ANNEX TO THE **WORLDWIDE FISHERIES MARKETING STUDY:** PROSPECTS TO 1985

U.S.A.

Government of Canada
Gouvernement du Canada
Fisheries and Oceans
Pêches et Océans

(This Report is one of a series of country and species annexes to the main study - entitled the Overview).

D R A F T

Annex to the
Worldwide Fisheries Marketing Study:
Prospects to 1985

UNITED STATES

Authors
D.B. McEachern
G. Raynes
G. Roger
L. Sonkodi
Department of Fisheries and Oceans.

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The views expressed in this Study, however, are ours alone and reflect the Canadian perception of worldwide markets.

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FOREWORD

As a consequence of global extension of fisheries jurisdictions, a radical shift has taken place in the pattern of worldwide fish supply and demand. This change is still going on and will continue for many years before a new dynamic equilibrium situation is reached. However, in the midst of this re-adjustment, a new trade pattern is emerging -- some net exporting countries are now importing and vice versa. In the longer term, some countries will experience shortages of supply and others will have a surplus. Fortunately, Canada is amongst the latter group.

The implications for the marketing of Canadian fisheries products arising from the worldwide introduction of the 200-mile limit are extensive. With our vastly improved supply position relative to world demand, government and industry are understandably concerned about ensuring that the bright promise of increased market opportunities are real and can be fulfilled. One of the steps in this process is the publication of the Worldwide Fisheries Marketing Study which assesses the global potential on a country and species basis.

Specifically, the purpose of the Study is to identify the longer term market opportunities for selected traditional and non-traditional species in existing and prospective markets and to identify factors which may hinder or help Canadian fisheries trade in world markets. To date, over 40 country markets and 8 species groups have been analyzed. It should be noted that while the information contained in the Reports was up-to-date when collected, some information may now be dated given the speed with which changes are occurring in the marketplace. In this same vein, the market projections should be viewed with caution given the present and still evolving re-alignment in the pattern of international fisheries trade, keeping in mind the variability of key factors such as foreign exchange rates, energy costs, bilateral fisheries arrangements and GATT agreements which have a direct effect on trade flows.

Notwithstanding, the findings contained in these Reports represent an important consolidation of knowledge regarding market potential and implications for improvements in our existing marketing and production practices. The results of the Study should, therefore, usefully serve as a basis for planning fisheries development and marketing activities by both government and industry in order to capitalize on the identified market opportunities.

This draft report is published for discussion purposes and as such we invite your critical comments.

Ed Wong

Marketing Services Branch.
Marketing Directorate.
Fisheries Economic Development and Marketing.
Department of Fisheries and Oceans.
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WORLDWIDE FISHERIES MARKETING STUDY
UNITED STATES

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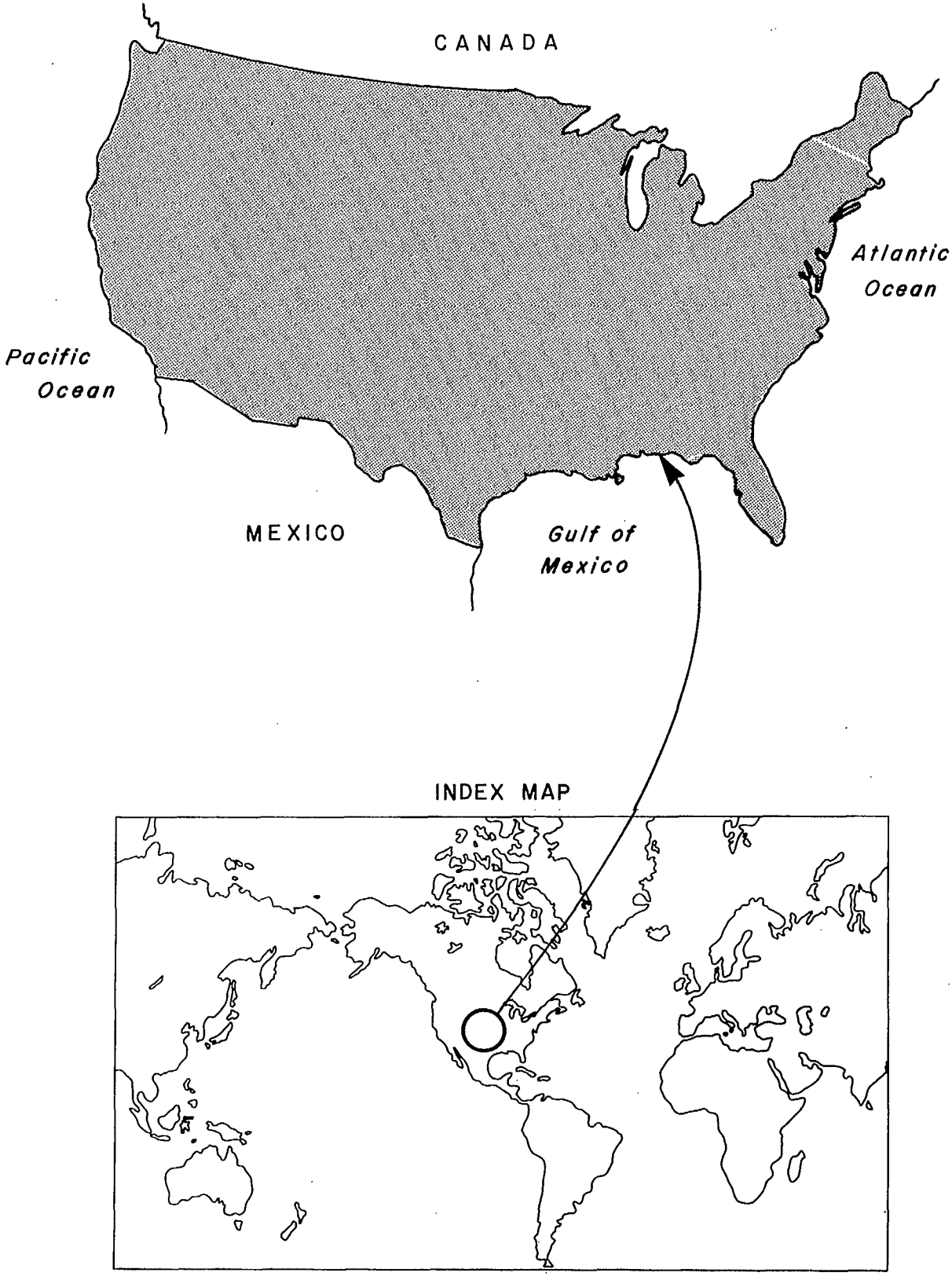
CANADA
Atlantic Ocean
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A. GENERAL OVERVIEW OF US FISHERIES

In 1979 the United States fishing industry contributed more than US $7 billion to the gross national product and employed about 260 000 people.

After the adoption of the 200-mile economic zone in March 1977, the volume of US fish landings moved upward. Total landings expanded from 2.4 million tonnes in 1976 to 2.8 million tonnes in 1979. (Appendix Table 1). In latter years the estimated world catch was 73.4 million tonnes, which means US landings accounted for 3.9% of the world harvest in 1979. In the same year Canada landed 1.5 million tonnes of fish and shellfish. The important difference between the American and Canadian fisheries is that 47% of US landings were processed into industrial products (bait and animal food) in 1979, while only a negligible proportion of Canadian landings went to industrial use.

In 1979, US consumers spent a total of $12.6 billion[1] on fishery products, about half of this on imported products. Per capita consumption of fish and shellfish expanded from 5.6 to 6.0 kilograms between 1975 and 1979.

TABLE 1

US annual per capita consumption of fish and shellfish

(kilograms, edible weight)

	Fresh & Frozen	Canned	Cured	Total
1960	2.6	1.8	0.3	4.7
1970	3.1	2.0	0.2	5.3
1975	3.4	2.0	0.2	5.6
1976	3.8	2.0	0.2	6.0
1977	3.6	2.1	0.2	5.9
1978	3.7	2.3	0.2	6.2
1979	3.6	2.2	0.14	5.9

Source: US Dept. of Commerce, Fisheries of the United States, National Marine Fisheries Service (NMFS), Washington, DC.

1) Amounts unless indicated otherwise are stated in US dollars.

US exports of fishery products have been increasing in recent years. Between 1975 and 1979 the volume of edible products exported grew from 99 000 tonnes to 251 000 tonnes and the value of total exports (edible and non-edible products) from $305 million to $1 082 million (Appendix II - IV).

TABLE 2

US exports of fishery products 1975-79

(million dollars)

	Edible	Non-edible	Total
1975	267	37	305
1976	330	55	385
1977	473	47	520
1978	832	74	906
1979	1 020	62	1 082

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS) and the Bureau of the Census, Washington, DC.

At the same time, US imports of fish products have been on the increase during the past five years. In 1979, the US imported 1.1 million tonnes of edible products as compared to 0.9 million tonnes in 1975. The combined value of edible and non-edible product imports increased from $1.6 billion in 1975 to $3.8 billion in 1979 (Appendix V - VIII).

TABLE 3

US imports of fishery products, 1975-79

(million dollars)

	Edible	Non-edible	Total
1975	1 367	270	1 637
1976	1 917	415	2 332
1977	2 078	544	2 622
1978	2 253	823	3 077
1979	2 668	1 143	3 811

Source: IBID.

The "Tokyo Round" of multilateral trade negotiations (MTN) which began in 1973 was substantially concluded in Geneva in April 1979. The negotiating parties agreed on a wide range of tariff reductions. In addition, agreements were concluded on non-tariff measures such as on subsidies and countervailing duties, government procurement, import licencing procedures, customs valuation and anti-dumping duties. The revised items of the US tariff schedule are shown in Appendix IX.

The US government announced a new fisheries policy in May 1979, aimed at substantially expanding the harvesting and processing potential of the domestic fishing industry. In 1978, the US imported $3.1 billion worth of fishery products but the value of its fish exports was only $1.0 billion, resulting in a trade deficit of $2.1 billion. It is the aim of the policy to decrease the deficit in fishery products to a maximum of $700 million by 1990.

The Department of Commerce Task Force report on fisheries development1) outlines the new policy as follows:

> "The widely varying nature of the problems in different areas of the country requires the major work of implementing a national development policy to be done on a regional basis. Federal agencies must be organized for effective interface with state and local governments and the industry in planning and implementing programs. The Administration's fishery development policy and program will provide the framework for regional efforts to produce specific solutions to industry's needs.
>
> In the future, Federal programs will concentrate on the development of non-traditional species, such as bottomfish off Alaska and squid off the East coast, and the expansion of the industry into new areas, such as the Western Pacific tuna fishery. Federal policy will be to foster the development of all sectors of the US fishing industry--including fishermen in our 200-mile zone, in the Great Lakes, US flag distant water fleets, and US processors and distributors--through a close working relationship with the industry and well-coordinated Government programs. This will involve:
>
> --providing foreign market access through Government negotiations, and through better information on market conditions and trade opportunities, to increase foreign markets and help reduce our massive trade deficit;

---

1) Toward a partnership for the development of the United States Fishing Industry, May 23, 1979.

--facilitating industry access to private venture capital for vessels, processing plants and support facilities through changes in existing regulations relating to the conditional fisheries restriction for such access and through a study of possible tax deferral benefits for shore-based facilities.

--reviewing Government regulations applicable to the industry to ensure fair and equitable treatment and an adequate basis for all regulatory actions;

--conducting research, and providing information to consumers, on the safety and nutritional value of seafoods in the American diet;

--satisfying the major fishing industry need in some regions for publicly-financed infrastructure such as ports and harbors;

--adapting existing technology and disseminating technological information to allow the industry to modernize and improve its capital facilities; and

--coordinating Federal agency personnel so that industry can work more effectively with those responsible for implementing Government programs."

This fisheries development program will enable the fishing industry and state and local governments to utilize better existing Federal Government programs for industry assistance and economic development.

In addition, the Administration will propose fisheries development legislation to ensure adequate funding of cooperative efforts between industry and government to solve the remaining development problems preventing the industry from taking full advantage of the opportunities presented by the Fishery Conservation and Management Act."

The same task force document states that: "Considering only species presently in use or species that can be used as alternatives, the US fish industry has the potential nearly to double its present catch. When development of additional species is considered for either export or introduction to the domestic market, potential US harvest could be as high as three times present harvest within a few decades."

For the purpose of this report, US landings have been estimated for 1981 and 1985. One should consider these figures only as rough approximations for a number of reasons:

1. Insufficient biological research has been done for certain species to predict potential catches.

2. It is difficult to foresee the pace of the development of the additional US harvesting and processing capability.

3. It is even more cumbersome to predict the extent of fisheries development in Alaska because of the vast capital requirements involved. The cost of production for certain lines may be too high in Alaska to produce marketable products.

4. The catch level for certain species will be dependent on the extent the US consumer is prepared to accept new products and on the development of new export markets.

5. It is difficult to judge whether certain Alaskan products will be price-competitive in the US midwest and on the Atlantic coast in competition with imports from Canada.

The forecast level of landings for 1981 and 1985 is presented in Appendix X - XIII.

When assessing future demand trends, the following official population projections were taken into account.

TABLE 4

US civilian resident population, July 1

(millions)

		Percentage increase on preceding year
1979	218.5	--
1980	220.0	1.0
1981	222.1	0.63
1982	224.2	0.96
1983	226.4	0.97
1984	228.6	0.96
1985	230.7	0.92

Source: US Bureau of the Census.

CONSUMPTION BY SPECIES

B. GROUNDFISH

Between 1970 and 1979 total US per capita consumption of all kinds of fish and shellfish expanded from 5.4 kilograms to 6.0 kilograms, an increase of 11%. During the same period the per capita groundfish consumption of fillets and blocks increased from 1.6 to 2.0 kilograms, or 25%. Within groundfish, the consumption of both fillets and blocks grew to the same extent.

TABLE 5

US per capita consumption of fish vs. groundfish, 1970-79

(kilograms per head, edible weight)

	total fish and shellfish	fillets	sticks and portions (blocks)	total
1970	5.4	0.8	0.8	1.6
1975	5.6	0.9	0.8	1.7
1976	6.0	0.9	0.9	1.8
1977	5.9[1])	0.9	0.9	1.8
1978	6.2[1])	1.0	1.0	2.0[1])
1979	5.9[1])	1.0	1.0	2.0[1])

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS).

The above table does not take into account the volume of groundfish consumed in the dressed and salted forms. In absolute terms the size of the US total groundfish market (all product forms) expanded from 433 000 tonnes in 1977 to 476 000 tonnes in 1979. (Appendix XIV).

---

1) Preliminary

The following two tables present a breakdown of the US groundfish markets for fillets and sticks and portions for 1978. The food service trade is split into a public (restaurants, fast food outlets, etc.) and a captive (hospitals, school lunch program, etc.) sector.

TABLE 6

Estimated 1978 US groundfish species utilization within major market segments (percentage total, each species)

	Portions, Sticks				Fillets**				
	Public F/S	Captive F/S	Retail	Total	Public F/S	Captive F/S	Retail	Total	Percent Total All Markets
Cod	32%	3%	5%	40%	43%	3%	14%	60%	100%
Pollock	*	28	44	72	4	18	6	28	100
Haddock	8	*	19	27	21	3	49	73	100
Flounder	*	*	*	*	58	1	41	100	100
Turbot	2	*	9	11	28	30	30	89	100
Whiting	5	45	26	76	*	24	*	24	100
Ocean Perch, Others***	6	15	29	51	2	28	19	49	100%
Total Market	16%	8%	14%	38%	31%	10%	21%	62%	100%

* Minimal

** Including blocks used by selected food service chains.

*** Including minced blocks.

NOTE: Excludes breading weight of portions.
Percentages reflect mid-points of estimate ranges.

Source: Technomic Consultants, Canadian Groundfish Export Potential to the USA Market, Chicago, Ill., 1980, for the Dept. of Fisheries and Oceans, Ottawa.

TABLE 7

Estimated 1978 US groundfish species utilization within major market segments (percentage total, each segment)

	Public F/S			Captive F/S			RETAIL			Percent Total
	Portions	Fillets	Total	Portions	Fillets	Total	Portions	Fillets	Total	All Species
Cod	89%	60%	69%	14%	14%	14%	16%	30%	24%	44%
Pollock	*	1	1	42	22	31	38	4	18	12
Haddock	4	6	5	*	2	1	12	21	17	9
Flounder	*	26	18	*	1	1	*	27	16	14
Turbot	1	5	4	*	16	9	3	8	6	8
Whiting	1	*	*	24	11	17	8	*	3	1
Ocean Perch, Others***	4	1	2	20	33	27	23	10	16	11
Total Market	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
% Total Market	16%	31%	46%	8%	10%	18%	14%	21%	35%	100%

* Minimal

** Including blocks used by selected food service chains.

*** Including minced blocks.

NOTE: Columns may not add due to rounding.
Excludes breading weight of portions.
Percentages reflect mid-points of estimate ranges.

Source: IBID.

The US groundfish processing industry

There are about 100 groundfish processing firms in the US with a heavy concentration on the east coast, particularly in Massachusetts. Most of these firms own one plant only. Filleting is their main activity; the volume block production is small.

TABLE 8

Number of US groundfish processing firms

East Coast		West Coast	
Massachusetts	45	Washington	10
New York	15	Oregon	8
New Jersey	4	California	8
Maine	7		16
	71		

Source: Fish from Canada, US International Trade Commission, 1980.

A recent study has indicated a fairly high level of concentration among firms supplying both the retail and the food service trades.

Substitution between species

The relative share of individual groundfish species shifted both in respect of fillets and blocks during the past few years. It is of particular interest to Canada to monitor the market performance of cod against other species.

1. Blocks

The following table presents the history of cod block versus Alaska pollock and whiting block consumption in the US since 1971 when the first Alaska pollock block shipment arrived from Japan. Between 1973 and 1979, Alaska pollock block consumption fluctuated between 23 000 and 31 000 tonnes per year. Whiting blocks, however, made a steady advance during the past five years with consumption increasing from 5 000 tonnes in 1975 to 23 000 tonnes in 1979.

TABLE 9

US block consumption: cod versus substitute species

1971-1979

(000 tonnes, product weight)

	Cod	Alaska pollock	Whiting	Others	Total
1971	90[1])	1	--	39	130
1972	93	15	--	50	158
1973	80	27	--	56	163
1974	51	26	--	47	124
1975	69	24	5	44	142
1976	89	31	8	53	181
1977	84	25	11	51	171
1978	94	23	18	52	187
1979	93	28	23	46	190

1) Estimated

Source: US Dept. of Commerce, Food Fish Market Review, National Marine Fisheries Service (NMFS), Washington, DC.

The next table shows the historical market shares of cod, Alaska pollock and whiting blocks in percentage terms.

TABLE 10

US block consumption: market shares of cod and substitute species, 1971-1979

(percentage)

	Cod	Alaska pollock	Whiting	Others	Total
1971	70[1])	0	--	30	100%
1972	59	9	--	32	100%
1973	49	17	--	34	100%
1974	41	21	--	38	100%
1975	49	17	3	31	100%
1976	49	17	4	29	100%
1977	49	15	7	30	100%
1978	50	12	10	28	100%
1979	49	15	12	24	100%

1) Estimated (MSB)

Source: Marketing Services Branch calculation and IBID.

These figures show that cod blocks retained their market share at 49% to 50% during the past five years despite the expanding new market for whiting blocks, which have established themselves partly at the expense of the Alaska pollock block market and of the markets for other types of blocks, such as haddock, ocean perch, turbot and flounder.

2. Fillets

The shifts in the consumption of groundfish fillet species over the past nine years are shown below:

TABLE 11

US fillet consumption: market shares by species

(000 tonnes, product weight)

	Cod	Haddock	Flounder	+	Turbot	Ocean Perch	Pollock	Total
1971	46	15	--	54	--	35	4	154
1972	49	15	--	66	--	43	6	179
1973	48	15	--	68	--	43	11	185
1974	40	11	--	62	--	37	8	158
1975	49	16	49	--	26	39	10	189
1976	66	16	49	--	20	30	14	195
1977	63	16	50	--	19	29	14	191
1978[1])	78	21	50	--	19	26	14	208
1979[1])	81	22	52	--	18	26	15	214

1) Preliminary

Source: IBID.

