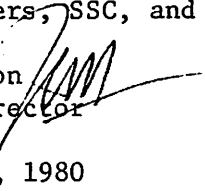


M E M O R A N D U M

TO: Council Members, SSC, and AP

FROM: Jim H. Branson 
Executive Director

DATE: September 17, 1980

SUBJECT: Tanner Crab FMP

ACTION REQUIRED

Review the summary of amendments to the Tanner Crab FMP for 1981 which will be presented to the Council by the Tanner Crab PDT. These amendments require approval by the Council to go forward for public comments. The dates and locations for public comment need to be determined. These could possibly be held in conjunction with public hearings for king crab. Final Council decision on these amendments should be at the December meeting.

BACKGROUND

The amendment changes to the Tanner Crab FMP will include regulatory changes by ADF&G, updated figures for ABC from NMFS, the 1981 estimate of DAH, and alteration for OY and TALFF.

JR

The Tanner crab PMT met September 22 to discuss:

- 1) the results of the NMFS Bering Sea crab survey;
- 2) Richardson's Tanner crab economic study;
- 3) the 1980-81 DAH report for Tanner crab (C. opilio);
- 4) the ADF&G staff recommendations of changes in Tanner crab guideline harvest levels for the Fall 1980 Board of Fisheries meeting; and
- 5) the 1980-81 Tanner crab FMP amendments proposed by the team.

Highlights of the Appended Reports

- . NMFS Trawl Survey - the 1980 Tanner crab stock assessment survey yielded these results:
 - 1) ABC for C. bairdi is 41 million pounds.
 - 2) ABC for C. opilio south of 58° is 78 million pounds.
 - 3) ABC for C. opilio north of 58° is 13 million pounds.
- . Richardson's report recommends no TALFF. He states in the conclusions "From the data and analysis presented in this paper, there is adequate justification for setting the TALFF for Tanner crab in the Bering Sea to zero for 1981." Further he assumes that the 1980 allocation of Tanner crab TALFF has had a "detrimental effect on the demand in Japan for U.S. Tanner crab products". He evaluated the domestic processing sector and determined the "The domestic industry has the capacity and intent to harvest the C. opilio resource". Finally he cites "a(n) historical precedent for the full development of Alaska's crab fisheries, both for king crab and for C. bairdi, after the foreign fishing had been stopped".
- . Sig Jaeger prepared a DAH report for the C. opilio fishery. He concludes that:
 - 1) there is excess physical harvesting and processing capacity; and
 - 2) the market value of C. opilio is the primary restriction to the full utilization of this resource by the domestic industry.

Jaeger presents 4 methods for determining DAH for the B.S. C. opilio fishery for 1981. These estimates which vary from a low of 43.7 million pounds to a high of 63.3 million pounds, are based on the assumption that there will be TALFF and the domestic market for C. opilio does not improve substantially over the conditions which prevailed in 1980.

- . The ADF&G staff recommended to the Board of Fisheries lowering guideline harvest levels for Tanner crab in the Bering Sea, South Peninsula, Chignik, Kodiak, and Prince William Sound. Only Cook Inlet, Yakutat and South-eastern will support harvest levels similiar to the 1979-80 fishery. The midpoint of the recommended guideline harvest level for the 1980-81 fishery is 64.7 million pounds, a decrease from the 83.4 million pounds during the

1979-80 season.

Recommendations

In evaluating the above reports the PMT supports the calculations of ABC in Dr. Reeves reports as well as the conclusions stated in the marketing report by Richardson. Further, the team agrees that the DAH report by Sig Jaeger presents a realistic appraisal of the current domestic ability given the present pricing of C. opilio.

The usual procedure for establishing TALFF is: $TALFF = OY - DAH$

The team recommends that given the marketing problems experience in the C. opilio fishery, the desire and intent of the domestic industry to utilize the entire OY for Tanner crab and the excess physical capacity of the domestic industry, that:

DAH be set equal to OY: therefore $TALFF = 0$

Further the Team recommends that the Council request public comment on changes in guideline harvest levels for the 1980-81 similar to those presented to the Board of Fisheries. Since it is impractical to amend both the plan and the Federal regulations in time for the 1980-81 season the Team recommends that the Council advise the Regional Director to use his Field Order authority to implement any changes in guideline harvest levels agreed upon after consultation with the Board of Fisheries.

The PMT also plans to present a schedule for redraft of the Tanner crab FMP into a multiyear framework document similar to the current draft of the king crab FMP.

Tentative submission of the redrafted Tanner crab plan is March 1981.

ADF&G Staff Proposals For Changes in the
Guideline Harvest Levels To The B.F.

	<u>1980-81</u>	<u>1979-80</u>
B.S.*	19 - 33	28 - 36
South Pen	3 - 6	15 - 20
Chignik	2 - 5	5 - 10
Kodiak	9 - 15	10 - 25
CI	11	11
PWS	1.3 - 5.3	3 - 7
Yakutat	.5 - 3	.5 - 3.0
SE	<u>.75 - 2.5</u>	<u>.75 - 2.5</u>
Totals	48.55 - 80.8	73.25 - 91.5
	$\bar{x} = 64.7$	$\bar{x} = 83.4$

* Submitted prior to results of trawl survey.

Sig Jaeger
P.O. Box 17033
Seattle, WA 98107
(206) 782-4240

September 22, 1980

Preliminary estimate for the North Pacific Fishery Management Council on the 1981 DAH for C.Opilio tanner crab in the Bering Sea.

The combined total catching/processing theoretical capacity of 135,600,00 pounds has materially increased since the July, 1979 estimate, but this potential capacity^{was} without application of the marketing constraints that were applied later in the fall and winter of 1979 and 1980. The reduction in market value and consequent incentive to market C.Opilio product has not substantially improved in the past year. The sale of the product is the predominate^{NT} obstacle to growth at this time.

Based on vessel, processing, and marketing performance of the past three years, four methods were evolved to estimate and predict performance for 1981, and are summarized as follows:

Method 1) Based on the simple straightforward 25.7% increase in domestic production of C.Opilio from 1979 to 1980, a 1981 prediction would be 49,700,392 pounds. 1979 was 31,443,178 lbs, and 1980 was 39,538,896 lbs., an increase of 8,095,718 lbs. over 1979, or a 25.7% increase. Applied to the 1980 catch, this results in an additional 10,161,496 lbs., for a total possible of 49,700,393 lbs. for 1981.

Method 2) ^v Fall vessel utilization of 1980 participants in 1981. In 1980, a total of 141 vessels fished for C.Opilio, the principal landings being in March through June. This four months of landings totalled 37,380,294 lbs or 94.5% of the year's total. This same period totalled 565 landings of the years' 603 total, or 93.6%. Using the same success ratio of volume per vessel per month, and the peak number

of 108 vessels operating in May, the four month production period would potentially land 54,322,272 lbs, or 94.5% of the possible 1981 volume. The fringe landings prior to and after this most productive period was 5.5% of the 1980 total. Applied to the 1981 potential, the sum would be: 3,161,613 lbs, added fringe landings
54,322,272 lbs, 4 month potential landings
57,483,885 lbs, possible production for 1981.

The foregoing method assumes that vessels were moving in and out of the fishery, and that there was therefore an unsatisfied processing demand of varying proportions.

Method 3) 60% of the vessels fishing king crab in Sept. 1979 were attracted to the C.Opilio fishery in 1980, or 141 vessels. Similarly, 60% of estimated 260 vessels to fish king crab in Sept. 1980, then 156 vessels prox to fish C.Opilio in 1981,- a 10.6% increase over 1980.

Realistically, using same fishing success and landing rate for these vessels, as in 1980, there would be only a 10.6% increase in catch in 1981, a total catch of 43,373,000 lbs.

This estimate does not however take into full consideration, such as in Method 2, the full possibilities of unsatisfied processing demand. Combining this vessel estimate with Method 2, however, would increase 2) from 57,483,885 lbs to 63,338,662 lbs.

Method 4) Domestic market growth and displacement of existing TALFF of 7500 m.t.
Estimates of domestic market growth range up to 10% over 1980.

If no TALFF, and based on 1980 survey, then possibly 13,000,000 lbs, (prox 1981 OY, C.Opilio, North of 58°), ✓ but with provision that the 13,000,000 lbs can be taken South of 58° ①. Total domestic catch could then equal 56,492,785 lbs.

However, as explained in the footnote 1, if TALFF were estimated and domestic catch required to be made North of 58° N. Lat., market size restraints on domestic vessels would probably reduce the TALFF to about 6,000,000 lbs., or a total estimated catch of 49,492,785 lbs.

Considering also fuel costs, and reduced CPVE, it is unlikely ✓ that it will be economically practical to fish C.Opilio North of 58° in the near future, although industry interest in doing so is there.

Footnote ①: ABC estimates for North of 58° are based on C.Opilio 105 mm (4.13", weighing 1.07 lbs) or greater. ABC estimates South of 58° for this same size, but the OY is based on 109 mm (4.29", weighing 1.2 lbs) or greater. It is estimated that of the 1980 Japanese catch to date, 26% was less than the ABC size of 105mm. Further, an OY restraint of 109mm North of 58°, would decrease the unrefined existing estimate from 13,000,000 lbs to about 6,000,000 lbs. Attached data will demonstrate further the continuing decline of average sizes and CPVE North of 58°. Any incentive for a domestic fishery in this area is evaporating because of the foreign fishery continuing. (Data: Dr. Jerry Reeves)

Summary of DAH estimates for 1981 on Bering Sea C.Opilio:

Method 1) 49,700,392 pounds
Method 2) 57,483,885 pounds
Method 3) 43,730,000 pounds
Method 2 and 3 combined) 63,338,662 pounds
Method 4) 56,492,785 pounds
and 49,492,785 pounds

A simple average of the above numbers is 53,373,084 lbs. Such an average assumes that the estimates are representative and proportional as to possibilities. This is not true! There are a number of dynamic and unpredictable factors, the major one being the market potential which is as difficult to put the finger on as a drop of mercury.

Some material factors to be considered are:

Item 1) Ex-vessel price is usually reflective of demand. Existing price level of 21¢ is a limited inducement, and only if catch rates are high, landing place is near, and unloading accomplished without undue delay. (21¢ is a 30% drop from 1979 price of 30¢)

Item 2) The higher price for C.Bairdi makes this species a higher priority catch than C.Opilio, and the current unrefined upward estimate of C.Bairdi ABC over last year will detract from incentives to fish C.Opilio.

Item 3) In 1980, a protracted strike over the C.Opilio price substantially reduced the catch during a period when processors and vessels could focus on the fishery, without the alternate economic opportunities which materialized in May, June, and July for such vessel work as tendering Herring, Salmon, and shipyard commitments.

Item 4) Throughout the tanner season, there were other economic opportunities as equally bad or good as tanner fishing. Joint ventures for trawling for Cod and Pollock, although not profitable, are on the threshold of increasing success when the lessons learned are applied to vessel and gear modification, and used more efficiently in the coming year. The variety of and number of catcher/processors (C/P) are increasing, which removes fishing units from the tanner fisheries. 7 crab vessels will spend the winter trawling, splitting, and salting true cod aboard. Another will be splitting and salting only for other crabber/trawlers. Although only one crab C/P did much with Opilio, his success was limited and may or may not encourage more such. Plans for engaging in alternate fisheries have not all surfaced as yet, either.

Item 5) Processors ashore are exploring new more productive opportunities, such as for bottomfish and later in the year for Herring and Salmon. This means in some cases a cutback or stopping of tanner processing. The late summer fishery for C.Opilio ceased for at least one processor that needed a maintenance period prior to resumption of the king crab fishery, although the crab were in good condition for processing.

Item 6) The Japanese market for tanner (and King Crab sections) may improve some because of the favorable shift of the Yen/dollar ^xexchange. (January, 1980- 240 yen to the dollar; currently 216/218 yen to the dollar.)

Item 7) The alternative source for tanner by the Japanese through a Soviet joint venture initiated last year, may well be increased, reducing somewhat the demand for the U.S. domestic product.

Item 8) As noted in footnote ¹, the continuing fishery by the Japanese North of 58° is consistently eliminating domestic incentive to fish there because of the deteriorating average size and daily CPVE. The 1980 fishery is still in progress by the land based vessels and declining catches may preclude achieving the TALFF of 7500 mt.

The following table illustrates the three year decline in average size:

Catch composition of Japanese Mothership and Landbased fleets North of 58° North Lat., 1978 to present, 1980 (NMFS data)

	1978			1979			1980		
	Percent of total catch	Avg Size	Avg Wt.	Percent of catch	Avg size	Avg Wt.	Percent of catch	Avg size	Avg Wt.
Mothership:	80%	4.76"	1.67lbs	81.5%	4.49"	1.39#	40%	4.24"	1.16#
Landbased:	20%	4.68"	1.58#	18.5%	4.69"	1.59#	60%	4.62"	1.52#

As noted earlier, the combined three year Japanese catch composition by size shows an ~~accelerated~~ ^{accelerated} decline; 26% of the catch in 1980 was less than 105 mm (4.13", equal to 1.07 lbs.) This decline was noted by INPFC data for 1979, but the drop in average size for 1979 maintained the CPVE of the previous year (1978.) However, this year, both average size and CPVE have declined.

U.S. catch for 1980 averaged 1.5 lbs per crab, with a CPVE of 94.

During the course of this research it was very useful to have a table of equivalents, carapace width in relation to weight for both C. Opilio and C. Bairdi. This table was developed from NMFS data.

Carapace width C. Opilio Male round weight; C. Bairdi

100 mm (3.937")	.92 lbs	.66 lbs
105 mm (4.133")	1.07 lbs	.76 lbs
109 mm (4.291")	1.2 lbs	.87 lbs
110 mm (4.33")	1.24 lbs	.89 lbs

115 mm (4.527")	1.42 lbs	1.01 lbs
116 mm (4.56")	1.46 lbs	-0-
117 mm (4.6")	1.5 lbs	-0-
118 mm (4.64")	1.54 lbs	-0-
119 mm (4.68")	1.58 lbs	-0-
120 mm (4.724")	1.62 lbs	1.17 lbs

125 mm (4.92")	1.85 lbs	1.31 lbs
130 mm (5.118")	2.09 lbs	1.48 lbs

136 mm (5.31")	2.35 lbs	1.67 lbs
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140 mm (5.51")	2.63 lbs	1.84 lbs
----------------	----------	----------

145 mm (5.7")	2.94 lbs	2.05 lbs
---------------	----------	----------

150 mm (5.9")	-0-	2.29 lbs
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155 mm (6.1")	-0-	2.52 lbs
---------------	-----	----------

160 mm (6.29")	-0-	2.78 lbs
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165 mm (6.496")	-0-	3.06 lbs
-----------------	-----	----------

170 mm (6.69")	-0-	3.29 lbs
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It is interesting to note that the C. Opilio is from 37% to 41% heavier than C. Bairdi of equal carapace width.

Item 9). The existing 1980 King Crab ex-vessel prices appears to be more fragile than in 1979. The 90¢ price agreed upon this year was 3 cents less than the weighted average price of 1979. (\$1.01, declining to 86¢ half way through the season.) If the king crab market is any barometer of the tanner prices, it appears negative at this time.

Item 10). Fuel prices have a deeper impact on the tanner fishery than on the king crab fishery. Production cutbacks by the OPEC nations, and crude oil price increases will within a year signal new fuel price increases after the present fuel glut in the U.S. is burned up, and possibly call for another allocation scheme among competing industries.

The ten items are not weighted, nor are they in order of importance. Depending on time and circumstance, any one singly or in combination can temporarily be a dominant factor affecting the DAH and the struggle for its approximate realization.

Extracting a promise or prediction from the industry of what it will do in terms of production and sales as a prerequisite for an assigned DAH, carries with it also a comcomitant requirement of management to remove or ameliorate obstruction to such desired growth.

In conclusion, the dominant obstruction appears to be the existing TALFF on C.Opilio. Despite the cut of 50% (15,500,00 mt to 7500 mt), the Japanese combined catch composition demonstrates a continuing decline in average size and CPVE, declines that preclude marketability by the domestic fishery.

Second, terminating the TALFF would increase the market potential and stimulate a measure of increased demand that could be reflected in improved prices.

Third, a possible alteration in management strategy could be to have a season North of 58° N. Lat., if the OY were to be achieved South of 58° N. Lat., or if late season crab condition warrants such a closure South of 58° .

This last option does not appear realistically hopeful at this time because of low prices, the distance to be travelled, and the declining average size and CPVE.

Sig Jaeger

September 22, 1980

D R A F T

MARKET ASPECTS OF THE FOREIGN ALLOCATION OF C. OPILIO TANNER CRAB IN THE BERING SEA UNDER THE FRAMEWORK OF THE FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976.

