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

WEST
GERMANY



Government
of Canada

Gouvernement
du Canada

Fisheries
and Oceans

Pêches
et Océans

Industry, Trade
and Commerce

Industrie
et Commerce

Canada, Dept. of Fisheries and Oceans. Fisheries Economic Development
& Marketing. Marketing Services Branch.

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

D R A F I

Annex to the
Worldwide Fisheries Marketing Study:
Prospects to 1985

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

With regard to the overall Study, we would like to acknowledge:

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E.W.
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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 an 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 potential on a country and species basis.

Specifically, the purpose of the Study is to identify the short (1981) and longer-term (1985) market opportunities for selected traditional and non-traditional species in existing and prospective markets. In this initial phase, 14 country markets and 8 species groups are analysed. It should be noted that while the information contained in the Reports was up-to-date when collected during March-June 1979, some information may now be dated given the speed with which changes are occurring in the marketplace. In this same vein, the market projections to 1981 and 1985 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 the recently concluded GATT-MTN 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.

Thus, the results of the Study should 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

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July, 1979
Ottawa

FEDERAL REPUBLIC OF GERMANY

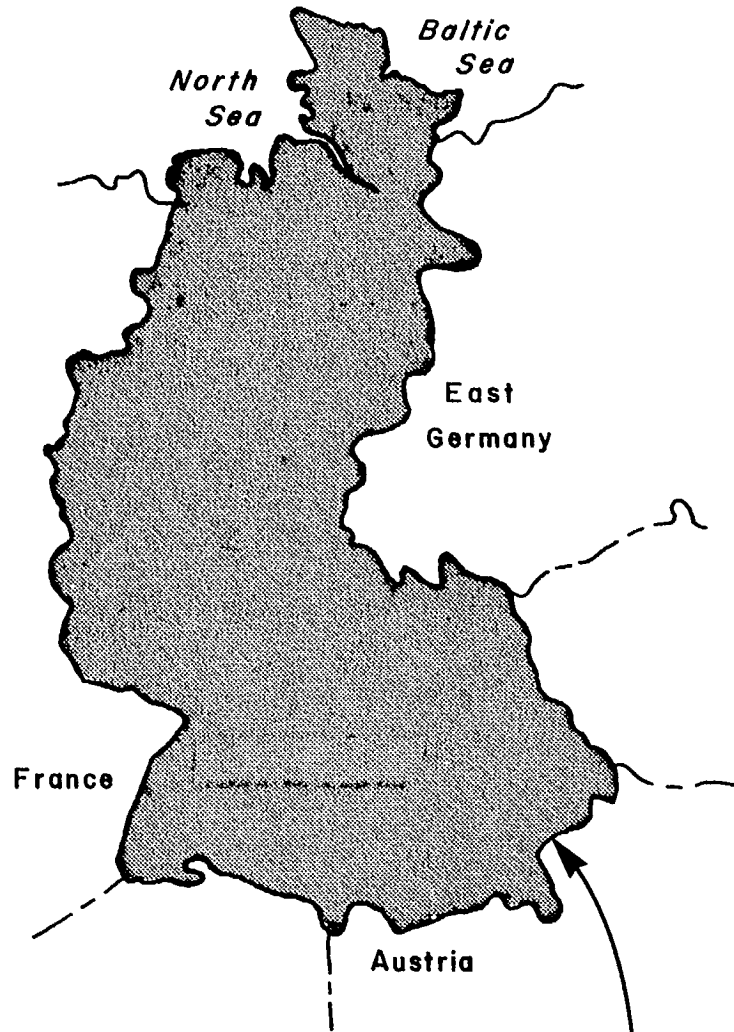
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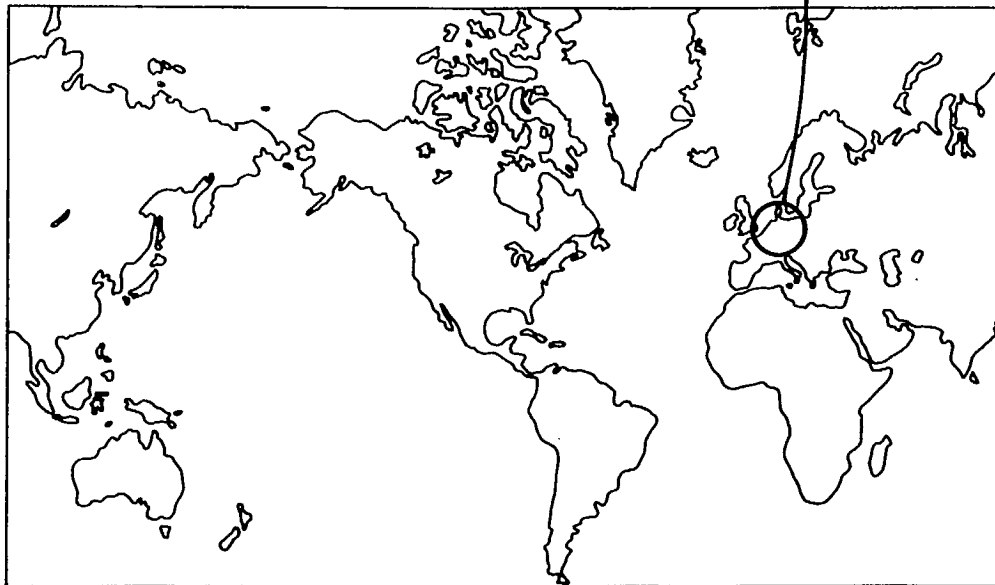
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WEST GERMANY



INDEX MAP



A. DEMAND FOR FISH

Fish consumption in Germany, an estimated 9.1 kg. product weight per capita in 1978, has been fairly stable in recent years and is not expected to drop sharply in the future. A projected slow decline in population, from approximately 61 million in 1978 to 59.7 million in 1985, will have little effect on overall demand for fish products.

Price increases and supply problems are creating new trends. With the exception of luxury fish products, consumers tend to hold off fish purchases when prices rise quickly. For example, in the second half of 1977, in the wake of price increases, groundfish sales slumped and remained depressed until the fall of 1978. In 1977, retail herring prices did not reflect rapid increases in the cost of raw materials. Between November 1976 and November 1977, the ex-plant price rose by 14.3%, but by February 1978, the price was increasing 20% per annum. At that point, consumer resistance led to stagnating sales which in turn exerted considerable pressure on raw material prices, resulting in losses at the importer level. Sales resumed their normal pace in September 1978 but industry sources fear that the average raw material price is becoming too high to guarantee a profitable use of existing production capacities.

The industry has tried to cope with consumer resistance

by using hake instead of cod in processing sticks and portions. But sales of saithe also dropped off after the German fleet was banned from Icelandic waters. What is not clear, however, is the influence of a highly concentrated processing industry on consumer buying habits. Recently, more promotional activity has been directed to winning consumer acceptance of cheaper, non-traditional fish which can substitute for well-known, higher priced species. In addition to a changing mix of fish products, other trends will likely continue:

- increasing demand for frozen fish, particularly ready-to-serve products. Retail sales of fish dinners, for example, are up 7% in 1977.
- little growth in institutional sales of frozen end products. But promotional campaigns could boost the share of institutional sales to 60% (the U.S. level) from 40% currently.
- consumers are expected to eat more salmon and shellfish over the next five years.
- the production and sale of frozen consumer products decreased slightly (3.3%) in 1977 though volume is higher than in 1975. The German industry contends that the decline is due to end product prices for fish rising more steeply than for competing food stuffs but available price indices suggest otherwise.

Annual retail price changes for substitute products were as follows:

	<u>1977</u>	<u>1976</u>
	(percentage change)	
Redfish fillet, frozen	4.5	1.8
Fish sticks	1.2	-3.7
Chicken	1.3	6.7
Eggs	4.2	9.1
Pork chops	-0.5	9.7

During the same period, prices of raw material increased, cod blocks by 13.6% and Atlantic pollock by 28.9%, an indication that lower sales were caused by the processors' supply-management rather than by consumer resistance.

More than half of the sales of frozen fish products are in the form of breaded fillets (see Table 1). Sales of ready-to-serve dishes and unbreaded fillets continued to increase in 1977 despite the general decline. High value species such as cod and ocean perch are sold for retail trade while low value species such as hake and more recent (pollock, blue whiting) substitutes are processed for institutional use.

Frozen products are primarily channelled through the processors' own wholesale organizations which deal directly with chain stores and institutional buyers. Since 1975, the frozen

food sector has developed a number of home service companies which operate a mail-order service for frozen food (including fish) in areas with towns too small to support a large super-market.

In contrast to the frozen fish sector, fresh fish is distributed via wholesaler and specialty stores. Large chains have discovered the profitability of the fresh fish trade and are engaged in fierce price competition with the small retailer.

B. SUPPLY OF FISH

(a) Domestic

By the spring of 1977, all coastal states on the North Atlantic had introduced the 200-mile economic zone; early in 1978 the coastal states bordering the Baltic Sea followed suit. These measures drastically limited access of the German fishing fleet to its traditional fishing grounds and prompted the first of many structural changes in the domestic industry.

In 1977, the West German fleet landed 394,500 tonnes in domestic ports and 20,800 tonnes in foreign ports including 11,487 tonnes in Canada. The catch was only 3.8% less than the previous year, a mark of the ability of the German off-shore fleet -- which accounts for 70.6% of

TABLE 1: FRG SALES OF FROZEN FISH PRODUCTS 1975-1977
('000 tonnes)

		<u>Domestic Packs</u>	<u>Institutional Packs</u>	<u>Total</u>
Fillets (not breaded)	1977	7.4	4.5	11.8
	1976	8.4	4.5	12.9
	1975	7.3	4.0	11.4
Fillets (breaded) ¹⁾	1977	15.9	11.6	27.5
	1976	16.2	12.3	28.5
	1975	15.2	11.2	26.4
Ready-to-serve ¹⁾	1977	7.9	1.5	9.3
	1976	7.4	1.5	8.9
	1975	6.2	1.8	8.1
Other seafood products	1977	0.7	3.7	4.3
	1976	0.6	3.8	4.4
	1975	0.6	3.3	3.9
Total frozen products ²⁾	1977	31.9	21.1	52.9
	1976	32.6	22.1	54.7
	1975	29.4	20.4	49.8

1) fish content 70%

2) discrepancies due to rounding

Source: Jahresbericht 1977/1978

TABLE 2. PER CAPITA CONSUMPTION¹⁾ BY PRODUCT GROUP 1961 - 1977
(Product Weight)

Product	1961	1965	1970	1971	1972	1973	1974	1975	1976 ^P	1977 ^P
Fresh Fish (Fillet W.)	1.71	1.58	1.02	1.04	0.82	0.93	0.82	0.72	0.82	
Frozen Fish	0.12	0.26	0.64	0.55	0.56	0.59	0.60	0.64	0.72	
Herring, Fresh	0.18	0.17	0.10	0.10	0.10	0.08	0.08	0.08	0.08	
Herring, Canned ²⁾ or Marinated	1.66	1.87	2.06	1.93	2.04	2.08	2.01	2.06	2.25	2.17
Herring, Smoked and Sprats	0.23	0.20	0.14	0.12	0.12	0.11	0.10	0.08	0.08	0.07
Other Smoked fish	0.13	0.20	0.22	0.19	0.19	0.21	0.23	0.23	0.25	0.24
Tuna, Canned	0.26	0.24	0.25	0.14	0.20	0.20	0.15	0.21	0.23	0.13
Sardines	0.41	0.28	0.12	0.14	0.17	0.18	0.15	0.14	0.19	0.13
Herring, Salted	0.76	0.56	0.40	0.37	0.38	0.42	0.40	} 0.72	} 0.71	} 0.61
Fish in Oil	0.14	0.13	0.11	0.11	0.11	0.13	0.13			
Cured Herring	0.06	0.05	0.05	0.05	0.05	0.04	0.04			
Other Fish Products	} 0.13	0.12	0.11	0.15	0.18	0.21	0.20			
Fish Salad		0.12	0.22	0.22	0.25	0.26	0.24	0.27	0.31	0.34
Shellfish and Mollusc										
- Fresh	0.12	0.14	0.16	0.17	0.16	0.18	0.23	0.31	0.32	0.24
- Prepared	0.02	0.04	0.06	0.07	0.09	0.09	0.07	0.10	0.13	0.14
TOTAL CONSUMPTION	5.93	5.96	5.66	5.35	5.42	5.71	5.45	5.56	6.09	

p - Preliminary

1) Domestically available

2) Includes Mackerel and Pilchard

Source: Jahresbericht über die Deutsche Fischwirtschaft.

landings -- to maintain catches despite 200 mile fishing limits. The decline is largely due to lower catches of shellfish and molluscs by the inshore fleet which, with the near-shore fleet, accounts for 28.1% of the catch (see Table 3). Between 1976 and 1977, with the loss of Icelandic fishing waters, Greenland became the most important area of supply for the off-shore fleet accounting for 24% of the total. In addition, the catch on the Norwegian coast declined by 45% owing to Norway's fishing policy. Landings from the Barents Sea, Newfoundland and New England also declined while catches near Bear Island, and in the waters west of Britain, Labrador and Nova Scotia increased.

Since 1977, the deep sea fleet has extended operation to waters off South West Africa, Argentina, Australia and New Zealand.

