41,050	2,344	1,509	66,295	2,824	2,156	619	830	700	91.4	5.2	3.4	93.0	4.0	3.0	17.4
12	3,712	40,285	2,751	986	68,337	3,718	1,315	590	740	750	91.5	6.3	2.2	93.1	5.1	1.8	19.8
13	4,352	40,974	2,240	8,883	67,026	2,605	13,063	611	860	680	78.7	4.3	17.0	81.1	3.1	15.8	19.0
14	4,096	38,025	907	5,962	61,250	1,242	8,768	621	730	680	84.7	2.0	13.3	86.0	1.7	12.3	17.4
15	4,352	36,418	2,302	12,100	60,639	2,423	18,906	601	950	640	71.7	4.5	23.8	74.0	3.0	23.0	18.8
16	3,584	47,445	212	9,623	75,047	353	15,521	632	601	620	82.8	0.4	16.8	82.5	0.4	17.1	25.4
17	2,944	32,123	1,289	5,539	48,698	1,482	7,101	660	870	780	82.5	3.3	14.2	85.0	2.6	12.4	19.5
18	3,712	46,411	—	5,094	71,747	—	7,491	647	—	680	90.1	—	9.9	90.5	—	9.5	21.3
19	3,584	33,668	1,070	14,085	49,299	1,338	20,121	683	800	700	69.0	2.2	28.8	69.7	1.9	28.4	19.7
20	3,584	52,833	—	865	80,125	—	1,236	659	—	700	98.4	—	1.6	98.5	—	1.5	22.7
10days	38,016	409,232	13,115	64,646	648,463	15,985	95,678	631	820	676	84.0	2.7	13.3	85.3	2.1	12.6	20.0
21	3,584	44,827	41	8,155	64,179	82	11,486	698	500	710	84.5	0.1	15.4	84.7	0.1	15.2	21.1
22	6,923	57,246	1,850	9,740	85,330	2,291	16,190	671	808	602	83.2	2.7	14.1	82.2	2.2	15.6	15.0
23	4,068	35,558	18	5,809	54,247	16	10,614	655	1,125	547	85.9	0.1	14.0	83.6	—	16.4	15.9
24	--	—	-	-	—	-	—	—	-	—	-	—	--	-	-	—	—
25	7,274	64,762	1,149	14,276	99,840	1,870	21,338	649	614	669	80.8	1.4	17.8	81.2	1.5	17.3	16.9
26	7,471	78,614	1,307	13,850	128,952	2,209	20,082	610	592	690	83.8	1.4	14.8	85.2	1.5	13.3	20.2
27	6,524	58,318	10,959	2,992	89,944	16,003	3,551	648	685	842	80.7	15.2	4.1	82.1	14.6	3.3	16.8
28	7,079	72,264	5,903	1,737	113,630	9,064	2,479	636	651	701	90.4	7.4	2.2	90.8	7.2	2.0	17.7
29	7,322	86,270	5,168	3,774	138,039	8,562	4,245	625	604	889	90.6	5.4	4.0	91.5	5.7	2.8	20.6
30	7,283	79,785	1,883	950	130,867	3,000	1,573	610	628	604	96.6	2.2	1.2	96.6	2.2	1.2	18.6
10days	57,528	577,644	28,280	61,283	905,028	43,097	91,358	638	656	669	86.6	4.2	9.2	87.0	4.1	8.9	18.1
Monthly Total	130,104	1,400,305	62,102	140,547	2,219,092	91,941	204,099	631	675	689	87.4	3.9	8.7	88.2	3.7	8.1	19.3
5 / 1	7,920	91,127	7,888	1,479	140,188	12,309	2,034	650	641	727	90.7	7.8	1.5	90.7	8.0	1.3	19.5
2	2,518	28,240	1,950	529	46,384	3,054	921	609	639	574	91.9	6.3	1.7	92.1	6.1	1.8	20.0
3	7,319	87,948	4,413	3,032	141,522	5,903	4,166	621	748	728	92.2	4.6	3.2	93.3	3.9	2.8	20.7
4	7,669	93,218	4,928	2,786	154,050	8,739	4,221	623	564	660	92.3	4.9	2.8	92.2	5.2	2.6	21.8
5	7,534	99,255	4,821	5,087	154,380	6,836	5,872	643	705	866	90.9	4.4	4.7	92.4	4.1	3.5	22.2
6	7,632	101,337	3,171	4,265	151,142	4,828	5,442	670	657	784	93.2	2.9	3.9	93.6	3.0	3.4	21.1
7	7,685	93,634	6,011	3,134	152,653	9,710	3,537	613	619	886	91.1	5.8	3.1	92.0	5.9	2.1	21.6
8	7,711	90,659	9,519	2,719	144,545	15,683	4,074	627	607	667	88.1	9.3	2.6	88.0	9.5	2.5	21.3
9	7,652	90,683	4,044	2,494	142,696	6,733	3,916	635	601	637	93.3	4.1	2.6	93.0	4.4	2.6	20.0
10	8,252	101,361	3,991	3,960	160,414	5,249	5,354	632	760	740	92.7	3.7	3.6	93.8	3.1	3.1	20.7
10days	71,892	877,462	50,736	29,485	1,387,974	79,044	39,537	632	642	746	91.6	5.3	3.1	92.1	5.2	2.7	21.0