A Report to the North Pacific Fishery Management Council
by Jim Richardson, NPFMC Staff Economist
September 1980

TABLE OF CONTENTS

<u>Part</u>		<u>Page</u>
I	Introduction.....	1
II	The Overview of the Tanner Crab Fishery.....	2
	The US Tanner Crab Fishery.....	2
	Harvesting and Processing Sectors.....	2
	Markets.....	5
	The Canadian Tanner (Queen) Crab Fishery.....	9
	Harvesting and Processing Sectors.....	9
	Markets.....	9
	The Japanese Tanner Crab Fishery.....	13
	Harvesting and Processing Sectors.....	13
	Markets.....	14
	The USSR Tanner Crab Fishery.....	24
III	Markets for Tanner Crab and the Implication of Market Structure on the Foreign Allocation of <u>C. Opilio</u> from the Bering Sea.....	25
	Summary of Market Survey.....	25
	Structure of the Market.....	32
IV	Conclusions.....	36
	Selected Bibliography.....	38
	Appendix I.....	A-1
	Appendix II.....	A-6
	Appendix III.....	A-9
	Appendix IV.....	A-21

Part I

INTRODUCTION

The primary objective of this paper is to provide the North Pacific Fishery Management Council with information required for a decision on the foreign allocation of Tanner crab in the Bering Sea for 1981. The foreign allocation of Tanner crab (all to Japan) in 1980 was 7500 mt. The Council will have to decide whether this amount should be increased, decreased, or remain the same in 1981.

The criteria for evaluating the foreign allocation is within the framework of the Fishery Conservation and Management Act of 1976. This document is readily available for reference, however, it is appropriate to review a couple of points. Public Law 95-354, amendment to the FCMA, added as one of the purposes of the act:

"to encourage the development of the United States fishing industry of fisheries which are currently under utilized or not utilized by United States fishermen, including bottom fish off Alaska." ^{1/}

Another helpful portion of the FCMA to review is the definition for optimum yield from a fishery which is:

"The term optimum with respect to the yield from a fishery, means the amount of fish --

- (A) which will provide the greatest overall benefit to the Nation, with particular reference to food production and recreational opportunities; and*
- (B) Which is prescribed as such on the basis of the maximum sustainable yield from such fishery, as modified by any relevant economic, social, or ecological factor. ^{2/}*

This paper examines some of the economic issues which are relevant to the foreign allocation issue.

^{1/} United States Congress, Fishery Conservation and Management Act of 1976 (Public Law 94-265, as amended p.3)

^{2/} Ibid., p.5

Part II

OVERVIEW OF THE TANNER CRAB FISHERIES

The US Tanner Crab Fishery

Harvesting and Processing Sectors

In 1977, the catch of Tanner crab equaled the catch of king crab in total pounds landed for the first time. The fishery took ten years to reach this level, the first significant commercial fishery for tanner crab having occurred in 1967. The growth of the fishery in terms of catch is shown in Table 1.

Over the short history of this fishery, the catch of Tanner crab from the Bering Sea has contributed an increasingly larger share of the Alaska total catch. Table 1 shows that the percentage contribution of the Bering Sea has increased from .5 percent in 1968 to 63.8 percent of the total catch in 1980. This change has been due to the development and expansion of the domestic fishing industry into the Bering Sea and also the restriction of foreign fishing in the Bering Sea over the same time period. (See further discussion of the regulation of foreign fishing in Appendix I).

The species composition of the Tanner crab catch from the Bering Sea has changed rapidly since 1978. Previous to 1978, the US fishery was directed almost entirely on the larger C. bairdi, with only small amounts of C. opilio taken as incidental or experimental amounts. The population level of C. bairbi is presently at a depressed level, generally attributed to several poor year classes during the early to mid-70's which now make up most of the fishable population. It is not presently known when or if the population of C. bairdi will increase to previous levels.

As the harvest quotas for C. bairdi decreased, the domestic fishery shifted effort to C. opilio, which has become an important component of the Tanner crab fishery. In the Bering Sea, as can be seen in Table I, the percentage contribution of C. opilio to the total Tanner crab catch has increased in 1980 to 52.1 percent of the total Tanner crab catch from only 2.5 percent in 1978 to 43.1 percent in 1979. This percentage increased in 1980 to 52.1 percent of the total Tanner crab catch. These figures demonstrate the importance of C. opilio to the domestic industry, and also emphasizes the rapid growth in the fishery.

Although the growth of the fishery for C. opilio has been rapid, it was not up to expectations for 1980. The estimated domestic annual harvest (DAH)

Table 1

Alaska Catch of Tanner Crab ^{1/} 1967-1980
(Units in pounds)

Year	Alaska Total	Bering Sea	Bering Sea percent of total	Bering Sea <u>C. opilio</u> only	Bering Sea <u>C. opilio</u> as percent of total
1967	118,932	0	0	0	0
1968	3,247,575	17,900	.5	0	0
1969	11,206,720	1,008,900	9.0	0	0
1970	14,473,228	1,487,161	10.3	0	0
1971	12,880,124	166,100	1.3	0	0
1972	30,135,404	119,200	.4	0	0
1973	61,719,396	301,348	.5	0	0
1974	63,906,037	5,044,197	7.9	0	0
1975	46,857,047	7,028,378	15.0	0	0
1976	80,770,981	22,341,475	27.7	0	0
1977	98,475,995	51,876,235	52.7	0	0
1978	130,625,764	67,831,257	51.9	1,715,636	2.5
1979	131,381,085	74,705,265	56.9	32,187,039	43.1
1980	118,988,000	75,883,218	63.8	39,570,668	52.1

Source: Alaska Department of Fish & Game, Catch and Production Commercial Fisheries Statistics, Statistical Leaflets Nos. 21-29
 Alaska Department of Fish & Game, "Monthly Cumulative Shellfish Catch".
 Alaska Department of Fish & Game, "Westward Regional Shellfish Management Office Board Report". January 1980

^{1/} C. bairdi and C. opilio

was 113,470,000 pounds in the Bering Sea. The actual 1980 catch for the Bering Sea was 39,570,668 pounds or only 35 percent of DAH. The DAH estimate was based upon the harvesting and processing capacity of the industry and also upon their intent for the 1980 season, given expectations of prices and markets similar to those of 1979. There are several suggested reasons for this shortfall, which will be discussed later in the paper. The important thing is to note is that catch/production was considerably less than estimated DAH, which makes necessary consideration of a foreign allocation under the framework of the FCMA.

From the population estimates made by biologists at NMFS, it appears as if the amount of Tanner crab available for harvest in Alaska in 1981 will be lower than in 1980. The 1981 guideline harvest levels from ADF&G have decreased from the 1980 level for every area except Yakutat and Cook Inlet. For the Bering Sea, the population estimates are shown in Table 2.

Table 2

Population Estimates for Tanner Crab in the Bering Sea

<u>Species</u>	<u>ABC</u>	<u>Size</u>	<u>Area</u>
<u>C. bairdi</u>	41 million pounds	>134 mm (5.28 in.)	all Bering Sea
<u>C. opilio</u>	59 million pounds	>109 mm (4.29 in.)	S. of 58° N. lat.
<u>C. opilio</u>	44 million pounds	>114 mm (4.49 in.)	S. of 58° N. lat.
<u>C. opilio</u>	13 million pounds	>104 mm (4.09 in.)	N. of 58° N. lat.
<u>C. opilio</u>	3 million pounds	>114 mm (4.49 in.)	N. of 58° N. lat.

Source: National Marine Fisheries Service, Preliminary Bering Sea trawl survey population estimates, September 1980.

In evaluating the population estimates, it is important to note that the industry has had greatest success marketing C. opilio at least 114 mm. (4.5 inches) in carapace width. Using this market preference as a criteria, the estimated population is 44 million pounds in the Bering Sea below 58° N. latitude, which is approximately equal to the 1980 catch. Above 58° N. latitude, the estimated population at least 114 mm. in carapace width is 3 million pounds. The industry may be able to expand catch and production of crab less than 114 mm. in the future if there is a change in the market demand for

smaller crab. However, the population size which should presently be considered as available for the domestic industry is restricted by market considerations to crab over 114 mm.

The total Alaska catch and amount of Tanner crab processed, by product form, is shown in Table 3. Unfortunately, data on production are not available yet from ADF&G for the period from 1977 to the present. Generally, the trends shown in previous years hold for recent production. That is, the dominant product form is frozen sections. An unknown percentage of the C. bairdi sections are reprocessed into meats at plants located mostly in Washington. At present, the product form for C. opilio is virtually all sections.

Markets

The markets for Tanner crab produced by the US industry are mainly in the domestic institutional market and in Japan. There are some exports to other countries, however, the amounts are small relative to total production. When the US industry began fishing/processing C. bairdi, there was not an established domestic market. The market for C. bairdi has since developed to the point where there is a strong demand by domestic consumers in addition to the Japanese market demand. This pattern is similar to what was experienced by the industry during the development of the king crab fishery.

For all Tanner crab, the amount of US exports by country of destination is shown in Table 4. From the information in Table 4, a calculation was made which shows the exports to Japan as a percent of the total US exports. This percentage is 97.6 %, 97.6% and 98.9% for 1978, 1979, and 1980 respectively (shown in Table 5). The total exports of Tanner crab as a percent of the total catch, also from Table 5, shows that 44.1 %, 59.5 %, and 48.9% of the Tanner crab catch was exported in 1978, 1979, and 1980 respectively.

These export percentages are for both species of Tanner crab, C. bairdi and C. opilio. Data are not available for the exports for each of the species separately. Information from the fishing industry, however, indicates that the market for C. opilio is presently almost entirely in Japan. It is reasonable to expect that domestic and alternate markets will be developed, as was the case first for king crab and then C. bairdi Tanner crab. However, this market development takes time and effort. There have been some successes by processing companies in finding domestic markets for C. opilio products, and these markets can be expected to expand with further efforts in market

Table 3

Alaska Catch and Production of Tanner Crab 1970-1980

(Units in pounds landed weight/product weight)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
<u>Catch</u>	14,473,228	12,880,124	30,135,404	61,719,386	63,906,037	46,857,047	80,770,981	98,475,995	130,625,764	131,381,085	118,988,000
<u>Production</u>											
fresh/frozen whole	20,807	11,104	1,002,735	7,093	25,806	0	40	n/a	n/a	n/a	n/a
fresh/frozen sections	1,099,318	691,447	2,831,083	15,729,828	16,646,291	18,338,637	26,814,655				
fresh/frozen meats	1,165,791	1,092,195	2,974,235	6,639,422	3,142,978	1,181,626	3,228,633				
canned meats	829,279	528,900	694,904	915,293	998,259	878,696	1,239,469				

Source: Alaska Department of Fish and Game, Catch and Production Commercial Fisheries Statistics, Statistical Leaflets Nos. 21-29 (catch for 1970-1976 and production for 1970-1972)

Alaska Department of Fish and Game, "Monthly Cumulative Shellfish Catch", catch 1977-1980

Alaska Department of Fish and Game, "Processors Annual Reports", compiled by Alaska Sea Grant Program for report 78-10, Market Structure of the Alaska Seafood Processing Industry (production data for 1973-1976).

1/ Alaska production figures are not yet available for the 1977-1980 period.

development. The different markets available to products from the two species appear to be attributable to a difference in size. For smaller C. bairdi and C. opilio sections of the same size and quality, the prices would be equivalent. Smaller C. opilio sections have not been sold in the domestic market previous to the last couple of years, whereas they have been a marketed product in Japan for a long period of time, due to the historical catches from the Sea of Japan.

There was some experimental production of meats from C. opilio this year. The product was shaken by hand in California. This experiment was not a great success. However, processed meats could be a possible future product for C. opilio if the production technology is developed to extract the meats efficiently. Again, the problem of extraction of meats was resolved by the industry for king crab and then for C. bairdi Tanner crab. It can be assumed that any technological problems of this type will be resolved over time by the domestic industry, given market incentive.

Table 4

U.S. Exports of Tanner Crab, by Country of Destination
(units in thousands of pounds, section weight)

<u>Country</u>	<u>Year</u>		
	<u>1978</u>	<u>1979</u>	<u>1980</u>
Japan	30,935	41,942	31,645
France	142	176	34
Belgium-Luxembourg	56	127	109
Canada	125	170	71
Netherlands	45	30	7
Other countries	401	533	136
Total	31,704	42,978	32,002

Source: U.S. Department of Commerce, Bureau of the Census

Table 5

U.S. Tanner Crab Exports to Japan as a Percent of Total exports
(units in thousands of pounds)

<u>Total Amt. Exported (section weight)</u>	<u>1978</u> 31,704	<u>1979</u> 42,978	<u>1980</u> 32,002
<u>Amt. exported to Japan(section wt)</u>	30,935	41,942	31,645
<u>Percent: Japanese to total exports</u>	97.6	97.6	98.9
<u>Total exports con- verted to round wt^{1/}</u>	57,646	78,142	58,185
<u>Total exports as a percent of catch</u>	44.1	59.5	48.9

Source: Calculated from Tables 1 and 4.

^{1/} Converted at a section recovery of 55 percent.

The Canadian Tanner (Queen) Crab Fishery

Harvesting and Processing Sectors

The Canadian fishing industry catches C. opilio off the Atlantic coast of the maritime provinces and markets the products from this fishery under the name Queen Crab. The Canadian landings of C. opilio, shown in Table 6, indicate a rapid growth of this fishery, particularly since 1976. The catch in 1976 was 23 million pounds which increased to 66 million pounds by 1979. This level of catch is greater than the current Alaska catch of C. opilio, and is more than half of the total 1980 Alaska catch of both species of Tanner crab.

To get some indication of the cause for the recent increase in Canadian landings/production of C. opilio, an industry representative in Moncton, New Brunswick was contacted.^{1/} The indication from this conversation was that a crab population increase was the reason for the recent trend in catch levels. Biological data on the status of the population of C. opilio off the maritime provinces should be obtained to confirm this initial assessment.

The amounts and product form of processed Queen crab are also shown in Table 6. The primary product is frozen meats which are shaken by hand, packed in blocks and frozen. Also, a portion of the meats are canned, and some crab are marketed whole.

Markets

Much of the Canadian production of Queen crab is exported, providing significant competition for Alaskan Tanner crab products, particularly in the northeastern states. The amount of Queen crab exported, by product form, is shown in Table 7 for the years 1970-1978. The US is the major importer of frozen Queen crab meats from Canada. The remainder of the exports go to countries in Europe, mainly to Sweden, France, and Belgium. The US also imports some canned Queen crab although it is not one of the major buyers. The largest importing country is France, followed by the United Kingdom, the Netherlands, Belgium, and Sweden.

Data were not obtained for a price series for Queen crab marketed in the northeastern US. However, according to information received from US proces-

^{1/} Personal conversation with Emile Gallant, United Maritime Fisherman's Association, Moncton, New Brunswick, August 28, 1980.

Table 6

Canadian Catch and Production of Queen Crab ^{1/}
 (Units in pounds landed weight/product weight) ^{2/}

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
<u>Catch</u>	17,335,710	15,371,055	15,618,015	22,396,185	23,368,590	15,743,700	23,902,200	31,352,895	46,355,715	66,099,285	n/a ^{3/}
<u>Production</u>											
fresh/frozen in shell	302,085	716,625	410,130	1,014,300	1,770,615	941,535	2,275,560	992,250	1,296,540	1,122,345	
fresh/frozen meats	1,671,390	2,802,555	3,243,555	4,110,120	4,685,625	3,389,085	5,208,210	3,464,055	7,902,720	8,727,390	
canned	1,327,410	879,795	837,900	1,583,190	1,439,865	1,071,630	2,176,335	2,745,225	3,283,245	2,659,230	

Source: Fisheries and Oceans Canada, Annual Statistical Review of Canadian Fisheries (Ottawa, Vol. 9, 10, and 11 for 1970-1978 data.)