The same figures converted into percentage market shares present the following picture:

TABLE 12

US fillet consumption: market shares by species

(percentage)

	Cod	Haddock	Flounder	+	Turbot	Ocean Perch	Pollock	Total
1971	30	10	--	35	--	23	3	100%
1972	27	8	--	37	--	24	4	100%
1973	26	8	--	37	--	23	6	100%
1974	25	7	--	39	--	23	5	100%
1975	26	8	26	--	14	21	6	100%
1976	34	8	25	--	10	16	7	100%
1977	33	9	26	--	10	15	8	100%
1978[1])	38	10	24	--	9	13	7	100%
1979[1])	38	11	23	--	9	12	7	100%

1 Preliminary

Source: Marketing Services Branch calculation based on IBID.

This table demonstrates that between 1975 and 1979 the market share of cod fillets increased from 26% to 38%. Haddock and pollock fillets also increased their market share. The losers were flounder, turbot and ocean perch fillets. The most pronounced loss was by ocean perch fillets, the market share of which dropped from 21% to 12% during the past five years.

Minced block consumption

Statistical information has been collected on US minced block consumption since 1975. As the following figures demonstrate, minced blocks do not represent an expanding market, with a share only of around 5% during the past four years.

TABLE 13

US consumption of minced blocks

(000 tonnes, product weight)

	Minced Blocks	Total Blocks	Market share of total block market %
1975	4	142	2.9
1976	8	181	4.5
1977	10	171	5.8
1978	10	187	5.4
1979	9	190	4.6

Source: IBID.

Fish sticks and portions production

Recent trends in US production of fish sticks and portions are shown in the following table. According to these data the batter-coated products made a substantial advance between 1977 and 1979.

TABLE 14

US production of fish sticks and portions

(000 tonnes, product weight)

	Sticks			Portions			Total		
	1977	1978	1979	1977	1978	1979	1977	1978	1979
Cooked, breaded	32	33	29	42	40	37	74	73	66
Cooked, batter coated	5	8	12	26	39	46	31	47	58
Breaded, raw	2	2	3	77	83	82	79	85	85
Unbreaded	--	--	--	14	15	14	14	15	14
Total	39	43	44	159	177	179	198	220	223

Source: US Dept. of Commerce, Fish Sticks, Fish Portions and Breaded Shrimp, (NMFS), Washington, DC.

1985 PROJECTIONS

3. Demand Projections

Between 1972 and 1979 the American fillet market expanded from 179 000 tonnes to 218 000 tonnes, corresponding to a compound annual growth rate of 2.5%. During the same years the block market also grew by an annual 2.5% from 158 000 tonnes to 190 000 tonnes. Between 1976 and 1979 however, the growth rates of fillets versus blocks were different. During these years total fillet consumption continued to grow by 2.5% annually but the growth rate for blocks dropped to 2%.

It is assumed in this report that between 1979 and 1985 the expansion of the US groundfish market will follow the same pattern as was established during the past three years: fillet consumption may grow by 2.5% and block consumption by 2% annually.

As far as the substitution between species is concerned it is projected that cod blocks will hold their market share of 49-50% in 1985 while Alaska pollock and whiting block consumption will grow faster than the total block market, at the expense of other species.

In the fillet market the declining share of ocean perch fillets sold was linked to product shortages in recent years. Since plentiful supplies of ocean perch are expected in the years to come, it is projected that ocean perch fillets will stage a comeback, to some extent.

It is estimated that as compared to 476 000 tonnes in 1979, aggregate demand for groundfish (all product forms) may amount to 550 000 tonnes in 1985. (For details see Appendix XIV and the following species sections).

TABLE 15

US ground ish consumption, 1977-79 and 1985

(000 tonnes, product weight)

	1977	1978	1979	1985
Round/dressed	52	53	56	68
Fillets	198	213	220	254
Blocks	171	186	190	214
Salted	12	12	12	14
Total	433	464	478	550

Source: US Dept. of Commerce, OP. CIT., and Marketing Services Branch projections.

4. Supply Projections (Landings)

In 1979 the US landed a total of 283 000 tonnes of groundfish. The table below shows estimated landings for 1981 and 1985. As mentioned in Section A, these figures can be considered only as very rough approximations.

TABLE 16

Forecast of US groundfish landings, 1981 and 1985

(000 tonnes, round weight)

	1979	1981	1985
Atlantic coast	182	173-225	185-239
Pacific coast	88	98-128	152-190
Alaska	13	44-76	123-177
Total	283	315-429	460-606

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS) and Marketing Services Branch estimates.

US Groundfish Balance

Despite a 50% projected increase in domestic production of groundfish products, the growing demand will have to be met by increased imports in 1985. It is projected that by 1985 the US may import about 386 000 tonnes of groundfish, an increase of 10% over the 1979 volume of 352 000 tonnes.

TABLE 17

US groundfish balance, 1979[1]) and 1985

(000 tonnes, product weight)

	Demand		Domestic Production		Exports		Imports Actual	Imports Potential
	1979	1985	1979	1985	1979	1985	1979	1985
Cod	187	215	21	32	--	6	162	189
Haddock	36	41	7	12	--	--	24	29
Flatfish	70	78	36	43	--	--	27	35
Turbot	20	23	--	--	--	--	18	23
Atlantic pollock	32	36	8	10	--	--	23	26
Alaska pollock	29	36	--	23	--	--	29	13
Ocean perch	44	55	21	27	--	--	26	28
Hake	37	47	13	16	--	--	26	31
Halibut	7	10.5	7	7	--	--	2.3	3.5
Other[2])	14	9	--	--	--	--	15	9
Total	476	550.5	113	170	--	6	352.3	386.5

1) The discrepancy between demand minus domestic production on the one hand and imports on the other in 1979 is attributable to inventory movements between January and December 1979.

2) Minced blocks and fillet blocks of minor species.

Source: IBID.

C. COD

Cod is the dominant item in the US groundfish market. In 1979, about 37% of total fillet consumption and 49% of total block consumption was cod. Cod blocks are primarily processed into portions and only relatively small volumes into fish sticks. As a rule, the lower-priced minced cod blocks are used for fish stick production.

The main strength of the cod market is its high penetration in the public food service trade (restaurants, cafeterias, fast food outlets). According to a survey carried out for the Department of Fisheries and Oceans by Technomic Consultants, Chicago, 60% of all fillets and 89% of all portions served in the public food service sector were of cod. Cod was much weaker in the captive food service trade (hospitals, canteens, school lunch programs, etc.) accounting for only 14% of fillets and 14% of portions. In retail trade the similar figures were 16% for portions and 30% for fillets.

According to these estimates, the destination of the about 64 000 tonnes of Canadian cod exported to the US in 1979 was as follows:

TABLE 18

Canadian cod exports (fillets and blocks) to the US, 1979

(000 tonnes, product weight)

Public food service	30-32
Captive food service	9-10
Retail trade	23-25
Total	64

Source: Technomic Consultants, OP. CIT.

An important characteristic of the cod fillet market is its subdivision into two fairly distinct segments. As a consequence of perceived quality differences among buyers, the Scandinavian countries receive 20-35 cents per pound more for their five pound cod fillets than Canadians do. The following table demonstrates this price differentiation in detail.

TABLE 19

Wholesale prices of 5 pound boneless frozen cod fillets, Boston

($US per pound)

April	Canada	Iceland	Denmark	Norway
1974	0.89-0.90	--	--	--
1975	0.75	--	0.92	0.87-0.89
1976	0.93-0.95	1.10	1.05	1.10[1])
1977	1.05	1.25	1.25	1.25
1978	1.18	1.30	1.30	1.35
1979	1.20	1.45	1.30	1.50
1980	1.15-1.18	1.60	1.60	1.65
1981	1.30-1.35	1.60	1.60	1.65

Source: US Dept. of Commerce, Boston Fishery Market News Report, (NMFS), Washington, DC.

TABLE 20

Wholesale prices of 10 and 15 pound jumbo boneless frozen cod fillets, Boston

($US per pound)

April	Canada	Iceland	Denmark	Norway
1974	0.95-0.97	--	--	--
1975	0.96-0.98	--	0.98	--
1976	--	1.03-1.15	1.10-1.14	1.10-1.18
1977	1.15	1.25	1.30	1.25-1.30
1978	1.35	1.40	1.40	1.32-1.38
1979	1.35-1.40	1.55-1.60	1.40	1.65
1980	1.42-1.53	1.65-1.70	1.70	1.75-1.80
1981	1.45-1.50	1.65-1.70	1.70	1.75

Source: IBID.

Since Icelandic companies produce only small quantities of the one-pound cod fillet pack, products of Canadian origin face less competition in this market segment.

The market also distinguishes to a certain extent between Canadian and Scandinavian cod blocks. While a good part of Canadian cod blocks are treated with tripolyphosphate, the Scandinavians do not use such additives. Moreover, it is generally considered that Scandinavian blocks are of a somewhat higher quality and, therefore, Scandinavian countries are able to charge 2-4 cents more per pound for their blocks than Canadians do. However, Iceland and Norway export cod blocks mainly for the use of their processing plants in the US. Although some Canadian companies own plants in the US, the majority of Canadian cod blocks are sold to American processors.

Cod consumption

Cod is primarily consumed as fillets or sticks and portions made from blocks. In addition, minor quantities are also consumed in the dressed and salted forms.

The following table sets out the history of US cod fillet and block consumption between 1971 and 1979. While cod fillet consumption expanded from 46 000 tonnes to 81 000 tonnes during the past nine years, cod block consumption grew only marginally, from 90 000 to 92 000 tonnes. The 1974 recession year caused a dip in both cod fillet and block consumption.

TABLE 21

US cod fillet and block consumption, 1971-1979

	Fillets	Blocks
1971	46	90
1972	49	93
1973	48	80
1974	40	51
1975	49	69
1976	66	89
1977	63	84
1978	78	94
1979	81	93

Source: US Dept. of Commerce, Food Fish Market Review, (NMFS), Washington, DC.

Because of limitations of the US statistical system, the volume of dressed and salted cod consumed cannot be properly measured, only estimated. Making allowance for this fact, it appears total cod consumption (dressed, fillets, blocks and salted) amounted to about 187 000 tonnes in 1979. By 1985, the figure may be in the neighbourhood of 215 000 tonnes. Fillet consumption may grow from 81 000 tonnes in 1979 to 94 000 tonnes in 1985 and block consumption from 92 000 tonnes to 104 000 tonnes. The dressed component is projected to increase from 6 000 to 7 000 tonnes and salted cod from 8 000 to 10 000 tonnes.

TABLE 22

US cod consumption, 1977-79 and 1985

(000 tonnes, product weight)

	1977	1978	1979	1985
Dressed	6[1])	6[1])	6[1])	7
Fillets	63	78	81	94
Blocks	84	94	93	104
Salted	8[1])	8[1])	8[1])	10
Total	161	186	187	215

1) Estimated

Source: IBID.

US Cod Landings

In order to quantify expected developments for cod, estimates have been developed for expected catch levels for 1981 and 1985. According to these forecasts, American cod fisheries will expand only in Alaska. On the Atlantic coast the cod catch is expected to remain stationary at between 40 000 and 45 000 tonnes in both 1981 and 1985. ~~Some decrease~~ No change is foreseen for the Pacific coast where the 1979 cod catch was ~~11~~ 9 000 tonnes. ~~A catch between 4 000 and 6 000 tonnes is likely during the next five years~~. The Alaska cod harvest, on the other hand, is expected to grow from practically

nil in 1979 to between 8 000 and 12 000 tonnes in 1981 and to between 30 000 and 40 000 in 1985. Taking the three areas together, the total US cod catch could increase from 54 000 tonnes in 1979 to between 78 000 and 91 000 tonnes in 1985.

TABLE 22(A)

US cod[1]) landings, 1977-79, 1981 and 1985

(000 tonnes, round weight)

				Forecast for	
	1977	1978	1979	1981	1985
Atlantic Coast	34	39	45	40-45	40-45
Pacific Coast	8	8	9	8-10	8-10
Alaska	--	0	--	8-12	30-40
Total	42	47	54	56-67	78-95

1) Includes ling cod

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), Washington, DC. and Marketing Services Branch estimates.

Cod Balance

Based on predicted cod landings, US production may increase from 23 000 tonnes in 1979 to 32 000 tonnes in 1985 (product weight). Of the 1985 total, about 11 000 tonnes would be produced from Alaska. It is assumed that about half of this volume will not enter the domestic market but will be exported to Japan, where it is expected a domestic cod market will develop. Japan's proximity should make Alaska a convenient source of supply.

Despite some increase in domestic cod landings, the US is likely to import more cod in 1985 than in recent years. Cod fillet imports may grow from 64 000 tonnes in 1979 to 75 000 tonnes in 1985 and those of blocks from 88 000 tonnes to 104 000 tonnes. Dressed cod consumption is projected to be supplied from domestic sources, while the volume of salted cod imported may increase to 10 000 tonnes during the next five years.

TABLE 23

US cod balance, 1979 and 1985

(000 tonnes, product weight)

	Demand		Domestic Production		Exports		Imports Actual	Imports Potential
	1979	1985	1979	1985	1979	1985	1979	1985
Dressed	6[1])	7	6[1])	7	--	--	--	--
Fillets	81	94	17	25	--	6	64	75
Blocks	93	104	--	--	--	--	88	104
Salted	8[1])	10	--	--	--	--	8[1])	10
Total	188	215	23	32	--	6	160	189

1) Estimate

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

Cod Imports

In 1979 the US imported 66 000 tonnes of cod fillets and 88 000 tonnes of cod blocks.

Iceland was the leading supplier of cod fillets (50% of the total) followed by Canada: Canada, on the other hand, supplied 45% of all cod blocks imported by the US and Iceland was in second place. Norway, Denmark and Greenland were the other major suppliers of both fillets and blocks.

The by-country pattern of US cod imports to 1985 will be influenced by a number of factors. Among them:

a) The resource situation. The 1979 Canadian cod catch was about 391 000 tonnes (round weight). By 1985, the potential catch may increase to over 600 000 tonnes. Icelandic cod production is also expected to increase, from 359 000 tonnes in 1979 to 400 000 to 450 000 tonnes by 1985. Norway, Denmark and Greenland are likely to face a static resource situation.

b) The European Economic Community (EC) cod catch declined from 641 000 tonnes in 1976 to about 440 000 tonnes in 1979. It is unlikely that an increase will take place within the next five years. The location of Norway and Iceland together with their preferential access to the community, suggests that they are in a particularly good position to supply the growing needs of the EC for cod. These countries, on the other hand, own processing plants in the US and have built up solid markets for their products. These investments will be safeguarded even though cod prices in Europe may be somewhat higher. Spain, Portugal and some other European countries are also likely to have a growing demand for cod imports.

c) The quantity of cod available for the US frozen fillet and block markets from Iceland, Denmark and Norway is influenced by alternative uses such as the fresh, salted and dried markets. Current indications are that world demand for salted and dried cod will increase in the years ahead.

Under these circumstances it is likely that Iceland and Canada will be the two countries that meet the increased US demand for cod.

A tentative split of 1985 US cod imports by country is presented in the following table.

TABLE 24

US cod imports, by country, 1979 and 1985

(000 tonnes, product weight)

	Fillets		Blocks		Salted	
	1979	1985	1979	1985	1979	1985
Canada	23	29	40	54	8[1]	9
Iceland	33	39	19	26	--	--
Norway	3	3	5	5	--	1
Denmark and Greenland	4	4	17	16	--	--
Other	3		7	2	--	--
Total	66	75	88	103	8[1]	10

1) Estimate

Source: US Dept. of Commerce, US Imports for Consumption, Bureau of the Census, Washington, DC.

BC Cod Exports to the US

The vast majority of Canadian cod is landed on the Atlantic coast, and in 1979 the catch was 378 000 tonnes, while the Pacific cod catch was about 11 000 tonnes (Pacific cod and ling cod). It is estimated that in 1980 a total of 966 tonnes of BC cod products entered the US market.

TABLE 25

BC cod exports to the US, 1980

(tonnes, product weight)

Whole/dressed	
Pacific cod	201
Ling cod	74
Fillets and Blocks	
Pacific cod	618
Ling cod	73
Total:	966

Source: Special tabulation of Canada export declaration forms

The BC cod catch is potentially expected to drop from 11 000 tonnes in 1979 to about 9 000 tonnes by 1985. With growing Canadian consumption, the likely volume of BC cod exports to the US in 1985 will be about 500 tonnes. The rest of the projected exports will be supplied by east coast processors.

D. HADDOCK

In 1979, haddock fillets accounted for 11% of total US fillet consumption, while haddock blocks represented 5% of the total block market.

Haddock is primarily a retail item in the US. In 1978, 21% of all fillets and 12% of all sticks and portions sold by retailers were haddock. The similar figures for the food service trade were 6% and 4%, respectively, while only 2% of fillets served in captive food service outlets were haddock. In 1979, Canada exported about 7 000 tonnes of haddock to the US, and more than 60% of this volume ended up in the retail trade, with about 25% in the public food service sector. (Technomics estimates).

Forecasting demand for haddock is hindered by the fact that US import statistics show a combined figure for haddock, pollock, hake and cusk fillets. The estimated pollock component is deducted in the following tables but no such estimates are available for hake and cusk fillets. It is believed, however, that the major part of the residual figure represents haddock.

Haddock Consumption

Between 1972 and 1979, combined haddock, hake and cusk fillet consumption increased from 15 000 to 22 000 tonnes while haddock block consumption dropped from 13 000 tonnes to 10 000 tonnes.

TABLE 26

US haddock fillet and block consumption, 1972-1979

(000 tonnes, product weight)

	Fillets[1]	Blocks
1972	15	13
1973	14	10
1974	11	11
1975	16	16
1976	16	16
1977	16	12
1978	20	14
1979	22	10

1) Includes hake and cusk fillets

Source: US Dept. of Commerce, Food Fish Market Review, (NMFS), Washington, DC.

Total US consumption (dressed, fillets and blocks) amounted to 39 000 tonnes in 1978 and 36 000 tonnes in 1979. By 1985, consumption may increase to about 41 000 tonnes.

TABLE 27

US haddock consumption, 1977-79 and 1985

(000 tonnes, product weight)

	1977	1978	1979	1985
Dressed	3[1])	3[1])	3[1])	4
Fillets[2])	16	20	22	25
Blocks	12	14	10	11
Salted	1[1])	1[1])	1[1])	1
Total	32	38	36	41

1) Estimated

2) Includes hake and cusk fillets

Source: IBID.

US Haddock Landings

The American haddock resource is confined to Atlantic coastal waters. Between 1977 and 1979 haddock landings expanded from 13 000 tonnes to 19 000 tonnes, and by 1985 may grow to 27 000 to 33 000 tonnes.

TABLE 28

US haddock landings, 1977-79 and 1985

(000 tonnes, round weight)

				Forecast for	
	1977	1978	1979	1981	1985
Atlantic coast	13	18	19	21-27	27-33
Pacific coast	--	--	--	--	--
Alaska	--	--	--	--	--
Total	13	18	19	21-27	27-33

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

Haddock Balance

Domestic production of haddock (dressed and fillets) is projected to increase from 7 000 tonnes in 1979 to 12 000 tonnes in 1985. Demand for haddock, however, is expected to increase more than domestic production and, therefore, US import requirements may increase from a total of 24 000 tonnes in 1979 to 29 000 tonnes in 1985.

TABLE 29

US haddock balance, 1979 and 1985

(000 tonnes, product weight)

	Demand		Domestic Production		Imports Actual	Imports Potential
	1979	1985	1979	1985	1979	1985
Dressed	3	4	2	4	1	-
Fillets[1])	22	25	7[1])	8	14	17
Blocks	10	11	--	--	8	11
Salted[2])	1	1	--	--	1	1
Total	36	41	9	12	24	29

1) Includes hake and cusk fillets

2) Estimated

Source: IBID.