JAPANESE TANNER CRAB MOTHER-SHIP. CATCH DATA. 1979 (NORTH OF 58°N)

	PULLING POTS	CATCH WEIGHT(KG) OPILIO	BAIRDI	HYBRID	CATCH NUMBER OPILIO	BAIRDI	HYBRID	AVERAGE WEIGHT(G) OP	B	HY	COMPARISON PERCENTAGE WEIGHT OP	B	HY	NUMBER OP	B	HY	C.P.U.E
5/11	7,531	86,115	5,210	3,358	130,640	7,379	4,344	659	706	773	91.0	5.5	3.5	91.8	5.2	3.0	18.9
12	7,565	90,877	1,897	2,978	141,114	3,012	4,250	644	630	701	94.9	2.0	3.1	95.1	2.0	2.9	19.6
13	7,748	103,548	2,625	1,093	167,894	3,977	1,366	617	660	800	96.5	2.4	1.0	96.9	2.2	0.9	22.4
14	8,272	74,006	23,106	185	119,824	35,638	289	618	648	640	76.1	23.7	0.2	76.9	22.9	0.2	18.8
15	8,323	89,987	5,139	1,643	159,686	9,284	2,228	564	554	737	93.0	5.3	1.7	93.3	5.4	1.3	20.1
16	7,991	87,443	2,234	3,496	142,656	3,858	5,422	613	579	645	93.9	2.4	3.7	93.9	2.5	3.6	19.0
17	8,317	81,655	3,260	1,933	139,725	6,035	3,159	584	540	612	94.0	3.8	2.2	93.8	4.1	2.1	17.9
18	8,149	68,971	3,017	512	117,021	4,997	825	589	604	621	95.1	4.2	0.7	95.3	4.1	0.6	15.1
19	8,417	78,633	959	2,096	129,877	1,913	3,176	605	501	660	96.3	1.1	2.6	96.2	1.4	2.4	16.0
20	3,014	22,988	1,501	321	43,206	2,122	478	532	707	672	92.7	6.0	1.3	94.3	4.6	1.1	15.2
10days	75,327	784,223	48,948	17,615	1,291,643	78,215	25,537	607	626	690	92.2	5.8	2.0	92.6	5.6	1.8	18.5
5 /21	8,161	84,669	584	2,425	138,480	1,293	3,352	611	452	723	96.6	0.7	2.7	96.8	0.9	2.3	17.5
22	8,061	58,627	2,043	1,534	101,497	3,655	2,426	578	559	632	94.2	3.3	2.5	94.4	3.4	2.2	13.3
23	8,159	67,775	1,085	690	122,341	2,332	1,300	554	465	531	97.4	1.6	1.0	97.1	1.9	1.0	15.4
24	8,132	59,870	6,801	2,102	90,545	10,422	3,056	661	653	688	87.1	9.9	3.0	87.0	10.0	2.9	12.8
25	8,175	59,231	4,923	1,377	99,681	8,087	2,315	594	609	595	90.4	7.5	2.1	90.6	7.3	2.1	13.5
26	7,675	55,171	4,771	1,700	95,589	8,469	2,146	577	563	792	89.5	7.7	2.8	90.0	8.0	2.0	13.8
27	7,251	49,452	8,341	780	82,711	13,632	951	597	612	820	84.4	14.2	1.3	85.0	14.0	1.0	13.4
28	6,267	38,732	12,738	2,084	57,233	19,967	2,809	677	638	724	72.3	23.8	3.9	71.5	25.0	3.5	12.8
29	5,575	31,429	8,960	2,533	51,989	15,036	3,019	605	596	839	73.2	20.8	6.0	74.2	21.5	4.3	12.6
30	7,844	42,607	13,316	1,783	69,640	22,133	2,827	612	602	631	73.8	23.1	3.1	73.6	23.4	3.0	12.1th
31	7,592	34,567	11,676	1,017	58,195	20,287	1,397	594	576	728	73.1	24.7	2.2	72.9	25.4	1.7	10.5
10days	82,892	582,130	75,238	18,025	967,901	125,313	25,598	601	600	704	86.2	11.2	2.7	86.5	11.2	2.3	13.5
monthly total	230,111	2,243,815	174,922	65,125	3,647,518	282,572	90,672	615	619	718	90.3	7.0	2.7	90.7	7.0	2.3	17.5
6 / 1	7,768	35,662	10,552	1,965	57,355	20,240	3,412	622	521	576	74.0	21.9	4.1	70.8	25.0	4.2	10.4
2	8,563	48,400	15,070	1,638	71,511	28,166	2,915	677	535	562	74.3	23.1	2.6	69.7	27.4	2.9	12.0
3	8,149	38,188	8,977	933	60,766	14,375	1,779	628	624	524	79.4	18.7	1.9	79.0	18.7	2.3	8.4
4	8,593	41,886	7,683	1,164	71,317	10,956	1,927	587	701	604	82.6	15.1	2.3	84.7	13.0	2.3	8.8
5	8,450	28,263	16,998	1,149	45,074	25,790	1,531	627	659	750	60.9	36.6	2.5	62.3	35.6	2.1	8.6
6	8,111	29,838	16,131	1,184	50,919	27,153	1,332	586	594	889	63.3	34.2	2.5	64.1	34.2	1.7	8.8
7	8,649	38,513	9,711	1,772	64,619	16,390	2,672	586	592	663	77.0	19.4	3.6	77.2	19.6	3.2	8.7
8	6,630	34,943	5,629	877	55,479	9,490	1,414	630	593	620	84.3	13.6	2.1	83.6	14.3	2.1	10.0
9	6,716	36,079	6,718	557	54,068	11,015	931	667	610	698	83.2	15.5	1.3	81.9	16.7	1.4	8.8
10	8,337	47,669	3,297	2,446	76,895	5,306	3,882	620	621	630	89.2	6.2	4.6	89.3	6.2	4.5	10.3
10days	79,966	379,441	100,766	13,685	608,003	168,881	21,795	624	597	628	76.8	20.4	2.6	76.1	21.1	2.8	10.0