Fisheries and Oceans Canada, Canadian Fisheries - Product and Stocks (Ottawa, 1979 preliminary data)

^{1/} C. opilio

^{2/} converted from metric tons

^{3/} not available but industry source reported catch similar to 1979 amount

Table 7

Canadian Exports of Queen Crab ^{1/} by Country of Destination
 (quantities in thousands of pounds product weight) ^{2/}

Product and Country	1970	1971	1972	1973	1974	1975	1976	1977	1978
<u>Fresh/Frozen Meats</u>									
United States	3398	5334	2000	2106	1528	1764	1438	1058	3605
Sweden	679	273	157	331	234	529	322	300	218
United Kingdom	216	300	207						
France	165	234					326	586	485
Belgium - Luxembourg							406	648	529
Netherlands								9	187
Other Countries	212	750	207	507	408	476	205	203	192
<u>Canned</u>									
United States	346	624	156	218	229	306	146	198	298
Sweden	359	300					229	229	73
United Kingdom	106	271					247	232	388
France	306	198	77	472	196	181	657	1014	1365
Netherlands	95	295	22					161	172
Belgium - Luxembourg	101	95		242	64			119	143
Other Countries	134	381	318	176	249	534	236	126	216

Source: Fisheries and Oceans Canada, Annual Statistical Review of Canadian Fisheries
 (Ottawa, various years 1970-1978)

^{1/} C. opilio

^{2/} converted from metric tons

sing companies, Canadian processed crab was generally lower priced than a US processed equivalent product. The reasons suggested for this lower price were:

- (A) Canadian companies processing Queen crab have an abundant supply of relatively inexpensive resident workers available to hand process the crab.
- (B) The Canadian fishing industry receives various types of government subsidies at the harvesting and processing levels. ^{2/}

An interesting aspect of the Canadian fishery for Queen crab is that market conditions are apparently taken into account in determining the level of catch and production. According to Emile Gallant, United Maritime Fishermen's Association, fishermen quit fishing in August this year even though the season was still open. ^{3/} The fishermen and processing companies had determined that the market for Queen crab products this year (1980) is approximately the same as it was in 1979. When this level of catch was achieved, the industry quit fishing/processing to keep from producing more than the markets will be able to absorb.

In summary, the Canadian production of C. opilio (Queen) crab apparently has an established market in the northern US and provides significant competition to some Alaskan produced Tanner crab products and product forms.

^{2/} Discussions with representatives of US Processing companies, Seattle, WA., August, 1980.

^{3/} Same as footnote ^{1/}.

The Japanese Tanner Crab Fishery

Harvesting and Processing Sectors

The Japanese Tanner crab fishery is in several locations, under a variety of types of fishing operations.

Shore based fleets fish in the Sea of Japan, and also fish for the Japanese quota of Tanner crab from the USSR in East Sakhalin. The 1980 allocation of Tanner crab by the USSR is 2,500 mt. or 5,512,500 pounds. The details of the present agreement are shown in Appendix III.

Japan also fishes for Tanner crab with high seas fishing fleets. Two motherships with catcher boats operated in the Bering Sea in 1980, catching the Japanese allocation from the US of 7,500 mt. (16,537,500 pounds) of Tanner crab, both C. bairdi and C. opilio. The species composition of the catch under this allocation for the past several years is shown in Table 8 below.

Table 8

Species Composition of the Japanese Tanner Crab Catch from the Bering Sea Allocation

	<u>C. bairdi</u>	<u>C. opilio</u>	<u>Hybrid</u>
1978	11.6%	85.2%	3.2%
1979	8.1%	89.8%	2.1%
1980	11.8%	82.7%	5.5%

Source: NMFS, foreign catch reports.

Under this allocation agreement, Japan pays the US 3.5 percent of the US ex-vessel price for the amount of crab harvested.

There is also a mothership operation under a joint venture agreement between Japan and the USSR, which includes a quota of Tanner crab in the Olyutol-Navarin area. Details of the 1980 joint venture are also in

Appendix III. The quota for Japanese Tanner crab catch under the 1980 joint venture agreement is 6,885 mt. or 15,181,425 pounds. The agreement also includes 750 mt. to be purchased from two USSR vessels, delivering to the Japanese motherships. The total quota of Tanner crab under this agreement is 7,635 mt. or 16,835,175 pounds. The payment for this catch is \$620 per mt. (28 cents per pound) for the Japanese catch as a fishing fee to the USSR and \$1,300 per mt., in terms of sections, to be paid to the USSR for their deliveries to the Japanese vessels (approximately 35 cents per pound round weight crab). The 1980 quota has increased considerably from the 1979 amount of 4,530 mt. or 9,988,650 pounds.

The Japanese catch of Tanner crab from all areas is shown in Table 9. This catch is for all Japanese vessels, whether they are shore based, high seas or joint venture. The trend for the total catch from 1968 to 1977 was a steady decline. That trend has been reversed since 1978 to a 1979 catch level of approximately 53 million pounds.

The Japanese production of Tanner crab products is shown in Tables 10, 11 and 12. The amount of whole Tanner crab, from the shore based fishery sold fresh, chilled or frozen is shown in Table 10. The canned production of Tanner crab is shown in Table 11. Table 12 shows the estimated total production of Tanner crab in Japan, both fresh/frozen and canned product forms. As the footnotes indicate, these data are approximate, however they are the best data available. Overall, it appears as if the decreased amount of Tanner crab available after 1968 has caused a decrease in the production of frozen Tanner crab (sections) while the amount of canned production has remained relatively constant.

Markets

The Japanese exports of frozen Tanner crab meats are shown in Table 13, from 1973 to 1979. The US has been the major importer of these products however the amount has decreased since 1977 to only 333,400 pounds in 1979. Japanese exports of canned Tanner crab are shown in Table 14. The amount of canned crab exported to all countries has decreased steadily from 5.7 million pounds in 1968 to 11 thousand pounds in 1979. The major countries importing canned Tanner crab have been the US and countries in Europe.

As might be expected, as Japanese production declined, the amount of imported Tanner crab increased rapidly. The amount of imports, by country of

Table 9

Total Landings of Tanner Crab in Japan ^{1/}
 (metric tons)
Tanner Crab

Year	<u>Tanner Crab</u>	<u>Pounds</u>
1952	5,876	12,956,580
1953	7,518	16,577,190
1954	9,618	21,207,690
1955	9,433	20,799,765
1956	8,133	17,933,265
1957	9,626	21,225,330
1958	11,062	24,391,710
1959	10,900	24,034,500
1960	13,413	29,575,665
1961	13,048	28,770,840
1962	14,921	32,900,805
1963	16,509	36,402,345
1964	20,382	44,942,310
1965	16,380	36,117,900
1966	19,487	42,968,835
1967	31,864	70,260,120
1968	61,679	136,002,200
1969	52,311	115,345,760
1970	53,265	117,449,330
1971	42,352	93,386,160
1972	41,730	92,014,650
1973	33,381	73,605,105
1974	30,066	66,295,530
1975	24,201	53,363,205
1976	22,028	48,571,740
1977	21,070	46,459,350
1978	22,902	50,498,910
1979	24,000 ^{2/}	52,920,000

Source: Data compiled by Clint Atkinson for the North Pacific Fishery Management Council, August, 1980

^{1/} Norinsuisan Sho. Gyogyo Yoshokugyo Seisan Tokei Nenpo. (Fisheries and Aquaculture Production Annual Statistics). Ministry of Agriculture, Forestry and Fisheries, Department of Statistical Information, Tokyo (Japan). various years and pages.

^{2/} Estimate from the Department of Statistical Information.

Table 10

Amount of Boiled Tanner Crab (fresh, chilled or frozen)

Sold Annually in the Tokyo Wholesale Market ^{1,2/}

(units in thousands of pounds)

<u>Year</u>	<u>Amount</u>
1971	9,812
1972	13,320
1973	10,136
1974	17,214
1975	11,289
1976	13,673
1977	13,673
1978	13,027

Source: Data compiled by Clint Atkinson for the North Pacific Fishery Management Council, August 1980.

^{1/} Tokyo Municipal Government. Tokyo-to Chuo OrosiuriiIchiba Nenpo (Tokyo City Central Wholesale Market Annual Report).

^{2/} It should be noted that most of the Tanner crab originating from imports or the distant-water fisheries are not sold in the Tokyo wholesale market auction but handled independently, either by brokers or by the companies themselves.

Table 11

Japanese Production of Canned Tanner Crab ^{1/}

Year	Standard cases ^{2/}	Meat (pounds)	Whole Crab (pounds) ^{3/}
1965	95,690	2,066,911	4,784,519
1966	217,168	4,690,833	10,858,412
1967	282,833	6,109,195	14,143,862
1968	271,219	5,831,217	13,560,970
1969	272,694	5,862,934	13,634,727
1970	340,352	7,351,619	17,017,638
1971	152,519	3,294,459	7,625,604
1972	192,961	4,167,990	9,648,125
1973	311,301	6,724,134	15,565,125
1974	289,602	6,255,397	14,480,087
1975	190,071	4,105,538	9,503,561
1976	230,235	4,973,082	11,511,764
1977	186,984	4,038,878	9,349,255
1978	252,044	5,444,156	12,602,212
1979	278,782	6,021,694	13,939,105

Source: Data compiled by Clint Atkinson for the North Pacific Fishery Management Council, August 1980.

^{1/} Japan Canner's Association. Kanzume Jiho (Canning Review), various years and pages.

^{2/} One standard case contains 48 half-pound tins (480 gr x 48 = 21.6 kg of meat).

^{3/} One standard case contains about 24 pounds of raw, whole crab.

Table 12

Estimated Japanese Production of Tanner Crab ^{1/}
(units in thousands of pounds whole crab equivalent)

Year	On-board vessel ^{2/}			Shore-based ^{3/}			Total		
	Frozen	Canned	Total	Fresh/Frozen	Canned	Total	Fresh/Frozen	Canned	Total
1965	83	1,744	1,827	31,249	1,379	34,289	31,333	4,784	36,117
1966	-	-	-	32,111	10,857	42,968	32,111	10,857	42,968
1967	630	4,833	5,463	59,962	9,309	64,796	56,117	14,142	70,260
1968	49,669	-	49,669	52,647	13,560	65,155	122,441	13,560	136,002
1969	56,917	-	56,917	44,792	13,635	58,498	101,710	13,635	115,345
1970	55,125	-	55,125	45,306	17,018	62,324	100,431	17,018	117,449
1971	45,063	-	45,063	40,695	7,627	48,322	85,759	7,627	93,386
1972	44,481	-	44,481	37,886	9,646	47,533	82,367	9,646	92,014
1973	38,219	-	38,219	19,820	15,565	35,385	58,040	15,565	73,605
1974	37,145	-	37,145	14,627	14,478	29,150	51,817	14,478	66,295
1975	28,296	-	28,296	15,562	9,503	25,066	43,859	9,503	53,363
1976	27,050	-	27,050	10,008	11,512	21,520	37,059	11,512	48,589
1977	27,553	-	27,553	9,556	9,349	18,905	37,110	9,349	46,459
1978	33,068	-	33,068	4,828	12,601	17,430	37,897	12,601	50,498
1979	-	-	-	-	13,940	-	-	13,940	52,920

Source: Data compiled by Clint Atkinson for the North Pacific Fishery Management Council, August 1980.

^{1/} No official statistics are available for all of the above items and the numbers must be considered only as approximate, being derived by the use of various conversion factors and differences.

^{2/} The total production for "on-board vessels" is taken as the catch for motherships and the North Pacific Tanner crab, etc. fleets: In addition, there are probably some landings from the "off-shore" (okiai) fleets and incidental catches from other North Pacific fishing fleets. The catch is mostly frozen in sections, some frozen whole and in the early years, some canned.

^{3/} The total production for "shore-based" plants is simply the difference between the total and the amount processed "on-board vessels". An attempt was made to estimate the amount of crab consumed fresh but proved impossible: One industry source estimates that about two percent of the shore-based landings are sold fresh to the consumer - the remainder is boiled and marketed whole, either fresh, chilled or frozen in that form. This type of product may also be processed aboard some of the smaller distant-water fishing vessels.

Table 13

Japanese Exports of Frozen Tanner Crab Meat ^{1/}

(units in thousands of pounds)

Year	United States		Canada	Europe		Austral- alia	Others	Total
	East	West		U.K.	Others			
1973	940.4 ^{2/}							
1974	293.3	79.4	24.3	4.4	251.4	2.2	-	654.9
1975	1,103.2	259.5	35.5	-	182.1	-	-	1,580.3
1976	2,074.9	441.2	-	-	259.5	61.3	12.6	2,981.8
1977	2,006.3	206.4	-	10.6	189.2	59.9	-	2,472.5
1978	951.9	93.0	-	5.5	13.0	-	-	1,044.5
1979	313.3	20.1	3.7	20.9	108.5	17.6	-	484.2

Source: Data compiled by Clint Atkinson for the North Pacific Fishery Management Council, August 1980.

^{1/} Japan Frozen Foods Export Association

^{2/} Industry source, validity not known.

Table 14

Japanese Exports of Canned Tanner Crab ^{1/}
(units in pounds)

Year	North America		South America	Africa	Asia	Europe	Middle East	Australia New Zea'd	Oceania	Total ^{2/}
	U.S.	Other								
1965	95,439	98,422	12,960	4,511	50,397	904,947	3,913	3,327	3,539	1,177,458
1966	55,861	13,534	-	185	22,510	1,329,650	156	-	6,230	1,428,004
1967	350,228	99,134	3,322	31,725	99,494	1,683,782	14,949	877	4,776	2,288,291
1968	2,611,888	91,520	7,243	63,429	36,444	2,921,093	13,099	12,630	13,931	5,771,281
1969	1,345,713	35,451	-	17,922	16,482	2,135,361	1,424	81,957	5,836	3,640,150
1970	744,145	6,476	979	35,723	107,882	808,260	15,476	30,422	19,121	1,767,880
1971	979,937	7,534	390	38,168	37,339	2,027,047	6,125	100,448	16,242	3,213,234
1972	610,498	33,721	487	9,686	3,808	917,039	3,629	26,504	3,741	1,609,116
1973	20,319	185	-	-	- ^{3/}	105,623	-	14,483	-	140,321
1974	260,399	1,795	-	6,255	-	90,307	341	37,742	560	506,221
1975	65,942	15,216	-	5,889	-	326,309	908	6,383	77	442,777
1976	264,924	2,804	-	936	-	398,871	1,170	32,675	-	701,364
1977	195,091	897	-	4,767	1,428	216,403	703	40,269	-	459,561
1978	1,638	284	-	846	141	-	1,067	26,248	-	30,226
1979	4,026	-	-	214	2,088	3,913	917	-	357	11,174

Source: Data compiled by Clint Atkinson for the North Pacific Fishery Management Council, August 1980.

^{1/} Okura Sho. Nihon Boeki Geppo (Japan Monthly Trade). Ministry of Finance, Nihon Kanzai Kyokai Hakko (Tokyo), various years and pages.

^{2/} Discrepancies noted between the sums of items given in this table and the totals published elsewhere for the years 1965 through 1970, but the differences are less than 1% and should not significantly affect the use of the data in various studies.

^{3/} The Ryukyu Islands (Okinawa) returned to Japan on May 15, 1972.

origin is shown in Table 15. The imports have come almost entirely from the US with small amounts imported from Canada and the USSR. The imports from the USSR are probably from deliveries to Japanese vessels by USSR vessels under the joint venture agreement.

The product form of imports from the US have been virtually all frozen sections. These are either re-processed into meats in Japan, or go to the consumer market as whole sections.

Data on the Japanese cold storage holdings are difficult to obtain however the data which were found to be available are show in Table 16. These data are insufficient for analysis of the relationship between Tanner crab prices and inventories, but they serve to illustrate a lack of necessary data.

As an additional note regarding Japanese imports of Tanner crab from the US, there is a tariff on these imports. The current rate is 9 percent which will be lowered to 6 percent by 1983 as a result of multilateral trade negotiations. The reduction should help to make US Tanner crab products more price competitive on the Japanese market.

Table 15

Estimated Japanese Imports of Frozen Tanner Crab 1,2/
 (units in pounds) 5/

<u>Year</u>	<u>Amount by Country of Origin</u>			
	United States	Canada	USSR	TOTAL
1970	63,484	1,001		64,485
1971	69,030	6,939		75,969
1972	51,176			51,176
1973	13,837,661	86,637		13,924,298
1974	7,772,934	150,354		7,923,288
1975	4,196,009	18,238		4,214,247
1976	9,935,909	170,276		10,106,185
1977	25,406,107 <u>3/</u>	234,934		25,641,041
1978	29,648,283 <u>3/</u>	201,215 <u>4/</u>		29,849,498
1979	43,162,619 <u>3/</u>	381,829	1,196,682	44,741,130

Source: Data compiled by Clint Atkinson for the North Pacific Fishery Management Council, August 1980.