In 1978, the off-shore fleet consisted of 67 units¹ with a total tonnage of 112,446 GRT. These 27 freezer factory trawlers (74,870 GRT) and 40 off-shore fresh fish trawlers (37,576 GRT) accounted for 56% of fresh fish landings (81,300 tonnes landed weight, primarily redfish). The near and inshore fleet delivered the remaining 44% of fresh fish landings. This represents 70% of the landings of the inshore fleet, with the remaining 30% composed of molluscs and crustaceans.

¹

In recent months four factory vessels have been transferred to foreign flags.

TABLE 3: FRG: LANDINGS 1968-1977.
('000 tonnes Catch Weight)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Fish for consumption	573.6	507.2	468.9	424.2	355.3	370.7	389.6	338.9	327.4	301.3
Shellfish and Molluscs for consumption	20.8	17.0	21.0	13.6	17.2	20.1	32.6	32.1	42.5	24.2
Fish and Shellfish for industrial use	76.0	116.3	106.8	53.6	32.7	64.8	50.7	63.0	55.9	69.0
Landings by FRG vessels in Foreign ports	(1)	(1)	(1)	(1)	(1)	(1)	3.6	4.4	6.1	20.8 ²⁾
Total landings by FRG vessels	670.4	640.5	596.7	491.4	405.2	455.6	496.6	438.4	431.9	415.3
Landings in FRG ports by foreign vessels	27.4	N.A.	43.6	20.1	19.0	21.1	18.3	9.0	15.5	20.7
Apparent supply	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	511.0	443.0	441.3	415.2
Freshwater fish						13.0	12.3	12.4	12.0	15.0 ! ∞ !

(1) Included in preceding figures

2) Includes 11,500 m.t. landed in Canada

Sources: Statistisches Bundesamt ., Wiesbaden: Fachseries 3, Reihe 4.5 various issues
Bundesministerium für Ernährung und Landwirtschaft, Jahresbericht über die Deutsche
Fischwirtschaft. various issues

Table 4 FRG: Sea Fishery by Type of Fleet,
1973-1977

(catch weight '000 tonnes)

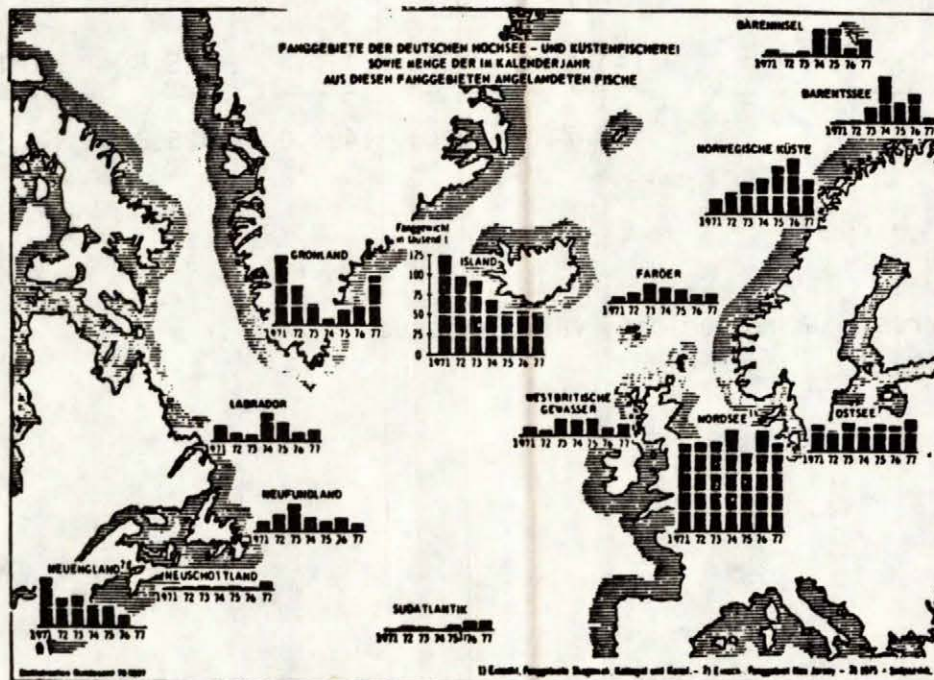
<u>Fleet</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
Off-shore	314.9	349.2	313.6	291.4	278.6
Lugger ¹	7.6	5.3	4.1	5.6	5.1
Near & Inshore	<u>133.1</u>	<u>138.5</u>	<u>116.3</u>	<u>128.8</u>	<u>110.8</u>
	455.6	493.0	434.0	425.8	394.5

Source: Jahresbericht, various issues

¹ Older herring seiners now converted to the fishing of primarily saithe for the fresh fish market.

FIGURE 1

Fishing Areas of the German Deep Sea and Coastal Fisheries and quantities landed



Source: Jahresbericht 1977/1978 p. 175

Each complete square represents 25,000 m.t. catch weight.

Table 5 , ACTIVITIES OF THE GERMAN DEEP SEA FLEET BY CATCH AREA AND SPECIES 1977

Fishing	North Sea	Skag. Sea	Engl. Channel	Westbrit. Waters	Barent. Sea	Bear Isl.	Norw. Coast	Faroes	Iceland.	Greenl.	Labrador	Nfld.	N.S.	New Engl	African SW Cst.	Total 1977	1976
A. Amount of fishing activity																	
Fishing Days	1235	1	11	320	310	464	2081	1092	4155	2493	631	395	252	3	545	13988	14250
B. Total landings ('000 m.t.)																	
Herring	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	0	16
Sprat	3	-	-	5	-	-	-	-	-	-	-	-	-	-	-	8	2
Mackerel	0	-	-	5	-	-	-	-	-	-	-	-	0	-	0	6	2
Cod	1	-	-	-	2	7	4	0	2	6	10	7	0	-	-	39	61
Haddock	0	-	-	-	1	1	2	0	1	0	-	-	0	-	-	7	18
Pollock	14	0	-	0	0	0	20	3	11	0	-	-	0	-	-	48	87
Blue Whiting	0	-	-	3	-	6	0	0	-	0	-	-	-	-	-	10	0
Hake	0	-	-	0	-	-	0	0	-	-	-	0	1	-	7	8	12
Other Groundf....	1	-	-	1	0	0	0	1	2	1	-	-	-	-	-	5	5
Redfish	0	-	-	0	1	2	5	6	32	43	0	0	0	-	-	89	56
Flatfish	0	-	0	0	0	0	0	0	5	4	1	1	0	-	-	11	6
Other	7	0	0	4	3	6	7	0	0	17	4	2	9	-	4	63	35
Total 1977	27	0	0	18	7	23	39	11	52	70	15	10	10	-	11	294	-
Total 1976	26	0	-	10	35	9	71	10	55	28	11	16	1	14	13	-	300

Source: Jahresbericht 1977/78 p. 76

Almost two-thirds of the fresh fish landings by the off-shore fleet had originated in Icelandic waters. With the closure of these and other fishing grounds, over-aged trawlers are being scrapped with adjustment aid from the government.

The frost fish sector (27 factory trawlers) has increased production to 78,100 tonnes landed weight during 1977 with approximately three-quarters landed as fillets, the remainder in round form. The fleet is based largely in the North Atlantic with the remainder off Argentina, South Africa and New Zealand.

The trend to landing non-traditional species has accelerated to include whiting, pilchards, black halibut, grenadier, lingcod -- species not well-known on the German market -- while saithe and haddock production is down. After 4 years of operating at a loss, the deep-sea fleet showed a small profit on its fishing operation in 1977. Increases in operating costs, especially crew wages and fuel, are expected to weaken operating results in 1978 with further declines expected in 1979 due to lower fish supplies. The off-shore fleet is hard pressed and has suffered a 50% cutback in 1979 quotas from 170,000 tonnes in 1978 to 85,000 tonnes in 1979.

The coastal fleet, (near and inshore) is made up of

Table 6 FRG Fish Supply 1976-1978¹
('000 tonnes catch weight)

	<u>1976</u>	<u>1977</u>	<u>1978 estimates</u>
Own landings	425.8	394.5	390.3
Import	<u>456.8</u>	<u>459.2</u>	<u>492.2</u>
Available supply	882.6	853.7	882.5
Export	239.5	238.4	270.8
Industrial use	<u>55.9</u>	<u>67.0</u>	<u>55.0</u>
Available for domestic consumption	587.2	548.3	556.7
Population (mill.)	61.5	61.4	61.2
Consumption per capita (kg.)	9.5	8.9	9.1

Source: Jahresbericht, various issues

¹ Conversion of product weight into catch weight, based on 1976 data, assumes factor of 1.356 for imports and 2.129 for exports, assuming an unchanged product mix.

663 fishing cutters and 538 coastal fishing craft and is declining in numbers. A further 369 vessels land fresh fish, 281 land shrimp and 131 land molluscs. Ownership is in the hands of independent fishermen-operators.

In 1977, 63% of total landings of 110,900 tonnes originated in the North Sea and 37% in the Baltic Sea cod grounds. Declaration of 200-mile zones for the Baltic in early 1978 cut available fishing grounds and led to government subsidized vessel lay-offs. Since the East Bloc countries have refused to sign bilateral fishing agreements, the German fleet is now limited to the West German, Danish and Swedish fishing zones in the Baltic Sea.

Table 7 provides a complete listing of all species landed in 1976 and 1977. Major declines are listed for:

Cod	-17%
Haddock	-59%
Pollock	-34%
Hake	-24%
Herring	-64%
Scallops	-54%
Food Shrimp	-42%
Feed Shrimp	-14%

Table 7: LANDINGS BY SPECIES, 1976, 1977, 1981 and 1985

('000 tonnes round weight)

	<u>1976</u>	<u>1977</u>	<u>1978</u> ¹⁾	<u>1981</u> ²⁾	<u>1985</u> ²⁾
1. Cod	106.4	88.4	77	35	45
2. Haddock	20.1	8.3	4	4	6
3. Redfish	54.7	82.3	62	30	30
4. Turbot	0.1	0.1	-	-	-
5. Halibut	0.5	0.9	1	1	1
6. Black Halibut	2.3	4.6			
7. Pollock (Saithe)	103.1	67.7	47	25	25
8. Blue Ling	3.2	4.0	4	4	4
9. Hake	10.0	7.6	15	15	15
10. Silver Hake	0.6	0.7	-	-	-
11. Sole	0.2	0.3	-	-	-
12. Plaice	3.8	4.5	5	3	3
13. Grenadier	Negl.	1.1	2	2	2
14. Capelin	---	---	-	-	-
15. Herring	22.7	8.1	8	5	10
16. Sprat	3.8	10.1	10	10	10
17. Mackerel	1.9	5.1	28	12	12
18. Wolffish	2.3	4.0	5	5	5
19. Salmon	Negl.	Negl.	-	-	-
20. Squid	1.2	1.3	2	n.a. ³⁾	n.a. ³⁾
21. Lobster	Negl.	Negl.			
22. Crab	0.6	Negl.			
23. Scallops	24.1	11.2)	18	18	18
24. Shrimps f. food	15.9	9.2)			
f. feed	10.5	9.0	8	8	8
SUBTOTAL	<u>387.0</u>	<u>328.6</u>	<u>296</u>	<u>177</u>	<u>194</u>
25. Other	38.8	65.9	94	100	75
TOTAL	<u>425.8</u>	<u>394.5</u>	<u>390</u>	<u>277</u>	<u>269</u>

Source: Statistisches Bundesamt Reihe 4.5, various issues

1) Estimates based on limited 1978 data from the same source.

2) These estimates are based on the assumptions outlined on the following page.

3) Landings will depend on the development of the Argentine fishery.

Increases occurred in:

Redfish	50%
Black Halibut	100%
Blue Ling	25%
Plaice	18%
Grenadier	
Sprat	166%
Mackerel	168%
Wolffish	74%
Other	70%

Appendix E provides a comparison of the landings of major species between 1960 and 1978.

(i) Herring:

With an estimated long-term average market of 250,000 tonnes catch weight, herring has traditionally represented about one third of the domestically processed sea-fish.

Table 8 shows the regional origins of the German fleets' own herring catch back in 1974. These catch proportions indicate the relative importance of Georges Bank, West British waters, the Baltic and North Seas as fishing grounds prior to the imposition of fishing restrictions.

Table 8 German Herring Catches 1974
(000 tonnes)

	<u>Offshore Fleet</u>	<u>Inshore Fleet</u>	<u>Total</u>	<u>Percent</u>
North Sea	4	4	8	14
West British	15	-	15	25
Nova Scotia	1	-	1	2
New England (Georges Bank)	26	-	26	44
Baltic		9	9	15
	<u>46</u>	<u>13</u>	<u>59</u>	<u>100</u>

Before such restrictions were in force, it can be seen that the German fleet provided about one-quarter of the necessary herring supplies. By 1977, this fleet was generating only 3% of the total FRG herring needs of 225,000 tonnes catch weight, mostly from the Baltic.

Since 1977, domestic supplies have been limited to small inshore catches in the Baltic and Skagerrak/Kattegat. Exports of herring and herring products in 1977 accounted for approximately 25,800 tonnes catch weight or 11% of total supply (see Appendix G).

While the German industry expects a return of traditional herring stocks in three to four years marine biologists are far more pessimistic. They only expect a TAC of 50,000 tonnes in the North Sea before 1983, growing to 200,000 tonnes in 1985 compared to 700,000 - 800,000 tonnes in past years and only 313,000 tonnes in 1975.