JAPANESE TANNER CRAB. MOTHER-SHIP. CATCH DATA. 1979 (NORTH OF 58°N)

	PULLING POTS	CATCH WEIGHT(KG) OPILIO	BAIRDI	HYBRID	CATCH NUMBER OPILIO	BAIRDI	HYBRID	AVERAGE WEIGHT(G) OP	B	HY	COMPARISON PERCENTAGE WEIGHT OP	B	HY	NUMBER OP	B	HY	C.P.U.E
6/11	1,766	12,325	457	191	20,476	562	385	602	813	496	95.0	3.5	1.5	95.6	2.6	1.8	12.1
12	8,820	73,175	4,381	1,496	109,908	6,617	2,434	666	662	615	92.6	5.5	1.9	92.4	5.6	2.0	13.5
13	8,714	62,779	3,810	1,916	101,531	5,606	2,559	618	680	749	91.6	5.6	2.8	92.6	5.1	2.3	12.6
14	8,806	56,508	3,531	2,550	94,469	5,895	4,132	598	599	617	90.3	5.6	4.1	90.4	5.6	4.0	11.9
15	8,842	57,610	259	2,133	96,955	424	3,496	594	611	610	96.0	0.4	3.6	96.1	0.4	3.5	11.4
16	8,405	46,563	714	963	84,263	821	1,632	552	870	590	96.5	1.5	2.0	97.2	0.9	1.9	10.3
17	8.872	64,325	1,791	3,213	109,246	3,184	5,160	588	562	623	92.7	2.6	4.7	92.9	2.7	4.1	13.3
18	8,912	64,077	2,665	3,688	109,471	3,747	6,071	585	711	607	91.0	3.8	5.2	91.8	3.1	5.1	13.4
19	8,647	55,200	672	1,366	90,370	981	2,310	611	685	591	96.4	1.2	2.4	96.5	1.0	2.5	10.8
20	8,934	80,112	9,024	5,913	135,362	15,232	9,278	592	592	637	84.2	9.5	6.3	84.7	9.5	5.8	17.9
10days	80,718	572,674	27,304	23,429	952,051	43,069	37,457	602	634	625	91.9	4.4	3.7	92.2	4.2	3.6	12.8
total	160,684	952,115	128,070	37,114	1,560,054	211,950	59,252	610	604	626	85.2	11.5	3.3	85.2	11.6	3.2	11.4

JAPANESE TANNER CRAB MOTHER-SHIP, CATCH DATA, 1979 (NORTH OF 58°N)