- 1/ Japan Marine Products Association. Imports of Marine Products. Various years and pages.
2/ According to Industry sources, nearly all of the Japanese imports of crab from the United States through 1976 were Tanner crab.
3/ Imports from 1976 through 1979 included some king crab in the frozen product form which were re-processed into the canned product. The amount of king crab exported from the United States during 1978 and 1979 was subtracted to correct for this.
4/ Includes imports from St. Pierre-Miquelon.
5/ Units converted from kilograms

Table 16

Estimated Inventories for Frozen Tanner Crab ^{1/}
(units in metric tons)

<u>Year</u>	<u>Month</u>	<u>Amount</u>	<u>Kind</u>
1976	April	5,000	Bairdi/Opilio
	August	21,500	Bairdi/Opilio
	December	11,000	Bairdi/Opilio
1977	April	2,000	Bairdi/Opilio
	August	9,800	Bairdi/Opilio
	December	3,600	Bairdi
1978	December	3,000	Bairdi
1979	December	4,000-	Bairdi/Opilio
		4,500	

Source: Data compiled by Clint Atkinson for the North Pacific Fishery Management Council, August, 1980.

^{1/} No official statistics are available for month-end inventories of Tanner Crab. These data have been provided by reliable industry sources but given only as their "best estimates".

The USSR Tanner Crab Fishery

Very little data are available for the USSR fishery for Tanner crab. It is assumed that any catch and production is consumed in the USSR. The main impact on the U.S. market from the Tanner crab resources of the USSR are from their joint venture with Japan. The USSR catch figures which are available are shown in Table 17.

Table 17

USSR Catch of Tanner Crab
(units of thousands of metric tons)

1973	3.3
1974	3.9
1975	3.2
1976	3.4

Source: Food and Agricultural Organization, Yearbook of Fishery Statistics: Catches and Landings (various years).

Part III

MARKETS FOR TANNER CRAB AND THE IMPLICATION OF MARKET STRUCTURE ON THE FOREIGN ALLOCATION OF C. OPILIO FROM THE BERING SEA

Summary of Market Survey

In August, meetings were held with a number of processing companies which process and market Tanner crab, particularly C. opilio. The purpose of these meetings was to obtain information from the processing industry on their evaluation of the foreign allocation issue, and to obtain information on markets for C. opilio products. Representatives were contacted for the following list of processing companies:

- Alaska Packers Assoc.
- Alaska Shell
- Deep Sea
- East Point Seafood
- Icicle Seafoods
- Pacific Pearl Seafoods
- Pan Alaska
- Peter Pan Seafoods
- Sea-Alaska Products
- Sea West
- Trident Seafoods
- Universal Seafoods
- Ursin Seafoods
- Whitney Fidalgo

This listing obviously does not include all companies processing Tanner crab, however it does provide a representative sample from the industry.

A letter, outlining the purpose of the informal survey was mailed to representatives from each of these companies, a copy of which is in Appendix II. Personal interviews were conducted with all but two of the companies on the list; those being excluded only due to difficulty in arranging a meeting time during a tight trip schedule.

To summarize some of the results of the discussions, specific questions and aggregated responses will be listed.

What would be the effect on the price of domestically processed Tanner crab of a 1981 Japanese C. opilio allocation of 7,500 MT, 15,000 MT, 0 MT?

What are the impediments to increased sales of C. opilio products to the domestic and foreign markets (e.g., low recovery rates, import restrictions, etc.)?

Do C. opilio and C. bairdi processed products have different markets (i.e., differentiability of product form)?

Is the market for domestically processed C. opilio mainly in Japan? If so, would Japan continue to be a strong market for Tanner crab if Japanese fishermen no longer participated in the fishery in the Bering Sea?

The unanimous response of the industry to the allocation issue was that the market for C. opilio products produced by the domestic companies would be improved considerably if the Japanese quota were set to zero. The emphasis on this point was extremely strong. It was further emphasized that the fishery for C. opilio would not be fully developed until this action occurred. It is interesting to note that this opinion was shared by the representatives of companies which have significant or predominant Japanese ownership, as well as the US owned companies.

Specific points of importance regarding this question which were mentioned are:

- A. It is not appropriate to discuss or define C. bairdi and C. opilio as separate products with separate markets. There are differentiable markets, but these are determined by the size of the crab, not the species.
- B. The major market for C. opilio products is presently in Japan. The amount of C. opilio caught by the mothership operations in the Bering Sea directly reduces the demand for domestically caught and processed Tanner crab in Japan. The demand for Tanner crab in Japan is from four sources of supply:

- (1) the Japanese catch by the shore based fleet in the Sea of Japan
- (2) the mothership fleet, fishing quotas allocated by the US and USSR in the Bering Sea and the East Sakhalin area respectively.
- (3) the Japan-USSR joint venture for Tanner crab off Olyuto1 Navarin.
- (4) imports of Tanner crab (C. bairdi and C. opilio from US companies, as well as imports from Canada and the USSR.

The general feeling of the industry was that the Japanese demand for Tanner crab would be supplied first by (1), (2) and (3) with the remainder of the market being supplied by (4), the U.S. fishing industry and other exporting countries (Canada and the USSR) When the foreign allocation from the Bering Sea is set to zero, the amount of Tanner crab supplied by (2) would be reduced, improving the competitive position of the U.S. industry.

- C. The industry feels that they face price discrimination against U.S. produced Tanner crab (particularly C. opilio) in the Japanese market. The reason usually suggested by the Japanese for this discrimination is differences in product quality between product produced by the mothership fleet and that produced by domestic companies. Several representatives of the processing companies felt that the allegation of product inferiority was untrue, and their company put up product equal to that the mothership operations produced and still faced price discrimination. An example of this type of pricing is shown in Table 18.

Other company representatives felt that in the past some plants had processed C. opilio sections which were of lower quality. It was stressed that the product had improved and that any technological difficulties would be overcome as experience was gained, as was the case for king crab and C. bairdi Tanner crab.

- D. The industry response to the fourth question was that Japan would definitely continue to be a strong market for Tanner crab if the Japanese no longer received a quota in the Bering Sea. As mentioned in (B), the industry feels that the markets available to them would

Table 18

Price Differentials for Shrink Packed C. Opilio
Wholesale Prices in Japan ^{2/}

Size	Mothership ^{2/}	US Company ^{3/}	Price FOB Dutch Harbor ^{4/}
2L ^{5/}	\$ 2.78/lb.	\$ 2.58/lb.	\$ 1.38/lb.
L	\$ 2.48/lb.	\$ 2.27/lb.	\$ 1.08/lb.
M	\$ 2.17/lb.	\$ 1.96/lb.	\$.93/lb.

Source: Industry source, August 1980.

^{1/} prices as of end of July 1980

^{2/} selling price of mothership operations

^{3/} price from importers to wholesalers

^{4/} price paid to US Company

^{5/} the 'L' size rating is a Japan grading system for Tanner crab by weight of individual sections. The weights by grade are:

12.5 oz. and over 3L

10.5 - 12.5 oz. 2L

8.5 - 10.5 oz. L

7 8.5 oz. M (missing legs, etc.)

The prices shown above are for the same product, processed in the same method, packed in the same size packages (5 kilograms).

in fact be strengthened by a zero Japanese allocation for C. opilio in the Bering Sea. An argument used in the past by the Japanese fishing industry in defense of the allocation of C. bairdi and then C. opilio in the Bering Sea, is that if the Japanese motherships no longer fished in the Bering Sea, market channels would no longer be available for US exports to Japan. This argument is rejected by the US industry for the following reasons.

1. Japan produces Tanner crab from the shore based fishery in the Sea of Japan, from the USSR allocation and from the Japan-USSR joint venture. The advertising, market channels etc. for this production would continue whether or not the Japanese had an allocation in the Bering Sea.
2. There is significant ownership of US processing companies by Japanese fishing companies. This relationship would ensure that the traditional market channels for US exports would remain operational.
3. There is growing interest by the domestic industry in promoting alternative, more direct marketing channels in Japan for Tanner crab and other products. These would provide alternatives to the established channels with the possible advantage of bypassing several level of middlemen in Japan.

Support for the industry position is emphatically demonstrated by the following example.

In a paper presented to the Council in December 1976 by Mr. Tatuso Saito, representing the Fishery Agency of the Government of Japan, the following argument was given in defense of the Japanese allocation of C. bairdi Tanner crab from the Bering Sea.

Crab is a luxury food item for the Japanese people. Therefore, demand for Tanner crab fluctuates with the general economic situation. In the long run, there is certainly a good possibility for an expanded crab market. However, we would like to stress that only through the marketing efforts of Japanese fishing companies selling

the product themselves catch will the general expansion of the market for both domestic and imported Tanner crab be feasible. For example, in the case of king crab, after Japan had been phased out of the fishery by the United States and the Soviet Union, the Japanese domestic market for king crab shrank. Contrary to expectations, imports decreased rather than increased. Therefore, the continuation of the Tanner crab fishery is necessary for the maintenance and expansion of the Japanese domestic market. 1/

It is apparent that the example presented in this paper does not represent the actual situation as shown in Table 19. The exports of king crab to Japan have increased rapidly since 1976.

The industry feels that the Japanese argument for the continuation of the Bering Sea allocation of C. opilio is equally as inappropriate as when it was used for king crab or C. bairdi Tanner crab in the past.

In summary, the domestic industry feels that the production of C. opilio is essential to their operation. The king crab season is very short, and the harvest quotas of C. bairdi are at low levels. To operate for a longer period, and spread their fixed cost over a larger number of days, expansion in the C. opilio market is desirable and essential. It is felt that the U.S. industry has the capacity and intent to harvest the resource. The shortfall in catch/production in 1980 from the expected amounts was caused by market phenomena, particularly a price to both the processing companies and to fishermen which was so low as to suppress the fishery. The price to fishermen fell in 1980 fell from the 1979 price of 31 cents per pound to 21 cents per pound. This was caused by low wholesale prices for the US product, ranging from \$.70 per pound to \$1.05 per pound for bulk pack sections, and up to \$1.25 per pound for smaller shrink-wrapped packs. There is concern by the domestic industry that the low prices and sluggish markets were attributable in part to conflicts of interest and possible collusion by the normal marketing channels available for U.S. exports. This aspect will be dealt with in the next section.

1/

From Additional Japanese Comments on the Tanner Crab Issue, by Mr. Tatuso Saito, representing the Fishery Agency of the Government of Japan, December 3, 1976 (a paper presented to the North Pacific Fishery Management Council, Second Plenary Session, December 2-5, 1976).

Table 19

U.S. Exports of Frozen King Crab
(units in pounds, section wt.)

<u>Year</u>	<u>Amount Exported</u>
1968	21,889
1969	21,816
1970	0
1971	0
1972	0
1973	1,970,991
1974	401,659
1975	764,552
1976	1,729,650
1977	7,498,861
1978	27,567,000
1979	32,863,000

Source: U.S. Bureau of the Census, FT 140, Schedule B,
Exports of Commodity by Country.

Structure of the Market

This section of the paper deals with aspects of the market structure of the fishing industry in Japan and how this structure is of concern in the determination of the foreign allocation of C. opilio in the Bering Sea. It is not necessary or reasonable to expect trading partners of the US to have the same type of marketing structures, regulations or customs as our own. It is, however, important to recognize what these different market structures, regulations and customs are and how they affect trading relationships between US companies and export markets in other countries, in this case Japan.

At present, the market for C. opilio products, produced by US companies, is mostly in Japan. This situation can be expected to change in the future, however the fishery is a recent development and alternate markets can not be developed immediately. Therefore, for the present, US companies are processing and selling in competition with one another basically for a single market. This situation, in general, theoretically gives Japan a monopsony position in the negotiations between producer and purchaser.^{2/}

Because the US, again in general, is one of the several producers of Tanner crab, its bargaining position is less strong, relative to the monopsonist buyer. C. opilio is also produced and marketed by Japan, Canada and the USSR, in amounts equal to the US production in some cases. This very simple buyer-seller market is complicated by a number of factors and conflicts present in the real market situation. These factors/conflicts will be examined one at a time with regard to their effect on the market situation.

A first complication which can be introduced is that in specific cases, the producers are also the buyers. For example, this year (1980) Nippon Suisan and Taiyo Gyogyo (Japanese fishing companies) both operated motherships in the Bering Sea and processed C. opilio and C. bairdi, utilizing the Japanese quota of 7500 mt. in the Bering Sea. Taiyo also operated a mothership in the Japanese-USSR joint venture in Olyntol-Navarin, with a 1980 Tanner crab allocation of 1300 mt. The products from these operations are sold on the Japanese market. Nippon Suisan and Taiyo are also purchasers of Tanner crab. This dual position as both producer and purchaser allows them the

^{2/} A monopsony is a monopoly from the buyers side, ie. a single buyer.

capability to adjust the production/purchase to the maximum benefit of the company. If, for example, the operation of the fishing company as an importer were in some way at conflict with the fishing operation of that company, the company would be in a position to adjust those operations in a way which would maximize the returns to the company from both operations. The above mentioned companies are used only as examples to illustrate that Japanese fishing companies are major producers of Tanner crab and also major buyers of Tanner crab.

A second complication which can be introduced into this market scenario is that Japanese fishing companies, which are major producers and buyers of Tanner crab, also have significant equity ownership in US processing companies. The actual amount of foreign ownership in US processing companies is difficult to determine exactly. This problem is due to incomplete or inaccurate disclosure of ownership information to the state. ^{3/} This problem was identified and discussed in a study prepared for the House Interim Committee on Foreign Investment of the Alaska Legislature in 1980. ^{4/} This study also determined that in 1977, the most current year for which production data were available, 25 percent of the total Alaska production of Tanner crab, by value, was produced by US processing companies with Japanese ownership greater than 25 percent. ^{5/}

As a measure of Japanese influence in the domestic companies which produce Tanner crab, this percentage should be regarded as conservative. This is due to the problem of incomplete reporting of foreign ownership mentioned previously and that only direct equity control was measured. There is also an indeterminate amount of financial control of domestic companies by Japanese companies through financial ties such as the financing of fishing operations. This is ample evidence to suggest that Japanese fishing and trading companies have the ability to control or influence the investment and operations decisions of a significant component of the domestic industry. There are many benefits as well as costs to the domestic industry of the Japanese investment,

^{3/} This information is reported to Alaska Department of Commerce and Economic Development in Annual Reports for Business Corporations.

^{4/} Frank Orth & Associates and W. Patrick Dougherty, Foreign Investment in the Alaska Seafood Industry, January 1980.

^{5/} Ibid., Exhibit 4-11, p. 196.

however this paper is only concerned with possible effects of this investment in the market structure and channels for Tanner crab.

A last complication in the market scenario which will be introduced is that many Japanese companies which produce and purchase Tanner crab, and have equity ownership in domestic companies which produce and export Tanner crab also belong to a marketing association. A 1980 membership list for this association, which is the Japan Marine Products Importers Association, is shown in Appendix IV. The fishing and trading companies in this association make up the 'regular market channels' for Tanner crab (and other species) imports from US companies. In letters, by the Association, explaining their operation, which are also included in Appendix IV, it is stated that of the total imports of marine products into Japan, the Association member companies import 95 percent. The percentage share of the imports for crab are listed at 90 percent. An interesting quote from one of the letters, in describing the policy of the Association is:

The basic policy of this association is to guide the member companies to import marine products from overseas at reasonable prices for adequate quantities, keeping an orderly purchasing manner. ^{6/}

The possibility that the members of the Association together would have the ability to influence the import market for a particular product is illustrated from the following quote.

The fish roe committee of Japan Marine Products Importers Association on February 13 held a meeting in order to obtain a pledge of cooperation from its member companies with a call previously issued by the chairman, Tashiro Yoshio of Marubeni Shoji. The call, made on January 25,

^{6/} From a letter of explanation given to members of a National Marine Fisheries Service Trade Mission to Japan at a meeting of the Japan Marine Products Importers Association, Tokyo, June 4, 1979 along with a membership list and an attendance list for the meeting. The source of this letter was one of the members of the Trade Mission.

asked moderation in the purchase of herring roe this year, reflecting on the last year's experience in which the buying frenzy among the competing Japanese companies in Canada and Alaska drove the price of herring roe sky-high while inviting critical comments toward their business approaches from the producing companies. ("Suisan Keizai Shinbun", February 12; "Shokuryo Shinbun", February 13, 1980). ^{7/}

The above information implies that while Japanese companies compete with one another, they may, at times, have the ability to use the marketing power represented by the membership of the Association to achieve commonly desired marketing goals. This type of market structure would be called an informal collusive oligopsony.

This information is not presented as proof that such collusion actually exists. The purpose of this section is to suggest that Japanese fishing companies may have a common goal of maintaining an allocation of C. opilio in the Bering Sea under the foreign allocation framework of the FCMA. It would be possible for these companies to influence the US catch/production of C. opilio if it were in their overall best interest to do so. The apparent conflict is that by providing a strong market and thus encouraging development of the US C. opilio fishery, Japanese fishing companies own fishing operation in the Bering Sea would be terminated that much more quickly.