Haddock Imports

In 1979, the US imported an estimated 14 000 tonnes of haddock fillets, primarily from Canada and Iceland, and 8 000 tonnes of haddock blocks, mainly from Iceland, Denmark and Norway. (It is not possible to present a by-country breakdown of haddock fillet imports since US import statistics show the combined figure of haddock, pollock, hake and cusk fillets. An estimated pollock fillet figure has, however, been eliminated from the total).

TABLE 30

US haddock imports by country, 1979

(000 tonnes, product weight)

	Fillets	Blocks	Salted
Canada	6	1	1
Iceland	N/A	3	--
Norway	N/A	2	--
Denmark	N/A	2	--
Others	N/A	--	--
Total	14[1])	8	1

1) Includes hake and cusk

Source: US Dept. of Commerce, US Imports for Consumption, Bureau of the Census, Washington, DC.

Canada's haddock landings (this species exists only off the Atlantic coast) are expected to grow from 35 000 tonnes in 1979 to a maximum potential of 58 000 tonnes in 1985. It is projected that in 1985 Canada may ship 8 000 tonnes of haddock fillets, 2 000 tonnes of blocks and 1 000 tonnes of salted haddock to the US.

E. OCEAN PERCH

In 1979, 14% of all fillets consumed in the US were ocean perch, while this species accounted for only 1% of the total block market.

It has been estimated that of the 22 000 tonnes of Canadian ocean perch fillets imported by the US more than 50% ended up in the retail trade. About one-third of this volume was consumed by the captive food service industry and 10% to 15% by the public food service industry. (Technomics estimates).

Ocean perch consumption

Between 1971 and 1979, US ocean perch fillet consumption fell from 35 000 tonnes to 26 000 tonnes, while block consumption fluctuated between 1 000 and 3 000 tonnes during the past five years.

TABLE 31

US ocean perch fillet and block consumption, 1971-79

(000 tonnes, product weight)

	Fillets[1]	Blocks
1971	35	--
1972	43	--
1973	43	--
1974	37	--
1975	39	2
1976	30	3
1977	28	2.5
1978	26	1
1979	26	1.6

Source: US Dept. of Commerce, Food Fish Market Review, (NMFS), Washington, DC.

1) excludes rockfishes.

In 1979, total US ocean perch and rockfish consumption was about 44 000 tonnes and 31 000 tonnes of the total represented fillets. By 1985, fillet consumption may increase to 40 000 tonnes. Decreased ocean perch fillet consumption in recent years was partly linked with supply shortages and resulting high prices. Since ample supplies are expected in the future with proper price adjustments the ocean perch fillet market is likely to expand again.

TABLE 32

US ocean perch consumption, 1977-79 and 1985

(000 tonnes, product weight)

	1977	1978	1979	1985
Dressed	9[1])	10[1])	11[1])	13
Fillets[2])	33	30	31	40
Blocks	2	1	2	2
Total	44	41	44	55

1) Estimated
2) Includes rockfishes

Source: See Table 31 and MSB estimates.

Ocean perch landings

US Atlantic coast ocean perch landings were 15 000 to 16 000 tonnes during the past three years. During the coming years the resource may be able to sustain a catch in the range of 15 000 to 25 000 tonnes. On the Pacific coast ocean perch is a minor resource with a catch around 3 000 tonnes. There are large quantities of rockfish, which are related species with a catch of 31 000 tonnes in 1979. A moderate expansion is expected for the future and 1985 landings may be in the neighbourhood of 34 000 to 40 000 tonnes (ocean perch and rockfish combined). In Alaska there is no ocean perch fishery at present, but the 1985 catch may amount to 5 000 to 15 000 tonnes.

TABLE 33

US ocean perch[1] landings, 1977-79, 1981 and 1985

(000 tonnes, round weight)

	1977	1978	1979	Forecast for 1981	1985
Atlantic coast	16	16	15	15-25	15-25
Pacific coast[1])	23	29	34	34-40	34-40
Alaska	--	--	--	3-7	5-15
Total	39	45	49	52-72	54-80

1) Includes rockfish

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

Ocean perch balance

The US may consume a total of 55 000 tonnes of ocean perch and rockfish in 1985. Domestic production is projected to supply only 27 000 tonnes and half of this quantity may be in the round/dressed form. An import volume of 26 000 tonnes is foreseen for fillets and 2 000 tonnes for blocks.

TABLE 34

US ocean perch balance, 1979 and 1985

(000 tonnes, product weight)

	Demand		Domestic Production		Imports Actual	Imports Potential
	1979	1985	1979[1])	1985	1979	1985
Dressed	11	13	11	13	--	--
Fillets	31	40	10	14	24	26
Blocks	2	2	--	--	2	2
Total	44	55	21	27	26	28

1) Estimated

Source: IBID.

Ocean Perch imports

The US imported 24 000 tonnes of ocean perch fillets and 2 000 tonnes of blocks in 1979. The major supplier was Canada, followed by Iceland.

TABLE 35

US ocean perch imports, by country, 1979

(000 tonnes, product weight)

	Fillets	Blocks
	1979	1979
Canada	18	0.2
Iceland	5	2
Norway	0.1	--
Denmark	0.1	0.4
Other	1	--
Total	24.2	2.6

Source: US Dept. of Commerce, US Imports for Consumption, (NMFS) and the Bureau of the Census, Washington, DC.

The Canadian ocean perch catch is projected to expand from 90 000 tonnes in 1979 to a maximum potential 162 000 tonnes in 1985. The share of Pacific rockfish in these totals are about 9 000 tonnes for 1979 and around 19 000 tonnes in 1985. The Icelandic catch may stabilize around 60 000 tonnes (the 1979 catch was 62 000 tonnes). It is projected that US demand for Canadian ocean perch products may amount to 19 000 tonnes in 1985 (18 700 tonnes of fillets and 300 tonnes of blocks).

F. FLATFISH

This chapter refers to all flatfish varieties, such as flounder, sole, plaice and witch, but not to turbot and halibut, which are dealt with in separate chapters.

In 1978, 27% of total fillets sold by US retailers and 26% of all fillets served by public food service outlets were flatfish, but they accounted for only 1% of total fillets served in the captive food service trade. It has been estimated that of the 21 000 tonnes of Canadian flatfish fillets exported to the US in 1979, about 60% were sold by the retail trade and the rest mainly by the public food service sector. (Technomics estimates).

Flatfish Consumption

Between 1975 and 1979, US flatfish fillet consumption increased from 49 000 to 52 000 tonnes, while block consumption increased from 5 000 to 6 000 tonnes.

TABLE 36

US flatfish fillet and block consumption

(000 tonnes, product weight)

	Fillets	Blocks
1972	n.a.	8
1973	n.a.	8
1974	n.a.	10
1975	49	5
1976	49	5
1977	50	6
1978	50	6
1979	52	6

N.A.: Not available.

Source: US Dept. of Commerce, Food Fish Market Review, (NMFS), Washington, DC.

The US consumed 72 000 tonnes of flatfish products in 1979, primarily in the fillet form. By 1985 consumption may grow to about 78 000 tonnes.

TABLE 37

US flatfish consumption, 1977-79 and 1985

(000 tonnes, product weight)

	1977	1978	1979	1985
Dressed	10[1])	10[1])	14[1])	16
Fillets	50	50	52	56
Blocks	6	6	6	6
Total	66	66	72	78

1) Estimated

Source: IBID and MSB estimates.

Flatfish landings

US Atlantic coast flatfish landings were 54 000 tonnes in 1978 and 64 000 tonnes in 1979. Expectations are that the catch will fall back within the 50 000 to 60 000 tonnes range by 1985. On the Pacific coast the flatfish catch was 31 000 tonnes in 1979, and by 1985 is likely to be 30 000 to 40 000 tonnes. There is no flatfish fishery in Alaska at present. If it is developed, by 1985 Alaska may supply between 20 000 and 30 000 tonnes of flatfish.

TABLE 38

US flatfish landings, 1977-79, 1981 and 1985

(000 tonnes, product weight)

				Forecast for	
	1977	1978	1979	1981	1985
Atlantic coast	53	53	64	48-58	50-60
Pacific coast	24	28	31	27-33	30-40
Alaska	--	--	--	10-20	20-30
Total	77	81	95	85-108	100-130

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), Washington, DC. and MSB estimates.

Flatfish balance

Increased demand for flatfish fillets is not expected to be met fully by larger domestic production in 1985 and the import requirement may amount to 29 000 tonnes. It is unlikely that a domestic flatfish block industry will develop, thus the full volume of block consumption (6 000 tonnes) is expected to be imported.

TABLE 39

US flatfish balance, 1979 and 1985

(000 tonnes, product weight)

	Demand		Domestic Production		Imports Actual	Imports Potential
	1979	1985	1979	1985	1979	1985
Dressed1)	14	16	14	16	3	--
Fillets	50	56	221)	27	21	29
Blocks	6	6	--	--	6	6
Total	70	78	36	43	30	35

1) Estimates

Source: IBID.

Flatfish imports

In 1979, the US imported 21 000 tonnes of flatfish fillets, 17 000 tonnes of which were supplied by Canada. Canada also shipped 5 000 tonnes of the total of 6 000 tonnes of blocks purchased by the US in that year.

TABLE 40

US flatfish imports by country, 1979

(000 tonnes, product weight)

	Whole/dressed	Fillets	Blocks
Canada	1.5	17	5
Iceland	0.4	--	0.1
Denmark	--	0.5	--
Other	1.0	3	1
Total	3.0	20.5	6.1

Source: US Dept. of Commerce, US Imports For Consumption, Bureau of the Census, Washington, DC., 1979.

The Canadian flatfish catch is expected to increase from 115 000 tonnes in 1979 to a maximum potential of about 165 000 tonnes in 1985. (Of these totals BC fishermen landed about 6 000 tonnes in 1979 and the 1985 catch may be about 8 000 tonnes). American demand for Canadian flatfish may amount to 23 000 tonnes of fillets and 5 000 tonnes of blocks in 1985.

G. POLLOCK

In 1979, about 7% of all fillets and 22% of all blocks consumed in the US were pollock. Fillets were nearly all of Atlantic pollock, while two-thirds of pollock blocks were processed from Alaska pollock.

According to estimates for 1978, 38% of sticks and portions sold in retail stores were of pollock. It is known that Alaska pollock is particularly strong in the fish stick segment of the market. While the demand for pollock in the public food service sector was very weak, 42% of sticks and portions and 22% of fillets served by captive food service establishments were pollock. (Technomics estimates).

Pollock consumption

Between 1971 and 1979, Atlantic pollock fillet consumption grew from 4 000 to 14 000 tonnes. The volume of Alaska pollock fillets consumed has been negligible. In the same period, the market for Atlantic pollock blocks fluctuated between 10 000 and 13 000 tonnes, while Alaska pollock block consumption increased from 1 000 tonnes to 28 000 tonnes.

TABLE 41

US pollock fillet and block consumption, 1971-1979

(000 tonnes, product weight)

	Fillets		Blocks	
	Atlantic	Alaska	Atlantic	Alaska
1971	4	--	12	1
1972	6	--	10	15
1973	11	--	11	27
1974	8	0.5	11	26
1975	10	0.3	13	24
1976	14	0.4	12	31
1977	15	0.5	15	26
1978	15	0.3	12	23
1979	14	0.8	13	28

Source: US Dept. of Commerce, Food Fish Market Review, (NMFS), Washington, DC.

Total US Atlantic pollock consumption (dressed, fillets, blocks) amounted to 32 000 tonnes in 1979. By 1985 consumption may reach 36 000 tonnes.

TABLE 42

US Atlantic pollock consumption, 1977-79 and 1985

(000 tonnes, product weight)

	1977	1978	1979	1985
Dressed	3[1])	3[1])	3[1])	3
Fillets	15	15	14	16
Blocks	15	12	13	15
Salted	2[1])	2[1])	2[1])	2
Total	35	32	32	36

1) Estimated

Source: IBID and MSB estimates.

Alaska pollock consumption is projected to grow from 29 000 tonnes in 1979 to 36 000 tonnes in 1985.

TABLE 43

US Alaska pollock consumption, 1977-79 and 1985

(000 tonnes, product weight)

	1977	1978	1979	1985
Dressed	--	--	--	--
Fillets	0.5	0.3	0.8	1
Blocks	25	23	28	35
Total	25.5	23.3	28.8	36

Source: IBID.

US Pollock landings

In 1979 the US landed 16 000 tonnes of pollock on the Atlantic coast. The resource permits an expansion of about 50% in catch, thus the 1985 landings may be in the range of 22 000 to 27 000 tonnes.

In the event that a pollock fishery is developed off Alaska, by 1985 it is anticipated 60 000 to 80 000 tonnes may be landed.

TABLE 44

US pollock landings, 1977-79, 1981 and 1985

(000 tonnes, round weight)

				Forecast for	
	1977	1978	1979	1981	1985
Atlantic coast	13	18	16	22-27	22-27
Pacific coast	--	1	--	--	--
Alaska	0.3	1.8	3	15-25	60-80
Total	13	20	19	37-52	82-107

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

Pollock balance

Despite increasing domestic landings of Atlantic pollock, the US is expected to import about 9 000 tonnes of fillets in 1985. A total Atlantic pollock block requirement of 15 000 tonnes will probably be imported.

TABLE 45

US Atlantic pollock balance, 1979 and 1985

(000 tonnes, product weight)

			Domestic		Imports	
	Demand		Production		Actual	Potential
	1979	1985	1979	1985	1979	1985
Dressed	3	3	3	3	--	--
Fillets	14	16	5	7	10	9
Blocks	13	15	0.1	--	11	15
Salted	2	2	--	--	2	2
Total	32	36	8.1	10	23	26

Source: IBID.

If a domestic pollock fishery is established in Alaska in waters on the scale indicated previously, US import demand may drop substantially, from 29 000 tonnes in 1979 to 13 000 tonnes in 1985.

TABLE 46

US Alaska pollock balance, 1979 and 1985

(000 tonnes, product weight)

	Demand		Domestic Production		Import Requirements	
	1979	1985	1979	1985	1979	1985
Dressed	--	--	--	--	--	--
Fillets	0.8	1	--	1	0.8	--
Blocks	28	35	--	22	28	13
Total	28.8	36	--	23	28.8	13

Source: See Table 45

Pollock imports

In 1979, Canada supplied about half of the estimated US Atlantic pollock fillet imports while Iceland was the leading Atlantic pollock block supplier. South Korea shipped the majority of Alaska pollock blocks.

TABLE 47

US pollock imports, by country, 1979

(000 tonnes, product weight)

	Fillets		Blocks		Salted
	Atlantic	Alaska	Atlantic	Alaska	Atlantic
Canada	5[1])	--	0.4	--	1.1
Iceland	N/A	--	6	--	--
Norway	N/A	--	1	--	--
Denmark	N/A	--	2	--	--
Japan	N/A	0.7	--	2	--
South Korea	N/A	0.1	--	26	--
Other	N/A	--	1	0.9	0.9
	10[1]	0.8	10.4	28.9	2.0

1) Estimated

Source: US Dept. of Commerce, US Imports for Consumption, Bureau of the Census, Washington, DC.

It is projected that the Canadian Atlantic pollock catch will grow from 31 000 tonnes in 1979 to a potential 35 000 tonnes by 1985. In 1979, BC fishermen landed 3 000 tonnes of ~~flatfish~~ pollock and the 1985 catch may be 9 000 tonnes. Iceland also expects growing pollock landings and the Norwegian pollock resource is also in a healthy state. American demand for Canadian Atlantic pollock products may not change between 1979 and 1985 (5 000 tonnes of fillets, 400 tonnes of blocks and 1 100 tonnes of salt pollock).

H. HAKE

Hake or whiting blocks accounted for 12% of total US block consumption in 1979.

Hake consumption is strongest in the captive food service trade where 25% of sticks and portions and 11% of fillets were hake in 1978. The share of hake in retail sales of sticks and portions was 8%. (Technomics estimates).

Hake consumption

American groundfish processors started importing whiting blocks from Latin American countries and from South Africa in 1975. These imports reached 23 000 tonnes by 1979. In the absence of domestic block production, import figures corrected by inventory movements indicate consumption levels.

TABLE 48

US whiting block consumption, 1975-79

(000 tonnes, product weight)

1975	5
1976	8
1977	11
1978	18
1979	23

Source: US Dept. of Commerce, Food Fish Market Review (NMFS) Washington, D.C.

Small quantities of whiting fillets have been imported to the US, mainly from Latin American countries and South Africa. The volume is not separated out statistically and is included in the haddock import and consumption figures. Consumption of hake in the dressed form can be estimated only approximately, in the absence of appropriate statistical data. In 1978, dressed hake was consumed (fresh and frozen) in the amount of 13 000 tonnes from the domestic catch. Minor quantities were also smoked. The US also consumes about 1 000 tonnes of salted hake per year.

It is expected that US whiting block consumption may expand from 23 000 tonnes in 1979 to 30 000 tonnes in 1985.

TABLE 49

US hake consumption, 1977-79 and 1985

(000 tonnes, product weight)

	1977	1978	1979	1985
Dressed	13[1])	13[1])	13[1])	16
Blocks	11	18	23	30
Salted	1	1	1	1
Total	25	32	37	47

1) Estimated
Source: US Dept. of Commerce, Food Fish Market Review, (NMFS), and MSB estimate.

US Hake landings

On the Atlantic coast, American vessels land red hake, white hake and whiting. Red hake is not used for human consumption. Both the white hake and the whiting resources promise only slightly increased catches over 1979 levels. On the west coast there is a large Pacific hake resource, so far only moderately exploited. It is estimated that only 2% to 3% of the current Pacific hake catch is utilized as food. This catch could increase from 14 000 tonnes in 1979 to 80 000 to 100 000 tonnes by 1985 but it is questionable whether suitable edible products can be developed from this species for the US domestic market. For the purpose of this paper it is presumed that it will not be processed into food.

TABLE 50

US hake landings, 1977-79, 1981 and 1985

(000 tonnes, round weight)

	1977	1978	1979	1981	1985
Atlantic coast					
Red hake (non food)	2	2	3	8-12	12-18
White hake	5	5	4	4-6	4-6
Whiting	21	23	16	15-25	15-25
Pacific hake (non-food)	2	3	14	35-45	80-100
Total	30	33	37	62-88	111-149

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

Hake balance

The US may need about 30 000 tonnes of hake blocks by 1985. Since the greatest part of the Atlantic white hake and whiting catch is likely to be utilized in the fresh and frozen dressed and filleted forms, unless a block industry develops based on Pacific hake, the US will have to import its total requirement. The development of price-competitive and acceptable hake blocks is a distant possibility.

TABLE 51

US hake balance, 1979 and 1985

(000 tonnes, product weight)

	Demand		Domestic Production		Imports Actual	Imports Potential
	1979	1985	1979	1985	1979	1985
Dressed	13	16	13	16	--	--
Blocks	23	30	--	--	25	30
Salted	1	1	--	--	1	1
Total	37	47	13	16	26	31

Source: IBID.

Hake imports

In 1979, the US imported 23 000 tonnes of whiting blocks, half of these from Argentina.

TABLE 52

US imports of whiting blocks 1979

(000 tonnes, product weight)

Argentina	12
South Korea	3
Poland	2
South Africa	1
Uruguay	5
other	2
Total	25

Source: US Dept. of Commerce, US Imports for Consumption, Bureau of Census, Washington, DC.

In 1979, about 13 000 tonnes of hake was landed on the Canadian Atlantic coast, but nothing in BC. By 1985, the Canadian Atlantic catch potential may be about 90 000 tonnes. A potential hake resource also exists off the Pacific coast, which may result in a potential catch of up to 30 000 tonnes in five years. Canada is projected to export about 800 tonnes of salt hake to the US in 1985, approximately the same volume as in 1979 and 1980. It is not foreseen that a Canadian hake block industry is going to develop which could compete with the mainly Latin American suppliers of the US market.