	Pulling Pots	Catch Weight (kg)			Catch Number			Arerage Weight (g)			Comparison Percentage Weight			Comparison Percentage Number			CPUE
		Opilio	Bairdi	Hybrid	Opilio	Bairdi	Hybrid	OP	B	HY	OP	B	HY	OP	B	HY	
6/21	8,089	64,619	18,548	3,604	114,567	30,576	6,000	564	607	546	74.4	21.4	4.2	75.5	20.1	4.4	18.8
22	8,147	66,997	14,548	3,109	114,305	21,823	5,095	586	667	610	79.1	17.2	3.7	80.9	15.5	3.6	17.3
23	8,154	69,316	15,231	5,921	116,131	24,136	7,900	597	631	749	76.6	16.8	6.6	78.4	16.3	5.3	18.2
24	8,871	64,477	24,804	4,697	108,153	37,171	7,576	596	667	620	68.6	26.4	5.0	70.7	24.3	5.0	17.2
25	8,707	82,304	13,490	3,132	131,106	20,881	5,068	628	646	618	83.2	13.6	3.2	83.5	13.3	3.2	18.0
26	8,778	53,892	22,827	6,237	89,965	35,562	7,046	599	641	885	65.0	27.5	7.5	67.9	26.8	5.3	15.1
27	8,574	54,258	10,266	3,246	86,623	15,837	5,851	626	648	555	80.1	15.1	4.8	80.0	14.6	5.4	12.6
28	8,715	52,780	10,798	3,166	84,322	17,300	5,151	626	624	615	79.1	16.2	4.7	79.0	16.2	4.8	12.3
29	8,673	51,496	13,722	2,361	90,599	20,993	4,376	568	654	540	76.2	20.3	3.5	78.1	18.1	3.8	13.4
30	6,850	38,537	15,823	3,075	64,294	27,428	5,668	599	577	543	67.1	27.5	5.4	66.0	28.2	5.8	14.2
10 days	83,558	598,676	162,233	36,372	1,000,065	251,707	60,337	599	645	603	75.1	20.3	4.6	76.2	19.2	4.6	15.7
Monthly Total	244,242	1,550,791	290,305	73,486	2,560,119	463,657	119,589	606	626	614	81.0	15.2	3.8	81.4	14.8	3.8	12.9
7/ 1	9,433	67,296	13,359	5,761	105,105	22,927	10,538	640	582	546	77.9	15.5	6.7	75.8	16.5	7.6	14.7
2	8,592	42,920	5,333	2,440	65,449	8,331	3,531	655	640	691	84.7	10.5	4.8	84.7	10.8	4.6	9.0
3	5,946	48,231	3,206	1,023	75,711	5,171	1,650	637	619	620	91.9	6.1	2.0	91.7	6.3	2.0	13.9
4	7,624	39,114	9,884	1,180	62,867	16,146	1,966	622	612	600	78.0	19.7	2.4	77.6	19.9	2.4	10.6
5	5,862	30,257	6,525	1,174	48,020	10,435	1,928	630	624	608	79.7	17.2	3.1	79.5	17.3	3.2	10.3
6	7,374	45,608	8,546	3,400	72,582	14,939	5,667	628	572	599	79.2	14.8	5.9	77.9	16.0	6.1	12.6
7	7,304	54,239	3,397	561	83,928	5,618	905	646	604	619	93.2	5.8	1.0	92.8	6.2	1.0	12.4
8	7,286	35,734	12,713	4,767	58,827	20,102	8,444	607	632	564	67.2	23.9	9.0	67.3	23.0	9.7	12.0
9	8,836	50,805	7,491	3,233	81,889	12,622	5,568	620	593	580	82.6	12.2	5.3	81.8	12.6	5.6	11.3
10	8,789	49,195	7,353	2,347	80,212	12,680	4,455	613	579	526	83.5	12.5	4.0	82.4	13.0	4.6	11.1
10 days	77,046	463,399	77,807	25,886	734,590	128,989	45,052	630	603	587	81.7	13.7	4.6	80.9	14.2	4.9	11.8
11	8,746	55,463	5,884	2,331	88,958	9,645	4,912	623	610	474	87.1	9.2	3.7	85.9	9.3	4.7	11.8
12	8,811	45,765	8,909	1,938	73,748	14,447	3,231	620	616	599	80.8	15.7	3.4	80.7	15.8	3.5	10.4
13	8,573	63,597	3,063	1,735	102,226	5,153	2,742	622	594	632	93.0	4.5	2.5	92.8	4.7	2.5	12.8
14	8,806	62,486	4,525	889	99,960	7,969	1,482	625	567	599	92.0	6.7	1.3	91.4	7.3	1.4	12.4
15	8,465	59,361	2,965	1,712	94,214	5,063	2,895	630	585	591	92.7	4.6	2.7	92.2	5.0	2.8	12.1
16	8,715	63,216	7,120	1,078	103,295	11,634	2,171	611	611	496	88.5	10.0	1.5	88.2	9.9	1.9	13.4
17	8,969	70,524	5,262	1,630	113,875	8,830	3,069	619	595	531	91.1	6.8	2.1	90.5	7.0	2.4	14.0
18	8,554	64,009	5,930	1,378	104,015	9,420	2,336	615	629	589	89.8	8.3	1.9	89.8	8.1	2.0	13.5
19	8,708	73,863	2,740	1,453	126,141	4,558	2,187	585	601	664	94.6	3.5	1.9	94.9	3.4	1.6	15.3
20	8,785	77,109	3,748	1,081	[illegible]	6,107	1,865	602	613	579	94.1	4.6	1.[illegible]	[illegible].1	4.5	1.4	15.5
10 days	87,132	635,393	50,146	15,225	1,0[illegible]6	82,828	26,890	614	605	566	90.7	7.2	2.[illegible]	[illegible].4	7.2	2.4	13.1

JAPANESE TANNER CRAB MOTHER-SHIP CATCH DATA, 1979 (NORTH OF 58°N)