^{7/} From: NMFS, Foreign Fishing Information Release No. 80-3 (March 13, 1980).

Part IV

CONCLUSIONS

From the data and analysis presented in this paper, there is adequate justification for setting the total allowable level of foreign fishing (TALFF) for Tanner crab in the Bering Sea to zero for 1981. The population estimates by NMFS for marketably sized C. opilio (4.5 inches and larger) total 47 million pounds for the entire Bering Sea. The domestic industry has demonstrated the ability to harvest, process and market amounts approaching this level (40 million pounds in 1980). With the fishery for C. opilio growing as rapidly as it has in the past several years, it can be expected that the entire 47 million pounds could be utilized by the domestic industry, given favorable market conditions.

The usual procedure for establishing the TALFF in this situation would be to set

$$DAH = ABC = OY \frac{1}{}$$

Which would then result in a TALFF equal to zero.

However, given the structure of the Tanner crab markets, it is appropriate to alter the usual formulation shown above to

$$OY = DAH \leq ABC$$

This formulation sets the optimum yield to be equal to the domestic harvest under the restriction that the harvest is less than or equal to ABC. This would also result in a TALFF equal to zero however the determination of optimum yield would reflect the market considerations of the Tanner crab fishery.

In summary:

- o The Japanese 1980 allocation of Tanner crab from the Bering Sea was 28 percent of the total Tanner crab exports by the US to Japan. ^{2/} Given information presented by the domestic industry, this amount of production can be assumed to have a detrimental effect on the demand in Japan for US Tanner crab products, particularly C. opilio products.
- o The domestic industry has the capacity and intent to harvest the C. opilio resource. Given the market conditions described in Part III, the ability of domestic companies to fully utilize the resource will depend on improving their bargaining position relative to the Japanese markets.
- o Finally, there is historical precedent for the full development of Alaska's crab fisheries, both for king crab and for C. bairdi Tanner crab, after the foreign fishing had been stopped. It is likely that C. opilio can follow this pattern, given the benefit of the encouragement for development of the US industry promulgated under the framework of the FCMA.

1/

DAH is expected domestic annual fishing harvest.
ABC is acceptable catch.
OY is optimum yield.

2/

US Tanner crab exports as of August 1980.

- o The domestic industry has the capacity and intent to harvest the C. opilio resource. Given the market conditions described in Part III, the ability of domestic companies to fully utilize the resource will depend on improving their bargaining position relative to the Japanese markets.
- o Finally, there is historical precedent for the full development of Alaska's crab fisheries, after the foreign fishing had been stopped, both for king crab and for C. bairdi Tanner crab. It is likely that C. opilio can follow this pattern, given the benefit of the encouragement for development of the US industry promulgated under the framework of the FCMA.

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APPENDIX I

APPENDIX I

The History of Regulation of Foreign Fishing for Tanner Crab

A summary of the regulations of foreign fishing are shown in Appendix I Table 1 and Figures 1 and 2. These show the relationship between the regulation of foreign fishing effort and the historical Tanner crab catches by Japan, the US, and the USSR (shown in Appendix I Table 2). For further discussion see Richardson and Orth, The Historical Role of Regulation of Foreign Fishing in the Development of Alaska's Shellfish Industry, May 1977.

APPENDIX I, Table 1

FOREIGN QUOTAS FOR KING AND TANNER CRAB IN EASTERN BERING SEA

Treaty Period	JAPAN		USSR	
	King Crab	Tanner Crab	King Crab	Tanner Crab
1965-66	185,000 cases	unrestricted	185,000 cases	unrestricted
1967-68	163,000 cases	"	100,000 cases	"
1969-70	85,000 cases	"	52,000 cases	40,000 cases
1971-72	37,500 cases	14,600,000 crab ^{1/}	23,000 cases	35,000 cases ^{2/}
1973-74	"Southern Area" ^{5/}	6,000,000 crab	100,000 crab	1,800,000 crab
	"Northern Area" ^{5/}	8,000,000 crab	160,000 crab	2,400,000 crab
	Total	14,000,000 crab	260,000 crab	4,200,000 crab
1975-76	Area "A" ^{6/}	0 mt	0 mt	750 mt
			(2,500,000 crab)	(750,000 crab)
	Area "B"	953 mt	7,700 mt	2,310 mt
		(300,000 crab)	(11,000,000 crab)	(3,300,000 crab)
	Total	953 mt	356 mt	3,060 mt
		(300,000 crab)	(112,000 crab)	(4,050,000 crab)
1977	Area "A" ^{6/}		2,500 mt	
	Area "B"		10,000 mt	
	Total		12,500 mt ^{3/}	
1978			15,000 mt ^{4/}	
1979			15,000 mt ^{7/}	
1980			7,500 mt ^{8/}	

Source: INPFC, U.S.-USSR and U.S.-Japan Bilateral Treaties, NPFMC Management Plan for Tanner crab.

^{1/} Plus allowance of 10 percent.

^{2/} One case is equivalent to 48 half-pound cans.

^{3/} Composed of 5,100 mt *Chionoecetes bairdi* and 7,400 mt *C. opilio*.

^{4/} *C. opilio*, catch restricted to north of 58° N. latitude and west of 164° W. longitude.

^{5/} Areas shown in Figure 1

^{6/} Areas shown in Figure 2

^{7/} Same area as footnote 4 with the addition of an area south of 58° N latitude and west of 173° W. longitude. This latter area had a quota of not more than 2500 mt with the restriction that no *C. bairdi* were to be retained.

^{8/} Fishing restricted to north of 58° N. latitude. No species restriction.

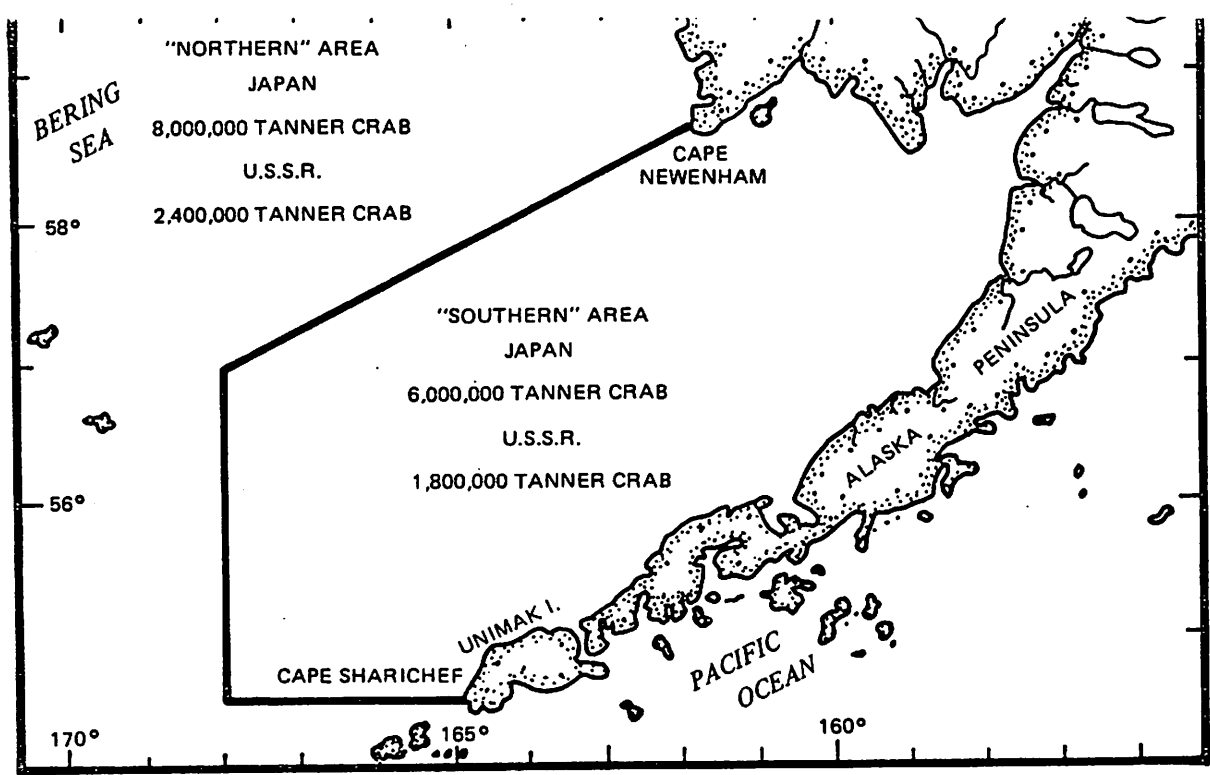


Figure 1 Areas and catch quotas for 1973 and 1974 established for Japanese Tanner crab fishing in the Eastern Bering Sea by the U.S.-Japan Agreement of December 1972.

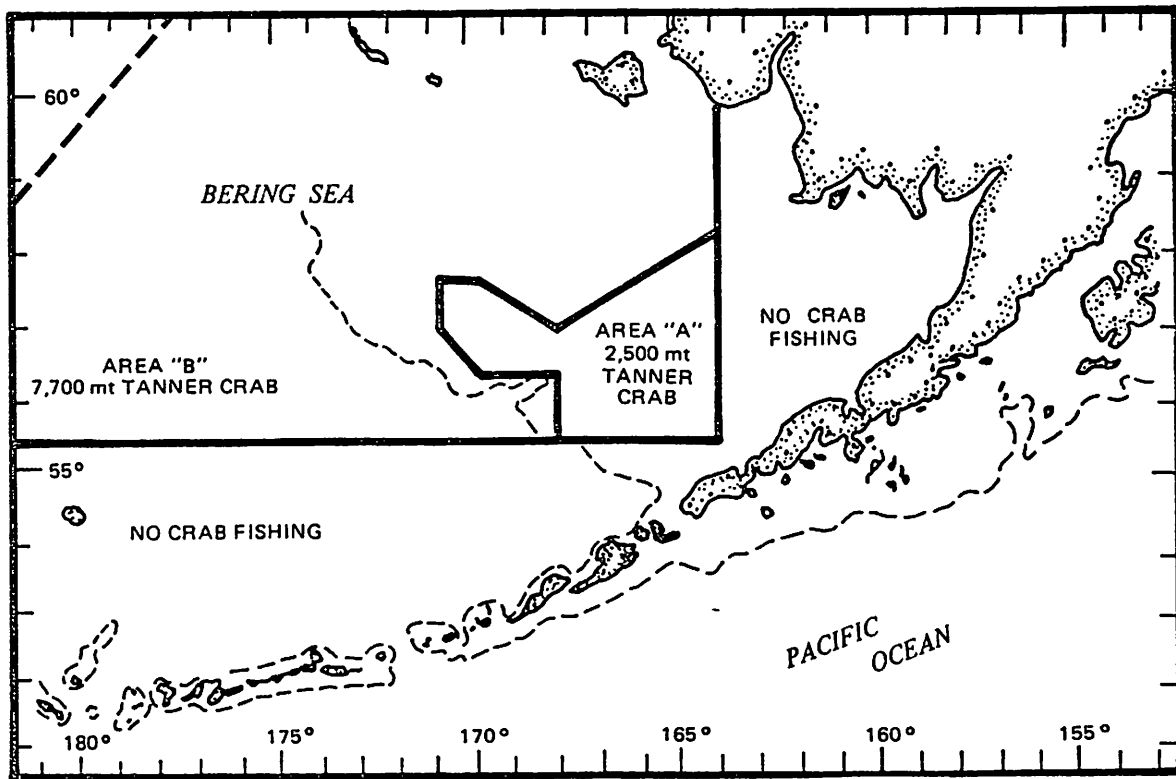


Figure 2 Japanese Eastern Bering Sea crab quotas and quota areas 1975 and 1976

Source: North Pacific Fishery Management Council, "Fishery Management Plan for Tanner Crab off Alaska," July 1977.

APPENDIX I, Table 2

FOREIGN AND U.S. CATCH OF TANNER CRAB IN EASTERN BERING SEA 1965 TO 1976¹
(In Millions of Pounds)²

	JAPAN			USSR	U.S.	TOTAL CATCH
	Tangle nets	pots	total	Tangle nets	pots	
1965	2.482		2.482	1.603 ³		
1966	3.591		3.591	1.603		
1967	20.051	.699	20.750	8.170		
1968	24.341	4.531	28.872	8.411	.017	37.300
1969	23.464	18.931	42.394	15.046	1.008	58.488
1970	18.506	25,332	43.838	13.795	1.487	59.120
1971	2.051	35.880	37.931	10.132 ^{4/}	.166	48.229
1972	.930	36.649	37.579		.119	37.698
1973 ⁵		33.603	33.603		.301	33.904
1974 ⁶		33.706	33.706		5.044	38.750
1975 ⁷		22.239	22.239		7.028	29.519
1976 ⁸		23.240	23.240		22.341	45.581
1977		27.562 ⁹	27.562		51.876	79.438
1978		33.075	33.075		67.831	100.906
1979		33.075	33.075		74.705	107.780
1980		16.538	16.538		75.883	92.421

Source: International North Pacific Fisheries Commission, "Annual Reports", various years 1965-1977 (Japan and USSR catch)
Alaska Department of Fish & Game, "Westward Regional Shellfish Management Board Report", January, 1980 (U.S. catch)

1. C. bairdi and C. opilio.
2. The number of crab was converted to number of pounds by using a factor of 2.41 pounds/crab, the weight per crab used by NMFS in their Bering Sea stock estimation (1977).
3. Estimated by applying number of pounds per case in 1969 to case pack figure for catch in 1965-1968.
4. No USSR fishery after 1971.
5. Japanese catch in 1973 was 14.441 million pounds in the southern area and 19.162 million pounds in the northern area. Areas are those defined in the 1972 bilateral agreement.
6. Japanese catch in 1974 was 14.458 million pounds in the southern area and 19.249 million pounds in the northern area. Areas are those defined in the 1972 bilateral agreement.
7. Japanese catch in 1975 was 5.256 million pounds in Area A and 16.983 million pounds in Area B. Areas are those defined in the 1974 bilateral agreement.
8. Japanese catch in 1976 was 5.873 million pounds in Area A and 17.366 million pounds in Area B. Areas are those defined in the 1974 bilateral agreement.
9. From 1977 on, the Japanese catch is assumed to be equal to the NPFMC allocation.

APPENDIX II

North Pacific Fishery Management Council

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Dear _____

The North Pacific Fishery Management Council will be considering amendment #5 to the Tanner Crab Fishery Management Plan this fall, probably at the September meeting. Part of the amendment will be the determination of the Japanese allocation of C. opilio crab from the eastern Bering Sea for the 1981 season. There is no question of the ability of the domestic industry to harvest and process the entire optimum yield given satisfactory markets. Unfortunately the 1980 U.S. catch was well under 50 percent of the DAH estimated in the Fishery Management Plan this year (i.e., 40 million of the approximately 90 million pounds available). If the foreign allocation is to be held at 1980 levels of 7,500 MT or reduced further in 1981, a very strong economic argument must be made along with the best possible estimate of the U.S. production.

To provide the Council with information to assist in their decision, I am completing a short-term study to provide some marketing data for Tanner crab. This study will include the U.S. and Japanese catch, production, imports, exports, and consumption. As part of this short-term study, I would like to conduct an informal survey of some of the major companies processing Tanner crab with the objective of obtaining information and projections on the markets for Tanner crab, particularly C. opilio. The basic question to be answered is:

What would be the effect on the price of domestically processed Tanner crab of a 1981 Japanese C. opilio allocation of 7,500 MT, 15,000 MT, 0 MT?

Other important questions to be addressed are:

What are the impediments to increased sales of C. opilio products to the domestic and foreign markets (e.g., low recovery rates, import restrictions, etc.)?

Do C. opilio and C. bairdi processed products have different markets (i.e., differentiability of product form)?

Is the market for domestically processed C. opilio products mainly in Japan? If so, would Japan continue to be a strong market for Tanner crab if Japanese fishermen no longer participated in the fishery in the Bering Sea?

What opinion does your company, or the industry in general, have of publicly-funded marketing explorations? Do you feel they result in a benefit to the industry?

If your company is willing to have a representative discuss these issues with me, I propose to set up appointments in Seattle during August.

I need the opinion of your company on these issues; however, this type of information may be something that your company does not wish to discuss. For that reason, I will be following up this letter by phone to set up appointments with representatives of the companies which indicate an interest in participating. A list of processors and individuals receiving this letter is attached.

I look forward to talking with you shortly.