Supplies of Atlanto-Scandia herring have shown a slight recovery but heavy fishing on the spawning stock in 1978 will further delay a recovery of supplies. In fact, biologists have grave doubts that the 1978 catch levels for Norway and Iceland can be maintained. The Baltic Sea, with an annual yield of 100,000 tonnes supplies East Bloc countries. The stock on the Georges Bank is very depressed and no estimates for its recovery are available.

Table 9 - HERRING CATCHES BY SUB AREAS AND DIVISIONS 1970-77

('000 tonnes live weight)

	1970	1971	1972	1973	1974	1975	1976	1977
The Sound and Belt Sea III b,c	12.4	11.1	7.8	6.2	7.0	6.6	3.9	*
The Baltic III d	6.0	5.4	3.0	2.6	2.4	3.6	2.7	7.7
North Sea, North IV a	0.4	0.6	0.9	2.6	1.4	1.6	1.3)	
Central IV b	37.1	3.2	4.7	5.8	6.2	5.0	0.4)	0.2
South IV c	0.2		-	-	0.1		-)	
N.W. Coast Scotland VI a N. Ireland	16.5	7.5	5.5	17.4	14.2	9.1	5.0	0.1
W. Coast Ireland VII b,c Porcupine Bank	0.2	0.1	*	*	*	0.9	*	*
South Coast Ireland VII g - k	1.5	1.0	0.4	0.3	0.4	0.4	*	0.1
English Channel E and W VII d,e	0.6	0.1	0.1	2.3	0.4	0.4	-	-
North West Atlantic	<u>93.9</u>	<u>56.5</u>	<u>31.3</u>	<u>33.8</u>	<u>27.0</u>	<u>24.3</u>	<u>9.5</u>	<u>-</u>
TOTAL	168.8	85.5	53.7	71.0	59.1	51.9	22.8	8.1

* Less than 500 tonnes

Source: Bulletin Statistique des Pêches Maritimes
Stat. Bundesamt: Hochsee- und Küstenfischerei, 1977

The supply situation in 1981 is not expected to improve markedly over 1978 levels. Current projections for the North Sea show an increase to 200,000 tonnes for 1985. The impact on Canadian exports will depend on the somewhat doubtful yield of the Icelandic and Norwegian stocks.

(ii) Groundfish

Total groundfish volume is included in an estimate of the market for cod because of the large amount of substitute groundfish species.

The German industry is divided into:

- the fresh fish sector (all fresh and chilled fish excluding herring). Sold in round or fillet form to industry and wholesalers, the average annual supply has been 160,000 - 170,000 tonnes, of which about 40,000 tonnes have gone into smoking, salting or freezing.
- the frozen fish sector processing fillet blocks, fish sticks and portions from pollock, cod and hake caught on board German factory trawlers. Annual output has been 50,000 to 60,000 tonnes product weight (130,000 to 150,000 tonnes catch weight).

The total requirements for the two sectors

are between 300,000 to 320,000 tonnes of groundfish per year. In the early 1970's cod represented 50% of landings, redfish 25%, pollock 20% and haddock 5%.

Between 1970 and 1976 the German fleet landed an average of 297,000 tonnes of major groundfish species per year, with declining catch volumes for the four major groundfish (see Table 10).

In 1978 German landings constituted less than two-thirds of long-term requirements. However, the decrease in major groundfish landings of 23% between 1977 and 1978 is not completely representative of the supply situation in the German groundfish market.

Since the early 1970's the German industry has to an increasing degree searched for and developed substitute species so that landings of other species have largely compensated for the shortfall in the major groundfish categories. Total 1978 catches of all species declined by only about 1% to an estimated 390,000 tonnes.

a) Cod:

Cod landings have declined steadily from a peak of 193,000 tonnes in 1971 to an estimated 77,000 tonnes in 1978. Cod traditionally provided about 50% of the total landings of the inshore and near-shore fleet. (see Table 11).

Table 10 Selected Groundfish Landings 1973-1978*
('000 tonnes catch weight)

<u>Species</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978 *</u>
Cod	115.2	152.6	119.9	106.4	88.5	76.8
Haddock	13.2	23.4	22.8	20.1	8.3	3.7
Pollock ¹	90.3	78.3	77.0	102.1	67.7	47.0
Redfish	61.3	57.8	54.0	54.7	82.3	62.2
	<u>280.0</u>	<u>312.1</u>	<u>273.7</u>	<u>283.6</u>	<u>246.8</u>	<u>189.7</u>

Table 11 Cod Landings 1976-1978
('000 tonnes)

	<u>1976</u>	<u>1977</u>	<u>1978**</u>
Off-shore fleet	69.5	37.5	24.3
In and near shore	<u>36.9</u>	<u>51.0</u>	<u>52.5</u>
TOTAL	106.4	88.5	76.8

* Estimates based on January-November data.

¹ In European sources includes Saithe, Coalfish, Coley;
In German Seelachs, Koehler, Blaufisch.

** Estimates

The decline in the off-shore landings reflects the loss of the Icelandic fishing grounds in November 1977 and reduced activities in the Barents Sea (introduction of a 200-mile zone by the U.S.S.R) which could not be compensated for by slight improvements in the fishing near Bear Island and Norway. The near and inshore fishery maintained its cod landings, of which two-thirds come from the North Sea and one-third from the Baltic.

Only North Sea stocks directly accessible to the German fleet are expected to improve by 1981 and could provide 200,000 tonnes (TAC 1979 of 183,000 tonnes) and no more than 300,000 tonnes by 1985. Germany's share (18,000 tonnes in 1977) will have to be negotiated with other European Community (EC) members. Even a doubling of its catch may no more than compensate for the partial loss of its Baltic Sea grounds which provided 31,000 tonnes in 1977. Under these circumstances the German industry can be expected to intensify its search and development of cod substitutes unless it obtains third-country (Iceland, Canada, Norway, USSR) allocations or can dispose of its fleet through charter or sale. An estimate of the 1985 market for cod will primarily depend on substitutes, the degree of utilization of the German fishing fleet and price and quality standards of the cod offered by third countries.

Table 12 Cod Supply 1977, 1978¹
(tonnes catch weight)

	<u>1977</u>	<u>1978</u>
FRG landings	88,500	76,800*
Foreign vessel direct landings	2,600	1,800*
Imports	25,400	15,600*
	-----	-----
Total Supply	116,500	93,200*
Export	71,400	70,800*
	-----	-----
Available for domestic consumption	45,100	22,400*

¹ For details on export and import by product form see Appendix G.

* Estimate based on 11 months data.

In 1978, total supply available for domestic consumption appears to have been 22,000 tonnes or half of the 1977 domestic supply.

The unexpectedly high level of cod exports continued in the face of shrinking total supplies because the German industry tried to improve its rate of capacity utilization and profitability. The German industry produces premium quality, boneless cod blocks, frozen at sea, which fetch high prices on West European export markets (EC countries, Switzerland, Austria and Sweden).

b) Saithe:

During the last decade processing of saithe has gained in importance far beyond its volume of 47,000 tonnes catch weight. Today 50% of the fillet blocks processed are made of saithe, and a substantial industry produces a substitute for smoked salmon from it. Both products are highly labour intensive and considerable value is added during processing. The German catch has been cut by more than half.

c) Redfish:

In 1977 domestic redfish landings increased by 67% to 82,300 tonnes with an additional 5,300 tonnes channelled into fish meal production. The increase is

Table 13 Domestic Supply of Saithe 1976-1978
(tonnes catch weight equivalent)

	<u>1976</u>	<u>1977</u>	<u>1978*</u>
F.R.G. landings	102,000	68,000	47,000
Landings by foreign vessels	6,300 ¹	8,000 ¹	5,000 ¹
Imports	44,000	51,500	57,500
Exports	-17,600 ²	-30,200	-15,500
	<hr/>	<hr/>	<hr/>
Apparent domestic consumption	134,700	97,300	94,200

* Estimates based on January-November data.

¹ Product weight.

² Includes an estimated 5,000 tonnes catch weight equivalent in prepared Saithe.

Table 14 FRG - Saithe Import & Export

(tonnes product weight)

	<u>IMPORT</u>	<u>EXPORT</u>
Fresh	16,467 ¹⁾	31
Frozen	1,459 ²⁾	458
Fillet, fresh	3,207 ³⁾	135
Fillet, frozen	6,720 ⁴⁾	3,402 ⁵⁾
Dried, salted	2,931	349
Prepared	37	1,009 ⁶⁾
	<u>30,821</u>	<u>5,384</u>

- 1) France 39%
 Denmark 18%
 Netherlands 16%
 Iceland 14%
- 2) France 54%

- 3) Denmark 72%
 4) Faroes 30%
 Denmark 29%
 Iceland 16%

- 5) France 48%
 Bel./Lux. 27%
- 6) Czechoslovakia 40%
 Austria 26%

Source: Spezialhandel nach Waren

the result of intensive fishing in Greenland waters, where the catch multiplied more than fourfold to 43,000 tonnes in 1977. All landings are sold on the fresh-fish auction market, primarily in round form.

Landings in 1978 are expected to drop by 24%. Imports and exports again balance each other (see Table 15).

d) Haddock:

The decline in haddock landings from 20,000 tonnes in 1976 to 3,700 tonnes in 1978 has cut back on domestic supply and exports, the latter mainly as frozen fillets (see Table 16).

e) Hake:

Landings of hake by the German fleet have rapidly increased since 1974 (see Table 17). Primary fishing grounds are the South Atlantic off Southwest Africa and Argentina. There are indications that the African waters are becoming overfished. Processing of the Argentinian hake has posed certain problems, since its high fat content turns rancid rapidly. The fish requires deep skinning to remove the fat which leaves little flaky flesh, primarily used for minced fish and for fish fingers.

Table 15 Domestic Supply of Redfish
1976-1978

(tonnes catch weight)

	<u>1976</u>	<u>1977</u>	<u>1978*</u>
FRG landings	54,700	82,300	62,200
Landings by foreign vessels	1,600	900	2,300
Imports	5,000	6,000	7,400
Exports	<u>-1,500</u>	<u>-4,000</u>	<u>-7,400</u>
Apparent domestic consumption	59,800	85,200	64,500

Table 16 Domestic Supply of Haddock, 1976-1978

(tonnes catch weight equivalent)

	<u>1976</u>	<u>1977</u>	<u>1978</u>
FRG landings	20,148	8,267	3,700
Landings by foreign vessels	500	407	267
Imports	4,853	4,454	4,336
Exports	<u>-5,568</u>	<u>-3,146</u>	<u>-1,344</u>
Apparent domestic consumption	19,933	9,982	6,959

* Estimates

Table 17 Domestic Supply of Hake 1976-1978
(tonnes catch weight equivalent)

	<u>1976</u>	<u>1977</u>	<u>1978</u>
FRG landings	7,800	10,000	10,300
Imports	20,300	21,400	23,000
Exports	-10,800	-10,900	-6,600
	<hr/>	<hr/>	<hr/>
Apparent domestic consumption	17,300	20,500	26,700

f) Substitutes:

Between 1976 and 1978 the share in total landings represented by "other species" doubled to 40% (164,000 tonnes), of which three-quarters may be considered groundfish substitutes (see Table 18). Long-term demand for groundfish is likely to be about 320,000 tonnes.

(iii) Shellfish

Between 1976 and 1977, the German market for unprocessed crustaceans and molluscs underwent a drastic structural change. Landings of the near and inshore fleet declined by 45% to 18,500 tonnes and caused cut-backs on exports and domestic consumption, the latter down by 12% to 3,600 tonnes. Germany has long been a net importer of processed crustacean and mollusc products.

(iv) Freshwater Fish

The domestic freshwater fisheries accounted for about 15,000 tonnes in 1977, an increase of 25% over 1976, due to the growth in trout (8,000 tonnes) and carp (4,000 tonnes) hatcheries. Lake and river fisheries have remained at a constant 3,000 tonnes.

Table 18 FRG - Domestic Supply¹ of All
Groundfish Species 1976-1978

('000 tonnes catch weight equivalent)

	<u>1976</u>	<u>1977</u>	<u>1978*</u>
Cod	49.2	45.1	22.4
Haddock	19.9	10.0	7.0
Saithe	134.7	97.3	94.2
Redfish	59.8	85.2	64.5
Hake	17.3	20.5	26.7
	<hr/>	<hr/>	<hr/>
Major groundfish species	280.9	258.1	214.8
"Other" groundfish ²	64.0	76.0	120.0
	<hr/>	<hr/>	<hr/>
Total groundfish	344.9	334.1	334.8

* Estimates based on January-November data.

¹ Landings plus imports minus exports

² Estimates of FRG landings

Table 19 German Supply of Crustaceans and Molluscs 1976 and 1977

('000 tonnes catch weight)

	<u>1976</u>	<u>1977</u>
<u>German landings</u>		
Shrimp for human consumption	15.9	9.2
Shrimp for industrial use	(11.1)	(9.0)
Mussels	25.4	13.6
Squid	1.2	1.3
Import ¹	9.0	8.5
Export ¹	23.5	8.2
	<hr/>	<hr/>
Domestic raw material supply for human consumption	28.0	24.4

¹ Processed products excluded.