	Pulling Pots	Catch						Average			Comparison Percentage						CPUE
		Weight (kg)			Number			Weight (g)			Weight			Number			
		Opilio	Bairdi	Hybrid	Opilio	Bairdi	Hybrid	OP	B	HY	OP	B	HY	OP	B	HY	
7/21	8,647	74,315	4,715	2,976	121,699	7,749	4,572	610	608	650	90.6	5.7	3.6	90.8	5.8	3.4	15.5
22	8,636	74,631	2,925	640	122,720	4,738	1,348	608	617	474	95.4	3.7	0.8	95.3	3.7	1.0	14.9
23	8,609	69,092	3,665	3,409	115,430	7,543	6,073	598	484	561	90.7	4.8	4.5	89.4	5.8	4.7	15.0
24	5,862	47,436	6,156	2,100	78,313	10,144	3,624	605	606	579	85.2	11.1	3.8	86.0	11.0	3.9	15.7
25	8,378	83,187	1,999	1,124	127,360	3,446	1,633	653	580	688	96.4	2.3	1.3	96.2	2.6	1.2	15.8
26	8,766	67,200	3,687	1,749	113,114	6,017	3,868	594	612	452	92.5	5.1	2.4	92.0	4.9	3.1	14.0
27	8,843	61,437	804	769	95,199	1,149	1,221	645	699	629	97.5	1.3	1.2	97.6	1.2	1.3	11.0
28	8,608	61,599	2,079	731	99,934	2,848	1,239	616	729	589	95.6	3.2	1.1	96.1	2.7	1.2	12.1
29	7,946	55,227	4,839	1,907	89,708	7,943	3,294	615	609	578	89.1	7.8	3.1	88.9	7.9	3.3	12.6
30	8,602	55,181	6,135	1,988	88,389	8,869	3,115	624	691	638	87.2	9.7	3.1	88.1	8.8	3.1	11.7
31	8,489	60,532	4,781	991	96,122	6,963	1,791	629	686	578	91.3	7.2	1.5	90.7	6.8	1.7	12.4
10 days	91,386	709,837	41,775	18,384	1,147,924	67,409	31,778	618	619	578	92.2	5.4	2.4	92.0	5.4	2.5	13.6
Monthly Total	225,564	1,808,629	169,728	59,495	2,916,924	279,226	103,320	620	607	575	88.8	8.3	2.9	88.4	8.5	3.1	12.9
8/ 1	8,535	57,583	2,400	2,141	85,203	3,758	3,288	676	639	651	92.7	3.9	3.4	92.4	4.1	3.6	10.8
2	8,747	63,705	3,651	2,609	99,247	6,125	2,937	642	596	888	91.1	5.2	3.7	91.6	5.7	2.7	12.4
3	7,944	52,552	899	1,774	78,646	1,499	2,374	668	546	747	95.2	1.6	3.2	95.3	1.8	2.9	10.4
4	8,616	63,678	4,065	1,753	99,971	5,760	4,052	637	706	433	91.6	5.8	2.5	91.1	5.2	3.7	12.7
5	6,312	48,963	1,334	1,809	79,443	2,500	2,596	616	534	697	94.0	2.6	3.5	94.0	3.0	3.1	13.4
6	6,937	54,887	3,260	966	77,178	5,320	1,542	711	613	626	92.9	5.5	1.6	91.8	6.3	1.8	12.1
7	8,030	52,201	513	2,521	94,761	899	4,704	551	571	536	94.5	0.9	4.6	94.4	0.9	4.7	12.5
8	7,737	42,979	2,751	351	76,760	5,730	842	560	480	417	93.3	6.0	0.8	92.1	6.9	1.0	10.8
9	7,452	48,197	1,275	1,147	79,013	2,139	1,941	610	596	591	95.2	2.5	2.3	95.1	2.6	2.3	11.6
10	8,393	37,698	1,967	609	62,165	3,364	999	606	585	610	93.6	4.9	1.5	93.4	5.1	1.5	7.9
10 days	78,703	522,443	22,115	15,680	832,387	37,094	25,275	627	596	620	93.3	3.9	2.8	93.0	4.1	2.8	11.4
Grand Total	1,227,397	9,996,652	949,418	325,976	15,894,307	1,508,204	487,177	628	629	669	88.7	8.4	2.9	88.8	8.4	2.7	14.6

JAPANESE TANNER CRAB. MOTHER-SHIP. CATCH DATA.1979 (CATCH NORTH OF 58° N)