Yours truly,



Jim Richardson
Fisheries Economist

APPENDIX III

Of the Japanese allocation, however, a quota for pollock has been reduced from 300,000 mt in 1979 to 290,000 mt in 1980, while a Soviet quota for sardine and mackerel within the Japanese Zone has been increased from 318,000 mt in 1978 and 450,000 mt in 1979 to 500,000 mt in 1980.

Under this allocation for 1980, Japan will be able to maintain 6,710 fishing vessels including support vessels which operated within the Soviet Zone in 1978 and 1979. Soviet fishing vessels including support vessels operated within the Japanese Zone increased from 503 (including 169 purse seiners) in 1978 to 542 (including 185 purse seiners) in 1979. These Soviet purse seiners mainly caught sardine within the Japanese Zone. In 1980, the number of Soviet purse seiners within the Japanese Zone will be increased as un-confirmed information indicates that the Soviets will remove some purse seiners operated in the Atlantic Ocean to the Japanese Zone in 1980 and that two of the ten 2,000 GT purse seiners which the Soviets placed an order to Poland for the construction have reportedly been completed.

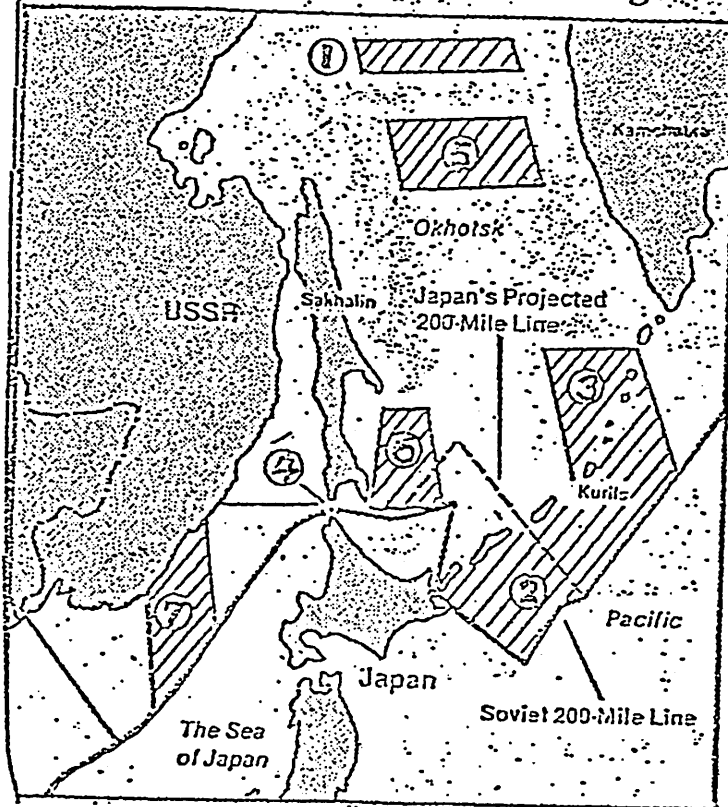
A Japanese proposal for extension of the Provisional Agreements for more than one year has been turned down by the Soviets this year as was last year.

The Japanese Diet, which convenes its 91st ordinary session today (December 21) is scheduled to approve today these Provisional Japan-Soviet Fisheries Agreements for 1980.

Details of the allocations by species and by area for 1980 are attached.

cc: Mr. Storer, Fisheries Director, OES/OFA/FA, STATE
Mr. Kravanja, F41, NMFS, NOAA
NMFS Regional Directors

Areas Open to Japanese Fishing



7 Areas within the soviet Zone Open to Japanese Fishing:

1. The Northern Okhotsk Sea
2. The Kuriles, Pacific Ocean side
3. The Kuriles, Okhotsk sea side
4. The Sohya Straits and around Nijo-Iwa
5. The Okhotsk Sea
6. East Sakhalin
7. The Japan Sea, Primorskaya

The above 7 areas open to Japanese fishing in 1980 are the same as in 1979.

Japanese Allocation by Species by 7 Fishing Areas within Soviet Zone, 1980

(In 1,000 metric tons)

Species	7 Fishing Areas							Total Quota	Total Quota	Total Quota
	1	2	3	4	5	6	7	1980	1979	1978
Follock		183.5	1.5			57.0	48.0	290.0	300.0	345.0
Squid		38.2	2.0			2.0	100.7	142.9	142.9	146.4
Saury		66.6	1.0			1.0		68.6	68.6	68.6
Sand lance				43.8				43.8	43.8	65.2
Cod		19.8	4.4			1.1	8.7	34.0	30.1	44.7
Flounders		13.9	1.8			3.7	5.4	24.8	20.9	30.3
Wachna cod		13.9				1.5	0.1	15.5	15.5	15.5
Ocean perch		16.1	0.8					16.9	14.7	22.0
Atka mackerel		2.7	0.7	1.0		0.3	6.6	11.3	11.3	11.0
Tuna & Skipjack		6.4						6.4	6.4	6.4
Sharks excl. Dogfish		1.2						1.2	1.2	1.2
Other fish		68.1	1.2	2.4		1.5	7.6	80.8	80.9	80.8
Octopus		1.6	0.9	1.0			0.1	3.6	3.6	3.5
Korean hair crab				0.8(1.64 mil)				0.8	0.8	0.8
Brown king crab					0.8(0.5 mil)			0.8	0.8	0.8
Tanner crab						2.5(4.2 mil)		2.5	2.5	2.5
Red tanner crab						2.6(3.096 mil)		2.6	2.5	2.3
Shrimp						0.5		0.5	0.5	0.5
Snail	(Shucked)	2.3				0.7		3.0	3.0	2.5
Total, 1980		2.3	432.0	14.3	49.0	0.8	71.3	180.3	750.0	850.0
Total, 1979		2.3	432.0	14.3	49.0	0.8	71.3	180.3	750.0	
Total, 1978		1.8	472.6	15.5	67.9	0.8	76.1	215.3		850.0

A-14

Soviet Allocation within Japanese Zone

(In 1,000 metric tons)

<u>Species</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Sardine and Mackerel	318	450	500
Pollock	80	70	30
Remonema ("Itohiki-dara")	138	90	80
Saury	20	10	10
Sand lance	30	10	10
<u>Other</u>	<u>64</u>	<u>20</u>	<u>20</u>
Total	650	650	650

INTERIM REPORT ON JAPAN-SOVIET FISHERIES NEGOTIATIONS FOR 1980

On November 27, Japan and the Soviet Union presented their first proposals for catch allocations in each other's 200-mile zones for 1980, as follows:

Japanese Allocation within Soviet Zone, 1980

<u>Species</u>	<u>1979 Allocation (1,000 mt)</u>	<u>1980 Japanese Demand (1,000 mt)</u>	<u>1980 Soviet Proposal (1,000 mt)</u>
Pollock	300.0	318.8	200.0
Flounder	20.9	20.8	16.4
Pcean perch	14.7	17.0	10.0
Pacific Cod	30.1	33.5	30.1
Wachna Cod	15.5	15.5	15.5
Saury	68.6	73.6	46.3
Atka mackerel	11.7	11.7	11.3
Sand lance	43.8	43.8	44.0
Sharks(excl. Dogfish)	1.2	1.2	1.2
Tuna & Skipjack	6.4	7.0	6.4
Squid	142.9	156.2	170.0
Octopus	3.6	3.8	3.6
Korean hair crab	0.8 (1.64 mil. crabs)	0.8	0.8
Brown King Crab	0.8 (0.5 mil. crabs)	1.0	0.8
Tanner Crab	2.5 (4.2 mil. crabs)	3.0	2.5
Red Tanner Crab	2.5 (4.9 mil. crabs)	3.0	2.6
Shrimp	0.5	1.5	0.5
Snail	3.0	5.5	3.0
Rattail	0	0	10.0
Anchovy	0	0	5.0
<u>Other</u>	<u>80.9</u>	<u>82.3</u>	<u>70.0</u>
Total	750.0	800.0	650.0

Proposed

Soviet Allocation within Japanese Zone, 1980

<u>Species</u>	<u>1979 Allocation (1,000 mt)</u>	<u>1980 Soviet Demand (1,000 mt)</u>	<u>1980 Japanese Proposal (1,000 mt)</u>
Sardine	} 450.0	} 550.0	190.0
Mackerel			190.0
Pollock	70.0	20.0	20.0
Remonema(Itohiki-dara)	90.0	50.0	50.0
Saury	10.0	10.0	10.0
Sand lance	10.0	0	-
Other	20.0	20.0	20.0
Species (other than Sardine & Mackerel) to be determined with USSR	<u>0</u>	<u>-</u>	<u>170.0</u>
Total	650.0	650.0	650.0

SOURCE: Nihon Keizai Shimbun, 11/29/79
Suisan Keizai Shimbun, 11/29/79

Y.N.

memorandum

DATE: September 3, 1980

REPLY TO
ATTN OF: Y. Nasaka

SUBJECT: Japan-Soviet Joint Fishing Operations for Tanner Crab, 1980

TO: Regional Fisheries Attache

Four Japan-Soviet joint fishing operations for tanner crab are under way for 1980 (see attached) in the Soviet Zone, approved both by USSR and the Japan Fisheries Agency.

Of particular interest for 1980 is the fact that:

- (1) The fishing area has been expanded to the so-called triangle area (marked B in the attached map) from the Olyutol-Navarin area (marked C and D) in 1979;
- (2) The total quota has been increased;
- (3) The fishing (Cooperation) fee has been increased by 17% to US\$620/mt of tanner crab in 1980 from US\$530/mt in 1979; and
- (4) The price to be paid for the Soviet catch has been somewhat lowered to \$1,300/mt in terms of crab section (60% of yield from round crab) in 1980 from \$1,380/mt in 1979.



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

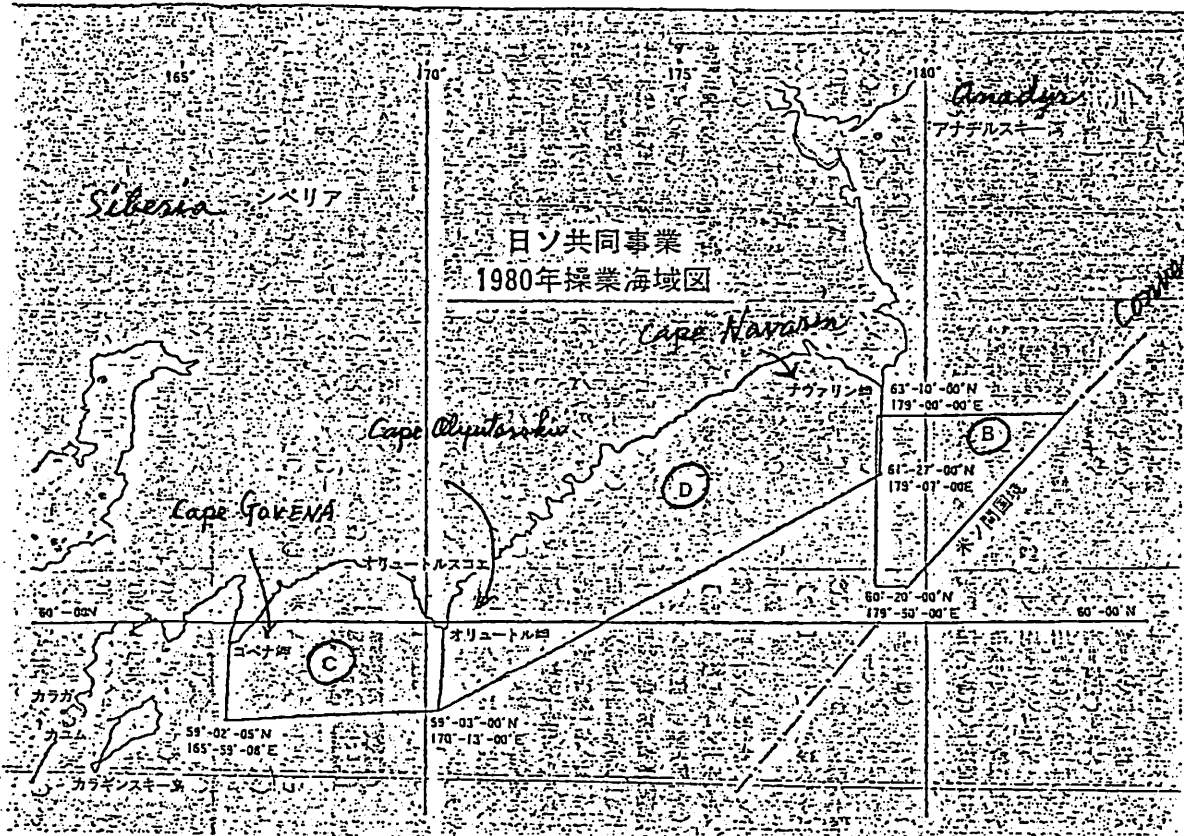
OPTIONAL FORM NO. 10
(REV. 7-76)
GSA FPMR (41 CFR) 101-11.6
5010-112

Japan-Soviet Joint Fishing Operations for Tanner Crab, 1980

<u>Japanese Companies</u>	<u>Species, Quota, Allowance and Fee</u>	<u>Japan's Buying from USSR, and Price</u>	<u>Area</u>	<u>Season</u>
1. Hoko Suisan Co. and Nichiro Gyogyo Co. (6 vessels by Japan &) (2 vessels by USSR)	Tanner crab 3,350 mt including 12% of bycatch of Blue king crab \$620/mt of round crab	Tanner crab 500 mt \$1,300/mt in terms of section	C, D, B	June - Oct. 15, 1980
2. Taiyo Gyogyo Co. (4 vessels by Japan &) (the same 2 vessels) (by USSR as above)	Tanner crab 1,300 mt including 10% of bycatch of blue king crab and shrimp 300 mt \$620/mt of round crab	Tanner crab 150 mt \$1,300/mt in terms of section	C, D, B	June - Oct. 30, 1980
3. Kushiro Kyodo Suisan (2 vessels by Japan)	Tanner - 1,235 mt Blue king - 150 mt Brown king - 500 mt Total 1,885 mt \$620/mt of round crab	No buying from USSR	C, D, B	June - Oct. 30, 1980
4. Hoppo Zuwai-gani Kyokai (3 vessels by Japan)	Tanner crab - 1,000 mt Shrimp 100 mt \$610/mt of round crab (\$10 cheaper due to distance to Area B) \$1,600/mt of shrimp	No buying from USSR	B only	Aug. - Oct. 30, 1980

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Japan-Soviet Joint Fishing Operations for Tanner Crab, 1980



APPENDIX IV

Note: This is a copy (of a copy) of a letter of explanation given to members of a National Marine Fisheries Service Trade Mission to Japan at a meeting of the Japan Marine Products Importers Association, Tokyo, June 4, 1979 along with a membership list and an attendance list for the meeting. The source of this letter was one of the members of the Trade Mission.

Gentlemen :

We are pleased to give hereunder a brief commentary regarding the Organization, Japan Marine Products Importers Association.

This association, presently being a voluntary organization, is scheduled to start as a juridical corporation after the Governmental approval by the end of this year. The function of the organization will remain unchanged.

- (1) The number of the member companies are 57, with the present board of the association being as follows :

President : from Mitsubishi Corporation
 Vice President : from Mitsui & Co. Ltd.
 Marubeni Corporation
 C. Itoh & Co. Ltd.
 Tohoku Ltd.
 Tokyo Maruichi Shoji Co. Ltd.
 Toyo Menka Kaisha Ltd.

- (2) With the head office in Tokyo, there are 4 committees working specially for kinds of fish. Namely,

<u>Name of Committee</u>	<u>Chairman from</u>
Tuna Committee	Mitsubishi Corporation
Shrimp --	"
Octopus & Squid --	Taiyo Fishery Co. Ltd.
Fish Roe --	Marubeni Corporation

Apart from the four committees, there are other two councils in Seattle and Las Palmas.

- (3) Majority of Japan's import of Marine Products are through the member companies and here are examples of percentage which shows the share of imports through the member companies.

Tuna	90%
Shrimp	85%
Octopus	95-99%
Squid	80%
Herring Roe	90%
Salmon Roe	90%
Capelin	90%
Crab	90% (Alaskan/Canadian origin)
Salmon	90% (" ")
Other fish	70%

- (4) The basic policy of this association is to guide the member companies to import marine products from overseas at reasonable prices for adequate quantities, keeping an orderly purchasing manner.