Table 20 FRG Imports of Freshwater Fish
(tonnes)

	<u>1977</u>	<u>1978</u>
Trout, fresh or chilled	7,524	8,497
Trout, frozen	3,414	3,551
Eels, fresh or chilled	3,678	3,366
Eels, frozen	1,488	1,585
Carp, fresh or chilled	3,829	3,185
Other freshwater fish, fresh or chilled	1,326	1,466
Other freshwater fish, frozen	163	333
Total	<u>21,422</u>	<u>22,583</u>

(b) Imports

(i) Herring

Supplies of 100,000 tonnes come from the North Sea, Norwegian waters and the Baltic Sea (via Polish and Swedish exports to Denmark). The 1978 catch has declined further with a simultaneous increase in the processing of substitutes. While 84% (117,000 tonnes) of herring imports in 1974 originated in EC countries, their share declined to 56% in 1977 (74,000 tonnes product weight). The remainder is supplied by Canada and the U.S. A.

Denmark is the major supplier of fresh herring (41,453 tonnes product weight in 1977) -- about 85% of imports, while Sweden (4.5%) has replaced Britain (3%) in second place. Canada supplies more than 56% of frozen herring imports (55,637 tonnes product weight in 1977); the U.S. less than 20%, Norway 10% and Denmark 6%. In 1978, the U.S. market share appears to have dropped to 10% while Denmark and Iceland increased deliveries. Imports from Canada of frozen round herring and fillets decreased by 16%. Total herring imports from Canada declined by 12.0% in volume but increased by 33% in value, a measure of the demand pressure. Canada was also the major supplier (56%) of barrelled herring in 1977. The balance was imported from a number of countries, each less than 10% of the total.

The origin of the herring processed in Germany

Table 21 FRG Herring Supply 1977

PRODUCT	Weight		Value	Average Product Price
	Product	Catch ¹⁾		
	('000 tonnes)	(Total Mill. DM)	(DM/kg)	
<u>IMPORT</u>				
Round, fresh ³⁾	13.9	13.9	20.0	1.44
Round, frozen ³⁾	17.0	17.0	23.8	1.41
Other, fresh ²⁾³⁾	27.4	55.6	55.2	2.01
Other, frozen ²⁾³⁾	38.3	77.7	72.8	1.90
Fillets, fresh	.2	.4	.7	3.15
Fillets, frozen	<u>0.4</u>	<u>0.7</u>	<u>1.1</u>	3.06
Subtotal, fresh or frozen*	97.2	165.3	173.6	
Whole, salted	13.3	19.4	38.5	2.90
Headless & others, salted	2.4	3.8	6.6	2.79
Fillets, salted	1.6	5.6	8.1	5.02
Prepared in barrels ⁴⁾	<u>9.1</u>	<u>23.3</u>	<u>24.3</u>	2.67
Subtotal salted or cured*	26.4	52.1	77.5	
Total Import	123.4	217.4	251.0	2.03
<u>DOMESTIC PRODUCTION</u>				
Round, fresh	6.3	6.3	5.3	0.85
Round, frozen	0	0	0	1.01
Other, frozen	0.2	0.4	0.5	2.65
<u>IMPORT FROM GDR</u>				
Round, fresh	<u>1.4</u>	<u>1.4</u>	<u>1.2</u>	<u>0.85</u>
Total supply	131.3	225.5	258.0	1.96

*Discrepancies in Subtotals are due to rounding

1) Conversion Factors: Flaps & Fillets, Fresh and Frozen

2.03

 Round, salted 1.46

 Headless, salted 1.61

 Fillets, salted 3.50

 Flaps in vinegar 2.56

2) Primarily Flaps

3) Feb. 15, 1977 - Feb. 14, 1978

4) Flaps in vinegar and spice-cured

SOURCE: Annual 1977/78 p. 41.

Table 22 Canadian Herring Exports
To West Germany, 1977-78

Q: tonnes
V: \$000

<u>HERRING</u>	<u>1977</u>		<u>1978</u>	
	<u>Q.</u>	<u>V.</u>	<u>Q.</u>	<u>V.</u>
Fresh, whole or dressed	-	-	-	-
Frozen, whole or dressed	5,440	3,324	7,744	5,848
Frozen fillets	28,702	22,387	20,667	26,079
Smoked kippered	-	-	-	-
Smoked boneless	-	-	-	-
Smoked bloaters	-	-	-	-
Vinegar cured, whole or dressed	305	310	561	789
Vinegar cured, fillets	3,658	2,793	3,754	4,790
Pickled, whole or dressed	769	656	944	845
Pickled, split	90	70	43	30
Pickled, fillets	846	553	1,339	1,613
Total Herring	39,810	30,093	35,052	39,994
<u>OTHER SPECIES</u>				
All forms of products	10,075	20,377	5,789	17,404
TOTAL EXPORT OF FISH PRODUCTS	49,885	50,470	40,841	57,398

Source: Exports by country (January-December 1978), Statistics Canada. Catalogue 65-003 Quarterly. Vol. 35 -- No. 4. Ottawa, 1979.

Table 23 Imports of Herring and Herring Products
1977 and 1978*
('000 tonnes)

<u>Form</u>		<u>Total</u> (Product Weight)	<u>From Canada</u> (Catch Weight)	
Fresh, round	1977	13.9	---	---
	1978*	11.9	---	---
Fresh, fillets and flaps	1977	27.6	0.6	1.2
	1978*	25.7	---	---
Frozen, round	1977	17.0	4.9	4.9
	1978*	17.1	8.3	8.3
Frozen, fillets & flaps	1977	38.6	26.4	53.6
	1978*	36.9	22.3	45.3
Dried, salted or smoked	1977	18.2	0.3	1.1
	1978*	16.2	0.2	0.7
Cured, pickled	1977	9.1	5.1	20.4
	1978*	9.7	6.2	24.8
Canned	1977	6.3	---	---
	1978*	4.8	---	---
TOTAL	1977	130.7	37.7	81.2
	1978*	122.3	37.0	79.1

Note: Data based on incomplete German information.
Inconsistencies with Table 18, based on Canadian
statistics, may be due to time lags.

Source: Spezialhandel nach Waren

* Estimates based on January-November data.

cannot be fully determined. While it is known that Denmark catches about one-third of its exports, the remaining Danish exports are landed by Iceland, Scotland, the Faroe Islands and others or is imported from Poland and Sweden. "Polish" herring may even originate in the Bay of Fundy.

Preliminary data for 1978 indicates that fresh herring imports have dropped further to an estimated 39,000 tonnes while frozen herring imports have remained constant. The trend toward the import of frozen herring is accelerating at the expense of fresh herring. The amount of herring processed by the German industry will depend on availability of raw material, herring prices relative to substitutes and employment opportunities for the fleet and processing industry.

(ii) Salmon

Germany imports an average of 4,000 - 4,500 tonnes per year. Her own landings are negligible (35 tonnes in 1977) (see Table 7). Canada provides over 40% of frozen imports compared with the U.S. (30%), Norway (17%) and Denmark (6%).

(iii) Groundfish

Despite the shortfall in German groundfish landings which resulted from loss of access to Icelandic fishing waters, supply in the fresh fish sector has been maintained

during the early part of 1978 by direct landings from French and Danish trawlers as well as from traditional supplies from the Netherlands and Norway. Since the fall of 1978 shortages and reduction in the range of species offered have become more noticeable.

(a) Cod:

The German industry expects an increase in the price of cod blocks to US \$1.10 - 1.12/lb. by the early fall of 1979. Relatively small shortfalls in ground-fish supply were met by imports from several sources, especially Denmark, Iceland, the Netherlands and Norway.

(b) Haddock:

The bulk of haddock imports are fresh or chilled dressed.

(c) Redfish:

Small volumes of redfish are imported from Iceland, Norway and France with some re-export to Japan, Cyprus and Israel.

(d) Hake:

An increasing amount of hake, particularly in frozen fillet form is imported, especially from Argentina.

(e) Saithe:

Imports now furnish over 60% of domestic supply. The processing of sides has been taken over by the Icelandic industry, now the major supplier.

Restricted supplies led to a price increase of 50% for salted sides in 1977, followed by a noticeable decline in retail sales. By comparison, sales of relatively expensive luxury-type fish products -- such as smoked salmon -- are least influenced by price changes while consumers react quickly to rapid price increases of low-cost products. However, price increases helped to tap new supplies. Icelandic fishermen now use special small vessels to land saithe directly in Germany, as an alternative to the major export market in the U.S.

(iv) Shellfish

Net imports in 1977 increased by 8%.

(v) Freshwater Fish

Net imports added 24,000 tonnes to a total domestic supply of 39,000 tonnes. EC members supplied 60% of imports in the form of trout, carp and fresh eels. Canada, the U.S. and New Zealand provided the bulk of frozen eels. Canadian eels, preferably silver eels, were imported at:

Table 24 Domestic Supply of Crustacean and Mollusc Finished Products

(tonnes product weight)

	<u>1976</u>	<u>1977</u>
Production	1,735	1,943
Imports	8,157	8,266
Exports	<u>2,058</u>	<u>1,672</u>
Apparent domestic consumption	7,832	8,537

Table 25 Import of Crustaceans and Molluscs 1976 and 1977 (tonnes)

	<u>1976</u>	<u>1977</u>
Lobster (live)	209	215 ¹
Lobster, whole or in pieces	42	42 ²
Freshwater Crayfish	342	425
Shrimp	2,459	2,653
Mussels	2,584	1,770
Squid and Octopus	1,690	1,672
Crustaceans or Molluscs, preserved or prepared	8,157	8,266

¹ Canada 36%

² Canada 61%

\$1.10 - 1.25 f.o.b. Canadian port in 1977

\$2.20 - 2.50 f.o.b. in 1978.

C. POTENTIAL TRADE

Assuming that the three-year average of 9.2 catch weight equivalent per capita consumption will be maintained, a smaller population will require 549,200 tonnes in 1985, only 7,200 tonnes less than in 1978. Since Germany's own landings are expected to decline by at least 120,000 tonnes the shortfall of well over 100,000 tonnes will have to be imported in addition to current imports of 490,000 tonnes. The German industry could compensate, of course, for all or part of the gap by reducing its fish exports. But as these are mostly high value-added products, they are probably needed to guarantee the existing processing capacity at an economically efficient level of operation.

(i) Herring

The long-term average market demand for herring in Germany is an estimated 250,000 tonnes. In recent years, the demand has been lower due to consumer resistance to high end-product prices. The gap between the demand for herring-type products and the reduced high-priced herring imports is increasingly filled by herring substitutes. To that end, the cost-conscious German fishing

Table 26 - Import Market Projections, 1981 and 1985

(metric tonnes product weight)

	1977 ¹⁾		1981		1985	
	TOTAL	FROM CANADA	TOTAL	FROM CANADA	TOTAL	FROM CANADA
1. COD						
1.1 Fresh, round or dressed	5,602		8,500	-	7,000	500
1.2 Fresh fillets	324		1,500	-	1,000	500
1.3 Frozen, round or dressed	1,278	178	4,000	1,000	3,000	1,000
1.4 Frozen fillets & blks	4,425	1,541	10,000 5,000	4,000 2,500	8,000 15,000	4,000 10,000
1.5 Dried & Salted	1,025		1,000	-	1,000	-
1.6 Cured, pickled, etc.						
1.7 Canned						
1.8 Other (specify)						
2. Haddock						
2.1 Fresh, round or dressed	3,268	-				
2.2 Fresh fillets	43	-				
2.3 Frozen, round or dressed	218	-	No change			
2.4 Frozen fillets & blks.	47	-				
2.5 Frozen blocks						
2.8 Other (specify)						
3. REDFISH						
3.1 Fr. rd. or dr.	2,490	-	4,000	-	4,000	-
3.2 Other-Fr. fillets	37	-	100	-	100	-
3.3 Fr. rd., or dressed	761	-	2,000	1,000	2,000	1,000
3.4 Fr. fillets & blks.	566	-	1,500	500	1,500	500
4. HURBOT (G. Halibut)						
4.3 Frozen, round or dressed	-	-	500	500	500	500
4.4 Frozen fillets	-	-	500	500	500	500
4.5 Frozen blocks						
4.8 Other (specify)						
5. HALIBUT						
5.3 Frozen, round or dressed	4,187	32	5,000	-	5,000	-
5.4 Frozen fillets						
5.5 Dried, Salted	1					
5.8 Other-Fresh rd.	348	-	500	-	500	-

(table 26 cont'd)

	1977		1981		1985	
	TOTAL	FROM CANADA	TOTAL	FROM CANADA	TOTAL	FROM CANADA
6. POLLOCK -Fr., rd., dressed	23,905		20,000	-		-
6.3 Frozen, round or dressed	1,566		2,000	-		-
6.4 Frozen fillets	2,798		8,000	-		-
6.5 Frozen blocks						
6.6 Cured, pickled, etc.	2,753		3,000	-		-
6.8 Other (specify)Fr. rd. dr.	3,501					
Prepared	73					
7. HALIBUT -fr., rd. or dressed	330					
7.3 Frozen, round or dressed	1,461		10,000	-	10,000	-
7.4 Frozen fillets	7,292		20,000	-	25,000	-
7.5 Frozen blocks						
7.6 Cured, pickled, etc.						
7.8 Other -Fresh filets	2.7					
8. FLATFISH -Fr., rd., or dr.	7,744	-	-	-	-	-
8.3 Frozen, round or dressed	1,159	-	-	-	-	-
8.4 Frozen fillets						
8.5 Frozen blocks						
8.8 Other (specify)						
9. GREENLING						
9.3 Frozen, round or dressed						
9.4 Frozen fillets						
9.5 Frozen blocks						
9.6 Cured, pickled, etc.						
9.7 Canned						
9.8 Other (specify)						
10. CAPELIN						
10.3 Frozen, round						
10.6 Cured, pickled, etc.						
10.7 Canned						
10.8 Other (specify)						
SARDINES						
Fresh, chilled	1,948					
Frozen	1,097					
Canned	7,858					