	Pulling	Catch						Average			Comparison Percentage						C.P.U.E.
		Weight (Kg)			Number			Weight (g)			Weight			Number			
	Pots	Opilio	Bairdi	Hybrid	Opilio	Bairdi	Hybrid	OP	B	HY	OP	B	HY	OP	B	HY	
8 /11	4,193	19,158	1,264	1,053	32,471	2,143	1,784	0.59	0.59	0.59	89.2	5.9	4.9	89.2	5.9	4.9	8.7
12	4,216	22,154	1,658	543	36,318	2,718	890	0.61	0.61	0.61	91.0	6.8	2.2	91.0	6.8	2.2	9.5
13	4,221	22,331	2,287	1,277	37,217	3,812	2,129	0.60	0.60	0.60	86.3	8.8	4.9	86.3	8.8	4.9	10.2
14	4,205	22,902	1,526	987	38,170	2,543	1,645	0.60	0.60	0.60	90.1	6.0	3.9	90.1	6.0	3.9	10.1
15	3,722	25,649	1,056	-	45,803	1,885	-	0.56	0.56	-	96.1	3.9	-	96.0	4.0	-	12.8
16	3,689	19,509	1,179	587	30,968	1,871	931	0.63	0.63	0.63	91.7	5.5	2.8	91.7	5.5	2.8	9.2
17	3,672	23,031	3,875	479	36,557	6,151	760	0.63	0.63	0.63	84.1	14.1	1.8	84.1	14.2	1.7	11.8
18	3,654	27,446	1,316	1,098	43,565	2,089	1,743	0.63	0.63	0.63	91.9	4.4	3.7	91.9	4.4	3.7	13.0
19	3,649	25,219	4,276	-	40,676	6,897	-	0.62	0.62	-	85.5	14.5	-	85.5	14.5	-	13.0
20	3,708	31,694	1,856	1,040	52,823	3,094	1,733	0.60	0.60	0.60	91.6	5.4	3.0	91,6	5.4	3.0	15.5
10days	38,929	239,093	20,293	7,064	394,568	33,203	11,615	0.61	0.61	0.61	89.7	7.6	2.7	89.8	7.6	2.6	11.3
8 /21	3,753	44,134	395	186	72,351	647	305	0.61	0.61	0.61	98.7	0.9	0.4	98.7	0.9	0.4	19.5
22	3,858	36,370	6,348	292	60,616	10,580	487	0.60	0.60	0.60	84.5	14.8	0.7	84.6	14.7	0.7	18.6
23	3,715	32,509	2,950	121	53,294	4,836	198	0.61	0.61	0.61	91.4	8.3	0.3	91.4	8.3	0.3	15.7
24	3,859	22,023	3,413	269	36,103	5,595	441	0.61	0.61	0.61	85.7	13.3	1.0	85.7	13.3	1.0	10.9
25	3,723	25,336	1,654	-	40,216	2,625	-	0.63	0.63	-	93.9	6.1	-	93.9	6.1	-	11.5
26	3,091	11,560	1,770	-	18,349	2,810	-	0.63	0.63	-	86.7	13.3	-	86.7	13.3	-	6.8
6days	21,999	171,932	16,530	868	280,929	27,093	1,431	0.61	0.61	0.61	90.8	8.7	0.5	90.8	8.7	0.5	14.1
monthly total	139,631	933,468	58,938	23,613	1,507,884	97,390	38,321	0.62	0.61	0.62	91.9	5.8	2.3	91.8	5.9	2.3	11.8
Grand Total	1,288,325	10,407,677	986,241	333,908	16,569,804	1,568,500	500,223	0.63	0.63	0.67	88.7	8.4	2.9	88.9	8.4	2.7	14.5

JAPANESE TANNER CRAB MOTHER-SHIP. CATCH DATE. 1979 (SOUTH OF 58°N)