JAPAN MARINE PRODUCTS IMPORTERS ASSOCIATION

Members present at 10:45 a.m. meeting June 4

SANSHI KAIKAN 8TH FLOOR
1-7 YURAKUCHO CHIYODA-KU
TOKYO

Telephone: (212) 0636 ~ 8
Cable Address: "FISHIMPORT"

米國水産物販売使節団との懇談会

昭和54年6月4日 10時30分

於 蚕糸會館 A 會議室

会社名	氏名
NIPPON SUISAN KAISHA LTD.	S. YAMAMOTO, K. KATO
C. ITOH & CO., LTD.	H. HARASHIMA
TAJIMA TRADING CO. LTD.	T. WAKUI
ITOYOKENDO CO. LTD.	K. MORIMOTO
TOKYO MARUICHI SHOJI CO. LTD.	H. ITOH
KYOKUYO CO. LTD.	M. UENO
NICHIDO GIYARO	M. SUZUKI
MITSUI & CO. LTD.	T. YAMAMOTO
IOEI TRADING CO., LTD.	M. FUJISAWA
ALASKA BOEKI CO., LTD.	T. TAGA, S. SUKEMASA
U.S.C. Trading Co., Ltd.	R. Mochizuki
JOPTRADE JAPAN LTD.	M. UJIE
水産庁水産流通課	M. NINOMIYA
EASTERN PRODUCTS CO., LTD.	T. NAKANO
Japan Marine Products Importers Assn	N. Hagiwara, H. Ando

JAPAN MARINE PRODUCTS IMPORTERS ASSOCIATION

Yurakucho Bldg., No. 1014
10-1, 1-chome Yurakucho, Chiyoda-ku,
TOKYO
Tel. (03) 212-8636/8
Cable Address: FISHIMPORT TOKYO

Functions and Activities of the Japan Marine Products Importers Association

Organization

The Japan Marine Products Importers Association is a nationwide organization structured by 83 import companies handling marine products. The main office is located in Tokyo, with branch offices in Kansai (Osaka) and Chukyo (Nagoya). Some 95% of all imported marine products are imported through the members of the Association.

Main Work

- (1) Surveys on overseas production, processing and export environment and preparation of related materials, so that import activities may be carried out smoothly.
- (2) Guidance in overseas fishing and processing technology
- (3) Domestic market surveys and encouragement of demand
- (4) Publicity; Overseas PR activities of Japanese market conditions; domestic PR activities to promote efficient use of resources
- (5) Exchange of itemized product informations
- ✓(6) Mediation in settling claims in cases of poor quality or insufficient weight of imported goods
- (7) Acting as a liaison between governments of exporting nations and the Japanese authorities concerned; answering inquiries from both sides
- ✓(8) Offering courses and seminars on such topics as the proper use of food additives and measurement of quantities remaining in food
- (9) Policies and measures to prevent violation of the Food Sanitation Law (voluntary testing of imported products)
- (10) In addition to the above, measures helpful to association members (en bloc application for certification forms, en bloc application for notifications of importation, formulation of import programs)
- (11) Publication of data (statistics, product information guidebook, etc.).

(Source: obtained from the office of the Regional Fisheries
Attache, United States Embassy, Tokyo, September, 1980)

LIST OF MEMBERS

(1980)

JAPAN MARINE PRODUCTS IMPORTERS ASS'N

Yurakucho Building

10-1, 1-chome, Yurakucho, Chiyoda-ku,

TOKYO

Tel. (03) 212-8636/8

Cable Address FISHIMPORT TOKYO

ALASKA BOEKI CO., LTD.

4-1, 3-chome Marunouchi, Chiyoda-ku, Tokyo 100.
 Phone. (03) 212-2611 Cable. ALAPUL TOKYO
 Telex. J22417
 Salmon, Salmon Roe, Herring Roe, Other Fish.

ALL NIPPON AIRWAYS TRADING CO., LTD.

Sales Sec. 1, Sales Dept. 1
 Kasumigaseki Bldg., 4F 3-2-5, Kasumigaseki,
 Chiyoda-ku, Tokyo 100.
 Phone. (03) 580-3561
 Telex. J29414
 Frozen Shrimp.

ATAKA PRODUCE CO., LTD.

Marine Dept.
 Mori Bldg., No. 20, 2-7-4 Nishi-Shinbashi,
 Minato-ku, Tokyo 105.
 Phone. (03) 504-8241 Cable. ATAKAPROCO
 Telex. J22568 ATAKAPRO
 Tuna, Shrimp, Salmon, Crab and Other Marine Products.

C. ITOH & CO., LTD.

Marine Products Dept.
 4 Nihonbashi-Honcho 2-chome, Chuo-ku, Tokyo 103.
 Central P.O. Box 136, Tokyo
 Phone. (03) 245-7195 Cable. "CITOH TOKYO"
 Telex. J22295, J22296, J22297
 Tuna, Eel, Shrimp, Octopus, Crab.

CO-OPTRADE JAPAN LTD.

(EXPORT & IMPORT ORGAN OF JAPANESE
 CONSUMERS' CO-OPERATIVE UNION)
 Seikyo Kaikan, 1-13, 4-chome Sendagaya, Shibuya-ku,
 Tokyo 151.
 Phone. (03) 404-3251 Cable. COOPTRADE TOKYO
 Telex. J23393 COOPTR
 Frozen Herring, Herring Roe, Salmon, Salmon Roe,
 Capeline, Squid, Shrimp.

**DAIMARU KOGYO KAISHA, LTD.
TOKYO OFFICE**

10-9, 2-chome Ginza, Chuo-ku, Tokyo 104.
 Phone. (03) 544-9123 Cable. DAIMARUKO TOKYO
 Telex. J24396
 Salmon, Herring Roe, Crab, Shrimp, Salmon Roe.
 Other marine products.

EASTERN PRODUCTS CO., LTD.

Marine Products Dept.
 Tokyo-Kaijo-Bldg., 2-1, 1-chome Marunouchi,
 Chiyoda-ku, Tokyo 100.
 Phone. (03) 212-7861 Cable. EASTERNPRO TOKYO
 Telex. J26285 EPCTOBU
 Frozen Shrimp, Cuttlefish, Octopus, etc.

EBIJO & CO., LTD.

Sales C Dept.
 23-5, Tsukiji 6-chome, Chuo-ku, Tokyo 104.
 Phone. (03) 542-1361 Cable. SHRIMPRAWN TOKYO
 Telex. 252-2369
 Shrimp, Prawn, Crab, Cuttlefish, etc.

EBINO DAIMARU CO., LTD.

21-7, 6-chome Tsukiji, Chuo-ku, Tokyo 104.
 Phone. (03) 541-7281 Cable. EBIDAI
 Telex. 252-3826
 Shrimp and Allied Products

FUSO TRADING CO., LTD.

Naka Bldg., 14-17, 2-chome Tsukiji, Chuo-ku,
 Tokyo 104.
 Phone. (03) 541-5581 Cable. BACKBONE TOKYO
 Telex. J28650 BACKBONE
 Shrimps, Salmon, Cuttle-fish, Crabs, Abalone and
 Other fish.

HANWA CO., LTD. TOKYO

13-10, 1-chome Tsukiji, Chuo-ku, Tokyo 104.
 Phone. (03) 544-2323, 2342, 2350
 Cable. HANWASAMA TOKYO
 Telex. (252) 2342, 2358
 Shrimp, Salmon, Salmon Roe, Herring, Herring Roe,
 Shell Fish.

HAKODATE KOKAI GYOGYO CO., LTD.

Business Dept.
 1-3-9, Higashi-Shinbashi, Minato-ku, Tokyo 105.
 Phone. (03) 573-1133
 Cable. KOKAI FISHERY TOKYO
 Telex. 252-2669
 Salmon, Shrimp, Crab, Squid.

HOKKAIDO FISHERIES CO., LTD.

International Dept.
 Shinbashi Bldg., 3-9, 1-chome Higashi-Shinbashi,
 Minato-ku, Tokyo 105.
 Phone. (03) 573-1122 Cable. GYOGYOKOSHA
 TOKYO Telex. 252-2541 HGK. T. J.
 Frozen Salmon, Salmon Roe, Herring Roe.

HOKO FISHING CO., LTD.

2-4, 1-chome Tsukiji, Chuo-ku, Tokyo 104.
 Phone. (03) 542-5411 Cable. "HK SUISAN TOKYO"
 Telex. 0252-2933 TOK, 0252-3337
 Shrimp, Cuttlefish, Sillago, Octopus, Salmon Roe, etc.

HOKOKU MARINE PRODUCTS CO., LTD.

2nd Section Northern Dept.
 9-13, Tsukiji 7-chome Chuo-ku, Tokyo 104.
 Phone. (03) 541-1731 Cable. HMPCOLTD TOKYO
 Telex. 2522258
 Salmon, Salmon Roe.

HOKUYO SUISAN CO., LTD.

Sales Dept.
 Hokoku Suisan Bldg., 9-13, Tsukiji, 7-chome,
 Chuo-ku, Tokyo 104.
 Phone. (03) 542-2571 Cable. HOKUYO SUISAN
 TOKYO Telex. 252-2987
 Fish meal, "SURIMI" Crab, Fish oil, Shell, Prawn,
 Frozen fish.

HOHMEI CO., LTD.

4-3-8, Tsukiji, Chuo-ku, Tokyo 104.
 Phone. (03) 543-6435 Cable. ABSEAHOHMEI
 Telex. 252-4579 HOHMEI J
 Frozen Prawns, Fresh & Alive Fish (Hamo Itoyori
 Tachiuo etc.) Fresh & Alive Lobster, Dried Salte Flying
 Fish Eggs.

HOEI TRADING CO., LTD.

Marine Product Dept.
 9F Mitsuseimei Bldg., 2-3, 1-chome Ote-machi,
 Chiyoda-ku, Tokyo 100.
 Phone. (03) 214-3981 Cable. HOEIGHCOM TOKYO
 Telex. 2224193 FUOILC J.
 Salmon, Salmon Roe, Herring, Herring Roe, Fish, n.e.s.

INTERNATIONAL MARINE PRODUCTS CO.

1-17, 4-chome Tsukiji, Chuo-ku, Tokyo 104.
 Phone. (03) 542-5241 Cable. IMPCO TOKYO
 Telex. J23384 IMPCOTOK
 Fish and Shell Fish (Frozen).

ITOMAN & CO., LTD.

Mori Bldg., No.20 7-4, Nishishinbashi 2-chome,
 Minato-ku, Tokyo 105.
 Phone. (03) 504-8130 Cable. "ITOMAN TOKYO"
 Telex. J22810
 Shrimp (Prawn), Lobster, Squid (Cuttlefish), Salmon,
 Salmon Roe, Snapper, Abalone and other seafoods.

ITO-YOKADO CO., LTD.

Trading Dept.
 5 Sanban-cho Chiyoda-ku, Tokyo 102.
 Phone. (03) 264-2111 Cable. "YORKSHOP" TOKYO
 Telex. J23841

IWAKIRI SUISAN K.K.

Iwakiri Suisan. Kushiro Eigyosyo
 Fukuko Uoageba, 3-15, Hamamachi, Kushiro-shi,
 Hokkaido 085.
 Phone. (0154) 23-1648
 Salmon, Salmon Roe, Herring Roe, Shrimp, Other Fish.

KAIKO INC.

6F Naka Bldg., 14-17, 2-chome Tsukiji Chuo-ku,
 Tokyo 104.
 Phone. (03) 542-6301 Cable. KAIKOINC TOKYO
 Telex. 2524659 KAINC J
 Marine Product.

KANEMATSU-GOSHO LTD.

Foodstuff Dept. NO. IV
 14-1, 2-Chome, Kyoobashi, Chuo-ku, Tokyo 104.
 Phone. (03) 562-7028 Cable. KANEGOLD TOKYO
 Telex. 252-2991
 Shrimp, Octopus, Salmon roe, Cuttlefish/Squid, Herring
 Roe, etc.

KASHO COMPANY LTD.

Marine Products Div.
 14-9, 2-chome Nihonbashi, Chuo-ku, Tokyo 103.
 Phone. (03) 272-5011 Cable. KASHOCOY TOKYO
 Telex. 222-2393, 222-3886, 222-3887
 Shrimp, Salmon Roe, Herring Roe, Salmon, Cuttlefish,
 Squid, Jelly fish, Octopus.

KOBE YOKO LTD.

9th Floor K.I.M.M. Bldg., 4-2-8 Isobe-Dori, Fukiai-ku,
 Kobe 651.
 Phone. (078) 232-3821
 Cable. KOBAYOKO KOBE
 Telex. J78838 KOBAYOKO
 Frozen Prawns/Shrimps, Lobsters, Cuttle Fish, Abalone,
 Salmon, Scallops, Fish & Salted Herring Roe.

KYOKUYO CO., LTD.

Trading Dept.
 1-1, 2-chome Marunouchi, Chiyoda-ku, Tokyo 100.
 Phone. (03) 211-5461 Cable. CHIYODAKYOKUYO
 Telex. 222-2493 (KYOKUA J)
 Shrimp (Lobster), Salmon Roe, Herring Roe, Crab,
 Cuttlefish.

THE MARINE FOODS CORPORATION

Purchasing Dept.
 1-5-1 Shibasaki, Chofu, Tokyo 182.
 Phone. (0424) 82-1111, 88-0001
 Cable. MARINE FOODS CHOFU
 Cuttlefish, Squid, Abalone, Top Shell, Clam, Crab,
 Shrimp, Fish Roe, Jelly fish.

MARUBENI COLDSTORAGE CO., LTD.

13-22, 4-chome Shibaura, Minato-ku, Tokyo 108.
 Phone. (03) 451-9301 Cable. TOKYO MINATO
 BENIREI Telex. 242-4602 (BENIREI J)
 Tuna, Black Cod, Red Snapper.

MARUBENI CORPORATION

Marine Products Dept.
 4-2, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100.
 Phone. (03) 282-4750 Cable. MARUBENI TOKYO
 Telex. J22326/8
 Tuna, Herring Roe, Salmon Roe, Shrimp, Octopus,
 Cuttlefish, etc.

MEIWA TRADING CO., LTD.

3-1, 3-chome Marunouchi, Chiyoda-ku, Tokyo 100.
 Phone. (03) 212-8151 Cable. MEIWA TOKYO
 Telex. J22336, J26746
 Shrimp, Cuttlefish, Herring Roe, Flying Fish Eggs and
 Jellyfish.

MITSUBISHI CORPORATION

Marine Products Dept.
 3-1, 2-chome Marunouchi, Chiyoda-ku, Tokyo 100.
 Phone. (03) 210-6700 Cable. MITSUBISHICORP
 TOKYO Telex. J22222-5 222-2071/222-6333
 Tuna, Cuttlefish, Octopus, Shrimp, Herring Roe, etc.

mitsui & CO., LTD.

Second Provisions Division.
 2-1, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100.
 Phone. (03) 285-5964 Cable. MITSUI TOKYO
 Telex. 222-2001
 Frozen Shrimp, Frozen Tuna, Frozen Octopus, Salmon
 Roe, Frozen sepia, Frozen Herring Roe, etc.

NAKAMURA SUISAN CO., LTD.

3-15, 3-chome Kaigan, Minato-ku, Tokyo 108.
 Phone. (03) 452-3756 Telex. 2422503 NAKAUO J
 Salmon, Salmon Roe, Herring, Herring Roe, Flying Fish,
 Mullet, Cuttle Fish.

NEMURO SUISAN COMPANY, LTD.

7-18, 5-chome Chuo, Nakano-ku, Tokyo 164.
 Phone. (03) 381-2725
 Frozen Salmon, Frozen Crab, Salted Salmon Roe, Salted
 Herring Roe.

NEW TOYO SEA FOODS CO., LTD.

Ishikawa Bldg., 20-1, 2-chome, Misaki-cho,
 Chiyoda-ku, Tokyo 101
 Phone. (03) 262-4408, 264-4373
 Cable. NEWSEAFOOD TOKYO, BANERJI TOKYO
 Telex. J25220 NEWFOOD
 Frozen Shrimp, Frozen Cuttlefish, Marine Product.

NICHIMEN CO., LTD.
Marine Products Section.
13-1, 1-chome Kyoobashi, Chuo-ku, Tokyo 104.
Phone. (03) 566-2289 - 2295 Cable. TYNICHIMEN
TOKYO Telex. J22620
Shrimp, Tuna, Skipjack, Salmon, Herring Roe & General
Marine Products.

NICHIMO CO., LTD.
Commodities Supply Dept.
Nippon Bldg., 6-2, 2-chome Ohtemachi, Chiyoda-ku,
Tokyo 100.
Phone. (03) 245-4895 Cable. NICHIMOCOMPANY
TOKYO Telex. 222-2552 & 222-6874 NITIMO
Salmon, Salmon Roe, Herring Roe, Black Cod, Cuttlefish,
Squid, Shrimp, Lobster, Abalone, Sea Urchin, Cod Roe,
Crab, Mullet Roe, Caviar, Red Snapper, General Fish etc.