I. TURBOT

Turbot is found both in the Atlantic and Pacific, and the main suppliers are Canada and Japan. The Pacific turbot is of a lower quality, with a bland taste, watery consistency and a tendency to shrink substantially when cooked. But in spite of these disadvantages, the Japanese product is successful on the US market since it is in the IQF form and as such is preferred by the restaurant trade.

Turbot consumption

Turbot fillet consumption dropped from 26 000 tonnes in 1975 to 18 000 tonnes in 1979, while block consumption fluctuated between 2 000 and 4 000 tonnes.

TABLE 53

US turbot consumption, 1975-79

(000 tonnes, product weight)

	Fillets	Blocks
1975	26	2
1976	20	2.6
1977	19	3.4
1978	19	2
1979	18	2
1980	18.5	2

Source: US Dept. of Commerce, Food Fish Market Review, (NMFS), Washington, DC.

By 1985, turbot fillet consumption may reach the 21 000 tonne level while turbot block consumption may remain at 2 000 tonnes.

TABLE 54

US turbot consumption, 1977-79 and 1985

(000 tonnes, product weight)

	1977	1978	1979	1985
Fillets	19	18	18.5	21
Blocks	3	2	2	2
Total	22	20	20.5	23

Source: IBID and MSB estimates.

Turbot balance

Since there is no turbot in US waters, the total turbot requirement is imported.

TABLE 55

US turbot balance, 1979 and 1985

(000 tonnes, product weight)

	Demand		Imports	
			Actual	Potential
	1979	1985	1979	1985
Fillets	18.5	21	16	21
Blocks	2	2	2	2
Total	20.5	23	18	23

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

Turbot imports

In 1979, the US imported 16 000 tonnes of turbot fillets and 3 000 tonnes of blocks. Japan supplied half of the total volume, followed closely by Canada. Canada was the major block supplier.

TABLE 56

US imports of turbot, 1979

(000 tonnes, product weight)

	Fillets	Blocks
Canada	6	2
Iceland	0.4	0.1
Japan	8	0.2
Other	1.5	0.2
Total	15.9	2.5

Source: US Dept. of Commerce, US Imports for Consumption, Bureau of the Census, Washington, DC.

The Canadian turbot catch is expected to increase from 40 000 tonnes in 1979 to a maximum potential of 65 000 tonnes in 1985. US demand for Canadian turbot may amount to 9 000 tonnes of fillets and 2 000 tonnes of blocks in 1985.

J. HALIBUT

Halibut, the highest-priced groundfish, is primarily marketed in the fresh and frozen dressed form in the US. It is mainly sold by high-class restaurants and quality fish-and-chips outlets. Retailing is confined to fish specialty shops.

Halibut consumption

It is estimated that Americans consumed 5 500 tonnes of dressed halibut and 1 300 tonnes of fillets and steaks in 1979, representing a substantial drop in demand from the two previous years. By 1985 dressed halibut consumption may increase to about 9 000 tonnes and fillet-steak consumption to 1 500 tonnes.

TABLE 57

US halibut consumption, 1977-79 and 1985

(000 tonnes, product weight)

	1977	1978	1979	1985
Dressed	8.0	8.2	5.3	9
Fillets and steaks	2.4	2.1	1.9	1.5
Total	10.4	10.3	7.2	10.5

Source: US Dept. of Commerce, Food Fish Market Review, (NMFS), Washington, DC.

Halibut landings

US fishermen land a very small volume of halibut on the Atlantic coast and more substantial quantities in Alaska. Both of these resources are static, however, and the total catch is likely to be between 10 000 and 12 000 tonnes in 1985.

TABLE 58

US halibut landings, 1977-79, 1981 and 1985

(000 tonnes, round weight)

	1977	1978	1979	Forecast for 1981	Forecast for 1985
Atlantic coast	--	--	--	--	--
Alaska	8	8	10	8-12	8-12
Total	8	8	10	8-12	8-12

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

Halibut balance

It is projected that the US may produce about 7 000 tonnes of halibut products in 1985 and may import 3 500 tonnes.

TABLE 59

US halibut balance, 1979 and 1985

(000 tonnes, product weight)

	Demand		Domestic Production		Imports Actual	Imports Potential
	1979	1985	1979	1985	1979	1985
Dressed	5.5	9	6.3	6	1.9	3
Fillets and steaks	1.3	1.5	0.9	1	0.4	0.5
Total	6.8	10.5	7.2	7	2.3	3.5

Source: IBID.

In the above table the demand figure for 1979 is much lower than the domestic production plus the import volume because of a very substantial increase in the level of inventories. Inventories increased from 1 200 tonnes to 3 900 tonnes between January and December.

Halibut imports

In 1979, the US imported 400 tonnes of filleted halibut and nearly 2 000 tonnes of dressed halibut. Canada was the major supplier of the dressed product.

TABLE 60

US imports of halibut, 1979

(000 tonnes, product weight)

	Fillets
Iceland	0.2
Other	0.2
Total	0.4

	Fresh/chilled/frozen Whole/beheaded
Canada	1.5
Mexico	0.4
Other	0.1
Total	2.0

Source: US Dept. of Commerce, US Imports for Consumption, Bureau of the Census, Washington, DC.

Canadian fishermen land halibut on both the Atlantic and Pacific coasts. In 1979, the Atlantic catch was 1 900 tonnes while BC waters produced 3 800 tonnes. The total Canadian catch potential may drop to about 4 000 tonnes and US demand for Canadian dressed halibut may increase to 2 500 tonnes by 1985.

K. SALMON

Salmon consumption

Per capita consumption of salmon in the US has been in a long-term decline due to diminishing supply, increasing exports and increasing populations. Per capita consumption of canned salmon during the 1960s was 0.8 pounds, declining to 0.5 pounds in the 1970s. The sharp increase in supply in 1980, 1981 has reversed this long term declining trend. For fresh, frozen and cured products consumption has increased sharply since 1979 with the increase in supplies (Table 61).

Prior to the late 1970's there was a strong substitutional relationship in the market between the demand for canned salmon and that for canned tuna. Per capita consumption of canned tuna increased from an average of 2.2 pounds in the 1960s to 2.9 pounds in the 1970s. This increasing trend subsided in 1979 when the per capita consumption of 3.3 pounds was recorded - the same as in the previous year.

The market for frozen salmon is largely derived from the demand for smoked and cured products. In the large cities such as New York and Chicago, salmon smokers bring frozen salmon and mild cured salmon in from the west coast and process it into products such as "Nova Scotia" smoked salmon, Scotch-style smoked salmon sides and lox sides. Lox is produced from mild cured salmon which is imported in 250 pound casks. The fish is taken from the cask and soaked in running water to remove salt. It then goes through a drying process. Prior to the advent of freezing facilities, nearly all of the salmon brought in from the west for smoking was salted in casks. Red spring salmon from the Pacific is most often used, but certain producers call specifically for Atlantic salmon and some white spring and coho salmon is used. Sockeye and pink salmon are never used for smoking because of their small size, and the flesh of pink salmon is often too soft. Smokers said they would use much more Atlantic salmon if more was available. As it is, nearly all of their production is of Pacific salmon.

The high consumption of smoked salmon in New York reflects the large Jewish and Scandinavian populations. Smoked consumption is increasing but would be more so if prices were lower, but competition for supplies keep prices high.

Some smoked Atlantic salmon is brought in from Scotland, processed from raw material which originates in Canada.

Fresh and frozen salmon for the restaurant trade is consumed in the major cities, but not on a large scale. In New York City, fresh Pacific salmon is flown in to the Fulton market. The three-hour difference in time facilitates the transfer, with the product leaving the West in the evening and arriving in time for maket opening at 5 a.m.. Salmon for that market is most often purchased from Seattle brokers, but comes from either the Northwestern states, BC or Alaska, depending on availability and price. Salmon could be a larger item in restaurants but is said to be too expensive compared to cod and shellfish. Atlantic salmon is reported to be a larger item for specialty restaurants, mainly French and Italian.

Purchases of frozen salmon steaks from supermarkets may show an increasing trend with the introduction of vacuum packages, which extend the shelf life considerably and are likely to be in demand as convenience items.

TABLE 61

US Salmon consumption, 1977-1980 and 1985

(000 tonnes)

	1977	1978	1979	1980	1985[1)]
Canned (product weight)	49	59	50	54	53
Fresh, frozen and cured (round weight)	14	9	58	73	60

1) Based on average per capita consumption figures in five most recent years and population projections.

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

Salmon exports

In recent years US processors have exported a considerably larger proportion of their salmon production - both frozen and canned. Frozen salmon exports have expanded in response to sharply increased prices offered by the Japanese, whose import requirements have risen substantially since the extension of fishing jurisdiction by the Soviet Union and the US reduced Japan's high-seas catches. Japanese salmon imports increased from 3 700 tonnes in 1975 to 49 700 tonnes in 1978 and 55 000 tonnes in 1979.[1] By 1985 it is estimated that Japan may import 50 000 tonnes, of which the US will supply 42 000 tonnes. In 1979, exports from the US to Japan amounted to 43 218 tonnes compared to 15 270 tonnes in 1977.

Total US frozen salmon exports were 65 484 tonnes in 1979 compared to 57 049 tonnes in 1978. Quantities exported to France and Sweden were also higher in 1979 than during the previous years (Table 63). The market for frozen salmon was volatile in 1979 and turned out to be unprofitable for processors due to the very high prices paid for the raw fish and declining selling prices later in the year. Processors froze too much salmon, anticipating better demand, and this contributed to a decline in prices.

Canned salmon markets improved steadily in 1979 and early 1980 with prices increasing for both pink and sockeye salmon. As a result more of the 1980 catch was diverted to canning, which caused prices to increase somewhat for the frozen product.

Canned salmon exports from the US have increased sharply in recent years as a result of less competition from Japan and the heavy production volumes. The UK, Australia and Canada have accounted for most of the increase. Canada is importing more salmon because of supply shortages caused by poor catches. Canadian canners are finding it more profitable to process quarter-pound and half-pound cans and import one-pound tall cans from Alaska to fill markets for that product. Canned exports from US may sustain a level of 34 000 tonnes by 1985 if the strong Alaskan runs can be sustained.

[1] With the large salmon runs in Alaska in 1981 exports from United States to Japan climbed to an estimated 66 000 tonnes while total frozen salmon exports may attain a level of 100 000 tonnes.

TABLE 62
US exports of canned salmon
(000 tonnes, product weight)

	1977	1978	1979	1980	1985
Canada	1	3	4	7	7
UK	4	4	8	15	15
Netherlands	1	2	2	3	3
Belgium	0.5	0.5	1	2	2
Australia	0.6	2	3	4	4
Japan	0.3	0.6	1	1	1
Other	0.8	1	1	2	2
Total	8.2	13.1	20.0	34.0	34.0

Source: US Department of Commerce, Fisheries of the United States, (NMFS), Bureau of the Census and (MSB) estimates.

Frozen salmon exports may come to 64 000 tonnes by 1985, mainly as a result of stable demand from Japan (Table 63). Significantly higher exports are not expected to materialize to Europe because of competition from cultured Atlantic salmon in European countries, including Norway and Scotland.

TABLE 63
US exports of frozen salmon
(000 tonnes, product weight

	1977	1978	1979	1980	1985
Canada	3	2	3	8.7	3
Sweden	2	2	3	2.2	3
Denmark	0.8	0.4	0.6	0.6	1
UK	2	3	3	2.6	3
Netherlands	0.5	0.8	0.8	0.7	1
Belgium	0.9	0.8	1	1.1	1
France	6	6	8	6.3	8
FRG	0.8	1	1	0.9	1
Japan	15	41	43	30.1	42
Other	0.7	1	1	2.3	1
Total	31.7	58.0	64.4	55.5	64.0

Source: IBID.

Salmon landings

Salmon landings in the US have increased progressively each year since 1975. The 1979 catch of 243 181 tonnes was a post World War II record - up by one-third from the previous year. The catches in 1980 surpassed that of 1979 - over 278 400 tonnes.1 Increased Alaskan production is dominated by Bristol Bay catches, where the run in 1979 of 40 323 000 fish was more than double the 1978 run and 2.2 times the 20-year average run of 18 520 000 fish.

The improvement of salmon runs in Alaska is being attributed to warmer water temperatures and better environmental conditions for fish survival, such as mild winters causing less freezeout in streams. The cutback in the Japanese high-seas salmon fishery has also had an effect, but even in the peak year they only caught 7 000 000 fish bound for Bristol Bay.

For the future, biologists in Alaska predict good runs, especially in cycle years. For 1981, the Bristol Bay fishery will be two-thirds as strong while 1982, 1983, 1984, lower returns are expected. The 1985 cycle year should be as strong as 1980. Pink salmon returns have also been high in recent years in Bristol Bay and other coastal areas and this trend is expected to continue. Pinks have a two-year cycle but the various fisheries should balance to produce runs of about 50 000 000 fish per year. These predictions will of course be affected positively or negatively according to the continuation of current environmental factors and highseas catch rates.

Salmon enhancement programs in the western US 2) are aimed at a large increase in harvest. The objective (in Alaska) is to expand production to historic high levels of 100 million fish by 1990. Other programs are also underway in Washington State and Oregon. For the purpose of this paper, supplies are projected to sustain a level ranging from 230 000 to 270 000 tonnes by 1985 (Table 64).

1) Since the text of this report was written final statistics for 1980 and preliminary statistics for 1981 indicate catches of over 278 000 tonnes in in those years.

2) There are hatchery programs underway for the production of Atlantic salmon in Connecticut and Vermont but commercial volumes have not materialized as yet.

TABLE 64

US salmon landings 1977-79 and 1985

(000 tonnes, round weight)

	1977	1978	1979	Range 1985
Atlantic coast	0	0	0	0
Pacific coast	27	25	31	33-41
Alaska	125	158	212	197-229
Total	152	183	243	230-270

Source: Dept. of Fisheries and Oceans, Marketing Services Branch, Ottawa and the US Dept. of Commerce, (NMFS), Washington, DC.

Salmon balance

It is anticipated that there will be very little (if any) shortfall in US landings by 1985. A small amount of imports may take place however, due to proximity and trading ties between US and Canadian companies.

TABLE 65

US salmon balance, 1979 and 1985

(000 tonnes, product weight)

	Demand				Domestic		Imports	
	Domestic		Export		Production		Actual	Potential
	1979	1985	1979	1985	1979	1985	1979	1985
Canned	50	53	20	34	70	87	0	0
Other[1])	48	42	64	64	110	104	2	2
Total	98	95	84	98	180	191	2	2

1) Product assumed to be frozen dressed salmon - to convert to round use a factor of 1.20.

Source: IBID.

L. HERRING

Herring consumption

The US is one of the largest markets in the world for herring products, with the greatest demand being for canned sardines - amounting to over 36 000 tonnes product weight in 1979. Other significant items are canned, pickled and smoked herring products. The total market in the US in product weight was 50 000 tonnes from 1977 to 1979, and is expected to reach a level of nearly 54 000 tonnes by 1985 (table 67).

TABLE 67

US consumption of herring products, 1977-79 and 1985

(000 tonnes, product weight)

	1977	1978	1979	1985
Fresh/frozen	2	2	2	2
Sardine	33	33	36	37
Canned	5	3	3	4
Pickled	9	11	8	10
Smoked	1	1	1	1
Total	50	50	50	54

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS) and (MSB) estimates.

Fish dealers in the main markets concur that sardines are being consumed by two overlapping market segments, which are the ethnic populations - primarily European - and the middle to high-income market segment, which consumes sardines as a snack item. The ethnic market may be declining slowly as younger generations become more dominant, whereas the demand from the higher-income segment is growing gradually as living standards increase. The net result is a level to very slightly declining per capita consumption. In total, however, the consumption of sardines is expanding and by 1985 should reach 37 000 tonnes product weight.

Similar consumption patterns are demonstrated for other herring products, including canned, pickled and smoked. Among these categories, the largest item is pickled herring, imported primarily from the Canadian

Atlantic coast for further processing[1]). This product is packed by Canadian producers in 100 kilogram barrels and purchased by about a dozen large US producers of a variety of pickled herring items packed in jars and containers of assorted sizes for distribution to the institutional and retail trade. The distribution of vinegar-cured herring has changed somewhat in recent years. VITA Foods company controlled 75% of the business prior to being sold in 1975, but now the trade is divided between three of four companies, resulting in a wider distribution of products. Vinegar-cured herring is imported with a preliminary cure (American and salt cure) but then altered and added to by processors according to as many as 15 different formulas or cures, each according to tastes of consumers. These formulas have been developed years ago according to recipes developed by eastern Europeans, Germans and Scandinavians. The markets for these products are fairly contained in each area and are delicacy-oriented so that they are probably sensitive to general economic conditions such as recessions or boom periods.

Most persons in the trade believe per capita consumption of pickled herring is not expanding but is perhaps declining very slowly. By 1985, it is projected that nearly 10 000 tonnes product weight will be consumed.

Smoked products, including kippers, are consumed by the institutional trade, including restaurants, hotels, clubs, and sold at the retail level in stores, delicatessens and fish shops. Kippers are generally split or boneless in the form of butterfly fillets. Buckling is a hot smoked herring (not cold smoked as are bloaters). Pickled herring processors are usually also smokers. This trade may be declining somewhat, but on the other hand some feel it is making a comeback.

Consumption of smoked and canned herring, along with fresh frozen, is projected to 1985 based on the average per capita figures from 1970 to 1977. Consumption of these products is also largely related to ethnic populations.

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1) There is also a small-scale production of fully processed pickled and smoked products on the west coast of Canada, some of which is exported into the western states.

Herring exports

Exports of herring from the US originate almost entirely from domestic landings. Nearly all of the Pacific catch has been exported to Japan for the herring roe, and for dried herring as a by-product from the carcasses. This trade is forecast to continue due to the lucrative returns from the roe market in Japan. If Alaskan landings expand in the future it will be in response to high roe prices and/or food herring prices in Japan.

Atlantic herring that are too large for the sardine industry (primarily off the State of Maine) are frozen round or filleted and exported to Europe. Some quantities are also exported to New Brunswick sardine processors, while small quantities from both coasts are used as bait for halibut longlining, swordfish fishing and lobster trapping.

Herring landings

US herring landings have expanded in recent years on both coasts, reaching over 132 000 tonnes in 1980 (Table 68) compared to only 46 000 tonnes in 1973.

The Pacific coast fisheries take place in Bristol Bay, southeastern Alaska, California and Washington. The Bristol Bay and southeastern Alaskan fisheries show potential for expansion but biologists have made a conservative catch projection of only 29 000 tonnes for all of the Pacific in future years. Actual landings in 1980 were over 40 000 tonnes despite the biologists low projection.

On the Atlantic coast, 1979 landings were unusually high because of an abundance of juvenile herring in the Gulf of Maine. The long-term projection for Atlantic coast landings is for 20 000 tonnes of juvenile herring (sardines) and 25 000 tonnes of adult herring. Virtually all of these Gulf of Maine landings are from weirs, purse seines, stop seines and pair trawls. There hasn't been a herring fishery on Georges Bank since foreign fishermen stopped fishing there in 1976. Surveillance by research vessels has not detected a significant stock of fish. However, if those

stocks can be rebuilt to former levels a fishery of 100 000 tonnes could be possible. High costs of fuel and the scarcity of herring have discouraged US fishermen from pursuing the Georges Bank fishery.

TABLE 68

US herring landings, 1977-80 and 1985

(000 tonnes, round weight)

	1977	1978	1979	1980	Range 1985
Atlantic coast	51	50	65	83	41-49
Pacific coast)	20	20	30	49	27-31
Alaska)					
Total	71	70	95	132	68-80

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS) and (MSB) estimates.

Herring balance

The US import requirement for herring by 1985 is projected at 54 000 tonnes, the same quantity as in 1979 (Table 69).