	Pulling Pots	Catch Weight (Kg) Opilio	Bairdi	Hybrid	Catch Number Opilio	Bairdi	Hybrid	Average Weight (g) OP	B	HY	Comparison Percentage Weight OP	B	HY	Number OP	B	HY	C.P.U.E.
3/11																	
12																	
13																	
14																	
15																	
16	3,632	31,332	-	673	47,472	-	1,020	660	-	660	97.9	-	2.1	97.9	-	2.1	13.5
17	1,258	10,766	-	124	16,312	-	188	660	-	660	98.9	-	1.1	98.9	-	1.1	13.1
18	1,708	21,103	-	1,067	30,147	-	1,524	700	-	700	95.2	-	4.8	95.2	-	4.8	18.5
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10days	6,598	63,201	-	1,864	93,931	-	2,732	673	-	682	97.1	-	2.9	97.2	-	2.8	14.7
21	3,890	31,584	-	906	45,774	-	1,313	690	-	690	97.2	-	2.8	97.2	-	2.8	12.1
22	4,335	36,965	-	255	56,869	-	393	650	-	649	99.3	-	0.7	99.3	-	0.7	13.2
23	4,309	37,586	-	1,494	52,202	-	2,076	720	-	720	96.2	-	3.8	96.2	-	3.8	12.6
24	2,818	25,684	-	1,351	36,175	-	1,902	710	-	710	95.0	-	5.0	95.0	-	5.0	13.5
25	4,255	41,079	-	911	60,411	-	1,339	680	-	680	97.8	-	2.2	97.8	-	2.2	14.5
26	2,640	23,440	-	90	34,471	-	132	680	-	682	99.6	-	0.4	99.6	-	0.4	13.1
27	3,146	36,973	-	1,152	53,584	-	1,670	690	-	690	97.0	-	3.0	97.0	-	3.0	17.6
28	3,394	29,854	-	1,661	44,557	-	2,480	670	-	670	94.7	-	5.3	94.7	-	5.3	13.9
29	3,857	36,553	-	557	52,976	-	807	690	-	690	98.5	-	1.5	98.5	-	1.5	13.9
30	4,092	37,922	-	918	55,767	-	1,351	680	-	679	97.6	-	2.4	97.6	-	2.4	14.0
31	3,915	37,847	-	273	51,145	-	369	740	-	740	99.3	-	0.7	99.3	-	0.7	13.2
10days	40,651	375,487	-	9,568	543,931	-	13,832	690	-	692	97.5	-	2.5	97.5	-	2.5	13.7
Monthly Total	47,249	438,688	-	11,432	637,862	-	16,564	688	-	690	97.5	-	2.5	97.5	-	2.5	13.9
4/1	3,611	35,395	-	325	47,831	-	439	740	-	740	99.1	-	0.9	99.1	-	0.9	13.4
2	2,568	26,721	-	424	37,111	-	590	720	-	719	98.4	-	1.6	98.4	-	1.6	14.7
3	3,976	38,102	-	833	55,220	-	1,208	690	-	690	97.9	-	2.1	97.9	-	2.1	14.2
4	3,929	43,502	-	833	60,419	-	1,157	720	-	720	98.1	-	1.9	98.1	-	1.9	15.7
5	3,813	37,231	-	1,234	50,313	-	1,667	740	-	740	96.8	-	3.2	96.8	-	3.2	13.6
6	3,565	35,580	-	935	49,416	-	1,299	720	-	720	97.4	-	2.6	97.4	-	2.6	14.2
7	3,049	32,943	-	77	45,755	-	106	720	-	726	99.8	-	0.2	99.8	-	0.2	15.0
8	3,753	32,583	-	567	43,445	-	753	750	-	751	98.3	-	1.7	98.3	-	1.7	11.8
9	3,987	30,670	-	-	42,597	-	-	720	-	-	100.0	-	-	100.0	-	-	10.7
10	3,814	31,964	-	86	47,006	-	126	680	-	683	99.7	-	0.3	99.7	-	0.3	12.4
10days	36,065	344,691	-	5,314	479,113	-	7,347	719	-	723	98.5	-	1.5	98.5	-	1.5	13.5

JAPANESE TANNER CRAB MOTHER-SHIP. CATCH DATA.1979 (SOUTH OF 58°N)

No. 2

	Pulling Pots	Catch Weight (Kg) Opilio	Bairdi	Hybrid	Catch Number Opilio	Bairdi	Hybrid	Average Weight (g) OP	B	HY	Comparison Percentage Weight OP	B	HY	Number OP	B	HY	C.P.U.E.
4 /11	3,809	31,675	–	155	43,391	–	212	730	–	731	99.5	–	0.5	99.5	–	0.5	11.4
12	3,983	36,935	–	–	49,247	–	–	750	–		100.0	–	–	100.0	–	–	12.4
13	4,118	44,444	–	1,216	56,980	–	1,558	780	–	780	97.3	–	2.7	97.3	–	2.7	14.2
14	4,232	45,661	–	354	61,703	–	479	740	–	740	99.2	–	0.8	99.2	–	0.8	14.7
15	4,330	45,126	–	469	63,559	–	659	710	–	712	99.0	–	1.0	99.0	–	1.0	14.8
16	4,139	40,625	–	940	56,423	–	1,306	720	–	720	97.7	–	2.3	97.7	–	2.3	13.9
17	3,781	36,322	–	238	50,447	–	331	720	–	719	99.3	–	0.7	99.3	–	0.7	13.4
18	3,247	38,566	–	109	56,714	–	161	680	–	677	99.7	–	0.3	99.7	–	0.3	17.5
19	2,684	27,148	–	162	38,237	–	228	710	–	711	99.4	–	0.6	99.4	–	0.6	14.3
20	3,344	32,325	–	–	48,977	–	–	660	–	–	100.0	–	–	00.0	–	–	14.6
10days	37,667	378,827	–	3,643	525,678	–	4,934	721	–	738	99.0	–	1.0	99.1	–	0.9	14.1
21	2,921	29,141	–	464	42,855	–	682	680	–	680	98.4	–	1.6	98.4	–	1.6	14.9
22																	
23																	
24																	
25		(North of 58°N)															
26																	
27																	
28																	
29																	
30																	
10days	2,921	29,141	–	464	42,855	–	682	680	–	680	98.4	–	1.6	98.4	–	1.6	14.9
Monthly Total	76,653	752,659	–	9,421	1,047,646	–	12,963	718	–	727	98.8	–	1.2	98.8	–	1.2	13.8

APPENDIX H
October 1979

ASSESSMENT OF TANNER CRAB STOCKS FROM THE 1979 NMFS TRAWL SURVEY IN THE EASTERN BERING SEA

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October 1979

ASSESSMENT OF TANNER CRAB STOCKS FROM THE 1979 NMFS TRAWL SURVEY IN THE EASTERN BERING SEA

Chionoecetes opilio

Current Status of Stocks

Coverage of C. opilio stocks during the 1979 survey extended to 61°N, slightly farther north than the 1978 survey which went to 60°N latitude. The distribution of large males appears similar to that of last year with around six percent of the population north of 58°N.