NICHIRO GYOGYO KAISHA, LTD.
(NICHIRO FISHERIES CO., LTD.)
Foreign Trade Dept.
12-1, 1-chome Yuraku-cho, Chiyoda-ku, Tokyo 100.
Phone. (03) 214-6161 Cable. NICHIROGYO TOKYO
Telex. 222-3661 NICHIR J
Shrimp, Prawn, Lobster, Tuna, Octopus, Squid, Herring
Roe, Salmon Roe, Salmon, Trout, Whale meat, etc.

NIHON HOGEI CO., LTD.
Eigyō-bu.
Iino-bldg., 1-1, 2-chome, Uchisaiwai-cho, Chiyoda-ku,
Tokyo 100.
Phone. (03) 506-5380, 506-5393
Cable. NIHONHOGEICO TOKYO
Telex. 2222869 NIHOCO J
Frozen Fish, Fish meal and oil, Frozen Shrimp.

NIPPON REIZO KABUSHIKI KAISHA
Foreign Trade Division.
3-23, 3-chome, Misaki-cho, Chiyoda-ku, Tokyo 101.
Phone. (03) 237-2221, 2231 Cable. NICHIREI TOKYO
Telex. J22450, J25340
Shrimp, Abalone, Cuttlefish, School Whiting, Octopus, etc.

NIPPON SUISAN KAISHA, LTD.
6-2, 2-chome Ohtemachi, Chiyoda-ku, Tokyo 100.
Phone. (03) 244-7000 Cable. NISSUI TOKYO
Telex. 2222260, 2222271, 2222277, 2222383
Frozen Sea Food, Canned Food, Others.

NICHIRYO LTD.
2-1, 2-chome Azabudai, Minato-ku, Tokyo 106.
Phone. (03) 584-0151 Cable. FEEDSTUFF
Telex. 2422136 NICRYO
Cuttlefish or Squid, Shrimp, Herring Roe, Clam,
Mackerel-Pike, etc.

NISSHO-IWAI CO., LTD.
Marine Products Section.
Nissho-Iwai Bldg., 4-5, 2-chome Akasaka, Minato-ku,
Tokyo 107.
Phone. (03) 588-2111 Cable. NISSHOIwai TOKYO
Telex. J22233
Prawn, Tuna, Octopus, Cuttle fish, Melurusa.

NOMURA TRADING CO., LTD.
TOKYO BRANCH
Tokyo Marine Products Dept.
Shin-Yaesuguchi Bldg., 2-2-1, Yaesu, Chuo-ku,
Tokyo 104.
Phone. Section No.1 (03) 277-4765 - 4770
Section No.2 (03) 277-4771 - 4775
Cable. NOMURABO
Telex. J22396, J22964
Section No.1: Shrimp, Prawn, Lobster.
No.2: Salmon, Tuna, Crab, Shellfish, Cuttlefish,
Octopus, Fish Roe.

**NORTH BORNEO FISHING CO.,
(JAPAN) LTD.**
Tanaka-Yaesu Bldg., 5-15, 1-chome Yaesu, Chuo-ku,
Tokyo 103.
Phone. (03) 273-5746/8 Cable. BORNSHIRIMP
Telex. 2226364 SUEDA J.
Shrimps, Frozen.

NOZAKI & CO., LTD.
Farm & Sea Products Dept.
16-19, 7-chome Ginza, Chuo-ku, Tokyo 104.
Phone. (03) 542-9211 Cable. NOZAKI TOKYO
Telex. J22375
Cuttlefish, Octopus, Herring Roe, Salmon Roe, Capelin.
Salmon, Herring, Shrimp, Crab.

OKAYA & CO., LTD.

Foodstuff Dept.

Time Life Bldg., 3-6 Ohtemachi 2-chome,

Chiyoda-ku, Tokyo 100.

Phone. (03) 270-9811

Cable. SASASO or OKAYASTEEL TOKYO

Telex. OKAYA J22245

Frozen Prawn & Lobster, Crab, Frozen & Salted Salmon
& its Roe, Bottom fish, Red snapper, Black Cod.**OKURA & CO., LTD.**

Hide, Livestock & Marine Products Dept.

Toshida Bldg., 6-11, 1-chome Ginza, Chuo-ku,

Tokyo 104.

Phone. (03) 563-6051 Cable. OKURA TOKYO

Telex. J-22306

Shrimp, Cuttlefish, Salmon, Herring Roe, Salmon Roe,
etc.**OSAKA GODO CO., LTD.**

Overseas Division.

6-4, 2-chome Nihonbashi-Honcho, Chuo-ku,

Tokyo 103.

Phone. (03) 665-8415 Cable. KUHOJIMURA TOKYO

OSAKA GODO TOKYO

Telex. 252-2212 (OG TB J) 252-4377 (OG TB J)

Frozen Shrimp.

OVERSEA FISHERY DEVELOPMENT LTD.

No.504 Co-op Hamamatsucho,

15-5, 1-chome Hamamatsucho, Minato-ku, Tokyo 105.

Phone. (03) 431-9589 Cable. ASSISTANTENTER

Telex. J27529 FISHERY

Shrimp, Octopus, Cuttle-fish.

SAIKI SHOJI CO., LTD.

Hibiya Park Bldg., 8-1, 1-chome Yuraku-cho,

Chiyoda-ku, Tokyo 100.

Phone. (03) 271-4768 Cable. CANSAIKI

Telex. CANSAIKI J26123

Shrimps, Abalone, Salmon, Herring Roes, Other Fish.

SANYO SHOKUHIN CO., LTD.

Overseas Operation Dept.

2-10-4, Eitai, Koto-ku, Tokyo 135.

Phone. (03) 642-1434 Cable. SSF SANYO

Telex. 262-2633

Frozen Salmon, Salmon Roe, Herring Roe.

SANYO SUISAN CO., LTD.

1-3-4, Tsukiji, Chuo-ku, Tokyo 104.

Phone. (03) 542-8971 Cable. SANYOFISH TOKYO

Telex. J25507

Cuttle-fish, Squid, Shrimp, Salmon, Herring Roe, Cod-Roe,
Sillago, Sea-bream.**SANYO TRADING CO., LTD.**

Agriculture & Marine Products Dept.

11, 2-chome, Kanda-Nishikicho, Chiyoda-ku,

Tokyo 101.

Phone. (03) 292-3411 Cable. PHOENIX TOKYO

Telex. J28470 PHOENIX

Frozen Shrimp, Lobster, Squid, Horse mackerel,
Short Necked Clam, Dried Squid.**SHIBAMOTO & CO., LTD.**

Import Section.

1-12, 1-chome Minato, Chuo-ku, Tokyo 104.

Phone. (03) 553-1111, 552-4231

Cable. "SIBASTEKO" TOKYO

Telex. J23621 SIBAMOTO TOKYO

Shrimp, Cuttlefish, Octopus, Salmon and Herring Roe.

SHINYEI KAISHA

Marine Products Dept. International Div. No.3

77-1, Kyomachi Ikuta-ku. Kobe 651-01.

(P.O. Box 178 KOBE PORT)

Phone. (078) 321-1121. Cable. SHINYEI

Telex. SHINYEI J78821

Marine Products.

SUMITOMO CORPORATION

Marine Products Sect.

No. 2 Nishikicho Bldg., 24-1, 3-chome Kandanishiki-cho,

Chiyoda-ku, Tokyo 100.

Phone. (03) 296-3853/61 Cable. SUMITSHOJI

TOKYO Telex. J22202, J22203, SUMITOMO J22202

Frozen Shrimp, Herring Roe, Salmon Roe, Salmon,
Cuttlefish.**TAITO SEIKO CO., LTD.**

Marine Products Division, Overseas Trade Dept.

Imaasa Bldg., 1-21, 1-chome, Higashi-Shinbashi,

Minato-ku, Tokyo 105.

Phone. (03) 572-3231 Cable. TAITOROPE TOKYO

Telex. 252030 TAITO J, TAITO J25306

Squid, Herring, Capelin, Tuna, Salmon, Herring Roe,
Salmon Roe, Lobster, Smelt, Saury.

**TAIYO GYOGYO KABUSHIKI KAISHA
(TAIYO FISHERY CO., LTD.)**

Foreign Trade Dept.
1-2, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100.
Phone. (03) 216-0811 Cable. OCEANFISH TOKYO
Telex. J22278, J24335, J26846
Shrimp, Tuna, Salmon, Crab, Cuttlefish, Octopus,
Herring-Roe, Salmon-Roe, etc.

TAIYO-NOSUISAN CO., LTD.

Overseas Dept.
2-1, 3-chome, Tamagawa, Fukushima-ku, Osaka 553.
Phone. (06) 443-8651
Telex. 252-4326
Shrimp, Prawn, Salmon, Salmon Roe, Herring Roe,
Cuttle fish, Octopus, Horse mackerel, Crab, Spanish
mackerel.

TAKAEI TRADING CO., LTD.

22-4, 6-chome, Tsukiji, Chuo-ku, Tokyo 104.
Phone. (03) 542-4791 Cable. TAKAEISHOTEN
Telex. 252-3736
Tuna, Salmon, Red Sanpper & Other Frozen Fish.

TOKYO COMERCIAL CO., LTD.

Import Section.
Playguide Bldg., 6-4, 2-chome Ginza, Chuo-ku,
Tokyo 104.
Phone. (03) 562-2541 Cable. "TOCOMCO" TOKYO
Telex. 252-2432
Frozen Tuna and Tunalike Fish, Shrimp, Prawn and
Lobster, Cuttle-fish, Octopus, Abalone.

TOKUSUI CO., LTD.

Foreign Business Section.
Tokyo Suisan Kaikan Bldg., 4F, 5-9, Toyomi-cho,
Chuo-ku, Tokyo 104.
Phone. (03) 533-5121 Telex. 2522697 TOKUSUI J
Frozen Shrimp, Frozen Squid, Frozen Fish.

TOKYO MARUICHI SHOJI CO., LTD.

16-9, 2-chome Uchikanda, Chiyoda-ku, Tokyo 101.
Phone. (03) 256-1111 Cable. MARUICHI SHOJI
TOKYO Telex. J22427
Frozen Prawn, Frozen Cuttlefish Octopus and other
Frozen Fishes and Salted Herring-Roe, Salted Salmon-Roe
and other Salted or Dired Fish or Fish Products.

TOSHIN SUISAN CO., LTD.

Tsukijinagatani-coop No.401
7-18-28, Tsukiji, Chuo-ku, Tokyo 104.
Phone. (03) 543-1606
Salmon, Salmon Roe.

TOSHOKU LTD.

Marine Products Dept.
2-4, Muromachi, Nihonbashi, Chuo-ku, Tokyo 103.
Phone. (03) 245-2211 Cable. TOSHOKU LTD. TOKYO
Telex. 2223311-2223315
Frozen Tuna, Shrimp, Salmon, Octopus, Cuttlefish,
Salmon Roe, Crab, Cod, Black Cod, Smelt, Eel.

TOYO MENKA KAISHA, LTD.

Marine Products Dept.
Iino Bldg., 1-1, 2-chome Uchisaiwai-cho, Chiyoda-ku,
Tokyo 100.
Phone. (03) 506-3462, 3411, 3391
Cable. TOYOMENKA TOKYO
Telex. J22421, J22548, J22332
Shrimp, Cuttlefish, Octopus, Herring Roe, Salmon Roe,
etc.

TOYO SUISAN KAISHA, LTD.

Fish Business Dept.
13-40, 2-chome Kohnan, Minato-ku, Tokyo 108.
Phone. (03) 471-5127 Cable. MARUTOFISH TOKYO
Telex. J28606
Salmon Roe, Herring Roe, Tunner Crab, King Crab,
Shrimp, Eel, Wakame, Bottom Fish, Salmon.

TOYODA TSUSHO KAISHA, LTD.

Foodstuff Section.
7-2, Yaesu, Chuo-ku, Tokyo 104.
Phone. (03) 277-2761/5 Cable. TOYOSAN TOKYO
Telex. J22827
Frozen Fish, Frozen Shrimp, Frozen Squid, Frozen
Abalone, Living Akagai, Living Crab, Seasoned Cuttle-
fish, and others.

WAKO TRADING CORPORATION

Dai-ichi Bldg., 10-4, 2-chome Nihonbashi, Chuo-ku,
Tokyo 103.
Phone. (03) 271-5421 Cable. YAOHANGROUP
Telex. 2226978 YAOHAN J
Frozen Shrimp, Salmon, Salmon Roe, Herring Roe.

K.K. WASHINGTON FISH
(WASHINGTON FISH, INC.)
Ikeda Bldg., 5-5, 4-chome Tsukiji, Chuo-ku, Tokyo 104.
Phone. (03) 542-9301 Cable. WAFIOYCO
Telex. J24234
Shrimp, Salmon, Salmon Roe, Squid, Herring, Herring
Roe, Other Fish.

WATAHAN INTERNATIONAL CO., LTD.
c/o Watahan Nohara Bldg., 1-4 Yotsuya,
Shinjuku-ku, Tokyo 160.
Phone. (03) 357-1251 Cable. WATAHANKOKI
Telex. 2322069 WATHAN J
Farm and Marine Products, Foodstuff.

WILBUR-ELLIS CO., (JAPAN), LTD.
Foodstuff Dept.
Sanshin Bldg., 4-1, 1-chome Yuraku-cho, Chiyoda-ku,
Tokyo 100.
Phone. (03) 591-3221 Cable. WILBURELL TOKYO
Telex. J22257 WECO
Lobster, Shrimp, Fishes.

YOKOHAMA REITO K.K.
1-7, 1-chome Moriya-cho, Kanagawa-ku,
Yokohama 221.
Phone. (045) 461-6431
Telex. 3822-219
Shrimp, Cuttle fish, Sillago, Shell fish.

YUASA TRADING CO., LTD.
No. 25 Kowa Bldg., 8-7, Sanban-cho, Chiyoda-ku,
Tokyo 102.
Phon. (03) 265-4411 Cable. "YUASA" TOKYO
Telex. J22401
Shrimps, Octopus, Cuttlefish, Salmon.

SHINKO SANGYO TRADING CO., LTD.
General Products Dept. Marine Products Sect.
38, 2-chome, Kitakyutaro-Machi,
Higashi-ku, Osaka 541.
Phone. (06) 262-2121 Cable. SYSCO OSAKA
Telex. SHINKO A J63243
Salmon, Salmon Roe, Crab, Cuttle fish, Shrimp,
Herring Roe, Dried fish.

A SUPPORTING MEMBER

FUTABAGUMI EXPRESS CO., LTD.
General Dept.
19-15, 3-chome, Takanawa, Minato-ku, Tokyo 108.
Phone. (03) 447-7171 Cable. FUTAKAISO
Telex. 242-2602

INTEROCEAN SHIPPING CORPORATION
Business Dept. 1 Business Dept. 2
Iino Bldg., 1-1, Uchisaiwai-cho, 2-chome, Chiyoda-ku,
Tokyo 100.
Phone. (03) 506-5324. 2904 Cable. OCEANINTER
Telex. J2-2335 222-3775 (Domestic)

**JAPAN FROZEN FOODS INSPECTION
CORPORATION**
Toyokuni Bldg., 4-6, 2-chome, Shiba-Daimon,
Minato-ku, Tokyo 105.
Phone. (03) 438-1411 Cable. INSPECTUNA TOKYO

KANTO YUSEN UNYU CO., LTD.
Frozen Dept.
Kokuryu-koen Bldg., 2-6-15, Shiba-Koen, Minato-ku,
Tokyo 105.
Phone. (03) 436-5231
Telex. 242-2133

MAYEKAWA MFG. CO., LTD.
Plant Business Head Office.
2-13-1, Botan, Koto-ku, Tokyo 135.
Phone. (03) 642-8181 Cable. MYCOMMYK TOKYO
Telex. 0-2622344 (MYCOM J)

NAKAMURA NIYAKU UNYU K.K.
Foreign Cargo Dept.
2-3-39, Shibaura, Minato-ku, Tokyo 108.
Phone. (03) 451-4161
Telex. 246-8138

THORESEN & CO., (JAPAN) LTD.
14-9, 1-chome, Kyoobashi, Chuo-ku, Tokyo 104.
Phone. (03) 567-6526 Cable. "THORSHIP" TOKYO
Telex. 252-2163

SEA-LAND SERVICE, INC.

Alaska Japan Service.

Shinkokusai Bldg., 3-4-1, Marunouchi, Chiyoda-ku,
Tokyo 100

Phone. (03) 284-1441 Telex. J47710