TABLE 69

US herring balance, 1979 and 1985

(000 tonnes, product weight)

	Demand				Domestic		Imports	
	Domestic		Export		Production		Actual	Potential
	1979	1985	1979	1985	1979	1985	1979	1985
Fresh/ frozen	2	2	551	551	55	47	182	16
Sardine	36	37	1	1	14	8	23	23
Canned	3	4	--	--	--	--	3	4
Pickled	8	10	--	--	--	--	8	10
Smoked	1	1	--	--	--	--	1	1
Total	50	54	56	56	69	55	53	54

1) Assumes all exports are in round form. In actual fact exports are in both round and fillet form but breakdown is not available.
2) Includes 16 162 tonnes of sardines from Canada.

Source: IBID.

Herring imports

Imports of herring products have been substantial, averaging 64 000 tonnes (product weight) valued at $66 million from 1977 to 1979. The largest item in both volume and value terms has been canned sardines, followed by pickled and cured herring and canned herring. Other items are fresh herring and smoked or kippered products (Table 70).

In the fresh or frozen category the bulk of the imports come from Canada in the fresh state from weir fishermen in the Bay of Fundy area, to be used as sardines. According to US statistics[1]) the sardine component of fresh imports was as follows: 1977 = 17 791 tonnes, 1978 = 23 547 tonnes, 1979 = 16 162 tonnes.

Imports of canned sardines come primarily from Norway, Canada and Japan. The European imports primarily serve ethnic markets and are expected to continue in similarly large volumes to 1985. (Large volumes of canned sardines also come from Peru, but these are anchovies, not herring).

Other canned imports come chiefly from Canada, Norway, FRG and Iceland and should continue in similar quantities to 1985.

Pickled and vinegar-cured imports, primarily from Canada, are used for further processing in the US. These imports come from each Atlantic province but the Newfoundland product is especially in demand because of size and quality. Occasionally processors obtain supplies from Iceland and European countries when quality products are not available from Canada. According to trade spokesmen, Canada will continue to supply the major share of herring for this business in the future because the size and quality of fish available from the US Atlantic fishery are not as well suited for pickling. Size and fat content are the two wild cards in the choice of supply. Twelve to 14-inch herring or larger is desired, but smaller than 10-inch herring is not mainly because of the higher costs of processing the smaller size.

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1) Source: Resource Statistics Division, (F/SRI), National Marine Fisheries Service, Washington, DC.

TABLE 70

US imports of herring products

(000 tonnes, product weight)

	Fresh/Frozen		Pickled/ Salted		Canned		Sardines	
	1979	1985	1979	1985	1979	1985	1979	1985
Canada	18	16	9	11	2	2	2	1
Iceland	--	--	--	--	0.2	0.2	--	--
FRG	--	--	--	--	0.2	0.2	--	--
Norway	--	--	--	--	0.2	0.2	8	8
Peru	--	--	--	--	--	--	6	6
Japan	--	--	--	--	--	--	2	2
Mexico	--	--	--	--	--	--	1	1
Other	--	--	--	--	--	--	4	4
Total	18	16	9	11	2.6	2.6	23	22

Source: US Dept. of Commerce, US Imports for Consumption, Bureau of the Census and MSB estimates.

M. LOBSTER

The US market for lobster

The demand is for two main species - American lobster and spiny lobster. Since Canada is the sole exporter of American lobster to the US market and does not harvest spiny lobster, the major part of this section will deal with the market for American lobster.

Apart from general economic conditions the following factors will influence the US market for American lobster products over the next several years:

i) developments in the US fishery with respect to lobster landings and other shellfish products.
ii) growth rates of various segments of the US market; the food service segment has been the principal market for shellfish in the US.
iii) the effects of other supplying countries with respect to trade in products which directly or indirectly compete with lobster, e.g. spiny lobster.

Lobster consumption

The following table shows the trend in consumption for American lobster products between 1977 and 1979 and the projected consumption for 1981 and 1985.

TABLE 71
US consumption of American lobster products,
1977-79 and forecast to 1981 and 1985
(000 tonnes, product weight)

				Forecast	
	1977	1978	1979	1981	1985
Live lobster	20.9	21.1	23.4	25.5	29.0
Canned - frozen meat	1.0	0.9	0.7	0.6	0.5
- hot pack	0.1	0.1	0.1	0.1	0.1
	1.1	1.0	0.8	0.7	0.6
Other products	1.1	1.9	3.8	4.5	6.0
All products	23.2	24.0	28.0	30.7	35.6

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS) and MSB estimates.

Between 1977 and 1979 American consumption of lobster products increased by almost 21%, more or less in keeping with the increase in combined US and Canadian landings over the same period.

Lobster consumption trends

While overall consumption rose substantially there were some significant changes with respect to various lobster products and these trends are expected to prevail during the next several years.

Live lobsters accounted for 90% of total US consumption of lobster products in 1977. Consumption of live lobsters increased by almost 12% in the period 1977-1979, but, as a share of the overall lobster market, live lobster products declined to 84% in 1979. Although consumption of live lobster is expected to increase by 24% during the period 1979-1985, it is likely the proportion of live lobsters to all lobster products consumed will continue to fall slightly during the same period.

The demand for frozen meat (cold pack) has declined over the past several years. When it was first developed, the cold pack was primarily intended to supply the retail segment of the market. As prices increased sales of the cold pack steadily declined in the retail stores. While the decline in retail rates has been partly offset by increased utilization by the food service segment of the market, it is expected that total demand for the product will continue to decline over the next several years.

Although the market for canned hot pack declined slightly between 1978 and 1979 demand is expected to stabilize during the period 1981-85.

Other lobster products (for example, frozen-in-sleeve) have enjoyed increasing acceptance during the past several years and are expected to increase their share of the lobster market overall during the 1981-85 period.

It is expected that the consumption of lobster products will grow at a reduced rate (2% per annum) over the next two years, in keeping with the anticipated reduction in the rate of growth in combined US and Canadian landings during the period 1979-81.

During the period 1981-85, it is expected that overall US consumption will increase at a rate of 4% per annum in keeping with anticipated increases in landings during that period.

US Lobster exports

Lobster exports are comprised mainly of spiny lobster and constitute a small volume of US shellfish exports. It is estimated that such exports corresponds to a small proportion of total US lobster supplies and are not a significant factor in the US trade in lobster products.

Spiny lobster

Although spiny lobster does not directly compete with American lobster it is believed to influence the price for certain lobster products, particularly those utilized in the food service sector of the market.

During the past three years consumption of spiny lobster has remained steady with supplies of approximately 40 000 tonnes (product weight) (70 000 tonnes round weight) per annum. Since 1975, US domestic landings of spiny lobster have stabilized at approximately 3 000 tonnes annually while imports have constituted approximately 96% of supplies. While US supplies of American lobster have fluctuated with the rise and fall of US and Canadian landings (US supplies of American lobster were at the same level in 1971 as they were in 1979), US supplies of spiny lobster have increased by 10% during the period 1971-1979.

US landings of American lobster

The following table shows the US landings of American lobster during the period 1977-79 and the forecast landings for the years 1981 and 1985.

TABLE 72

US American lobster landings 1977-79 and forecast 1981, 1985

(000 tonnes, live weight)

			Forecast	
1977	1978	1979	1981	1985
14.4	15.6	16.9	16-20	18-22

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and (MSB) estimates.

From a high of 15 900 tonnes in 1970, US landings of American lobster declined steadily to a low of 13 000 tonnes in 1974. Since 1974, landings have gradually increased to a record (for the last decade) of 16 900 tonnes in 1979. It is expected that landings of American lobster may increase to about 18 000 tonnes in 1981 and to 20 000 tonnes in 1985.

US balance of American lobster, 1979 and 1985

When calculating the balance of American lobster the following assumptions were made:

i) landings would increase to 20 000 tonnes in 1985.
ii) exports of American lobster would continue to remain at very small levels as a present.
iii) utilization of domestically-landed American lobster would continue to be primarily in fresh product form.

TABLE 73

US balance of American lobster 1978 and 1985

(000 tonnes, product weight)

	Demand		Domestic Production		Imports	
	Actual	Potential	Actual	Potential	Actual	Potential
	1979	1985	1979	1985	1979	1985
Live	23.4	29.0	16.9	20.0	6.5	9.0
Canned	0.8	0.9	-	-	0.8	0.9
Other Products	3.8	6.0	-	-	3.8	5.3
Total	28.0	35.9	16.9	20.0	11.1	15.2

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and (MSB) estimates.

The foregoing table shows that while domestic production could increase to 20 000 tonnes in 1985 (an increase of 18% from 1979) import requirements could increase from 11 000 to 15 200 tonnes, product weight. By using the appropriate conversion factors (1.0 for live and other products and 4.64 for canned products) the round weight equivalent of US import requirements could be 18 500 tonnes in 1985 compared with 14 000 tonnes in 1979, an increase of 32%.

US imports of American lobster

As shown in the preceding section, import requirements could increase to about 18 500 tonnes in 1985 compared with 14 000 tonnes in 1979. Canada is the sole supplier of American lobster to the US and exported approximately 68% (round weight equivalent) of its 1979 lobster landings of 20 500 tonnes. Between 1979 and 1985, Canadian lobster landings are expected to increase by approximately 21% to 25 000 tonnes.

N. CRAB

The US market for crab

The American crab market is served by several main species, blue crab, Dungeness, king and snow. Only the latter two species are significant in terms of US trade in crab products.

Landings of Dungeness crab amounted to 18 000 tonnes in 1978 and 1979, the lowest quantity of the four commercially important species. Dungeness crab products have their principal market in the western US although relatively small quantities are shipped to eastern markets. Small quantities are exported to other countries, including Canada.

Blue crab landings were over 69 000 tonnes in 1979 and 63 000 tonnes in 1978. Because of certain properties, Blue crab meat is less suitable than king or snow crab for freezing or canning. In addition the blue crab has the lowest meat yield of the four major species (about 14% of live whole weight compared with about 20% for the other three species). For these reasons the blue crab market is fairly localized in the Southeastern and Southern US where it is sold, for the most part, fresh or cooked in shell.

Since king and snow crab are the principal species in terms of trade between the US and Canada and other countries this section will deal for the most part with the US market for king and snow crab.

US consumption of crab products

The following table shows the trend in consumption for crab products between 1977 and 1979 and the projected consumption for 1981 and 1985.

TABLE 74

US consumption of crab products, 1977-79 and forecast to 1981 and 1985

(000 tonnes, product weight)

				Forecast	
	1977	1978	1979	1981	1985
Fresh/frozen meat					
Blue Crab	8.2	8.8	9.7	9.7	9.7
Dungeness	6.5	4.2	4.2	4.2	4.2
Snow	7.5	5.1	5.0	5.8	5.8
King	8.6	5.1	5.0	5.5	6.7
Other	0.3	0.3	0.3	0.5	0.3
Canned crab	3.8	2.4	4.5	4.5	4.7
All crab products	34.9	25.9	28.7	30.0	31.6

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS). Washington D.C.

Consumption trends

Consumption of blue crab rose substantially during the latter part of the last decade in keeping with steady increases in landings of this species. It is expected that consumption will remain stable during the period 1979 to 1985 in line with the anticipated trend in landings.

Consumption of Dungeness crabs reached a peak in 1977 in keeping with the very high landings recorded in that year. Landings are not expected to increase significantly above 1979 levels during the next five years and it is expected consumption of Dungeness crab will remain stable during the same period.

Consumption of king crab rose steadily throughout the 1970-77 period. Consumption then declined in 1978 and again in 1979 even though landings in those two years were at the highest levels in over a decade. The decline in domestic consumption was, however, more than offset by a large increase in US king crab exports (from 4 600 tonnes in 1977 to over 16 000 tonnes in 1979). During the period to 1985, consumption of king crab is expected to recover somewhat while landings are expected to decline slightly from the record high levels of 70 000 tonnes recorded in 1979 to 56 000 - 64 000 tonnes in 1985.

The recent trend in consumption of snow crab products was similar to that observed in the case of king crab, climbing steadily in the years 1970-76, then declining markedly in 1978 and 1979. Contrary to the reduction in domestic consumption, snow crab landings continued to increase steadily to a record high volume of 59 600 tonnes in 1979. As was the case with king crab, US exports of snow crab more than offset the decline in domestic consumption. US snow crab exports increased from 10 000 tonnes in 1977 to 19 500 tonnes in 1979. It is anticipated that the US consumption of snow crab will also recover somewhat during the period 1979-1985.

US crab exports

US crab exports are comprised mainly of snow and king crab frozen meat and sections. Relatively small quantities of canned king crab meat are exported.

During the years 1977 to 1979 exports of king and snow crab meat rose very rapidly while domestic consumption declined. It is anticipated that increased fishing effort will result in large increases in snow crab landings over the next five years. While domestic consumption of snow crab products is expected to recover it is expected that the quantity of snow crab products available for export will almost double by 1985. Domestic consumption of king crab products is also expected to recover during the period 1979 to 1985. In contrast to the outlook for snow crab, however, the anticipated decline in king crab landings in 1985, coupled with increased domestic consumption, indicates that a smaller quantity of king crab frozen meat products will be available for export.

TABLE 75
US exports of crab products, 1977-79 and forecast to 1985
(000 tonnes, product weight)

	1977	1978	1979	Potential available for export 1985
Frozen meat				
Snow crab	10.0	14.4	19.5	36.0
King crab	4.6	13.7	16.4	14.2
Canned meat				
King crab	0.1	0.2	0.4	0.5
Total exports	14.7	28.3	36.3	50.7

Source: US Department of Commerce, Fisheries of the United States, (NMFS) and MSB estimates.

US crab landings

The following table shows landings by regions of the four major commercial species of crabs for the period 1977-79 and the forecast landings for the years 1981 and 1985.

While landings of blue crab and Dungeness crab in 1985 are expected to be on a level with the quantities taken in 1979, landings of snow crab could increase significantly (perhaps by as much as 70% compared to 1979) while the catch of king crab is expected to decline somewhat from the high levels recorded in 1979.

TABLE 76

US crab landings by region and species 1977-79 and forecast 1981 and 1985

(000 tonnes, live weight)

				Forecast	
	1977	1978	1979	1981	1985
Atlantic					
Blue crab & other	64	68	75	70-80	70-80
Pacific					
Dungeness	27	15	15	12-16	12-16
Alaska					
Dungeness	0.5	3	3	3-5	3-5
Snow	45	59	60	74-92	90-114
King	45	59	70	56-64	56-64
Total	181.5	204	223	215-257	231-279

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

US balance of crab, 1979 and 1985

The balance of crab products forecasted for 1985 indicates differences in trends for king and snow crab. The anticipated decline in landings and production, coupled with some expected recovery in the domestic consumption of king crab indicates there will be a reduction in the quantity of frozen king crab meat available for export in 1985.

In the case of snow crab, anticipated large increases in landings and production indicate there will be a large increase in the quantity of snow crab available for export in 1985. Domestic consumption of snow crab products is also expected to increase slightly compared with 1979 levels. The anticipated large increase in US production is expected to reduce the demand for imported snow crab fresh and frozen meat by 1985.

TABLE 77

US balance of crab products, 1979 and potential 1985

(000 tonnes, product weight)

	Domestic Consumption		Domestic Production		Exports		Imports	
	Actual 1979	Potential 1985	Actual 1979	Potential 1985	Actual 1979	Potential 1985	Actual 1979	Potential 1985
Fresh, frozen meat								
Blue crab	9.7	9.7	9.7	9.7	--	--	--	--
Dungeness	4.2	4.2	4.2	4.2	--	--	--	--
King	5.0	6.7	24.4	20.9	16.4	14.2	--	--
Snow	5.0	5.8	20.5	41.0	19.5	36.0	1.0	0.8
Other	0.3	0.3	--	--	--	--	0.3	0.3
All fresh, frozen meat	24.2	26.7	58.8	75.8	35.9	50.2	1.3	1.1
Canned meat								
King	1.7	2.0	2.1	2.5	0.4	0.5	--	--
Snow	0.3	0.5	--	--	--	--	0.3	0.5
Other	2.5	2.4	--	--	--	--	2.5	2.4
All canned meat	4.5	4.9	2.1	2.5	0.4	0.5	2.8	2.9
All crab products	28.7	31.6	60.9	78.3	36.3	50.7	4.1	4.0

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

US imports of crab

The following table shows the trend in frozen crab meat and canned crab meat imports for the years 1977 to 1979 and the forecast imports for 1985.

TABLE 78

US imports of crab products, 1977-1979 and forecast 1985

(000 tonnes, product weight)

	1977	1978	1979	Forecast 1985
Crab meat, fresh, chilled or frozen	2.8	2.1	1.3	1.1
Crab meat, prepared or preserved	1.7	2.4	2.8	2.9
Total	4.5	4.5	4.1	4.0

Source: US Dept. of Commerce, US Imports for Consumption, Bureau of the Census and MSB estimates.

Recent trends in US imports and the forecast balance of crab products in 1985 suggest that import requirements of frozen snow and other crab meat could decline slightly by 1985 compared with 1979. In 1979, US frozen crab meat imports were comprised of approximately 1 000 tonnes of snow crab meat with Canada supplying 850 tonnes and Japan 150 tonnes. About 300 tonnes of frozen meat from other crab species was imported by the US in that year.

In contrast to the recent trends in frozen crab meat, canned crab meat has enjoyed increasing sales during the past several years. According to US import statistics, Canada with almost 200 tonnes and Japan with over 300 tonnes, were the principal suppliers of canned snow crab meat to the US in 1979. Other countries supplied about 2 000 tonnes of canned meat from other crab species that year. It is anticipated that imports of canned crab meat could increase to 2 900 tonnes in 1985, up slightly from 2 800 tonnes in 1979.

US market outlook for Canadian crab products, 1985

The outlook for Canadian crab products in the US market in 1985 indicates, on the basis of recent and anticipated trends in trade and landings, that the frozen crab meat market could continue to decline gradually over the next five years. It is possible that Canadian sales of frozen crab meat could decline by an additional 200 tonnes product weight or 900 tonnes round weight equivalent by 1985.

In contrast the outlook for canned crab meat exports, based on recent trends is more favourable. Canada exported about 100 tonnes of canned snow crab meat (product weight) or approximately 1 000 tonnes round weight equivalent in 1979. It is likely that these exports will remain on the same level in 1985 with the possibility of some small increase.

O. SCALLOPS

The US market for scallops is supplied by three species, Bay, Calico and Sea. Landings of the first two species have been fairly stable over the past several years and in 1979 they constituted approximately 8% of all US scallop landings and between 3 and 4% of supplies. Thus the sea scallop is the most important commercial species in terms of both the domestic fishery and trade in scallops.

Two main product forms are of commercial importance in the scallop market - fresh or chilled meat and frozen meat. The latter product accounts for in excess of 90% of the scallop meats imported.

US consumption of scallops

The following table shows the trend in consumption for the period 1977 to 1979 and the forecast consumption in 1985.

TABLE 79

US consumption of scallops 1977-79 and forecast 1985

(000 tonnes, meat weight)

1977	1978	1979	Forecast 1985
25.7	28.3	26.7	13.7

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

US scallop consumption has historically had a close relationship with year-to-year variations in supply. Domestic landings of scallops have varied widely over the last twenty years. In 1961, US landings reached a peak of over 13 000 tonnes. From 1961, when scallop imports accounted for only 20% of US supplies, US landings declined steadily until they reached a low point of 3 600 tonnes in 1973. That year imports accounted for 57% of US supply. Since 1973, US scallop landings have climbed steadily to a record 15 500 tonnes in 1979. As landings increased the proportion of supplies provided by imports has gradually fallen in recent years to 42% in 1979.

At the previous peak level of landings in 1961, apparent US scallop consumption was .09 kg per capita, a rate which was not surpassed until 1976. During the years 1969 to 1974, when US landings were at their lowest levels recorded in the past twenty years, per capita consumption fell to .06 kg, approximately half of the current rate.

Since the middle of the last decade Canadian exports of scallop meat to the US have accounted for between 40 and 50% of all US supplies and between 80 and 90% of all US scallop imports. Over the past several years the supplying countries other than Canada have provided between 1 500 and 2 300 tonnes of scallop meat annually to the US.