Using size distribution data from the 1979 fisheries, commercial crabs are currently considered to be all males >104 mm. Approximately 90 percent of the U.S. catch of C. opilio was above this size (Table 1). Size distribution data is not yet available from the Japanese fisheries. However, since average carapace width is similar (about 114 mm) in both fisheries and since the total catch of each country is about the same, the U.S. size distribution data is taken as representative.

The 1979 abundance of males >104 mm is 159 million crabs, up 26 percent from the 1978 survey (Table 2). Pre-recruit abundance is 29 percent under last year.

ABC Estimate

In the past, the acceptable biological catch has been estimated by applying an appropriate exploitation rate to the commercial stock estimate made at the time of the survey. However, in the case of C. opilio, it appears that the peak of the molting period occurs during the survey. This means that part of the immediate pre-recruit population is counted as pre-recruits and the remainder is counted as commercial-sized crab. For Tanner

crabs, an estimate of the commercial stock available at the beginning of the next fishing season is required for ABC calculations. Thus, it appears that the survey estimates of stock abundance should be adjusted for expected recruitment between the survey and the next season. Additionally, fishery removals after the survey should be taken into account. Accordingly, the exploitable population for 1980 is estimated by:

$$P = (N_{>104} - C)e^{-M} + N_{100-104}e^{-M}, \text{ where}$$

$N_{>104}$ = estimated number of males >104mm

C = catch in numbers after the survey

M = natural mortality between the survey and the 1980 fishery

$N_{100-104}$ = estimated number of pre-recruit males.

Based on a review of survey effort in the Tanner crab fishing areas (Tables 3 and 4), catches after the survey are considered to be those after July 10 and July 30 for the U.S. and Japanese fisheries and amount to zero and 4.0 million crabs, respectively. Natural mortality is considered to be the annual instantaneous value of 0.2 times the appropriate time interval (8.5 and 7.0 months, respectively, for south and north of 58°N).

From growth data in Somerton and Low (1977), pre-recruit C. opilio are considered to be in the 100-104 mm size group. U.S. observer information from the 1979 Japanese fishery for C. opilio indicates that molting occurs predominately in July. For the region south of 58°N, this period occurs approximately in the mid-region of the survey time period. The survey north of 58°N occurred on the whole after the molting period. Thus, for that portion of the stock south of 58°, the potential recruitment for 1980 is considered to be half the pre-recruit estimate (Table 2). Recruitment is considered to be complete before the survey in the area north of 58°.

Table 1.--Size frequency distribution for the 1979 U.S. catch of C. opilio, eastern Bering Sea.

Carapace width group (mm)	Percent frequency	Cumulative percent
<96	.97	.97
96-100	3.35	4.32
101	1.04	5.36
102	1.50	6.86
103	1.89	8.75
104	2.14	10.89
105	2.55	13.44
106-110	21.17	34.61
111-115	27.16	61.77
116-120	19.86	81.63
121-125	10.65	92.28
126-130	4.47	96.75
>130	3.25	100.00

Table 2.--Survey abundance estimates for Tanner crabs, eastern Bering Sea (millions of crabs).

Year	C. Bairdi		C. Opilio*	
	Pre-recruits (124-134mm)	"Legals" (>134mm)	Pre-recruits (99-104mm)	"Legals" (>104mm)
1975	78	176	415	431
1976	49	135	--	
1977	40	92	--	
1978	26	46	76	126
1979	16	32	54 (6, N) (48, S)	159 (9, N) (150, S)

*N = North of 58° N; S = South of 58° N.

Table 5.--Estimates of ABC for Tanner crabs in the eastern Bering Sea (range in parentheses).

Survey year	Size group	Millions of crabs	Average weight (pounds)	Millions of pounds	Exploitation rate	ABC (millions of pounds)	Fishing season
			C. Bairdi				
1977	>134	92	2.41	222	.40	89	1978
1978	>134	45	2.36	106	.40	43	1979
1979	>134	28 (23,34)	2.40	67 (55,82)	.40	27 (22,33)	1980
			C. Opilio				
1975	>115	431	1.79	772	.58	448	1978
1978	> 99	187	1.26	235	.58	136	1979
1979	>104	156 (127,188)	1.40	218 (178,263)	.58	126 (103,153)	1980
North of 58°N		5 (3,7)		7 (4,10)		4 (2,6)	
South of 58°N		151 (124,181)		211 (174,253)		122 (101,147)	