(table 26 cont'd)

		1977		1981		1985	
		TOTAL	FROM CANADA	TOTAL	FROM CANADA	TOTAL	FROM CANADA
11.	HERRING - Fresh, round	13,851	-	5,000	-	3,000	-
	11.2 Butterfly Fil. Fresh	27,393	553	20,000	1,000	15,000	-
	11.3 Fillets, Fresh	209	-	1,000	-	1,000	-
	11.4 Frozen, round	16,957	4,936	20,000	6,000	20,000	6,000
	11.5 Frozen fillets	367	218	-	-	-	-
	butterfly fil. froz.	38,285	26,224	40,000	28,000	40,000	20,000
	11.6 Dr., slt., or smk.	18,236	329	15,000	500	10,000	-
	11.7 Cured, pickled, etc.	9,101	5,112	10,000	7,900 ¹⁾	10,000	7,900
	11.8 Canned	6,305	-	-	-	-	-
12.	MACKEREL - Fr. round	7,219	-	8,000	-	8,000	-
	12.3 Frozen, round	18,625	616	20,000	1,000	20,000	1,000
	12.4 Frozen fillets	1,526	-	5,000	-	10,000	-
	12.6 Cured, pickled, etc.						
	12.7 Canned	3,514	-	5,000	-	5,000	-
	12.8 Other (specify)						
13.	SALMON - Fresh, Rd.	568	-	500	-	1,000	-
	13.3 frozen, hndl., drsd	2,616	1,335	3,800	2,000	4,000	1,000
	13.4 frozen fillets/steaks						
	13.6 Cured, pickled, etc. smk.	352	10	1,000	500	500	50
	13.7 Canned	120	23	300	-	500	-
	13.8 Other (specify)						
14.	OTHER FINFISH - Fresh	5,037					
	14.3 Frozen, round or dressed	9,520		No change			
	14.4 frozen fillets	1,866	69				
	14.5 frozen blocks						
	14.6 Cured, pickled, etc.	1,320					
	14.7 Canned	1,376					
	14.8 Other (specify) smoked	2,976					
	Canned tuna & Bonito	11,886					
	Fillets breaded & raw	4,803					
	SHARK						
	Fresh, round or dr.	723	-	-	-	-	-
	Frozen, rd. or dr.	2,508	194	2,500	200	2,500	200
	SPRATS						
	Fresh or chilled	694	-				
	Frozen	1,364	-				
	Canned	438	-	No change			

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1) Composition: 5,000 m.t. vinegar-cured fillets; 600 m.t. spice-cured whole or dressed; 1,500 m.t. hard-cured pickled fillets; 800 m.t. hard-cured whole.

(table 26 cont'd)

		1977		1981		1985	
		TOTAL	FROM CANADA	TOTAL	FROM CANADA	TOTAL	FROM CANADA
	<u>FRESHWATER FISH</u>						
15.	<u>WHITEFISH</u>						
	15.3 Frozen, round or fresh	58					
	15.4 Frozen fillets						
	15.5 Frozen blocks						
	15.8 Other (specify)						
16.	<u>TROUT, Fresh, Rd.</u>	7,524	-	No change			
	16.3 Frozen, round	3,414	-				
	16.4 Frozen fillets						
	16.5 Frozen blocks						
	16.8 Other (specify)						
17.	<u>PICKEREL AND SAUGER</u>						
	17.3 Frozen, round						
	17.4 Frozen fillets						
	17.5 Frozen blocks						
	17.8 Other (specify)						
18.	<u>LAKE PERCH</u>						
	18.3 Frozen, round						
	18.4 Frozen fillets						
	18.5 Frozen blocks						
	18.8 Other (specify)						
19.	<u>LAKE SMILT</u>						
	19.3 Frozen, round						
	19.4 Frozen fillets						
	19.5 Frozen blocks						
	19.8 Other (specify)						
20.	<u>OTHER FRESHWATER FISH-Fr or Ch</u>	1,326					
	20.3 frozen round	163					
	20.4 Frozen fillets						
	20.5 frozen blocks						
	20.8 Other (specify)						
	<u>EELS</u>						
	Fresh or chilled	3,678		4,000	-	4,000	-
	Frozen	1,488	631	1,500	800	1,500	800
21041	<u>CARP</u>						
	Fresh or chilled	3,829	-	4,000	-	2,000	-

(table 26 cont'd)

		1977		1981		1985	
		TOTAL	FROM CANADA	TOTAL	FROM CANADA	TOTAL	FROM CANADA
	SHELLFISH						
21.	SQUID						
	Round	851	-	1,200	-	1,800	-
	Tube						
	Dried						
	Other						
22.	LOBSTERS						
	In shell	314	103	500	200	500	200
	Meat	11	-	20	5	20	5
	Canned	88	55	100	50	100	50
23.	CRABS						
	In shell						
	Meat						
	Canned						
24.	SCALLOPS						
	Meats						
	Meats with roe						
25.	SHRIMPS						
	Raw, in shell	3,078	7	4,500	10	4,000	10
	Cooked, peeled, frozen					500	100
	Canned	214	11	300	20	300	20
	OCTOPUS						
	Frozen	821	-	1,000	-	1,000	-
26.	OTHER SHELLFISH- Molluscs						
	In shell	2,237	-	3,000	-	3,000	-
	Meat						
	Canned	7,964	118	8,000	200	8,000	200
	TOTAL IMPORTS						

industry has increased the catch of pilchards (sardina walbaum, sardinops, sardinella), mackerel and sprat. Experiments are underway to process blue whiting as another substitute.

Processing, however, has posed technical problems (leading to the re-export of 10,000 tonnes of pilchards in 1978) and proven to be more expensive than expected. Competitive prices and quality of Canadian herring imports may induce the German industry to switch back from the least desirable substitutes. The need to find employment for the German fleet limits the scope for a return to herring processing; and forecasts for 1979 indicate only a 50% capacity use. Any measure offering improvement in the ratio of fleet utilization will act as an incentive to reduce the use of substitutes.

Until 1985, Canadian herring exports to Germany will depend less on the recovery of the herring stocks than on the price and quality of the Canadian product. If the German industry's need for secure supplies and guaranteed quality can be met in longer-term contracts (minimum six months), the current level of Canadian exports (90,000 tonnes catch weight) will be maintained. Stabilized prices at a reasonable level may increase exports by 20,000-30,000 tonnes, especially if some employment for the German fleet can be offered. Additional exports are possible if

mackerel is indeed being overfished.

About 80% of the available supply of fresh and frozen herring is processed into marinades and canned foods. The annual consumption of fresh ("green") herring is estimated at between 15,000 and 20,000 tonnes. The balance is smoked, salted ("matjes fillets") or processed into salads. In 1977 consumer products (including small amounts of herring substitutes) were divided as follows:

Canned herring	53,200 tonnes
Marinades	67,500 tonnes
Salt herring	6,400 tonnes
Spice-cured and matjes fillets	5,900 tonnes
Smoked herring	3,200 tonnes

For certain products, Canadian herring may not be as desirable as other herring. For example, the German industry prefers a minimum fat content of 8% up to a possible 12-16% for sour flaps. Herring outside this range should be packed separately indicating "under 8%" and "over 15%". If of good quality, this herring can be used by the canners but they must adjust their formulae. Therefore it is vital to have the fat content tested and marked on the cases. Since the German canning industry changed to smaller-sized cans in 1978, the preferred size

is 7-11 herring per kilogram. The average Canadian delivery of 4-6/kg. appears too large. One Canadian product which would find easy market acceptance would be graded frozen fillets of the preferred size 10-14/kg. For smoking round herring size 3-5/kg. with a fat content of 10-11% (up to 15% acceptable) are preferred.

The herring canning sector processes approximately 200 million cans (content 200 g.) per year. There are three groups of canners. The largest group consists of five companies which specialize in the canning of herring and substitutes, and account for about 70% of the supply*.

The raw material shortage in 1977 forced the largest canner, Hawesta, to substitute for herring and currently mackerel represents 30% of raw material. At the same time the company shifted to the use of frozen herring from Canada. Preferred fillet size is 10-14 kg. and the minimum fat content is 10%.

Three firms represent 20-25% of the supply and in addition to canned herring, process a wide range of fish and other products**. A few small firms produce the remaining 5-10%***.

* The companies are Hawesta, Norda, Wefina, Heyco and Westfalia.

** Richter, Appel & Frenzel, Fisch-Union.

*** These include Werber and Schutt and Schwartz Marine.

The growing difficulties of buying raw materials may lead to further plant consolidation in the herring processing industry particularly of companies dependent on fresh herring for their raw material source. These firms were forced to shift to frozen or marinated round fish or flaps and absorb a considerable increase in raw material costs. Prices for frozen flaps, for example, doubled during the year.

(a) Herring Substitutes

The herring processing industry has searched for substitutes ever since the decline of herring catches from the early 1970s. After a preliminary unsuccessful experiment with mackerel, efforts were turned to pilchards, especially various species of the Clupeidae family: *Sardina Walbaum*, *Sardinops*, *Sardinella*. Technical difficulties (unacceptable for smoking, small size and soft flesh make filleting difficult and labour intensive, limited shelf life) are compensated for by supply costs about one third-lower than herring. Pilchards will likely be dropped by processors if and when herring supplies return.

A number of companies have resumed development work on mackerel, until recently only processed

Table 27 Herring Import Prices January-June 1978
by Product Form (Dfl/kg)

	<u>Round, Fresh</u>	<u>Round Frozen</u>	<u>Flaps Fresh</u>	<u>Flaps Frozen</u>	<u>Sour Flaps</u>	<u>Fillets Fresh & Frozen</u>	<u>Salt Round</u>	<u>Salt Fillet</u>
January	1.83	1.63	3.09	2.44	3.04	2.21	3.28	5.25
February	1.44	1.75	2.84	2.66	3.28	3.07	3.20	5.78
March	1.75	1.30	2.70	2.70	3.49	2.98	3.43	6.82
April	1.41	1.38	2.61	2.67	3.38	4.33	3.44	6.66
May	1.22	1.37	2.48	2.76	3.92	2.42	3.52	5.66
June	1.65	1.41	2.51	2.81	3.62	3.60	4.00	3.77

Source: Geschäftsbericht, October 1978 P. 14

in smoked form. Mackerel is processed now for herring-like canned products which are gaining consumer acceptance. Development of mackerel marinades is progressing.

In 1977 the supply of mackerel consisted of:

domestic catch	5,100 tonnes (2% by inshore fleet)
<u>Import:</u> - r., fresh	7,200 tonnes (58% Denmark)
r., frozen	18,600 tonnes (31% Netherlands) (20% Norway)
- fillets, frozen	1,500 tonnes (UK 64%)
- prepared	3,500 tonnes
	<hr/>
TOTAL	35,900 tonnes product weight
Re-export	11,200 tonnes in various forms
Apparent domestic supply	24,700 tonnes (product weight)

About half the supply fills the regular demand for mackerel while the other 12,000 tonnes are used as herring substitutes. Prices of mackerel flaps are identical to those of pilchards. Canned mackerel products are sold at prices above those of herring to compensate for a lower yield and higher labour costs. The canning industry expects to continue the use of mackerel and sprats as long as the German fleet can be utilized and import prices offer a wider profit margin than herring.

In 1977, blue whiting stocks in the North Atlantic were thought to offer possibilities as herring substitutes. So far, developmental work has been unsuccessful. The soft flesh makes the fish unsuitable for iced transport; in salted or smoked form the fish dries out quickly and acquires a flat taste. Processing into frozen fillets seems to be more promising. The addition of soybean oil to the smoked or salted form may improve its acceptability. A Canadian species for which the German industry has shown some interest is gaspereaux provided it is not mixed with other herring.

The following chart shows the uses to which the German processing industry puts the "new" species:

<u>Species</u>	<u>PROCESS</u>				
	<u>round</u>	<u>fillet</u>	<u>mince</u>	<u>smoke</u>	<u>canning</u>
Blue whiting	x		x	x	
Grenadier		x	x	x	
Pilchard	x				x
Sardinops	x				x
Mackerel	x			x	x
Loligo		x	x		x

(b) Sales Potential

Canadian exports to FRG must maintain quality standards with regard to grading and marking by size and grading by fat content. Both are considered essential parts of a sales contract.

Exporters are expected to overpack, to meet the transport loss, estimated at 4% by weight. Between 15 and 20 firms handle the import of herring. The four largest, Fimex, Joergensen, Luebbert and Norda, account for 80% of imports. Importers look for standards of fish quality, proper cutting and adequate packaging. Importers accept losses, due to thawing of 3-5%.

Canadian mackerel could gain a share of the herring substitute import market if price is competitive.