The substantial reduction in scallop consumption forecast for 1985 is directly related to significant reductions anticipated in both American and Canadian landings between 1979 and 1985. The expected decline in landings is the result of extreme pressures on the scallop resource which has been caused by overfishing.

US scallop exports

No separate statistics relating to the US exports of scallop meats are available, and it is believed that such exports, if any, would be very limited.

US scallop landings

TABLE 80

US scallop landings by region 1977-79 and forecast to 1985

(000 tonnes, meat weight)

	1977	1978	1979	Forecast 1985
Atlantic	12.6	15.1	15.5	7.0
Alaska	--	--	--	0.5
Total	12.6	15.1	15.5	7.5

Source: IBID.

There is much concern in the industry that landings will soon peak and return to the declining cycle that occurred during the period 1961 to 1973. Some small recovery of the commercial scallop fishery in Alaska is anticipated and landings in that region are forecast to reach 500 tonnes in 1985.

US balance of scallops, 1979 and 1985

The following table depicts the balance of scallop meats for 1979 and the forecast balance for 1985.

TABLE 81

US balance of scallop meats 1979 and forecast 1985

(000 tonnes, meat weight)

	Domestic Consumption		Domestic Production		Exports		Imports	
	Actual 1979	Potential 1985	Actual 1979	Potential 1985	Actual 1979	Potential 1985	Actual 1979	Potential 1985
Scallop meats	26.7	15.3	15.3	7.5	--	--	11.4	7.8

Source: IBID.

US imports of Scallops

The following table summarizes recent trends in US scallop meat imports between 1977 and 1979 and forecasts imports for 1985.

TABLE 82

US imports of scallop meats 1977-79 and forecast 1985

(000 tonnes, meat weight)

	1977	1978	1979	Forecast 1985
Canada	11.9	11.0	9.0	5.5
Other countries	1.6	1.8	2.3	2.3
Total	13.5	12.8	11.3	7.8

Source: US Dept. of Commerce, US Imports for Consumption, Bureau of the Census, and MSB estimates.

The forecasted imports for 1985 reflect the anticipated decline in Canadian landings from a high of 14 600 tonnes recorded in 1977 (a record quantity of Canadian scallop meats were also exported to the US that year) to 6 200 tonnes in 1985. The forecast of Canadian exports also assumes that Canada would continue to retain, as it has in the past several years, between 2 000 and 2 500 tonnes of scallop meat a year for domestic use.

The forecast of imports from countries other than Canada which have ranged between 1 600 and 2 300 tonnes between 1977 and 1979 are expected to remain unchanged at 2 300 tonnes in 1985.

US market outlook for Canadian scallops, 1985.

Because of anticipated declines in Canadian landings, the quantity of scallops exported by Canada to the US is expected to fall sharply by 1985. If Canadian landings do fall to 8 000 tonnes by 1985, then Canada could export 5 500 tonnes while retaining 2 500 tonnes for domestic use. If the imports provided by other countries remain on the 1979 levels of 2 300 tonnes, Canada's share of the volume of US scallop imports would decline from 80% in 1979 to 70% in 1985.

P. SHRIMP

From the standpoint of value of final sales, the market for shrimp is the most important segment of the total market for fisheries products. In 1978, retail and institutional sales of shrimp products, excluding canned and fresh shrimp, totalled an estimated $0.3 billion and $1.9 billion respectively for a combined value of $2.2 billion. In contrast, estimated aggregate sales values of scallops and crab meat were $256 million and $628 million respectively.

The shrimp market has five salient characteristics. First, shrimp is preferred by the consumer over all other shellfish and over the years has shown a more dynamic growth pattern relative to other seafood generally. Second, the geographic boundaries of the market are not confined to the coastal states: shrimp products have a relatively even distribution throughout the country. Third, shrimp has a universality of demand in the marketplace in the sense that differences in age and income, as well as demographic factors, have influenced consumption to a much lesser extent than has been the case for other shellfish products. Fourth, shrimp comprises a very minor part of the diet of the American consumer. Finally, the market for the southern or warm-water species, which are generally preferred by the consumer, is distinct from the market for northern shrimp, which occupies a separate sub-market.

A very wide range of shrimp products is marketed in the US. There are many combinations of the five basic product categories viz: whole or headless; cooked or uncooked; peeled or unpeeled; fresh or frozen; breaded or unbreaded. The greater proportion of the shrimp consumed in the US in recent years have been either in shell, or peeled but not otherwise processed. Next in importance has been breaded shrimp, followed by canned shrimp products. Fresh shrimp consumption has been declining for many years and has been replaced by frozen shrimp, which, in its many forms, is mainly absorbed by the food service sector. On the other hand most of the canned shrimp is sold through the retail trade.

In general the various shrimp products are not close substitutes: substitution is not likely to occur unless there is an exceptionally wide price differential.

Trends in US shrimp consumption

The appeal of shrimp to the consumer has been such over the years that per capita, as well as total consumption has followed a rising long-term trend. In 1960 the per capita consumption of shrimp, heads-off basis, was 0.6 kilograms. In 1970, consumption had risen to 0.9 kilograms and by 1977 still further to 1.0 kilograms. A number of reasons have been advanced for the long-term increase in per capita demand. They include an intensive, organized industry program of advertising and promotion; an excellent distribution network; product variety, including breaded items; product versatility; a substantial growth in real per capita purchasing power, and a shift away from lower-priced carbohydrates to higher-priced protein foods. The foregoing factors together with the increase in population have been reflected in strong long term growth in the total consumption of shrimp in the US. Between 1967 and 1977 consumption of shrimp products, heads-off basis, increased by 42%. In 1977, domestic landings, imports and consumption reached record levels. However, subsequent trends now point to the cessation of market growth, possibly until at least 1985, as indicated in the following table.

TABLE 84

US consumption of shrimp, 1977-79 and forecast for 1985

(000 tonnes, heads-off weight)

	1977	1978	1979	1985
Fresh and frozen	202	182	180	192
Canned	18	13	10	8
Total	220	195	190	200

Source: US Dept. of Commerce, OP.CIT..

The foregoing estimated consumption trends reflect in particular the very substantial decline that has taken place in the domestic landings of shrimp since 1977, the steep upward movement of prices, and a weakening of the US economy. Future trends in the consumption of shrimp will depend primarily on the rate of growth in world landings and the strength of demand from other markets, such as Japan. The probability is that the existing world shrimp fisheries have in general reached the level of maximum sustainable yields.

US exports of shrimp

Relative to the total supply of shrimp, US exports are small and declining. In 1979, domestic exports of fresh, frozen and canned shrimp were not significantly different from the levels of 1970. Some 15 000 tonnes of fresh and frozen shrimp and 5 000 tonnes of canned shrimp (heads-off weight) were exported in 1979. In addition, 2 500 tonnes of shrimp from Mexico was trans-shipped through US ports. These trends are set out on a product weight basis in the following table.

TABLE 85

US exports of shrimp

(000 tonnes, product weight)

Year	Domestic	Foreign	Total
1970	16	7	23
1971	17	5	22
1972	17	3	20
1973	21	5	26
1974	16	3	19
1975	16	3	19
1976	14	4	18
1977	16	4	20
1978	18	6	24
1979	16	3	19

Source: US Dept. of Commerce, Shellfish Market Review and Outlook, June 1977 and Fisheries of the United States, 1978 & 1979. National Marine Fisheries Service, Washington, DC.

As indicated in the next table the three major markets for American shrimp products are Canada, Mexico and Japan. Canada is the leading export market, absorbing some 7 000 tonnes product weight in each of the years 1977-79.

TABLE 86

US exports of shrimp by country

(000 tonnes, product weight)

Country	1977	1978	1979	Projected 1985
Mexico	4	4	5	3
Canada	7	7	7	6
Japan	2	3	2	2
Sweden	1	1	0	0
Other	2	3	2	1
Total	16	18	16	12

Source: US Dept. of Commerce, Fisheries of the United States, 1978 and 1979 (NMFS) and MSB estimates.

Frozen shrimp products are the dominant category of shrimp exported by the US and, as shown in Table 87 has accounted for between 68% and 72% of total exports for the years 1977 to 1979 inclusive.

TABLE 87

US exports of shrimp by major categories

(000 tonnes, product weight)

Category	1977	1978	1979
Fresh or chilled, nor otherwise prepared not packaged for retail sale	0.6	1	1
Fresh or chilled, but not otherwise prepared, packaged for retail sale	0.6	1	2
Frozen, whether or not otherwise prepared or preserved	11	13	11
Canned, but not frozen	4	3	2
	16.2	18	16

Source: US Dept. of Commerce, US Exports, Schedule "E" Commodity by Country, FT/410 December 1977-8-9, Bureau of the Census.

No significant changes are expected over the next five years in either the volume or pattern of exports. However, in view of the drastic decline that has taken place in the level of US landings, together with the probability of high prices in the years ahead, some contraction in the volume of exports is to be expected. This situation is projected in Table 86.

Shrimp landings in the US

The long-term trend until 1977 was expansionary for American landings of shrimp. The record landings of 131 000 tonnes, heads-off weight, in 1977 were 94% above the level of 1960 and 29% above that of 1970. In 1978 and 1979, landings declined sharply and in the latter year were 29% or 83 000 tonnes below the 1977 peak. It is highly probable that the various shrimp fisheries are being harvested in excess of maximum sustainable yields and landings will continue to remain below the peak level of 1977. Projected landings, round weight, are set out in the following table.

TABLE 88

US shrimp landings, 1977-79 and forecast for 1985

(000 tonnes, round weight)

1977	216
1978	192
1979	153
1985 (forecast)	145-175

Source: US Dept. of Commerce, OP.CIT.

US imports of shrimp

Imports of shrimp have ranged between 90 000 tonnes and 104 000 tonnes during the past few years (Table 89). As shown in Appendix XV imports consist primarily of unbreaded frozen shrimp, which are either shell-on or peeled.

TABLE 89

US imports of shrimp

(000 tonnes, product weight)

Year	Quantity
1970	99
1971	87
1972	101
1973	92
1974	104
1975	91
1976	104
1977	103
1978	90
1979	102

Source: US Dept. of Commerce, Shellfish Market Review & Outlook, June 1977, (NMFS).

The sources of US imports of shrimp are global in scope. In 1979, for example, some 26 countries supplied quantities of 500 tonnes or more (Appendix XVI). Imports from Canada have fluctuated around an average of 500 tonnes in recent years.

Shrimp balance

On the basis of the conclusions and projections outlined in earlier sections of this analysis the following table has been developed.

TABLE 90

US shrimp balance, 1979 and 1985

(000 tonnes, product weight)

	Demand				Domestic		Imports	
	Domestic		Export		Production		Actual	Potential
	1979	1985	1979	1985	1979	1985	1979	1985
Fresh and frozen	180	192	14	11	94	97	100	106
Canned	5	4	2	1	5	3	2	2
Total	185	196	16	12	99	100	102	108

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

It will be noted that a modest increase in US imports of 6% is forecast between 1979 and 1985, and it is expected to be confined to fresh and frozen shrimp products. There should not be a significant change in the imports of canned shrimp.

Potential for Canadian exports

As mentioned earlier, annual imports from Canada are well below 1 000 tonnes, and are made up of the northern species, of the Pandalidae family. So far as can be determined, it is imported solely in the frozen form, which is generally peeled and de-veined. The export opportunities implicit in the projected growth of 6% in imports by 1985 have to be modified in the light of the fact that northern shrimp occupies a minor position in the American market. As the northern shrimp species are less preferred relative to the larger southern shrimp, the potential for increased exports of the former is less than the forecast growth of 6 000 tonnes in total imports. Widespread substitution of northern shrimp for warm-water shrimp is likely only if supply constraints offer no alternative.

It is estimated that the proportion of total import demand applicable to northern shrimp products is of the order of 3%. On this basis potential US imports of northern shrimp would be about 3 000 tonnes in 1985. The constraints on the ability of Canadian exporters to take advantage of this export opportunity will be supply limitations and more favourable markets in Europe.

Q. FRESHWATER FISH

Freshwater fish consumption

Consumption of freshwater fish (on a landed-weight basis) has ranged from a high of 99 000 tonnes to a low of 91 000 tonnes in the past three years. (Table 91).

TABLE 91

US freshwater fish consumption[1] in landed weight

1977-1979

(000 tonnes)

	1977	1978	1979
US landings	65	71	63
Imports	39	42	40
Total	104	113	103

Source: US Dept. of Commerce, Fisheries of the Unites States, (NMFS), and the Bureau of the Census.

The US absorbs 60 to 65% of the output of the Canadian freshwater fish industry. By and large, freshwater fish are sold fresh, except for specific products and markets. As a result much of the US consumption of freshwater fish from Canada is in the Northeast and Great Lakes areas of the country.

In terms of volume sales, the number one Canadian freshwater export item to the US is whitefish, which is used for smoking, or for sale as pan-ready fish, continental grade fillets and "cutter" whitefish. Smokers, mainly in New York City, absorb about one-third of the volume. The fish is imported whole, dressed, head-on, soaked in a brine solution, scaled and smoked whole. Pan-ready whitefish are sold with heads, fins and tails off, mainly to the restaurant and fish specialty trade. Continental grade (fillets) are lower-priced because of the present of some cysts. Cutter whitefish is deboned fillets sold mainly to institutional buyers.

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1) Imports converted to round weight using a factor of 2.0 for fillets and 1.5 for round and dressed. Inventories are not considered.

Freshwater fish landings

US freshwaster fish landings declined over the three year period 1977-79 from almost 55 000 tonnes in 1977 to under 51 000 tonnes in 1979. While the catch of freshwater finfish increased generally during the three years, the fairly large drop in alewife landings resulted in the overall decline.

Table 92

US freshwater fish landings, 1977,1978, and 1979

(000 tonnes)

	1977	1978	1979
Alewives	17 802	19 178	10 828
Other freshwater finfish	36 933	38 154	40 029
Total	54 735	57 332	50 857

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS).

The bulk of US freshwater fish landings are from the Great Lakes and the Mississippi River region and are almost evenly divided between these two regions. The total catch from these areas was 62 200 tonnes in 1976 (most recent statistics providing this detail for regional landings) compared with 60 000 tonnes in 1966!

To a large extent the freshwater catch is comprised mainly of species different from those imported from Canada although landings of smelt, whitefish and yellow perch account for a fairly large percentage of the catch from the Great Lakes region.

Source: US Dept. of Commerce, Fishery Statistics of the United States, (NMFS), 1976.

TABLE 93

US landings of major freshwater species[1]) 1976

(000 tonnes)

Alewives	17.8	Gizard-shad	0.6
Carp	10.6	Lake trout	0.1
Buffalo fish	9.6	Moon eye (goldeye)	0.2
Catfish and bullheads	5.3	Paddlefish (catfish)	0.3
Chubs	0.7	Quill back	0.3
Sheepshead	2.4	Shad	0.5
Whitefish	2.5	Sucker	0.6
Yellow perch	1.5	Yellow pike	0.2
Smelt	2.4	Tullibee	0.1
Lake herring	0.2	Other	5.9
Garfish	0.4	Total	62.2

1) An additional 5 400 tonnes of catfish were produced in ponds in 1976.

Source: US Dept. of Commerce, Fishery Statistics of the United States, (NMFS).

For the period to 1985, commercial freshwater fish landings are not expected to change significantly.

Freshwater Fish balance, actual 1979 and forecast 1985

The following table depicts the balance of freshwater fish utilized for human consumption (alewives have been excluded) in 1979 and forecast for 1985.

TABLE 94

US balance of freshwater fish, actual 1979 and forecast 1985

(000 tonnes, product weight)

	Consumption		Domestic Production		Exports		Import Requirements	
	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast
	1979	1985	1979	1985	1979	1985	1979	1985
All products	51.1	53.1	24.8	26.8	3.2	3.2	29.5	29.5

Source: US Dept. of Commerce, IBID, and MSB estimates.

The projected 1985 balance shows that the consumption of freshwater fish products is expected to rise slowly by about 3.9% between 1979 and 1985. The increased requirement of 2 000 tonnes will likely be met by increased production arising from an anticipated small growth (in the order of 3 000 tonnes) in domestic landings between 1979 and 1985.

Freshwater fish imports

Imports of freshwater fish were at a higher level in the late 1970s than they were in the 1960s[1]) indicating a general overall increase in total consumption. Canada supplied most of the fresh/frozen, round and dressed imports while the bulk of the fillet imports come from Brazil. These Brazilian imports are reported to consist largely of catfish fillets. Imports have been in a slightly declining trend for the past several years and are not expected to expand during the period to 1985.

TABLE 95

US imports of freshwater fish 1977-79

(000 tonnes)

	1977	1978	1979
Fresh or frozen (not fillets)			
From Canada	11	12	11
Percentage	84	86	92
Total	13	14	12
Fillets			
From Canada	3	4	4
Percentage	25	31	31
Total	12	13	13
Grand Total	25	27	25

Source: US Department of Commerce, US Imports for Consumption, Bureau of the Census.

1) In 1960, 23 000 tonnes were imported while in 1966 this quantity had declined to 20 000 tonnes.

Market outlook for Canadian freshwater fish products, 1985

Canadian exports to the US decreased by 4 000 tonnes to 20 800 tonnes between 1977 and 1979. (Appendix XIX). It is expected however, that the volume of shipments may decline to about 19 000 tonnes in 1985. While the market for blocks is expected to remain on a level with 1979 exports, it is possible that there will be some reduction in shipments of whole/dressed and filleted products.

R. CANADIAN FISHERIES EXPORT POTENTIAL TO THE US, 1985

The following table summarizes the projected US import demand for Canadian fishing products for 1985. The details of this table are set out in Appendix XVIII.

It should be noted that the 1979 actual figures shown below are derived from official Canadian export statistics. In contrast, in the previous species chapters, US import statistics were used for the assessment of the imported volumes for the same year. The two sets of figures are not always identical for a variety of reasons.

Canadian fisheries export potential to the US, selected species, 1985
(000 tonnes, product weight)

	1979	1985	Increase/Decrease tonnes	%
Cod	74.2	92.0	17.8	24
Haddock	12.3	11.0	- 1.3	- 11
Hake	0.7	0.8	0.1	14
Atlantic Pollock	6.8	6.5	- 0.3	- 4
Pacific Pollock	0.3	0.2	- 0.1	- 33
Ocean Perch	17.3	19.0	1.7	10
Flatfish	20.9	28.0	7.1	33
Turbot	7.6	11.0	3.4	45
Halibut	1.0	2.5	1.5	150
Total Groundfish	(141.1)	(171.0)	(29.9)	21
Herring	28.1	30.5	2.4	9
Pacific Salmon	2.3	5.6	3.3	143
Atlantic Salmon	0.1	0.3	0.2	200
Mackerel	1.3	2.1	0.8	62
Total Pelagic	(31.8)	(38.5)	(6.7)	21
Lobster	8.5	11.4	2.9	34
Crab	1.2	1.1	- 0.1	- 8
Scallops	8.8	5.5	- 3.3	- 36
Shrimp	0.7	0.7	---	---
Squid	1.6	2.0	0.4	25
Clams	2.0	2.6	0.6	30
Total Shellfish	(22.8)	(23.3)	(0.5)	2
Freshwater Fish	20.8	19.0	0.6	- 9
Grand Total	216.5	251.8	37.7	16

Source: Dept. of Fisheries and Oceans, Marketing Services Branch estimates, Ottawa.

This table demonstrates that as compared to total Canadian exports (selected species) of 216 500 tonnes in 1979, US import demand for Canadian fisheries products may increase by 16% to 252 000 tonnes by 1985.

US demand for Canadian groundfish is projected to expand by 30 000 tonnes to 171 000 tonnes in 1985 (21%). The largest increase is projected for cod products. As compared to actual cod exports of 74 200 tonnes in 1979, the US may want to import 92 000 tonnes in 1985. Sizable increases in US demand are also projected for flatfish, turbot and halibut.

The US bought 31 000 tonnes of pelagic products from Canada in 1979. A 21% increase is foreseen in this category for 1985. The dominant item is herring. As against 28 100 tonnes of exports in 1979, Canada may have a potential market for 30 500 tonnes in the US in 1985. Pacific salmon exports are projected to more than double and Atlantic salmon and mackerel export possibilities are also seen to improve by 1985.