Trading practices are just as important as quality. Difficulties occur sometimes when cash-against-documents terms are specified. The importer not only takes all risks of financing, distribution and storage but the procedure is expensive in terms of administration and financing costs. Importers prefer suppliers who are prepared to ship against open account to established importers.

In order to maintain a long-term market, even after the return of the North Sea herring, the Canadian

industry will have to meet the quality standards and terms of trade available from other suppliers of frozen herring fillets.

(c) Herring Review

The long-term average market demand for herring in the FRG has been estimated to 250,000 tonnes. In recent years the supply has been lower due to consumer resistance to high end-product prices. Efforts of the very cost-conscious German fishing industry to find additional employment for the German fleet by increasing the catch of herring substitutes such as pilchards (*sardina walbaum*, *sardinops*, *sardinella*), mackerel and sprat have filled the gap. Experiments are underway to process blue whiting as an additional substitute.

In 1977, herring supplies amounted to 225,500 tonnes catch weight. Only 3% were caught by the German fleet, primarily in the Baltic; approximately 120,000 tonnes imported originated in the waters of the North West Atlantic (Canada and U.S). The remaining imports (100,000 tonnes) came from the North Sea, Norwegian waters and the Baltic Sea (via Polish and Swedish export to Denmark). 1978 herring supplies have declined further with simultaneous increase in the processing of substitutes.

The amount of herring which the German industry will undertake to process therefore, is subject to 3 major determinants:

- i) the availability of raw material
- ii) the price of herring relative to the price of its substitutes
- iii) the need to find adequate employment for its fleet and its processing industry

(ii) Salmon

The market for salmon is expected to remain stable for the next two to three years after which stiffening competition is expected from Norwegian aquaculture. The bulk of imports is further processed into high-value smoked salmon. Consumption is expected to grow by 10% annually over the next five to six years. Species and sizes used in the smokeries, in order of preference, are:

Troll salmon:	Red King	7/11 kg
	Red King	11/18 kg
	Silver	6/9 kg
	Silver	9 kg
	Summer Chums	
Net Salmon:	King	

A threat to Canadian imports may be posed by further development of Norwegian aquaculture salmon. At present, Canadian salmon prices are still competitive in Norwegian prices (1 kg. with head, gutted at 50 Nkr = C\$ 11.20), but the German importer expects a substantial drop in prices in about two years, when certain bottlenecks in the aquaculture process have been overcome. At that time, a Norwegian production of 4,000 - 5,000 tonnes, at a substantial price decrease is thought possible. Salmon prices in 1978, in Canadian dollar per pound, c.i.f. German port, were:

4-6/2.15 Cdn. \$

6-8/2.70

8-10/2.90

10-12/3.15

12-14/3.50

The German importers expect a price decrease of between 10% and 20% in 1979.

Canadian exporters have been singularly unsuccessful in introducing canned salmon as a replacement for canned tuna (12,000 tonnes per year). German consumers would require a massive educational campaign before they would accept the Canadian packed product, which includes bones and skin.

Table 28 Salmon - Import & Export 1977,
January-November, 1978*

		<u>Import</u>		<u>Export</u>
		<u>Total</u>	<u>From Canada</u>	(m.t. Product Weight)
Fresh	1977	568	-	3
	1978*	639	-	8
Frozen	1977	2,616	1,335	103
	1978*	2,451	1,098	165
Salted or in brine	1977	14	10	-
	1978*	5	-	-
Fillets, salted or in brine	1977	9	-	3
	1978*	1	-	-
Smoked	1977	300	-	56
	1978*	270	-	63
Salmonidae, prepared	1977	-	-	-
	1978*	139	31	80

* January-November.

(iii) Groundfish

a) Cod

It seems unlikely that the previous demand for 150,000-160,000 tonnes of cod will be recaptured. Under competitive price conditions, processors could switch back to cod, replacing up to half of substitutes now used. If so, total demand for cod could be 120,000-130,000 tonnes. The German industry can be expected to retain, if not increase, current exports of 71,000 tonnes of cod. The German domestic market is interested in finished products made from standard blocks processed from both cod and substitutes. Increases in exports of fresh cod are due to tourist demand in southern Europe.

As supplies from traditional sources are not expected to exceed the total 1978 supply of 90,000 tonnes, Germany should offer possibilities to market an additional 30,000-40,000 tonnes (catch weight) of cod over the next 2-3 year period. The long-term forecast for cod imports is subject to the same variables as herring: availability of stocks, prices of substitutes and use of the German fleet.

b) Mackerel

Both for mackerel itself and as a herring substitute, Canadian exports show excellent market potential provided the German price can be met.

c) Saithe

The profitable German market is starting to attract Canadian exporters. The quantity supplied is not yet large, but each new supplier is welcome as a means of keeping the raw material price down. The size of the Canadian species (4-5 per kilogram) is, however, small compared to the preferred 2-3/kg size. The price of saithe is determined in U.S. and U.K. markets.

d) Other Groundfish

This includes a wide variety of species: whiting and blue whiting, blue ling and black halibut, wolf-fish, dog fish and other sharks. The cost of catching and processing are high, supply uncertain, and technological production problems have not been solved fully. Cod imports, therefore, could take up the slack if prices are competitive and trawler fleets operate at economic capacity.

(iv) Shellfish

German importers expect lobster and shrimp imports will continue to grow at a rate of 10% per year for the next five years. The export of Canadian live lobster, however, may be limited by the German preference for lobster not smaller than 1½-2 lbs. Demand for crustaceans and molluscs, especially lobster and shrimp, is expected to rise by 10% p.a. for the next three years.

(v) Freshwater Fish

Because of unacceptable quality, Canadian freshwater species other than eels find only a limited market in Germany. One exception however, is individually quick-frozen fillets of wild lake trout.

D. PROBLEMS

Herring is no longer considered a cheap source of protein and has become a delicacy. Accordingly, quality requirements will become more stringent in 1979. Importers who did not buy against firm product specifications in 1978 may not be prepared to place new contracts without relating prices to specific quality considerations. Canadian exporters should be prepared to carry out quality control tests and certify individual shipments for grading and content standards.

Price is a key variable for the future. Retention of the herring market share through 1983 for instance, will depend on the price of herring relative to the price of its substitutes, and as well the need of the domestic fishing industry to balance employment in the fleet with the herring processing sector. Similarly, additional imports of groundfish will depend on the quality of the product offered, prices relative to other available substitutes and the level of capacity utilization of processing plants.

APPENDICES

APPENDIX A

1. Government Fishery Policy

For a number of years the government has attempted, at the domestic and international level, to mitigate the effects on the West German fishing industry of worldwide introduction of the 200 mile fishing limits.

(a) Domestic

The objectives of domestic fishery policy stated in a 1976 government paper "Outline of the Fishery Policy for the Coming Years" are to:

- secure an adequate supply of fish products at reasonable prices through domestic catches and imports;
- preserve an efficient fleet;
- preserve employment levels in the industry;
- guarantee appropriate wage levels and working conditions;
- continue research with special emphasis on existing and new fishing grounds and non-traditional species;
- retain old fishing grounds and acquire new ones through international and bilateral negotiations.
- liberalize EC marketing policy for fish products;
- improve domestic marketing structures.

To achieve the objectives, new programs are foreseen as well as continuation of existing support.

(b) The European Community

Since January 1978, eight member states of the EC have agreed on the basic provisions of the Community's Fisheries Policy. So far, Britain has blocked ratification, creating uncertainty for EC members and preventing the conclusion of long-term quota agreements with third countries.

In other areas of fish policy, the EC has introduced a number of measures to create a more orderly and coordinated approach.

Of special interest to exporters is a common organization of the market in fishery products which adopts common marketing standards for classification by quality, size or weight, and packaging, presentation and labelling.

The regulations set a "withdrawal price" below which producers will not sell their product. It also creates an "intervention fund" to compensate producers' organizations forced to withdraw those products not sold at the stipulated withdrawal price.

For example, the 1979 withdrawal price for herring size 1 (8 or less fish per kg) is fixed at about \$308. The intervention price is fixed annually between 35% and 45%

of the "guide price" (average of prices recorded in the preceding three years). The system has repeatedly led to removal of larger quantities of quality fish than the market could absorb at the set price.

The guide price is also the basis for the annually fixed "reference price" which governs import price levels from third countries. It represents a minimum price below which foreign imports may be subject to suspension, restriction to specified qualities or end uses, or to countervailing duties.

Finally, the regulation provides for an export refund on products whose internal prices exceed world prices. The market conditions which result prove to be highly inflexible in light of rapidly changing world conditions. Member states' recommended reforms have not yet been enacted.

(c) International Aspects of Fisheries Policy

Because of membership in the EC, West Germany is not free to pursue its own policies at the international level. The Community has authority to negotiate protection of fish stocks and conclude bilateral agreements. In effect Germany gets its catch quotas only as part of EC allocations. Since East bloc countries refuse to recognize the EC as a legal entity, a number of fishery agreements, such as the

North East Atlantic Fisheries Convention, have not been renewed so that Germany has been unable to obtain quota allocations for a large part of the Baltic Sea.

Nevertheless, Germany actively participates internationally in a number of research projects and by making cooperative arrangements which will serve as "tickets of admission" to offshore fishing grounds (see Appendix D).

APPENDIX B

Fleet Ownership

The off-shore fleet is in the hands of four fishing companies:

- i) Nordsee - Deutsche Hochseefischerei AG: (68% Unilever, 31% Dresdner Bank, 1% others).

The Nordsee Group is the largest, fully-integrated German fishing company and operates 36 trawlers. Plants in Bremerhaven and Cuxhaven process a full range of herring, mackerel, sprat and groundfish (cod, saithe, pollock, redfish) products under the brand names Lysell and Norda.

The company uses 300,000 tonnes of raw material per annum. Until recently, one-third was landed by company owned vessels with the remainder imported. The operations center on processing and marketing frozen products and fresh fish. The company operates 250 fish speciality stores and 150 fish restaurants. Its wholesale organization serves the institutional sector operating four depots for restaurants. One-third of its institutional sales go to its own restaurants.

- ii) Hanseatische Hochseefischerei AG: (Oetker Group -- food processing, shipping, banking, insurance).

Table B1: Organization of NORDSEE Group

N O R D S E E - G R O U P

Trawling Dr. Peschau	Processing Fuchs	Trade Scholl-Poensgen	Chairman Rehder	Technical Speiser	Finance & Controlling	Personnel Schmidt
Factory trawlers	Factories	Shops	Legal	Engineering	Economics	Management development
Fresh fish trawlers	Fischindustrie Bremerhaven	Germany Austria	Public relations	Product and process deve- lopment	Financing	Recruitment and training
Shore facilities workshops ice factory cold store	Seedler Cuxhaven	Restaurants	Fishmeal factories	Central laboratory	Financial accounts	Salaries, wages' and social benefits
	Sales organisa- tion for	Germany Austria Netherlands Switzerland	Norda Heringshandel	Technical organisation	Planning	Trade unions and works councils
	canned fish Norda/Lysell von Eitzen	Hamburger Farm			Electronic data processing	Personnel administration
	Sales units for frozen fish fresh and smoked	Wholesale Depots		Civil engineering	administrative organisation	
					Taxes/insurances	
					Central buying	
					Transport	

The company owns 18 trawlers, operates a frozen fish processing plant and fish smokery and trades in the export, import and domestic wholesale markets.

iii) **Norstern:** (Major shareholder Jacob -- Weston Group)

In contrast to the other three trawler companies, Norstern -- with eight trawlers -- does not own processing facilities and sells on the German market to Czechoslovakia, Switzerland, Austria and France.

iv) **Pickenpack:** (family owned)

The company operates 4 vessels and a processing plant for frozen fillets and fish burgers. About 95% of production is sold in Germany with the remainder exported to the Netherlands, Belgium and France.

Through an association, the off-shore fishing companies coordinate marketing activities, government lobbying and distribution of quota allocations. Their dominance of the frozen-product market enables them to control supplies and prices.

APPENDIX C

The Processing Industry

Intense concentration in the primary sector has prompted concentration in some sectors of the processing industry.

Table C1 West German Fish Processing Plants 1975

<u>Size of Plant (No. of Employees)</u>	<u>No. of Plants</u>	<u>Total No. of Employees</u>	<u>% of Industry Sales</u>
1-9	82	383	4.7
10-99	98	3,020	26.6
100-199	20	2,650	23.6
200-499	6	1,703	17.0
500 and over	4	3,390	28.1
Total	210	11,206	100.0

Source: Jahresbericht 1976/1977 p. 55.

In an analysis of market share, 40% of plants account for less than 5% of industry sales. These small production units are engaged in smoking fish, frequently selling directly to the consumer. Another 45% of plants account for little over a quarter of total sales; almost one-half (45%) of

industry sales is processed by 10 plants owned by large food concerns. In addition to concentration of ownership, the industry is physically concentrated with two-thirds of processing located in Bremen and Lower Saxony (Niedersachsen) and 12% in Hamburg.

The fresh fish market handles direct landings of iced seafish, with the exception of herring, through daily auctions at the three government owned fish markets in Bremerhaven, Cuxhaven and Hamburg. Sales are made to fresh fish wholesalers, processors and local retailers. A well organized transportation system distributes the catch within 24 hours to all parts of Germany and to adjoining countries (about 12% of the fresh fish supply is exported).

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FRG: FISHERY RESEARCH AND CO-OPERATIVE PROJECTS

The Federal Fisheries Research Institute and the German industry are currently engaged in a number of offshore projects, such as:

1. for the Antarctic the establishment of a research station, the construction of an ice-strengthened research vessel, and the formation of an institute for antarctic research. These undertakings follow two expeditions by a German research vessel and a factory trawler which studied the occurrence of krill and its production techniques.
2. in Argentina a chartered catch and factory vessel will continue the research project on the commercial exploitation of octopus and hake.
3. in New Zealand a joint venture program involving a German factory trawler will be carried out by a newly formed company with 49% German and 51% New Zealand participation. It is estimated with the help of DM 6 mill. subsidy from the FRG government. Permission for this undertaking was apparently obtained in return for EEC concessions to New Zealand imports in the butter and cheese market.

4. a bilateral agreement with the Seychelles which is expected to provide a replacement for a large part of the groundfish losses in the North Sea by quotas for red snapper and bonito.
5. With a grant of DM 20 mill. the federal government participates in the development of a fishing port at Samanco, Peru. This project includes:

- (a) off-loading facilities with mobile cranes and transport equipment;
- (b) a terminal containing freezing and cold-storage facilities, ice-making plant, refrigerated trucks as well as an electricity-generating plant for the town of Samanco;
- (c) industrial park with plants for fish canning and frozen fish products;
- (d) refitting of Peruvian fishing vessels;
- (e) training of Peruvian crews;
- (f) new fisheries research vessel.

6. A grant of DM 500,000 to Tunisia to construct freezer and cold-storage facilities for sardines and a fish meal plant in Mahdia, and to train Tunisian personnel in modern catching techniques.

7. A FRG industry consortium is negotiating with the Australian government for permission to undertake a research program in the Australian 200-mile zone.

The project will be carried out by a FRG factory trawler studying fishing feasibilities in waters not frequented by the Australian fleet. Positive results would be expected to lead to extensive German-Australian cooperative arrangements.

TABLE E: FRG DOMESTIC LANDINGS¹⁾ BY SPECIES
('000 m.t. Catch Weight)

	1960*	1973	1974	1975	1976	1977	1978 ³⁾
Herring & Sprat	185	71.4	57.7	53.1	22.7	18.2	8.5
Cod	89	116.5	154.3	119.9	106.4	88.5	76.8
Haddock	9	14.8	24.2	22.8	20.1	8.3	3.7
Pollock	48	90.5	78.5	77.0	102.1	67.7	47.0
Redfish	143	61.3	57.8	54.0	54.7	82.3	62.2
Shellfish & Molluscs	24	30.0	30.4	22.8 ²⁾	27.1	18.3 ²⁾	18.0
Other	95	76.6	93.7	84.4	92.7	111.2	174.2
Total	593	461.1	496.6	434.0	425.8	394.5	390.3
						-7.3%	-1.1%

* 1960 data in landed weight. Source: Institut für landwirtschaftliche Marktforschung.

1) German vessels-only

2) Shellfish only

3) estimate based on January-November data

SOURCE: Statistisches Bundesamt, Fachserie 3, Reihe 4.5

SELECTED RETAIL PRICES

FISH/RETAIL STORE BREMERHAVEN, MARCH 8, 1979

	<u>DM/500g</u>
Salmon, fresh	14.50-18.00
Salmon, smoked	30.00
Salmon, smoked by half-side	25.00-27.50
Redfish	4.50
Ling	3.40
Pollock	2.00
Sole	5.90- 6.90, 7.90
Lemon Sole	4.50- 3.50
Plaice, round	1.95- 1.40
Plaice, fillet	4.40
Witch, headless	3.40
Weser (freshwater) Flounder	1.60
Gurnard (Sea Robin)	-
Auglerfish, Monkfish	6.00
Haddock, round-Norwegian	1.80-22.20
Eels, live	8.50; 9.50
Norwegian shrimp, cooked	4.00-
Icelandic crabmeat	14.95

<u>Smoked fish</u>	<u>DM/100g</u>
Haddock	0.60
Salmon	6.00

<u>Cured Fish</u>	<u>DM/100g</u>
Gravlachs	4.00

FOOD SECTION OF LARGE DEPARTMENT STORE, HAMBURG, MARCH 10, 1979

Complete Inventory of Frozen Fish Chest

	<u>DM</u>
Igloo - 10 fish sticks - Cod 300 g.	2.78
15 fish sticks Pollock 450g	
fish content before cookg. 292 g	2.99
Pollock fillets, breaded 400g	3.48
Pollock, 4 portions 400g	3.48
Redfish fillets, 400g	4.98
Cod fillets, 4 portions 400g	4.28
Plaice fillets, 250g	4.69
4 Pollock steaks 250g	2.98
4 x Cod in dill sauce 450g	
Cod content 300g, sauce 150g	5.48
Seeschmansschnitzel 300g	
(small pieces of Cod & Pollock (151g)	
in sauce)	3.28
4 breaded fishburgers (ØDV Pollock)250g	
fish content 125g	2.98
Fillet with champignons - Pollock	
au gratin in alu-dish 400 g (fish 200g)	4.48
Smoked Salmon on styrofoam tray 250g	12.99

Newspaper ads:

Langnese Fishsticks 300g. Reg. 278. now	2.48
Dr. Oetker Fishsticks 300 g.	1.75
Igloo Mariners' Schnitzel; cooked	
and breaded 300g	2.25
Igloo Fish shop marseille 250g	2.68
12 Snails	3.98
Igloo Fillets "Bordelaise" 400g	2.99

FRG: HERRING EXPORTS 1977

<u>PRODUCT FORM</u>	<u>PRODUCT WEIGHT</u> (m.t.)	<u>VALUE</u> ('000 DM)	<u>CATCH WEIGHT</u> (m.t.)
Round, fresh	96	172	96
Round, frozen	842 ¹⁾	1,224	842
Flaps, fresh	556 ²⁾	1,020	1,129
Flaps, frozen	3,626 ³⁾	7,499	7,361
Fillets, frozen	1,128 ⁴⁾	2,070	2,290
Dried, salted	57	199	83
Fillets, dried, salted	119 ⁵⁾	520	417
Smoked	17	100	34
Fillets, frozen, breaded	13	85	27
Prepared, in barrels	15	56	28
Prepared, canned	6,411	28,725	13,463
TOTAL	12,880	41,670	25,770

1) Czechoslovakia 54%

2) Czechoslovakia 56%

3) Czechoslovakia 56%

4) Czechoslovakia 100%

5) Sweden 89%

FRG: Average Herring Import Prices 1976 and 1977
and Market Share of Exporting Country

		<u>Fresh</u>				<u>Frozen</u>			
		<u>Round</u>		<u>Other</u>		<u>Round</u>		<u>Other</u>	
		<u>DM/kg</u>	<u>%</u>	<u>DM/kg</u>	<u>%</u>	<u>DM/kg</u>	<u>%</u>	<u>DM/kg</u>	<u>%</u>
TOTAL	1977	1.44	100	2.01	100	1.41	100	1.90	100
	1976	1.06	100	1.62	100	1.00	100	1.44	100
=====									
EEC	1977	1.49	84	2.02	97	1.41	25	1.95	9
	1976	1.07	90	1.62	97	0.99	43	1.44	24
France	1977	1.06	1	-	-	1.03	1	1.18	-
	1976	0.92	6	-	-	0.97	-	-	-
Belgium	1977	0.86	-	2.10	-	2.50	-	0.85	-
	1976	0.82	2	1.69	-	0.75	-	-	-
Netherlands	1977	1.84	9	2.18	1	1.65	8	1.92	1
	1976	1.05	21	1.67	1	1.22	13	1.50	-
Denmark	1977	1.47	71	2.02	93	1.04	10	1.84	4
	1976	1.18	48	1.64	85	0.85	13	1.47	5
U.K.	1977	1.07	3	1.88	3	1.81	4	1.92	1
	1976	0.78	13	1.51	10	0.84	13	1.40	13
Ireland	1977	2.52	-	2.29	-	1.83	2	2.18	3
	1976	1.53	-	1.69	1	1.18	4	1.50	5
Iceland	1977	-	-	-	-	2.08	4	-	-
	1976	1.09	-	-	-	1.46	3	-	-
Norway	1977	1.81	3	1.79	-	1.33	18	1.58	3
	1976	1.02	8	1.53	1	1.01	20	1.48	6
Sweden	1977	1.07	12	1.97	1	0.78	2	2.28	1
	1976	0.67	1	1.10	-	0.59	2	0.93	-
Poland	1977	0.97	1	-	-	0.81	2	-	-
	1976	0.73	1	1.58	-	0.76	1	1.08	-
Canada	1977	-	-	1.75	2	1.54	29	1.91	68
	1976	-	-	1.48	-	1.02	11	1.44	49
U.S.A.	1977	-	-	-	-	1.27	18	1.89	19
	1976	-	-	-	-	0.96	19	1.39	21

SOURCE: Geschäftsbericht, October 1978.

FRG: Export of Cod Products 1977, January-November 1978

		Product Weight (m.t.)	Catch Weight (m.t.)
<u>Fresh</u>			
Round or dressed	1977	7,333 ¹⁾	9,093
Round or dressed	1978	11,869 ^{1)*}	14,718*
Fillets	1977	3,214 ²⁾	9,481
Fillets	1978	2,662*	7,853*
Total Fresh	1977	10,547	18,574
Total fresh	1978	14,531*	22,571*
<u>Frozen</u>			
Round or dressed	1977	1,017	1,261
Round or dressed	1978	1,580*	1,959*
Fillets & blocks	1977	17,366 ³⁾	51,230
Fillets & blocks	1978	13,540*	39,943*
Total frozen	1977	18,383	52,491
Total frozen	1978	15,120*	41,902*
<u>Dried and/or salted</u>	1977	130	356
<u>Dried and/or salted</u>	1978	157*	430*
<u>Total export of Cod</u>	1977	29,060	71,421
<u>Total export of Cod</u>	1978	29,808*	64,903*

*January to November

Destination

1) 1977	Netherlands	43%	2) 1977	France	44%	3) 1977	France	27%
	France	21%		Austria	18%		Bel./Lux.	20%
	Denmark	19%		Netherlands	16%		U.K.	12%
1978	Netherlands	35%	1978	France	64%	1978	France	37%
	Denmark	27%		Austria	13%		Bel./Lux.	21%
	U.K.	19%		Bel./Lux.	7%		U.K.	17%
							Netherlands	9%

FRG: Import of Cod Products 1977, January-November 1978

	Product Weight (m. t.)	Catch Weight (m. t.)	(conv. f.)
<u>Fresh</u>			
Round or dressed 1977	5,602	6,946	(1.24)
Round or dressed 1978	4,300*	5,332*	
Fillets 1977	324	956	(2.95)
Fillets 1978	<u>878*</u>	<u>2,590*</u>	
Total fresh 1977	5,926	7,902	
Total fresh 1978	5,178*	7,922*	
<u>Frozen</u>			
Round or dressed 1977	1,278	1,585	(1.24)
Round or dressed 1978	697*	864*	
Fillets & blocks 1977	4,425	13,054 ¹⁾	(2.95)
Fillets & blocks 1978	<u>1,874*</u>	<u>5,528*¹⁾</u>	
Total frozen 1977	5,703	14,639	
Total frozen 1978	2,571*	6,392*	
<u>Dried and/or salted</u> 1977	1,025	2,809	(2.74)
<u>Dried and/or salted</u> 1978	527*	1,445*	
<u>Total import of Cod</u> 1977	12,654	25,350	
<u>Total import of Cod</u> 1978	8,276*	14,314*	

*January to November

- 1) Sources: 1977 Canada 35%
Denmark 29%
Norway 19%
- 1978 Norway 54%
Denmark 19%
France 18%