Total shellfish exports to the US are projected to expand only marginally between 1979 and 1985 (2%). The only species that may record a substantial increase is lobster. Such exports may expand from 8 500 to 11 400 tonnes (34%). In contrast, crab and scallop exports are projected to decline, while shrimp exports may remain on the 1979 level.

APPENDICES

APPENDIX I

US LANDINGS, 1976-1979
(000 tonnes, round weight)

	1976	1977	1978	1979
Cod[1]	34.1	42.6	47.2	53.9
Haddock	5.8	12.9	17.9	19.0
Redfish[2]	35.1	38.2	45.5	49.6
Halibut	9.3	8.0	8.0	9.7
Pollock	11.0	13.4	19.5	18.7
Hake[3]	29.4	28.9	33.6	37.2
Flatfish	74.7	76.9	82.0	94.9
Herring	68.5	70.7	70.0	94.8
Mackerel[4]	2.7	6.0	12.8	28.8
Salmon	140.3	152.2	183.5	243.2
Menhaden	925.1	814.7	1 177.1	1 181.4
Other fish	637.0	577.9	506.2	496.9
Lobsters	16.6	16.9	17.7	19.7
Crabs	156.4	180.8	203.7	221.9
Scallops	11.0	12.6	15.1	15.5
Shrimp	183.1	216.2	191.8	152.4
Other shellfish	86.7	88.8	102.5	105.2
Grand Total	2 426.8	2 357.7	2 734.1	2 842.8

1) Includes "ling cod".
2) Includes "rockfishes".
3) Includes "red & white hake and whiting".
4) Includes "Atlantic and Pacific mackerel".

Source: US Dept. of Commerce, Fisheries of the Unites States, (NMFS).

Note: Landings are reported in round (live weight) for all items except univalve and bivalve molluscs, such as clams, oysters and scallops which are reported in weight of meats (excluding the shell).

APPENDIX II

EXPORTS OF DOMESTIC FISHERY PRODUCTS OF THE US, BY PRINCIPAL ITEMS, 1978 AND 1979

Item	1978		1979	
	000LB	$000	000LB	$000
Edible fishery products:				
Fresh and frozen:				
Whole or eviscerated:				
Salmon	122 180	268 582	140 160	302 324
Other	70 332	48 912	104 941	91 650
Fillets:				
Salmon	3 591	7 674	4 205	9 270
Other	29 896	22 047	46 559	35 720
Fish sticks and portions.	1 052	1 388	896	1 453
Shellfish:				
Shrimp	34 801	88 184	28 934	87 392
King crab	30 266	105 424	36 219	96 346
Snow crab	31 704	47 390	42 978	70 296
Other	23 901	35 458	37 759	52 519
Canned fish and shellfish:				
Mackerel	9 560	10 446	8 357	11 142
Salmon	32 513	49 240	50 719	91 916
Sardines	1 555	1 533	1 590	1 180
Shrimp	5 984	12 084	5 469	12 391
King crab	462	3 076	866	3 898
Squid	10 566	3 349	8 382	2 447
Other	5 082	10 496	3 447	9 957
Cured	11 445	9 677	10 441	15 326
Fish roe	22 891	105 708	21 010	123 551
Other fish and shellfish	530	986	648	1 426
Total edible fishery products	448 311	831 654	553 580	1 020 204
Nonedible fishery products:				
Fish meal	101 400	17 468	31 402	5 526
Fish oils	222 012	42 340	198 497	39 571
Seal furs	(1)	1 866	(1)	2 450
Other	--	(2)12 206	--	(2)14 615
Total nonedible fishery products	--	73 880	--	62 162
Grand Total	--	905 534	--	1 082 366

(1) Number of seal furs was 22 000 in 1978 and 23 000 in 1979.
(2) Includes the value of whale and sperm oil.

Source: US Dept. of Commerce, IBID.

APPENDIX III

EXPORTS OF DOMESTIC FISHERY PRODUCTS, 1970-79

Year	Edible		Nonedible	Total
	000LB		$000	
1970	140 375	93 878	23 606	117 484
1971	171 816	113 637	25 608	139 245
1972	171 642	134 188	23 700	157 888
1973	238 942	241 866	57 302	299 168
1974	178 010	194 966	67 166	262 132
1975	218 152	267 360	37 369	304 729
1976	240 866	329 810	54 880	384 690
1977	331 059	473 375	47 121	520 496
1978	448 311	831 654	*73 880	905 534
1979	*553 580	*1 020 204	62 162	*1 082 366

*Record

Source: US Dept. of Commerce, IBID.

APPENDIX IV

EXPORTS OF DOMESTIC FISHERY PRODUCTS OF THE US,
BY CONTINENT AND COUNTRY OF DESTINATION, 1979

Country	Edible		Nonedible	Total
	000LB	----------	$000 ----------	
North America				
Canada	82 851	116 565	2 877	119 442
Mexico	14 049	35 477	514	35 991
Netherlands Antilles	1 937	3 355	2	3 357
Bermuda	911	1 944	42	1 986
Bahamas	1 066	1 507	48	1 555
Dominican Republic	853	829	325	1 154
Panama	533	751	6	757
French West Indies	526	427	76	503
British Virgin Islands	392	472	--	472
Barbados	279	322	10	332
Trinidad	142	288	2	290
Cayman Islands	140	211	--	211
Guatemala	116	195	13	208
Belize	83	159	2	161
Jamaica	134	122	27	149
Honduras	56	105	18	123
Costa Rica	60	110	1	111
El Salvador	22	38	43	81
Haiti	188	60	--	60
Nicaragua	5	7	--	7
Total	104 343	162 944	4 006	166 950
South America:				
Venezuela	7 509	4 109	90	4 199
Colombia	107	100	4 058	4 158
Argentina	263	141	30	171
Surinam	128	131	18	149
Brazil	5	30	8	38
Chile	--	--	37	37
Peru	126	31	3	34
Uruguay	9	27	--	27
Ecuador	7	25	--	25
Bolivia	8	18	--	18
Total	8 162	4 612	4 244	8 856
Europe:				
European Economic Community:				
France	31 961	69 783	946	70 729
United Kingdom	29 528	56 597	9 825	66 422
Netherlands	12 167	24 745	16 986	41 731
Federal Republic of Germany	32 698	26 156	4 496	30 652

APPENDIX IV (Cont'd)

EXPORTS OF DOMESTIC FISHERY PRODUCTS OF THE US,
BY CONTINENT AND COUNTRY OF DESTINATION, 1979

Country	Edible		Nonedible	Total
	000LB		$000	
Europe continued:				
Belgium and Luxembourg	10 379	22 905	3 644	26 549
Italy	6 291	8 305	949	9 254
Denmark	3 133	4 457	31	4 488
Ireland	387	617	--	617
Total	126 544	213 565	36 877	250 442
Other:				
Sweden	9 246	16 098	2 203	18 301
Greece	8 471	3 573	18	3 591
Spain	1 532	1 206	2 238	3 444
Switzerland	889	2 755	488	3 243
Norway	1 276	1 594	178	1 772
Finland	197	235	--	235
Cyprus	185	195	--	195
Iceland	250	131	--	131
Bulgaria	--	--	62	62
Austria	5	7	9	16
Portugal	5	14	--	14
Malta and Gozo	8	12	--	12
Union of the Soviet Socialist Republics	--	3	--	3
Czechoslovakia	--	--	1	1
Total	22 064	25 823	5 197	31 020
Asia:				
Japan	253 125	563 006	4 844	567 850
Korea Republic	10 546	12 850	1 267	14 117
China, Peking	3 894	5 210	--	5 210
Hong Kong	2 205	3 832	223	4 055
China, Taiwan	2 650	3 556	425	3 981
Saudi Arabia	1 112	1 639	214	1 853
Singapore	375	911	39	950
Kuwait	2 985	855	--	855
Philippines	987	379	294	673
Israel	325	234	17	251
Thailand	111	161	37	198
Indonesia	25	92	1	93
United Arab Emirates	45	65	6	71
Malaysia	27	49	10	59
Jordan	65	32	--	32
Qatar	12	22	--	22

APPENDIX IV (Cont'd)

EXPORTS OF DOMESTIC FISHERY PRODUCTS OF THE US,
BY CONTINENT AND COUNTRY OF DESTINATION, 1979

Country	Edible		Nonedible	Total
	000LB		$000	
Asia - continued:				
Lebanon	7	22	--	22
Bahrain	9	19	--	19
India	--	--	9	9
Sri Lanka (Ceylon)	--	2	3	5
Pakistan	--	--	5	5
Brunei	1	3	-	3
Oman	1	2	-	2
Bangladesh	--	--	1	1
Iran	1	1	--	1
Total	278 508	592 942	7 395	600 337
Australia and Oceania:				
Australia	8 667	15 000	297	15 297
New Zealand	837	1 659	11	1 670
French Pacific Islands	371	763	7	770
Trust Pacific Islands	106	152	--	152
Other Pacific Islands	38	95	--	95
Western Samoa	2	4	--	4
Total	10 021	17 673	315	17 988
Africa:				
Egypt	1 990	545	4 024	4 569
Republic of South Africa	532	951	19	970
Canary Islands	719	681	--	681
Nigeria	562	261	46	307
Guinea	36	61	--	61
Tunisia	18	49	--	49
Libya	47	33	--	33
Liberia	17	28	--	28
Congo (Brazzaville)	--	--	25	25
Zaire	8	20	--	20
Mauritius	1	4	10	14
Ghana	3	4	--	4
Ivory Coast	--	--	4	4
Sudan	--	3	--	3
Cameroon	2	2	--	2
Sierra Leone	2	2	--	2
Morocco	1	1	--	1
Total	3 938	2 645	4 128	6 773
Grand Total	553 580	1 010 204	62 162	1 082 366

Source: US Dept. of Commerce, IBID.

APPENDIX V

IMPORTS OF EDIBLE AND NONEDIBLE FISHERY PRODUCTS INTO THE US 1970-79.

Year	Edible		Nonedible	Total
	000LB	$000	$000	$000
1970	1 873 300	812 530	224 880	1 037 410
1971	1 785 470	887 070	187 131	1 074 201
1972	2 341 138	1 233 292	261 119	1 494 411
1973	*2 416 193	1 398 484	184 649	1 583 133
1974	2 266 880	1 495 380	215 498	1 710 878
1975	1 913 089	1 367 180	269 919	1 637 099
1976	2 228 475	1 916 848	415 497	2 332 345
1977	2 177 010	2 078 492	543 699	2 622 191
1978	2 410 512	2 253 142	823 422	3 076 564
1979	2 369 369	*2 668 051	*1 143 239	*3 811 290

* Record

Source: US Dept. of Commerce, US Imports for Consumption, Bureau of the Census.

APPENDIX VI

IMPORTS OF FISHERY PRODUCTS TO THE US: VALUE, DUTIES COLLECTED, AND AD VALOREM EQUIVALENT, 1970-79

Year	Value		Duties collected		Average ad valorem equivalent	
	Fishery imports	All imports	Fishery imports	All imports	Fishery imports	All imports
	$000				Percent	
1970	1 037 410	39 767 700	25 175	2 551 200	2.4	6.5
1971	1 074 201	45 545 900	(1)22 455	(1)2 768 000	2.1	6.1
1972	1 494 411	55 555 300	24 292	3 124 000	1.6	5.6
1973	1 583 133	68 655 100	25 835	3 459 000	1.6	5.0
1974	1 710 878	100 125 800	29 815	3 772 000	1.7	3.8
1975	1 637 099	96 515 102	26 675	3 780 000	1.6	3.9
1976	2 332 345	121 120 869	43 293	4 674 700	1.9	3.9
1977	2 622 191	147 075 300	58 252	5 484 800	2.2	3.7
1978	3 076 564	172 952 200	88 240	7 161 500	2.9	4.1
1979	3 811 290	205 922 662	117 153	7 202 174	3.1	3.5

(1) These calculated duties do not include the temporary surcharge imposed by the President under Proclamation NO. 4074, effective August 16, 1971, and terminating December 20, 1971.

Source: US Dept. of Commerce, IBID.

APPENDIX VII

IMPORTS OF EDIBLE AND NONEDIBLE FISHERY PRODUCTS INTO THE US, 1979

Continent and country	Edible		Nonedible	Total
	000LB	----------	$000 ----------	
North America:				
Canada	537 298	591 863	39 203	631 066
Mexico	121 556	341 964	14 686	356 650
Panama	69 115	74 181	4 709	78 890
Nicaragua	10 041	30 961	3	30 964
Honduras	6 452	27 081	--	27 081
Greenland	21 447	19 878	--	19 878
Other	58 942	72 032	7 320	79 352
Total	824 851	1 157 960	65 921	1 223 881
South America:				
Brazil	42 909	99 676	4 831	104 507
Ecuador	55 390	69 462	96	69 558
Argentina	42 776	26 017	9 732	35 749
Peru	33 948	12 609	18 124	30 733
Chile	12 395	17 213	8 366	25 579
Other	49 528	64 619	9 762	74 381
Total	236 946	289 596	50 911	340 507
Europe:				
European Economic Community:				
Italy	993	1 002	548 395	549 397
Federal Republic of Germany	1 841	1 879	52 182	54 061
Denmark	44 889	46 961	5 426	52 387
United Kingdom	6 835	14 418	33 480	47 898
Other	21 231	19 531	48 503	68 034
Total	75 789	83 791	687 986	771 777
Other:				
Iceland	190 126	214 791	435	215 226
Norway	53 482	61 617	6 943	68 560
Switzerland	24	74	36 284	36 358
Spain	18 667	14 842	18 854	33 696
Other	25 117	24 930	25 110	50 040
Total	287 416	316 254	87 626	403 880

APPENDIX VII (Cont'd)

IMPORTS OF EDIBLE AND NONEDIBLE FISHERY PRODUCTS INTO THE US, 1979

Continent and country	Edible		Nonedible	Total
	000LB	$000	$000	$000
Asia:				
Japan	241 264	190 713	65 329	256 042
Republic of Korea	150 369	105 153	5 950	111 103
Hong Kong	13 056	25 603	74 842	100 445
China, Taiwan	82 440	69 349	16 021	85 370
India	36 641	58 994	2 509	61 503
Other	234 278	163 650	79 229	242 879
Total	758 048	613 462	243 880	857 342
Australia and Oceania:				
Australia	12 439	79 633	1 244	80 877
New Zealand	9 356	22 197	287	22 484
New Guiana	49 545	16 636	6	16 642
British Pacific Islands	25 573	15 284	1	15 285
Other	8 932	3 463	1 163	4 626
Total	105 845	137 213	2 701	139 914
Africa:				
Republic of South Africa	28 542	46 836	1 791	48 627
Mauritius	11 421	7 936	--	7 936
Senegal	17 360	4 154	--	4 154
Ivory Coast	5 170	2 708	--	2 708
Other	17 981	8 141	2 423	10 564
Total	80 474	69 775	4 214	73 989
Grand Total	2 369 369	2 668 051	1 143 239	3 811 290

Source: US Dept. of Commerce, IBID.

APPENDIX VIII

IMPORTS OF FISHERY PRODUCTS INTO THE US,
BY PRINCIPAL ITEMS, 1978 AND 1979

Item	1978		1979	
	000LB	$000	000LB	$000
Edible fishery products:				
Fresh and frozen:				
Fillets:				
Groundfish	233 106	240 075	252 957	284 953
Other	190 643	178 655	174 569	185 418
Total	423 749	418 730	427 526	470 371
Blocks and slabs	406 286	325 367	408 152	337 365
Halibut	6 955	10 779	4 119	7 407
Salmon	6 617	13 562	5 022	11 390
Tuna:				
Albacore	199 331	122 436	212 517	144 553
Other	602 229	198 155	535 262	171 307
Loins and discs	6 679	6 564	5 842	5 706
Crabmeat	4 681	15 190	2 784	9 807
Scallops (meats)	28 367	72 829	25 155	84 906
Lobsters:				
American (includes fresh-cooked meat)	13 150	33 813	16 262	39 047
Spiny	43 034	222 474	44 417	259 421
Shrimp	195 475	418 354	220 216	705 008
Other	199 966	90 188	182 349	100 706
Canned:				
Herring, not in oil	7 635	8 315	7 077	9 481
Salmon	325	693	434	800
Sardines:				
In oil	24 231	25 490	22 878	27 679
Not in oil	24 486	14 580	26 878	16 299
Tuna:				
In oil	207	432	627	743
Not in oil	51 574	63 390	53 076	64 328
Bonito and yellowtail:				
In oil	168	157	300	224
Not in oil	220	207	71	67
Abalone	3 930	15 268	4 282	15 035
Clams	4 739	6 089	5 967	7 427
Crabmeat	4 053	9 503	5 073	12 329
Lobsters:				
American	2 295	15 215	1 790	10 912
Spiny	125	455	134	743
Oysters	23 521	24 547	19 075	18 320
Shrimp	2 739	3 370	4 288	8 230
Other	46 412	51 304	56 306	58 640

APPENDIX VIII Cont'd

IMPORTS OF FISHERY PRODUCTS INTO THE US,
BY PRINCIPAL ITEMS, 1978 AND 1979

Item	1978		1979	
	000LB	$000	000LB	$000
Cured:				
Pickled or salted:				
Cod, haddock, hake, etc.	37 606	38 291	39 683	43 293
Herring	24 958	13 639	17 218	9 433
Other	6 919	9 653	7 849	12 592
Other fish and shellfish	7 850	4 103	6 740	4 482
Total edible fishery products	2 410 712	2 253 142	2 369 369	2 668 051
Nonedible fishery products:				
Scrap and meal	87 802	12 577	179 226	29 616
Solubles	380	44	207	24
Other	--	810 801	--	1 113 599
Total nonedible fishery products	--	823 422	--	1 143 239
Grand Total	--	3 076 564	--	3 811 290

Note: Data include imports into the United States and Puerto Rico and include landings of tuna by foreign vessels in American Samoa.

Source: US Dept. of Commerce, IBID.