FRG: IMPORT OF FISH AND FISH PRODUCTS, 1976-1978

	1976		1977		Jan-Nov. 1978	
	m.t.	Mill. DM	m.t.	Mill. DM	m.t.	Mill. DM
031.010 Trout, Fresh or Chilled	6,483.9	34.7	7,524.3	41.3	7,607.7	37.8
020 Trout, Frozen	3,670.8	26.5	3,414.0	25.8	3,390.5	23.7
030 Salmon, Fresh or Chilled	506.9	8.8	567.6	10.1	639.1	9.1
040 Salmon, Frozen	2,599.6	33.2	2,616.0	34.0	2,450.6	28.0
050 Fresh, Herring & Northsea Whiting, Fresh, Chilled or Frozen	42.6	0.2	57.6	0.2	40.8	0.1
060 Other Salmonides, Fr., Ch., Fr.	123.1	0.5	32.1	0.15	33.4	0.2
070 Eels, Fresh or Chilled	4,419.9	51.2	3,677.6	50.5	2,900.2	43.1
080 Eels, Frozen	771.1	5.0	1,487.8	9.4	1,395.7	10.2
090 Carp, Fresh or Chilled	4,421.2	12.2	3,829.4	11.3	2,022.3	6.3
130 Carp, Frozen	21.7	∅	1.5	∅	∅	∅
152 Ornamental F.	141.3	17.6	136.6	18.7	107.1	16.6
159 Other Fresh W.F., Fresh or Ch.	1,439.6	5.0	1,326.0	5.2	1,254.1	6.2
160 Other Fresh W.F., Frozen	134.4	0.7	162.6	1.3	325.1	2.3
212 Herring, Round, Fresh, Feb 15- June 15	4,435.1	4.4	3,613.0	3.9	3,550.0	5.2
219 Herring, Other Fresh, Feb 15- June 15	10,801.0	16.8	9,545.1	16.9	9,414.6	24.5
232 Herring, Round Frozen, Feb 15 - June 15	4,617.0	4.4	4,421.4	4.7	6,937.0	9.3
239 Herring, Other, Frozen Feb 15 - June 15	8,914.9	12.9	10,273.8	16.9	10,083.5	27.0
242 Herring, Whole, Fresh June 16 - Feb 14	16,921.7	18.2	10,237.9	16.0	7,341.2	11.7
249 Herring, Other, Fresh June 16 - Feb 14	27,295.7	45.0	17,848.2	38.3	13,977.7	34.0
252 Herring, Round, Frozen June 16 - Feb 14	16,001.5	16.1	12,535.3	19.1	8,756.1	14.5
259 Herring, Other, Frozen June 16 - Feb 14	23,846.2	34.0	28,011.2	55.8	12,653.4	53.0
260 Sprats Fresh Feb 15 - June 15	209.0	0.2	152.7	0.18	137.3	0.1
270 Sprats Frozen Feb 15 - June 15	462.5	0.5	762.3	1.0	558.8	0.5
301.280 Sprats, Fresh June 16 - Feb 14	604.3	0.6	541.2	0.5	354.2	0.3
290 Sprats, Frozen June 16 - Feb 14	954.0	1.1	601.9	0.6	1,296.7	1.1
312 Tuna, Round, Fresh	1.3	∅	4.9	∅	1.8	∅
314 Tuna, Round, Frozen	25.9	∅	2.3	∅	1.8	∅
332 Other Tuna, Fresh	3.2	∅	∅	∅	-	-
334 Other Tuna, Frozen	∅	∅	1.5	∅	-	-
340 Other Tuna, Fresh or Chilled	60.3	0.3	54.5	0.3	28.7	0.2
360 Other Tuna, Frozen	48.0	0.1	71.6	0.2	86.8	0.2
370 Sardines, Fresh, Chilled	992.3	0.7	1,948.0	1.6	1,972.4	1.9
380 Sardines, Frozen	1,214.0	1.4	1,097.0	1.3	1,737.2	2.0
410 Shark, Fresh, Chilled	621.0	2.2	723.4	2.6	496.1	2.1
420 Shark, Frozen	2,677.3	9.6	2,507.7	9.3	3,286.8	11.1
430 Ocean Perch, Fresh, Chilled	2,765.1	3.5	2,490.3	3.8	2,963.3	4.9
440 Ocean Perch, Frozen	692.0	1.0	741.3	1.4	481.1	0.9
450 Halibut, Fresh, Chilled	233.0	0.7	347.9	1.0	514.6	1.6
470 Halibut, Frozen	5,713.8	16.4	4,187.4	12.4	4,338.8	11.5
480 Cod, Fresh, Chilled	5,353.4	11.2	5,602.1	13.0	4,299.9	10.7
490 Cod, Frozen	1,832.9	3.2	1,277.8	2.7	696.7	1.8
510 Saithe (Pollock) Fresh	21,352.8	24.8	23,905.3	35.1	16,466.9	25.8
520 Saithe (Pollock) Frozen	742.5	0.9	1,566.3	2.3	1,458.9	2.7
530 Haddock, Fresh, Chilled	3,582.1	8.6	3,268.3	9.1	2,598.0	7.3
550 Haddock, Frozen	230.2	0.5	217.9	0.5	455.3	1.1
560 Whiting (or Silver Hake) Fr. or Chilled	86.6	0.2	124.8	0.2	107.6	0.1
570 Whiting, Frozen	401.3	0.3	772.1	0.5	570.8	0.4
580 Mackerel, Fresh Feb 15 - June 15	1,291.9	1.3	1,442.8	1.6	1,352.9	1.4

FRG: IMPORT OF FISH AND FISH PRODUCTS, 1976 - 1978

(Continued)

	1976		1977		Jan-Nov. 1978	
	m. t.	Mill. DM	m. t.	Mill. DM	m. t.	Mill. DM
590 Mackerel, Frozen, Feb 15 - June 15	3,084.8	2.9	6,365.8	5.6	9,462.7	8.1
301.610 Mackerel, Fresh June 16 - Feb 15	4,252.1	4.0	5,776.6	5.7	4,013.4	3.6
630 Mackerel, Frozen June 16 - Feb 15	5,530.9	4.6	12,259.1	10.8	7,199.0	5.9
640 Sardelles, Fresh, Chilled	148.6	0.3	184.0	0.4	99.5	0.1
650 Sardelles, Frozen	821.7	1.1	742.1	1.1	742.6	1.1
660 Plaice, Fresh, Frozen	6,279.6	13.6	6,892.2	14.7	6,153.1	13.8
670 Plaice, Frozen	735.4	2.7	585.5	2.0	662.8	2.4
680 Bream, Fresh, Chilled	11.5	∅	16.6	0.08	21.0	0.1
690 Bream, Frozen	193.3	0.5	114.0	0.3	126.7	0.3
710 Sole, Fresh, Chilled	634.3	8.0	662.4	8.1	507.4	7.0
730 Sole, Frozen	496.0	4.6	412.6	4.0	443.7	4.1
752 Flounders, Fresh, Chilled	211.8	0.4	172.9	0.3	119.9	0.2
754 Hake, Fresh, Chilled	157.7	0.8	205.2	1.1	142.5	0.8
759 Other Seafish, Fresh, Chilled	3,718.4	11.4	4,625.0	16.1	4,509.3	20.5
762 Flounders, Frozen	58.5	∅	47.0	∅	12.6	∅
764 Hake, Frozen	778.2	1.4	688.5	1.2	511.3	1.3
769 Other Seafish, Frozen	1,301.8	4.4	8,701.2	12.0	12,511.3	16.8
810 Fillets, Cod, Fresh, Chilled	446.9	1.7	324.1	1.6	877.5	4.0
852 Fillets, Pollock, Fresh	2,755.4	7.2	3,501.4	10.5	3,207.7	11.0
854 Fillets, Haddock, Fresh, Chilled	49.6	0.1	43.1	0.1	∅	∅
855 Fillets, Hake, Fresh, Chilled	5.3	∅	2.7	∅	∅	∅
856 Fillets, Redfish, Fresh, Chilled	41.0	0.2	37.1	0.2	82.1	0.4
858 Fillets, Herring, Fresh, Chilled	170.1	0.5	208.5	0.7	187.5	0.7
859 Fillets, Other Seafish, Fresh Chilled	522.2	2.4	1,526.9	4.7	2,331.5	6.2
910 Fillets, Cod, Frozen	1,314.0	4.7	4,425.0	21.7	1,874.3	8.3
920 Fillets, Pollock, Frozen	4,641.7	10.7	2,797.7	6.3	6,719.7	21.4
930 Fillets, Haddock, Frozen	43.1	0.1	46.6	0.2	832.0	0.4
301.940 Fillets, Redfish, Frozen	305.0	1.0	566.3	2.2	661.9	2.9
950 Fillets, Tuna, Frozen	3.0	∅	2.1	∅	∅	∅
960 Fillets, Mackerel, Frozen	126.3	0.2	1,525.7	2.3	1,318.9	1.8
971 Filelts, Hake, Frozen	6,849.9	14.3	7,292.1	16.0	7,510.3	17.1
974 Fillets, Herring, Frozen	108.6	0.4	367.2	1.1	1,103	2.7
978 Fillets, Other Seafish, Frozen	1,585.6	9.2	1,864.3	10.0	2,364.6	12.1
980 Fish livers, Roes, Soft Roes Fr. Chilled	395.1	1.0	409.1	1.0	267.0	1.3
990 Fish livers, Roes, Soft Roes, Frozen	36.2	∅	43.4	0.1	39.3	0.1
302.012 Herring, Round, Dried Salted	17,901.2	37.7	13,277.4	38.5	10,848.8	36.4
014 Herring, Headless, Dried Salted	2,113.7	4.6	2,363.9	6.6	2,141.6	6.7
030 Cod, Dried (Stockfish) Not Salted	73.8	0.6	120.0	0.8	56.4	0.4
D70 Cod, Klippfish Salted, Not Dried	846.1	5.3	902.5	5.6	280.7	0.5
05D Cod, Dried, Salted	7.1	∅	2.7	∅	182.1	0.7
150 Anchovy, Dried, Salted	500.5	1.4	421.4	1.3	310.0	1.0
170 Halibut, Dried, Salted	-	-	1.0	∅	-	-
180 Salmon, Salted or in Brine	101.7	1.3	13.6	0.1	5.3	∅
192 Pollock Klipp F.	24.8	0.1	516.2	1.0	∅	∅
194 Pollock, Dried, Salted	2,534.8	8.7	2,237.2	7.8	2,931.2	9.0

FRG: IMPORT OF FISH AND FISH PRODUCTS, 1976-1978

(Continued)

	1976		1977		Jan-Nov. 1978	
	m.t.	Mill. DM	m.t.	Mill. DM	m.t.	Mill. DM
191 Other Fish, Dried, Salted	78.9	0.3	97.6	0.3	34.4	0.2
198 Other Fish, Dried, Salted or in Brine						
210 Cod Fillets, Dried, Salted	3.2	ø	0.2	ø	8.1	ø
250 Salmon Fillets, Salted or in Brine	ø	ø	9.0	ø	1.1	ø
283 Herring Fillets, Dried, Salted	1,742.7	7.3	1,614.0	8.1	1,250.2	7.6
289 Fillets, Other Fish, Dried Salted	179.2	0.9	801.4	3.4	18.2	0.4
302.310 Herring, Smoked	1,236.2	4.7	980.2	4.5	592.8	3.3
330 Salmon, Smoked	290.7	8.5	329.6	9.9	269.5	7.8
390 Other Fish, Smoked	3,014.9	9.7	2,975.5	10.7	2,776.7	9.7
600 Fish Livers, Roes, Soft Roes, Dried, Salted	1,292.0	7.7	1,268.7	7.2	718.5	4.3
700 Fish Meal, Edible	26.1	ø	50.3	ø	5.0	ø
303.120 Rock Lobster	59.6	1.3	68.0	1.7	66.7	1.6
210 Lobster, Live	209.0	5.1	215.4	5.3	183.2	4.2
230 Lobster, Whole	33.7	0.7	30.3	0.5	36.6	0.5
290 Other Lobster	8.3	0.2	11.3	0.3	8.2	0.3
410 Shrimp & Fresh W. Crayfish	314.9	3.9	424.8	5.0	388.8	5.3
432 Shrimp - Pandalidae	431.2	2.9	679.3	4.4	313.4	2.8
434 Shrimp - Crangon	728.4	1.9	591.8	ø.3	808.0	5.4
439 Shrimp - Other	1,299.6	18.5	1,381.9	21.6	2,143.4	26.4
500 Other Shellfish	66.8	1.0	76.1	1.2	61.3	0.9
610 Oysters - To 40 g	16.7	0.2	19.4	0.1	15.4	ø
630 Oysters - Other	216.2	2.0	207.7	2.1	194.9	1.9
650 Mussels	2,584.2	2.0	1,770.4	2.0	1,438.4	2.0
660 Snails Exc. Sea Snails	448.0	4.1	239.5	2.9	409.4	3.6
682 Squid, Frozen	922.0	3.2	851.3	3.3	1,103.1	4.5
684 Octopus, Frozen	504.8	2.2	472.9	2.2	664.2	2.9
303.686 Krake, Octopus, Frozen	262.7	0.8	348.1	1.1	363.9	1.2
688 Other Molluscs, Frozen	257.0	1.2	244.4	1.2	322.5	2.0
689 Other Molluscs	214.7	0.9	n.a.	n.a.	123.9	0.8
<u>FISH PREPARATIONS</u>						
160.110 Caviar			44.4	9.0	30.3	8.0
190 Caviar Substitute			159.1	2.3	183.8	2.0
300 Salmonides, Prep. or Pres.			120.0	1.2	139.4	1.3
510 Herring Fillets, Raw, Breaded, Frozen			28.3	0.1	20.1	0.1
592 Herring, in Barrels, Prep.			9,101.0	24.3	8,854.7	28.2
599 Herring, in Other Cont., Prep.			6,304.8	26.4	4,428.7	21.0
710 Sardines, Prep.			7,858.4	38.0	7,886.1	40.0
750 Tuna, Prep.			10,149.3	48.0	11,024.5	45.8
820 Bonito, Prep.			1,736.5	8.4	2,098.4	10.0
830 Mackerel, Prep.			3,513.9	14.3	3,946.7	16.2
850 Anchovy, Prep.			488.0	4.6	479.0	4.4
920 Other Fish Fillets, Raw, Breaded			4,803.4	19.8	5,164.3	21.3
940 Pollock, Prep.			73.3	0.3	37.0	0.1
982 Sprats, Prep.			437.7	2.4	312.2	1.8
989 Other Fish, Prep.			887.8	3.7	801.2	3.4
1605.200 Shrimp, Prep.			214.4	4.2	170.7	4.2
302 Lobster & Rock Lobster, Prep.			88.1	2.7		
300 Other Shellfish, Prep.			3,973.1	45.9	3,911.0	45.9
500 Mollusc, Prep.			3,990.8	22.6	3,399.7	20.8