APPENDIX IX
US TARIFFS: STAGED RATE MODIFICATIONS

T.S.U.S. Item	Brief Description	Rate from which staged	Rates of duty, effective with respect to articles entered on and after January 1							
			1980	1981	1982	1983	1984	1985	1986	1987
110.28	Mackerel, frozen, whole/beheaded etc., not scaled	0.35¢/lb	0.3¢/lb	0.26¢/lb	0.22¢/lb	0.17¢/lb	0.13¢/lb	0.08¢/lb	0.04¢/lb	Free
110.50	Cod, haddock, pollock, Atlantic perch, etc., fresh/chilled/frozen/ otherwise processed, quota	1.875¢/lb	1.875¢/lb	1.875¢/lb	1.875¢/lb	1.875¢/lb	1.875¢/lb	1.875¢/lb	1.875¢/lb	1.875¢/lb
110.50	Cod, haddock, pollock, Atlantic perch, etc., fresh/chilled/frozen/ otherwise processed, ex-quota	2.5¢/lb	2.42¢/lb	2.34¢/lb	2.27¢/lb	2.19¢/lb	2.11¢/lb	2.04¢/lb	1.96¢/lb	1.875¢/lb
110.65	Yellow perch, filleted, fresh/ chilled/frozen	0.6% ad val.	0.5%	0.5%	0.4%	0.3%	0.2%	0.2%	0.1%	Free
111.37	Herring, pickled/salted, not canned, bulk containers under 15 lbs.	6% ad val.	5.8%	5.5%	5.2%	5%	4.8%	4.5%	4.2%	4%
111.48	Salmon, pickled/salted, not canned	4% ad val.	3.9%	3.8%	3.6%	3.5%	3.4%	3.3%	3.1%	3%
111.52	Alewives, pickled/salted, in bulk or in containers over 15 lbs.	0.9% ad val.	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
111.56	Fish, pickled/salted NSPF, in bulk or in containers over 15 lbs.	0.5% ad val.	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
111.60	Fish, pickled/salted NSPF, not in airtight containers under 15 lbs.	12.5% ad val.	12.2%	11.9%	11.6%	11.2%	10.9%	10.6%	10.3%	10%
111.76	Herring, kippered/smoked, not otherwise processed	0.3¢/lb	0.26¢/lb	0.22¢/lb	0.19¢/lb	0.15¢/lb	0.11¢/lb	0.07¢/lb	0.04¢/lb	Free
111.84	Mackerel, smoked/kippered, not canned or otherwise preserved	3% ad val.	2.9%	2.9%	2.8%	2.8%	2.7%	2.6%	2.6%	2.5%
111.92	Fish NES, smoked/kippered, not otherwise preserved and not canned	3% ad val.	Free	Free	Free	Free	Free	Free	Free	Free

APPENDIX IX (Cont'd)

US TARIFFS: STAGED RATE MODIFICATIONS

T.S.U.S. Item	Brief Description	Rate from which staged	Rates of duty, effective with respect to articles entered on and after January 1							
			1980	1981	1982	1983	1984	1985	1986	1987
112.01	Anchovies, not in oil, in airtight containers under 15 lbs.	12.5% ad val.	9.5%	6.5%	5%	5%	5%	5%	5%	5%
112.03	Fish Anchovies in airtight containers weighing with containers over 15 lbs. each	2.2% ad val.	1.9%	1.7%	1.4%	1.1%	0.8%	0.6%	0.3%	Free
112.12	Herring, not in oil, in airtight containers weighing with cont. over 15 lbs.	0.8% ad val.	0.7%	0.6%	0.5%	0.4%	0.3%	0.2%	0.1%	Free
112.18	Salmon, prepared/preserved, not in oil in airtight containers	7.5% ad val.	6.9%	6.4%	5.8%	5.3%	4.7%	4.1%	3.6%	3%
112.20	Sardines, canned, not in oil, under 8 oz each	5% ad val.	4.7%	4.4%	4.1%	3.8%	3.4%	3.1%	2.8%	2.5%
112.24	Sardines, not in oil, in airtight containers over 15 lbs.	1.7% ad val.	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%
112.42	Bonito, Yellowtail, prepared/ preserved in oil, not canned	7.5% ad val.	7.2%	6.9%	6.5%	6.2%	5.9%	5.6%	5.2%	4.9%
112.46	Herring, prepared/preserved, in oil, in airtight containers	12.5% ad val.	11.9%	11.4%	10.8%	10.3%	9.7%	9.1%	8.6%	8%
112.54	Sardines, in oil, prepared/ preserved, over 18¢/lb but not over 23¢/lb.	30% ad val.	27.8%	25.5%	23.3%	21%	18.8%	16.5%	14.3%	12%
112.79	Sardines in oil, not skinned or boned/smoked/canned, not under 45 cents/lb.	6% ad val.	5.8%	5.5%	5.3%	5%	4.8%	4.5%	4.3%	4%
112.86	Sardines, skinned/boned, in oil, value over 30 cents/lb, canned	24% ad val.	23.5%	23%	22.5%	22%	21.5%	21%	20.5%	20%
112.94	Fish, canned, NES	12.5% ad val.	11.8%	11%	10.3%	9.5%	8.8%	8%	7.3%	6.5%

APPENDIX IX (Cont'd)
US TARIFFS: STAGED RATE MODIFICATIONS

T.S.U.S. Item	Brief Description	Rate from which staged	Rates of duty, effective with respect to articles entered on and after January 1							
			1980	1981	1982	1983	1984	1985	1986	1987
113.01	Fish pastes/sauces	4% ad val.	3.5%	3%	2.5%	2%	1.5%	1%	0.5%	Free
113.05	Fish balls/cakes/puddings, in oil	12.5% ad val.	11.8%	11%	10.3%	9.6%	8.8%	8.1%	7.3%	6.6%
113.15	Fish balls/cakes/puddings, not in oil NSPF	0.8% ad val.	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
113.40	Fish roe, excl. sturgeon, not in oil, in airtight containers	2¢/lb	1.7¢/lb	1.5¢/lb	1.2¢/lb	1¢/lb	0.7¢/lb	0.5¢/lb	0.2¢/lb	Free
113.50	Fish prepared/preserved NSPF, in oil	12.5% ad val.	11.6%	10.6%	9.7%	8.8%	7.8%	6.9%	5.9%	5%
114.25	Crabmeat, prepared/preserved, not canned	7.5% ad val.	7.2%	6.9%	6.6%	6.3%	5.9%	5.6%	5.3%	5%

Source: Federal Register, December 13, 1979, presidential documents

APPENDIX X

FORECAST OF US ATLANTIC COAST (INCLUDING THE GULF OF MEXICO) LANDINGS, SELECTED SPECIES, 1981 and 1985
(000 tonnes, round weight)

	1979 Actual	1981	1985
GROUNDFISH	182	173-225	185-239
Cod	45	40-45	40-45
Haddock	19	21-27	27-33
Flatfish	64	48-58	50-60
Pollock	16	22-27	22-27
Ocean perch	15	15-25	15-25
Hake: white	4	4-6	4-6
red	3	8-12	12-18
whiting (silver hake)	16	15-25	15-25
PELAGIC & ESTUARIAL	67	43-51	44-54
Mackerel	2	2	3-5
Herring	65	41-49	41-49
MOLLUSCS & CRUSTACEANS	146	132-152	156-176
Shrimp	109	100-110	110-120
Lobster (American)	17	16-20	18-22
Scallops (meat weight)	14	6-8	6-8
Squid	6	10-14	22-26

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS), and MSB estimates.

APPENDIX XI

FORECAST OF US PACIFIC COAST LANDINGS, SELECTED SPECIES 1981 and 1985
(000 tonnes, round weight)

	1979 Actual	1981	1985
GROUNDFISH	88	104-128	152-190
Cod	9	8-10	8-10
Flatfish	31	27-33	30-40
Hake	14	35-45	80-100
Ocean perch and rockfish	34	34-40	34-40
PELAGIC & ESTUARIAL	58	55-67	57-71
Salmon	31	31-37	33-41
Mackerel	27	24-30	24-30
MOLLUSCS & CRUSTACEANS	52	40-582	47-65
Shrimp	21	14-240	19-29
Crab - Dungeness	15	12-16	12-16
Squid	16	14-18	16-20

Source: US Dept. of Commerce, IBID.

APPENDIX XII

FORECAST OF US ALASKA LANDINGS, SELECTED SPECIES 1981 and 1985
(000 tonnes, round weight)

	1979 Actual	1981	1985
GROUNDFISH	13	44-768	123-177
Cod	--	8-12	30-40
Ocean perch	--	3-7	5-15
Alaska pollock	3	15-25	60-80
Flatfish	--	10-20	20-30
Halibut	10	8-12	8-12
PELAGIC & ESTUARIAL	242	164-204	190-237
Salmon	212	144-179	150-180
Mackerel	--	2-4	10-20
Capelin	--	--	3-6
Herring	30	18-21	27-31
MOLLUSCS & CRUSTACEANS	156	147-185	165-209
Shrimp	23	14-24	16-26
Scallops (meat weight)	0	0.4	0.4
Crab - King	70	56-64	56-64
- Snow (Tanner)	60	74-92	90-114
- Dungeness	3	3-5	3-5

Source: US Dept. of Commerce, IBID.

APPENDIX XIII

US LANDINGS PROJECTIONS, SELECTED SPECIES, 1985
(000 tonnes, round weight)

	1979				1985			
	Atlantic	Pacific	Alaska	Total	Atlantic	Pacific	Alaska	Total
Cod	45	9	--	54	40-45	8-10	30-40	78-95
Haddock	19	--	--	19	27-33	--	--	27-33
Flatfish	64	31	--	95	50-60	30-40	20-30	100-130
Pollock	16	--	3	19	22-27	--	~~60-80~~	~~22-27~~ 82-107
Ocean perch	15	34	--	49	15-25	34-40	5-15	54-80
Hake: white	4	--	--	4	4-6	--	~~60-80~~	~~64-86~~ 4-6
red	3	--	--	3	12-18	--	--	12-18
whiting (silver hake)	16	14	--	30	15-25	80-100	--	95-125
Halibut	--	--	10	10	--	--	8-12	8-12
Total Groundfish	182	88	13	283	185-239	152-190	123-177	460-606
Salmon	--	31	212	243	--	33-41	150-180	183-221
Mackerel	2	27	--	29	3-5	24-30	10-20	37-55
Capelin	--	--	--	--	--	--	3-6	3-6
Herring	65	--	30	95	41-49	--	27-31	68-80
Total Pelagic	67	58	242	367	44-54	57-71	190-237	291-362
Shrimp	109	21	23	153	110-120	19-29	16-26	145-175
Lobster	17	--	--	17	18-22	--	--	18-22
Scallops (meat weight)	14	--	0	14	6-8	--	0.4	6-8
Crab: King	--	--	70	70	--	--	56-64	56-64
Snow (Tanner)	--	--	60	60	--	--	90-114	90-114
Dungeness	--	15	3	18	--	12-16	3-5	15-21
Squid	6	16	--	22	22-26	16-20	--	38-46
Total Molluscs	146	52	156	354	156-176	47-65	165-209	368-450
Grand Total	395	198	411	1 004	385-469	256-326	478-623	1 119-1 418

Source: US Dept. of Commerce, IBID.

APPENDIX XIV
US GROUNDFISH CONSUMPTION, 1977-1979 and 1985
(000 tonnes, product weight)

	1976	1977	1978	1979
Round/Dressed				
Cod	6	6	6	7
Haddock	3	3	3	4
Flatfish	10	10	14	16
Atlantic pollock	3	3	3	3
Ocean perch	9	10	11	13
Hake	13	13	13	16
Halibut	8	8	6	9
Total	52	53	56	68
Fillets				
Cod	63	78	81	94
Haddock[1]	16	21	22	25
Flatfish	50	50	52	56
Turbot	19	19	18	21
Atlantic pollock	15	13	14	16
Alaska pollock	0.5	0.3	0.8	1
Ocean Perch[2]	33	30	31	40
Halibut	2.4	2.0	1.4	1.5
Total	198.9	213.3	218.1	254.5
Block				
Cod	84	94	92	104
Haddock	12	14	10	11
Flatfish	6	6	6	6
Turbot	3	2	2	2
Atlantic pollock	15	12	13	15
Alaska pollock	25	23	28	35
Whiting	11	18	23	30
Ocean perch	2	1	2	2
Other[3]	13	16	14	9
Total	171	186	190	214
Salted				
Cod	8	8	8	10
Haddock	1	1	1	1
Atlantic pollock	2	2	2	2
Hake	1	1	1	1
Total	12	12	12	14
Grand Total	433.9	464.4	478.2	550.5

1) Includes hake and cusk.
2) Includes rockfishes.
3) Includes minced blocks and fillets blocks of minor species.

Source: US Dept. of Commerce, Food Fish Market Review, (NMFS), and MSB estimates.

APPENDIX XV

US IMPORTS OF SHRIMP BY MAJOR CATEGORIES
(000 tonnes, product weight)

Category	1977	1978	1979
Shrimp and prawns, shell-on	57	46	56
Shrimp, peeled, not breaded, raw, not in airtight containers	40	38	39
Shrimp, peeled, in airtight containers	1	1	2
Shrimp, peeled, not breaded NSPF, not in airtight containers	5	5	5
Shrimp, peeled, breaded, not in airtight containers	0.3	0.2	0.2
Total	103.3	90.2	102.2

Source: US Dept. of Commerce, US Imports for Consumption, Bureau of the Census.

APPENDIX XVI

US IMPORTS OF SHRIMP BY COUNTRY

(000 tonnes, product weight)

Country	1977	1978	1979
North America			
Mexico	35	33	33
Panama	5	4	6
El Salvador	2	2	3
Nicaragua	3	3	2
Guatemala	2	2	2
Honduras	2	2	1
Costa Rica	0.6	0.5	1
Canada	0.7	0.5	0.5
Other	4	1	0.6
Total	54.3	48	49.1
South America			
Ecuador	4	5	6
Brazil	2	2	4
Columbia	3	2	2
Venezuela	1	0.6	1
Guyana	2	2	2
French Guiana	0.7	0.8	2
Surinam	2	0.9	0.7
Other	0.4	0.3	0.5
Total	15.1	13.6	18.2

Source: IBID

APPENDIX XVI (Cont'd)

US IMPORTS OF SHRIMP BY COUNTRY

(000 tonnes, product weight)

Country	1977	1978	1979
Europe			
European Economic Community	0.8	0.2	0.5
Other Europe	0.2	0.1	0.4
Total	1.0	0.3	0.9
Asia			
India	19	18	14
Thailand	2	2	5
Hong Kong	2	2	2
China, Peking	0	0	1
China, Taiwan	2	1	4
Indonesia	2	2	3
Bangladesh	2	2	1
Sri Lanka (Ceylon)	0.5	0.5	0.6
Republic of Philippines	0.3	0.3	0.6
Malaysia	1	0.4	0.8
Pakistan	0.3	0.4	0.5
Other	2	1	0.9
Total	33.1	29.6	33.4
Australia and Oceania	0.4	0	0.5
Africa	1	0.6	0.6
Grand Total	104.9	92.1	102.7

Source: US Dept. of Commerce, Fisheries of the United States, (NMFS).

APPENDIX XVII

CANADIAN EXPORTS OF FRESHWATER FISH TO THE US, 1977-79

(000 tonnes)

	1977	1978	1979
Round or dressed			
Fresh and frozen	12.8	13.9	15.2
Bass	0.1	0.2	0.2
Perch	0.4	0.3	0.3
Pickerel	2	2	2
Pike	0.3	0.4	0.5
Sauger	0.4	0.4	0.6
Smelt	3	3	4
Trout	0.2	0.2	0.2
Tullibee, chub	0.4	0.4	0.4
Whitefish	4	4	4
Freshwater fish nes	2	3	3
Fillets, fresh and frozen	2.3	2.6	4.1
Perch	1	1	2
Pickerel	0.7	0.7	0.8
Pike	0.1	0.1	0.2
Sauger	0.1	0.3	0.6
Whitefish	0.2	0.1	0.1
Freshwater fish nes	0.2	0.4	0.4
Block	2.2	2.7	2
Mullet	0.4	0.6	0.5
Pike	0.5	0.8	0.6
Whitefish	1	1	0.7
Freshwater fish nes	0.3	0.3	0.2
Grand Total	17.3	19.2	21.3

Source: Statistics Canada, Export by Commodities, Ottawa, 1977-1979.

APPENDIX XVIII

CANADIAN FISHERIES EXPORT POTENTIAL TO THE US, SELECTED SPECIES, 1985.

(000 tonnes, product weight)

Summary		Whole/ Dressed	Fillets	Blocks	Salted	Smoked	Pickled	Canned	Other	Total
Groundfish	1979	8.8	71.0	50.1	11.1	0.03	--	--	0.1	141.1
	1985	2.5	92.8	63.8	11.9	--	--	--	0.1	171.1
Pelagic	1979	17.6	1.6	--	--	0.5	8.1	3.9	0.06	31.8
	1985	22.9	0.5	--	--	0.9	10.5	3.7	--	38.5
Shellfish	1979	12.6	--	--	--	--	--	0.2	10.0	22.8
	1985	16.2	--	--	--	--	--	0.3	6.8	23.3
Freshwater Fish	1979	15.0	3.7	2.1	--	--	--	--	--	20.8
	1985	13.7	3.2	2.1	--	--	--	--	--	19.0
Grand Total	1979	54.0	76.3	52.2	11.1	0.5	8.1	4.1	10.2	216.5
	1985	55.3	96.5	65.9	11.9	0.9	10.5	4.0	6.9	251.9

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APPENDIX XVIII (Cont'd)

CANADIAN FISHERIES EXPORT POTENTIAL TO THE US, SELECTED SPECIES, 1985.

(000 tonnes, product weight)

GROUNDFISH		Whole/ Dressed	Fillets	Blocks	Salted	Smoked	Pickled	Canned	Other	Total
Cod	1979	3.3	21.0	41.4	8.5	0.03	--	--	--	74.2
	1985	--	29.0	54.0	9.0	--	--	--	--	92.0
Haddock	1979	4.5	5.9	1.1	0.8	--	--	--	--	12.3
	1985	--	8.0	2.0	1.0	--	--	--	--	11.0
Hake	1979	--	--	--	0.7	--	--	--	--	0.7
	1985	--	--	--	0.8	--	--	--	--	0.8
Atlantic	1979	--	5.3	0.4	1.1	--	--	--	--	6.8
Pollock	1985	--	5.0	0.4	1.1	--	--	--	--	6.5
Pacific	1979	--	0.1	0.1	--	--	--	--	0.1[1]	0.3
Pollock	1985	--	0.1	0.1	--	--	--	--	0.1	0.2
Ocean Perch	1979	--	17.0	0.3	--	--	--	--	--	17.3
	1985	--	18.7	0.3	--	--	--	--	--	19.0
Flatfish	1979	--	16.1	4.8	--	--	--	--	--	20.9
	1985	--	23.0	5.0	--	--	--	--	--	28.0
Turbot	1979	--	5.6	2.0	--	--	--	--	--	7.6
	1985	--	9.0	2.0	--	--	--	--	--	11.0
Halibut	1979	1.0	--	0.01	--	--	--	--	--	1.0
	1985	2.5	--	--	--	--	--	--	--	2.5
Total	1979	8.8	71.0	50.1	11.1	0.03	--	--	0.1	141.1
	1985	2.5	92.8	63.8	11.9	-	--	--	0.1	171.0

1) Roe

APPENDIX XVIII (Cont'd)

CANADIAN FISHERIES EXPORT POTENTIAL TO THE US, SELECTED SPECIES, 1985.

(000 tonnes, product weight)

PELAGIC		Whole/ Dressed	Fillets	Blocks	Salted	Smoked	Pickled	Canned	Other	Total
Herring	1979	14.6	1.6	--	--	0.4	7.6	3.8	0.06[1]	28.1
	1985	16.0	0.5	--	--	0.5	10.0	3.5	--	30.5
Pacific	1979	2.1	--	--	--	0.1	--	0.1	.[1]	2.3
Salmon	1985	5.0	--	--	--	0.4	--	0.2	--	5.3
Atlantic	1979	0.1	--	--	--	--	--	--	--	0.1
Salmon	1985	0.3	--	--	--	--	--	--	--	0.3
Mackerel	1979	0.8	--	--	--	--	0.5	--	--	1.3
	1985	1.6	--	--	--	--	0.5	--	--	2.1
Total	1979	17.6	1.6	--	--	0.5	8.1	3.9	0.06	31.8
	1985	22.9	0.5	--	--	0.9	10.5	3.7	--	38.2

1) Roe

SHELLFISH										
Lobster	1979	7.4	--	--	--	--	--	0.1	1.0[1]	8.5
	1985	10.5	--	--	--	--	--	0.1	0.8	11.4
Crab	1979	1.1[2]	--	--	--	--	--	0.1	--	1.2
	1985	0.9[2]	--	--	--	--	--	0.2	--	1.1
Scallops	1979	--	--	--	--	--	--	--	8.8[3]	8.8
	1985	--	--	--	--	--	--	--	5.5[3]	5.5
Shrimp	1979	0.7[4]	--	--	--	--	--	--	--	0.7
	1985	0.7[4]	--	--	--	--	--	--	--	0.7
Squid	1979	1.4	--	--	--	--	--	--	0.2[5]	1.6
	1985	1.5	--	--	--	--	--	--	0.5[5]	2.0
Clams	1979	2.0	--	--	--	--	--	--	--	2.0
	1985	2.6	--	--	--	--	--	--	--	2.6
Total	1979	12.6	--	--	--	--	--	0.2	10.0	22.8
	1985	16.2	--	--	--	--	--	0.3	6.8	23.3

1) Meat 2) Includes some meat 3) Shucked 4) Includes some peeled 5) Tubes.

Source: Statistics Canada, Exports by Commodities, and MSB projections.